

A Guide to Scientific Nutrition for Autism and Related Conditions

**Spring 2002
Second Edition**

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



WEB SITE:

www.kirkmanlabs.com

TELEPHONE:

1(800)245-8282

1(888)Kirkman

1(503)694-1600

1(503)682-0838 (Fax)

MAIL:

**Kirkman Laboratories
6400 SW Rosewood St.
Lake Oswego, OR 97035**

E-MAIL:

Ordering - sales@kirkmanlabs.com

Customer Service - rhonda@kirkmanlabs.com

Technical Support - rondadukes@kirkmansd.com

Technical Support - larry@kirkmanlabs.com

Technical Support - ilene@kirkmanlabs.com



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KIRKMAN LABORATORIES

"Kirkman is the only manufacturing company designing products specifically for autistic individuals"

Our Beginnings

Kirkman has been manufacturing vitamins and dietary supplements for more than 52 years. Our involvement with the autistic community began in 1967 with an urgent request by Dr. Bernard Rimland, founder of the Autism Research Institute, for help in manufacturing special vitamin formulations. He believed that sufferers of "autism", a disorder that at the time was not well known, could be helped by particular vitamin combinations.

Dr. Rimland's proposal that a vitamin therapy could play a role in the treatment of such an invasive biological disorder as autism, was revolutionary in many ways. We were moved, however, by Dr. Rimland's tenacity and enthusiasm for finding solutions for the autistic which prompted a collaboration that has lasted for more than 30 years.

The result of our early work was Super Nu-Thera™, a vitamin formulation especially high in B-6 and magnesium.

Since its inception, more than 50,000 autistic individuals from around the world have used Super Nu-Thera™. Those who have taken Super Nu-Thera™ report a wide range of benefits that include better eye contact, less self-stimulatory behavior, more interest in the world around them, fewer tantrums, more speech and in general more normalcy.

To date there have been 18 clinical studies, including Dr. Rimland's published studies, regarding the use of B-6 in the treatment of the autistic - all with positive results. The product has proven so beneficial to the autistic that Kirkman now offers eight versions of Nu-Thera™.

Our Focus

With the rising incidences of autism occurring worldwide (now reported to be 1 in 150 children), it became evident that developing effective treatments for the autistic required Kirkman's full commitment.

We are the only manufacturing company completely devoted to developing therapeutic dietary supplements for the autistic. We have been fortunate enough to work with the world's leading researchers, doctors, and scientists in the field of autism to develop our products. Our mission is to offer the most up to date and effective nutritional and dietary supplements known to aid the autistic. At Kirkman, our company motto is, *"Are we doing all we can?"*

Scientific Nutrition for Autism and PDD

Unlike other conditions, autism is a multi-spectrum disorder with wide ranging symptoms that appear in varying degrees that are unique to an individual. There was a time when autism so baffled the medical community that it was considered untreatable.

Today nutritional supplementation is playing an increasingly important role in the treatment of autism. Testing laboratories are verifying that children with autism and PDD are seriously low in many vitamins, minerals, essential fatty acids, and amino acids. Because of these deficiencies, most children with autism and PDD also suffer from digestive and immune problems. These deficiencies result in neurological problems such as vision, speech, attention, and socialization weaknesses.

Our Products

Kirkman offers a full line of nutritional supplements that have been found to be beneficial to the autistic. Unique to Kirkman has been the development of hypoallergenic forms of supplements, important because research indicates that the autistic may be more prone to allergic reactions than the average individual.

Kirkman's line of supplements now includes more than 100 products - all of which are described in detail in the following pages. In addition articles of particular importance to the autistic community have been included to help explain the role of dietary supplements and nutrition in those with autism.



NEW KIRKMAN PRODUCTS

Kirkman Labs is continuously working with the leading practitioners and scientists in the field of autism to develop new products that provide significant benefits.

Since the publication of the last *A Guide to Scientific Nutrition for Autism and Related Conditions* the following products have been developed and introduced:

Alpha-Ketoglutaric Acid - An ammonia complexing agent for use when children's ammonia levels are elevated.

Arctic Cod Liver Oil - A new Nordic Naturals **ORANGE FLAVORED** cod liver oil which has significantly reduced "fishy" taste and odor.

Balanced Omega Combination - A new Nordic naturals product combining Evening Primrose Oil and EPA and DHA.

EnZym-Complete™ with DPP IV - A multi-purpose plant based enzyme for digestion of a broad spectrum of foods.

Kirkman Fortified Functional Foods - Sugar, casein and gluten free mixes for cookies, pancakes, doughnuts, and flavored drinks, fortified with vitamins, minerals, and immune boosting nutrients.

Kirkman Flavoring Syrups - Three sugar free flavoring syrups which make great syrups for pancakes or waffles, plus can be used to flavor nutritional supplement blends or medicines.

Kirkman Toothpaste Gel - A sugar, casein and gluten free toothpaste gel containing no sodium lauryl sulfate. Flavored with natural raspberry flavoring.

Lactobacillus Companion - This formulation combines two unique strains of lactic acid bacteria, *Lactobacillus salivarius* and *Lactobacillus helveticus*, each with their own impressive qualifications. These probiotic strains possess the remarkable ability to beneficially affect the delicate balance of the intestinal flora as they set up residence (implant themselves) in the mucous membrane of the small intestine.

Magnesium Citrate Soluble Powder - A revolutionary form of magnesium which is absorbed very quickly because it is soluble in liquids.

ProEFA - An Omega 3/6/9 capsule manufactured by Nordic Naturals containing both fish oils and borage oils.

Pro-Immune Support - This formulation contains the stellar immune-stimulating properties of Beta 1,3/1,6 glucan in combination with the well-researched and impressive probiotic strain of *L. plantarum*.

Super Nu-Thera™ Hypoallergenic - A fully potent version of our popular Nu-thera™ Hypoallergenic Capsules.

Super Nu-Thera™ Liquid with P-5-P - is now available without vitamins A&D in a great tasting wild cherry flavor.

Super Nu-Thera™ Liquid without Vitamins A&D - is now also available in a great tasting wild cherry flavor.

For more in-depth information on each of these products see the individual description pages in the chapters that follow.

THE KIRKMAN NAME IS SYNONOMOUS WITH QUALITY

Kirkman Laboratories will settle for no less than having the absolute best quality products available anywhere. This is our standard and it will never be compromised. Individuals with autism have come to expect this standard from Kirkman and our selection of ingredients, formulas, personnel and operating procedures ensure that this commitment is maintained.

Formulations sold by Kirkman Laboratories have been developed using an advisory board of experts in the field of autism and developmental disorders. Top physicians and scientists worldwide continuously work with us so that Kirkman formulations remain current and on the "cutting edge" of new treatments and developments.

Quality at Kirkman begins with the selection of raw materials to be used in the manufacturing process. Once an ingredient is decided upon, an intense search of all available suppliers is done. Samples and specifications are obtained from all qualified vendors for that item and an evaluation is performed based on source, potency, and impurities including heavy metals, pesticides, casein, gluten and others pertinent to that material. The best supplier (or suppliers) are chosen and become the only approved vendors for that material. Whenever possible pharmaceutical grade materials are used, but in the case of food ingredients or herbal products, pharmaceutical grades are often not available.

Before any formulation is made available for sale, a stability study is performed which ensures that potency, purity and physical

characteristics remain satisfactory through the expiration date. Furthermore, a sample of every lot of product manufactured is examined periodically so that an ongoing monitoring of quality is in place at all times.

Kirkman has stringent requirements in the hiring of personnel. Our dedicated staff is aware of our quality commitment and goes out of their way to guarantee prompt, efficient service. A rigorous training program is in place for new employees before they function on their own.

Kirkman's Standard Operating Procedures are based on the Food and Drug Administration's drug standards. Kirkman does manufacture certain prescription drugs and those operating standards are used on all of our nutritional supplement and food products as well. Though the FDA does not require drug standards to be applied to supplements and foods, Kirkman will not compromise any product or procedure. Many companies have "double standards" for different types of products but Kirkman believes the highest quality specifications and procedures must apply to all products. In addition to the routine testing on our products, Kirkman also monitors critical quality aspects on those products where there is any potential for a negative response or a product degradation. Examples of this are casein testing of Kirkman Colostrum Gold®, casein testing of probiotics, potency of probiotics based on number of organisms and heavy metal and pesticide testing of cod liver oils. This special testing of critical specifications is just another example of Kirkman's commitment to quality.

"Kirkman products can be trusted to be the best products available."





HYPOALLERGENIC PRODUCT LINE

Kirkman Laboratories' dedication to the autistic community continues with the continuous introduction of products which show extreme promise in the search for treatment and eventually a cure for autism. As we work with parents and doctors in developing administration and dosage protocols, it has become evident that some autistic children have extreme sensitivities and allergies to nearly all ingredients normally used in formulating nutritional supplements. It has always been Kirkman's goal to formulate all products to be as palatable as possible so as to make administration and compliance easy for the parents. Some of the flavorings and formulation aids used to make these products taste good, are the very ingredients that some autistic children are very sensitive to.

Kirkman Laboratories is committed to having a broad product line that will meet all the needs of the autistic community. To cover the needs

of those children who are extremely sensitive or allergic to many commonly used ingredients, Kirkman has developed a full line of hypoallergenic products in two piece hard-shell capsules. The capsule shell is made from plant cellulose, not from beef or pork gelatin as most capsules are. Capsules manufactured from beef or pork can contain potential allergens associated with animal derived ingredients. Kirkman's vegetable capsule shells are manufactured from plant cellulose derived from trees or cotton. This fibrous cellulose is an inert material and is allergen free. Furthermore, these hypoallergenic products contain no fillers, flavors, preservatives or common formulating aids which could cause sensitivity or allergic reactions. As a result, this hypoallergenic line is free of casein, gluten, corn, soy, flavors, colors, animal derivatives, sweeteners, sugar, heavy metals, pesticides and other environmental impurities.

WHY AREN'T ALL PRODUCTS MADE HYPOALLERGENIC?

Most manufacturers of nutritional supplements provide products to drug chains, food chains and mass market distributors. The majority of the population is not sensitive to a common list of ingredients usually called "pharmaceutical excipients". Some of the most common ingredients on that list include stearic acid, citric acid, gelatin, dextrose (corn sugar), corn starch, sucrose, polyvinylpyrrolidone, sodium chloride, sugar alcohols etc. In addition, various flavorings and colorings are often used. For those individuals without sensitivities or allergies to these ingredients or the impurities

present in those ingredients, no problematic side effects become evident to the user. Manufacturers use these standard ingredients because of cost and because they contribute to production efficiency. As an example, capsule shells made from gelatin cost less than half of those made from plant cellulose plus production using animal gelatin shells is often twice as efficient. The fillers and capsule production aids Kirkman uses in this Hypoallergenic line are the most inert ingredients known and are all pharmaceutical grade so as not to contain any impurities. In addition to the plant cellu-



HYPOALLERGENIC PRODUCT LINE

(continued)

lose in the capsule shell, Kirkman uses non-allergen excipients such as silicon dioxide, di-calcium phosphate and L-leucine. In formulating the hypoallergenic line, Kirkman used only one criteria which was providing the best non-allergen product line possible. Ingredient choice and purity, plus the science behind those selections were the only considerations. Cost and production efficiencies were not considered. Helping the extremely sensitive autistic individual was our goal, and we have accomplished that goal. There is no other hypoallergenic line available which is geared strictly to autism and other developmental diseases.

WHAT HAVE BEEN THE RESULTS?

Individuals using the hypoallergenic product line have essentially eliminated all sensitivities, allergies and reactions that had previously been an issue. The response to these products has been phenomenal with physicians and customers from all over the world continuing to complement and thank Kirkman for developing this line which was so very much needed by the autistic community.

THE INGREDIENTS IN THE KIRKMAN HYPOALLERGENIC LINE

1. Plant Cellulose
Cellulose fibers obtained from cotton or wood pulp. These fibers are treated, purified and ground to the proper mesh.
2. Colloidal Silicon Dioxide
Silicon is one of the most abundant elements on earth. It occurs in nature as silicon dioxide or as silicates. Silicon dioxide is known to most individuals as sand. Colloidal Silicon Dioxide is non-toxic in the human body.
3. Magnesium Stearate Vegetable Grade
Kirkman uses vegetable grade to ensure maximum purity. This ingredient is used in minute quantities to allow proper filling of the plant cellulose capsules.
4. Occasionally, Calcium Phosphate or Calcium Sulfate may be used.

WHAT PRODUCTS ARE OFFERED IN THE HYPOALLERGENIC LINE?

The following products are available:

1. Nu Thera™ Condensed Formula
(with and without vitamins A and D)
2. TMG 175 mg. capsules
3. Vitamin C 250 mg. capsules
4. Zinc 20 mg. capsules
5. Vitamin E capsules 100 IU
6. DMG 125 mg. capsules
7. Gingko Biloba Standardized Extract capsules
8. DMG 125 mg. capsules
with Folic Acid and B-12
9. TMG 175 mg. capsules
with Folic Acid and B-12
10. Taurine capsules
11. L-Glutamine capsules
12. GABA Plus capsules
13. Magnesium capsules
14. Calcium powder
15. Melatonin Plus capsules
16. CoQ10 capsules
17. Cranberry Extract capsules
18. MSM powder
19. Folic Acid and B-12 capsules
20. Colostrum unflavored liquid
21. "Yeast Control" capsules
22. EveryDay daily vitamin
and mineral supplement
23. DMSA Hypoallergenic capsules
24. Lipoic Acid Hypoallergenic capsules
25. L-Glutathione capsules
26. Selenium capsules
27. Magnesium Glycinate capsules
28. Milk Thistle capsules
29. Glycine capsules
30. Chelation Aid Pro-Support
31. Multiple Vitamin Pro-Support
32. Multiple Mineral Pro-Support
33. N-Acetyl Cysteine
34. B-Complex with CoEnzymes
Pro-Support capsules
35. Magnesium Citrate Soluble Powder
36. Beta Glucan capsules
37. Alpha Ketoglutaric Acid
38. Idebenone capsules
39. Molybdenum capsules

It is Kirkman's goal to offer a hypoallergenic version of all products developed in the future. This product line is a significant breakthrough in allowing extremely sensitive individuals to get the supplements they need without worrying about additives, allergies or impurities.



FREQUENTLY ASKED QUESTIONS

Questions About Kirkman Laboratories

1. How long has Kirkman been in business?

The Kirkman company was started in 1949 and sold Fluoride products for dental treatment.

2. When did Kirkman start selling products for autism?

Kirkman began selling the Super Nu-Thera™ line in 1980. We now carry

numerous different products for autism and have many more exciting new products in development.

3. What else does Kirkman do?

Kirkman's only markets are Flouride products for dental use and a complete line of supplements for autism and developmental disorders.

Questions about Product Selection

Questions about Super Nu-Thera

1. Which Super Nu-Thera™ product should I start on?

Smaller children can start on the liquid or the regular powder. The liquid can easily be mixed with water, juice or other beverages. The powder can be mixed with foods or beverages. Older children or adults who can swallow tablets may want to use the caplets. Very sensitive individuals with many known allergies should use the Nu-Thera™ Hypoallergenic Capsules. The P5P powders and caplets are usually recommended when results with the regular powder or caplets are marginal, or if some effectiveness seems to have tapered off.

2. Can I start my child on Super Nu-Thera™ and take him off of Ritalin?

Nutritional therapy can often eliminate the need for Ritalin. However you must discuss this with your physician and in some cases suggest that it be tried.

3. What if my child can't take Super Nu-Thera™?

Kirkman's EveryDay™ Children's Multivitamin has been specially formulated for those children who are not helped by the high levels of Vitamin B6 and Magnesium found in Super Nu-Thera™. Kirkman's Everyday™ Multivitamin is hypoallergenic and contains lower doses of Vitamin B6 in two different forms, pyridoxine hydrochloride and pyridoxal-5-phosphate (P5P). It also contains Taurine and L-Glutamine, two important amino acids for the treatment of autism.

Questions about DMG and TMG

1. Should I buy DMG or TMG? What is the difference?

DMG (Dimethylglycine) has been used in autism for many years and is recommended by Dr. Bernard Rimland. It has produced dramatic speech and behavioral improvements in many children (as many as 80% in some studies). TMG (Trimethylglycine) is a new, only recently available compound which has been giving extremely positive results. TMG has one more methyl group in its chemical structure than DMG. This extra methyl group breaks off to reduce harmful homocysteine levels and raise serotonin levels by producing a precursor called SAME. The rest of the molecule becomes DMG. So, in essence, with TMG you get DMG plus the SAME. Generally, Kirkman recommends that if you are on DMG and are getting good results, stay with it. If you are just beginning this type of product, TMG offers some extra benefit. Consultation with your physician is also suggested in making a choice.

2. Why do some DMG and TMG products have Folic Acid and B-12?

DMG and TMG can lower folic acid levels in the body, which can in turn cause hyperactivity. Adding folic acid to the preparation should prevent that. B12 is added because folic acid can mask B12 deficiency.

3. Can I give Super Nu-Thera™ and DMG (or TMG) together?

Yes, they often work very synergistically together, but we do recommend starting one product at a time, adding the second one after about a week of administration with no side effects.

Questions about Products for Intestinal Support

1. I suspect that my child has a yeast problem. What products does Kirkman have for a Candida infection?

Kirkman currently has Colostrum Gold, several probiotic products, Super Cranberry Extract, and Yeast Control.

2. Would acidophilus help my child's Candida infection?

Yes, probiotics do help in Candida infections. Kirkman's Colostrum Gold® is also a very good choice.

3. I keep hearing about how great a product colostrum is. What does it really do?

Kirkman's Colostrum Gold® is a multi-faceted product. Colostrum fights Candida and bad bacteria. It also adheres to the wall of the gut and starts a healing process because it contains growth factors. In addition, colostrum contains immunoglobulins which stimulate and enhance the entire immune system. It is truly a remarkable product. For more scientific information, please see our website article.



FREQUENTLY ASKED QUESTIONS (continued)

Questions about Cod Liver Oil and Essential Fatty Acids

1. Is Kirkman's Cod Liver Oil the same as what I get in the health food store?

No. Much of the Cod Liver Oil at retail levels is "spiked" with synthetic Vitamin A palmitate. Kirkman's is from all natural sources. Furthermore cod liver oil can be contaminated with heavy metals and pesticides. Kirkman's is purified and tested for the absence of those contaminants.

2. Why does Kirkman's Cod Liver Oil also contain Vitamins D and E?

Along with Vitamin A, Vitamin D is a natural component of Cod Liver Oil and is one of the nutrients from which CLO derives its therapeutic benefits. Vitamin E is added as an antioxidant to guard against oxidation (rancidity) of the oil after the bottle is opened.

3. Does Kirkman's Cod Liver Oil contain Omega fatty acids for my child?

This depends on the extent of essential fatty acid deficiency that is present. It is generally recommended that a fatty acid profile be

done before beginning supplementation. Most children with autism have significant deficiencies in Omega-3 fatty acids and may require further supplementation in addition to Cod Liver Oil. Other high-quality essential fatty acid products available from Kirkman include EFA-Plus, Coromega™, Pro-EPA, and Pro-DHA.

4. Can Kirkman's EFA-Plus (ground flaxseed product) be used in cooking?

Unlike other essential fatty acid products, Kirkman's EFA-Plus has been specially formulated to be heat stable when used in cooking and baking. It is easy to administer when mixed into your child's favorite pancake mix or cookie batter.

5. Can I continue giving my child Efalex if I start Nu-Thera™ and DMG?

Yes, Efalex is an essential fatty acid supplement and is not related to or affected by Nu-Thera™ or DMG.

Questions about MSM

1. What is MSM for?

MSM is used in autism to remove toxins from the body by detoxifying cells and helping to eliminate free radicals. It also has anti-inflammatory properties which promote healthy muscles and joints.

Additional Questions About Kirkman's Products

- 1. My child has many food allergies and is extremely sensitive to chemicals. What Kirkman products can I use?**

Kirkman has a complete line of hypoallergenic products which contain no known allergens, fillers, flavors, colors, grains, casein, gluten, or animal products. They are formulated in plant cellulose capsules instead of the traditional animal gelatin capsule shells most manufacturers use. Gelatin can cause reactions in some individuals. These hypoallergenic products should cause no reactions or allergies.

- 2. Can your products be used by people who are not autistic?**

Yes, our Super NuThera™ products and EveryDay™ Multivitamin are great high potency supplements that can be used by people of all ages. In addition we also carry nutritional supplements such as Vitamin C, Vitamin E, Zinc,

Magnesium, Ginkgo Biloba, CoQ10, Cranberry Extract, and certain amino acids which can be used by anyone. The products in the hypoallergenic line offer an alternative to the supplements sold in retail stores, which may contain unwanted additives.

- 3. Are trial sizes of your products available?**

Yes. We have trial sizes of products available for \$3.00, which generally constitute about a two-week supply.

- 4. I can't find your products anywhere. Where are they sold?**

They are sold only through Kirkman Laboratories, either on our website or by phone. They are not sold in retail stores. In a few select areas, an autism foundation representative may have limited supplies, but this is rare.

Questions About Product Administration

- 1. My child hates the taste of Super Nu-Thera™. What can I do? How do I make it more palatable?**

The new clear orange colored versions of liquid Super Nu-Thera™ taste much better than the old product. They can be taken straight from the bottle or diluted in water, lemonade, fruit juice, or other favorite beverage. The powders are also improved and can be mixed with lemonade or juice, or sprinkled into applesauce or custard. It is best to use a food your child already likes as the media. If your child will take capsules or pills, try the hypoallergenic capsules or the caplets.

- 2. Should I give Super Nu-Thera™ products on an empty stomach?**

No. They should be given with meals because high doses of vitamins and minerals can cause stomach upset or nausea in some individuals. The same is true for most other Kirkman products as well.

- 3. My child won't take Super Nu-Thera™ powder in foods or beverages. Can I buy empty capsules at my health food store and put the powder in the capsules? Will that affect the way they work?**

Yes, you may put Super Nu-Thera™ powder into capsules and swallow them. The product works the same.



FREQUENTLY ASKED QUESTIONS (continued)

4. I use several of your products. Can I combine all of these in one drink?

Yes you can. We know that several parents make special "shakes" or "slurries" which their children like and put all of the supplements in that mix. We suggest being creative to make administration as easy as possible.

5. Can I mix your products with "Equal™" to make them taste better?

Yes, if your child can tolerate Equal™, it is acceptable to do this.

6. My son was taking TMG and ran out. I am ordering more. Will there be any adverse reaction from being out for a few days?

It is possible that your son might regress slightly until the TMG is reintroduced. Some of the positive improvements may not stay as evident. Reintroduction will restabilize and return him to previous levels.

7. Is it essential to give DMG or TMG with super Nu-Thera™?

No, they can be given separately. However, they often work synergistically with one another. It is better to start with one for a few weeks and then add the other. That way improvements on each can be easily monitored.

8. If my child is taking a multivitamin with 400 mcg. of folic acid and 6 mcg. of B-12, does he need any more of these if he takes DMG or TMG?

He could need additional amounts of these nutrients. Kirkman offers both DMG and TMG with added folic and B-12, and also offers a Folic Acid-B12 supplement in both liquid form and hypoallergenic capsules. The signal that more of these nutrients are needed is hyperactivity. DMG and TMG can reduce folic acid levels in the body.

9. How will I know if my child is getting too much DMG or TMG?

You should follow the dosage recommendations from our website located in the product specification section in our on-line store. Your physician should be consulted if dosage recommendations are to be exceeded.

10. At what time of day should DMG/TMG be taken?

Generally, DMG or TMG should be given at the beginning of the day because taking it at night could make it difficult for some children to sleep. If it does not affect your child's sleep pattern, it can be spread out during the day.

11. What dose of Cod Liver Oil should my child take?

Kirkman recommends following Dr. Mary Megson's dosages, which are 1/4 teaspoon for children under two, 1/2 teaspoon for 2-5 years of age, 3/4 teaspoon for 6-10 year olds, and one full teaspoon for children over 10 and adults.

12. How much is too much vitamin A or vitamin D?

Vitamin A is considered completely safe up to 10,000 International Units per day. Vitamin D is considered completely safe up to 800 IU's per day. These dosages represent 200% of the published recommended daily values.

13. Doesn't my child get enough vitamin D from the sun?

This depends on where you live, the time of day exposed, and the type of clothes worn. Vitamin D is too important to risk deficiency. Be sure your child supplements with 200 to 400 IU's daily.

14. My daughter is taking 1000 mg. of calcium and 400 mg. of magnesium per day. Can she take Super Nu-Thera™ too?

She should cut back on the magnesium because Super Nu-Thera™ contains high levels of magnesium. Usually 400 mg. of total magnesium per day is adequate.

Questions About Dosage

1. Should I start with the full dosage listed on the label?

It is better to work up to the full dosage (based on the child's age or weight) gradually. Start with 1/2 the dosage for a few days, then increase to 3/4 and as long as no side effects are seen, work up to the full dose in about ten days to two weeks.

2. How many teaspoons in an ounce of liquid?

Six

3. Where can I find dosage recommendations for your products?

On our website -

www.kirkmanlabs.com

go to the product specification section in our on-line store. They are also outlined in this product catalog.

Asking for Kirkman's Advice or Opinion

1. What is the first Kirkman product I should use?

Generally, a Super Nu-Thera™ product is the first to be used. About 45% of the children get positive results with Super Nu-Thera™.

2. Which Kirkman products should I use? There are so many to choose from. Which will work for my child?

This is a very complicated question with no universal answer. The needs of children with autism vary from child to child. Our website has long and short articles telling in detail what our products do and should be a starting point in product selection.

Any laboratory testing you have had done will also help you in determining the needs of your child. You should share this information with your health professional and get their support in choosing a program that will show positive results. For those children with extreme sensitivity to flavors and additives, our hypoallergenic line would be the products of choice.

3. My child has been diagnosed with PDD. Will any of your products help?

The Super Nu-Thera™ products have been used successfully in PDD, as have many of our other supplements. You should discuss nutritional therapy with your physician.

4. Does Kirkman make products for ADHD?

The Super Nu-Thera™ products, DMG (or TMG), essential fatty acids, and amino acids such as Taurine and Glycine have all been effective in many children with ADHD. However, you should consult with your physician on this and all other nutritional therapy.

5. If I start using Super Nu-Thera™, can my child go off Ritalin?

This question must be answered by your doctor or health professional. Kirkman Laboratories is not authorized to diagnose or treat any disease or disorder. There have been situations in the past where this has been possible.



FREQUENTLY ASKED QUESTIONS (continued)

6. Does my child have to stop his current treatments if he starts new products?

This question needs to be addressed by your health professional. Kirkman Labs does not advise on how to treat diseases or disorders.

7. How long should I use DMG or TMG if I don't see any results?

Dr. Rimland reports that results are usually seen in a week or so. If after 30 days no improvement is evident, discontinuation is probably in order.

8. My child has a speech delay. What do you recommend?

Super Nu-Thera™ has produced results, as has DMG or TMG.

9. Is the casein free, gluten free diet really important in autism?

The majority of children with autism are helped dramatically with CF/GF diets. There are many good books written about the diet and we recommend that you consult these publications for further information.

Questions About Ingredients And/Or Reactions To Kirkman Products

1. Are there any side effects or reactions that can occur from taking Kirkman products?

There can be. Many individuals are sensitive to flavors, sweeteners, additives, or fillers. Those people are in the minority, but reactions can occur. These reactions can cause rashes, hyperactivity or other side effects. People who experience such sensitivities should switch to the Kirkman products in the hypoallergenic line, which contain no flavors, fillers or known allergens. The encapsulated products are made using a plant cellulose capsule shell instead of the traditional animal gelatin capsules used by most manufacturers.

2. Are Kirkman products all casein and gluten free?

Prior to June 12th, 2000 the Kirkman probiotic "Acidophillus Plus" had a trace of casein. As of June 12th, all products manufactured by Kirkman are now casein and gluten free. This is confirmed by independent laboratory testing.

3. What does "natural flavoring" mean?

Many flavors are synthetically manufactured using harmful chemicals. Kirkman's natural flavors actually come from their respective fruit or plant. In other words, natural orange flavor comes from real oranges, and natural lemon comes from lemons. By using natural flavors, Kirkman makes it possible for parents to avoid certain products their child may be sensitive to. We don't have to worry about what harmful chemicals may be present.

4. Super Nu-Thera™ causes my child to be hyperactive. What can I do?

You could add more magnesium (up to 400 mg. daily) and you could add more folic acid and B-12 to the diet. You might also try the Nu-Thera™ hypoallergenic formula.

5. Could there be a diuretic effect with Super Nu-Thera™?

Generally this is not the case.

Questions About Ingredients And/Or Reactions To Kirkman Products (continued)

6. Does Super Nu-Thera™ cause the urine to change color?

Yes, those individuals whose vitamin B-2 levels are low, will experience the urine turning dark yellow or orange upon using Nu-Thera™ products. This is normal and is not cause for concern. Continuing use of Nu-Thera™ will generally keep the urine dark yellow on a regular basis.

7. What is P5P? Is it better than B-6? Should everyone use it?

P5P is short for Pyridoxal-5-Phosphate. P5P is called the active form of vitamin B-6 because when B-6 is ingested, the liver must first convert it into P5P for utilization. There is increasing evidence that some children with autism can not make this conversion. It is those children who benefit from P5P versions of Super Nu-Thera™. If your child gets none or marginal improvements with regular Super Nu-Thera™ or if the effectiveness of the regular product diminishes, then a P5P version may help. P5P can cause hyperactivity in certain individuals so it is recommended that if good results are obtained with the regular versions of Super Nu-Thera™, that no change to P5P formulas be made.

8. Why are there fewer milligrams of P5P in your formulas than B-6?

Because no conversion is required of P5P in the liver, it is immediately available and none is lost in a conversion process. As a result, leading physicians treating autism believe that it only takes 1/4th to 1/10th as much P5P to equal B-6 activity. That amount unfortunately varies in children, so some experimentation is necessary to find the optimum level for each child.

9. Is there a liquid Super Nu-Thera™ with P5P?

Kirkman has now developed both a green apple flavored and a wild cherry flavored Super Nu-Thera™ liquid containing 25 mg. of P5P in addition to 200 mg. of Pyridoxine Hydrochloride.

10. How can Kirkman's Colostrum be casein free if it comes from a cow?

Kirkman's Colostrum Gold® is put through several filtration processes to remove the casein. The absence of casein is confirmed by an independent laboratory analysis which is available upon request.

11. Does TMG cause hyperactivity in some children like DMG does?

Yes it can.

12. What kind of symptoms does the "die off reaction" cause?

Nausea, upset stomach with vomiting or diarrhea can occur.

13. What kind of Vitamin A does Super Nu-Thera™ contain and is it the right kind? I keep hearing about the type which is in Cod Liver Oil. Is that kind better? Can I mix them?

It seems that everyone is confused about this.

This is a complicated issue. Vitamin A can be either synthetic or natural. The synthetic form is called the "trans" form, which refers to its chemical configuration. The natural form is called the "cis" form, which again

(continued on next page)



FREQUENTLY ASKED QUESTIONS (continued)

refers to its chemical structure. The “trans” form of Vitamin A can be either Vitamin A Acetate or Vitamin A Palmitate. These are the forms that are present in Super Nu-Thera™ products. These are also the forms that are used as drugs for the treatment of Vitamin A deficiency. They are perfectly safe forms and the largest manufacturer of Vitamin A in the world, Hoffman La Roche, has clinical studies which show that both forms are well absorbed. In fact, the acetate and palmitate are considered to be equal in absorbability.

Cod Liver Oil contains about 88% of the trans form of Vitamin A but also contains 12% of the “cis” form. Dr. Mary Megson in Virginia has recently been doing studies using Cod Liver Oil as the source of Vitamin A in children with autism. Dr. Megson believes that in many children, the “cis” form of Vitamin A is turning on central retinoid receptors which may be blocked in autism. Dr. Megson reports improved visual response, improved eye contact and better concentration. Dr. Megson also feels that one of the “cis” components of Cod Liver Oil (14-hydroxy retro-retinol) is improving immune memory.

Many of our customers are using both Super Nu-Thera™ products and Cod Liver Oil. Using both will still provide a safe level of Vitamin A. Some of our customers, however, wish to follow Dr. Megson’s protocol exactly as she treats patients in her practice, using Cod Liver Oil as the only source of Vitamins A and D. For those customers choosing to duplicate Dr. Megson’s protocol, Kirkman offers Super Nu-Thera™ Liquid in a special form containing no Vitamins A or D. Using this form of liquid Nu-Thera™ without A and D will allow parents to use Cod Liver Oil as the A and D source, while still being sure that their child receives all the other important nutrients. It is mandatory, when using this form of Super Nu-Thera™, that Vitamins A and D be given from another source to insure against vitamin deficiency.

Questions About Shipping and Handling of the Products

1. Do any of your products need to be refrigerated after receiving?

All probiotics (including Pro-Culture Gold™, Pro-Bio Gold™, Culturelle™, and others) are more stable at cold temperatures and do require refrigeration. In addition, Colostrum Gold™, EFA-Plus, and Cod Liver Oil must be refrigerated after opening.

2. When I received your probiotic product, the enclosed ice was melted. Is it still good?

Yes, we know that some shipping points take longer to reach than the ice will last. There is sufficient overage in the product to allow for a day or two at higher temperatures. Just refrigerate the product when you receive it.

Questions About Shipping and Handling of the Products (continued)

3. I live outside of the United States.

Can I still order your product?

Yes, we can ship to all countries EXCEPT Mexico, North Korea, Germany, Iceland and Venezuela.

4. How long will it take to get product in a foreign country? Are there customs implications?

Each country has its own customs implications and potential problems. Kirkman will ship any order to a foreign country within 48 hours by air. However, the actual delivery time will vary depending on how long it takes to clear customs in a particular country.

5. What is the delivery charge for overseas shipment?

It varies. Please contact our office for further information.

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DETOXIFICATION OF HEAVY METALS IN THE TREATMENT OF AUTISM

“Many of the physicians Kirkman is involved with report remarkable success stories using the chelation process. Dr. Stephanie Cave and Dr. Amy Holmes of Baton Rouge, LA report that 70% of their patients show improvement to some degree. That degree of improvement depends on several factors...Obviously, this process is too new for all the answers to be known. More time and clinical studies are needed to assess the degree of improvement that can be expected in the detoxification of autistic children. We do know, however, that kids are getting better and that gives us all the hope and the faith to push forward.” - LARRY NEWMAN, Kirkman Labs Chemist

AN OVERVIEW

Autism and other developmental disorders closely resembling autism probably have multiple sources of origination. A few of these disorders can be explained genetically, but in the vast majority of cases there is not a strict genetic explanation. More likely it appears to be a complicated combination of genetics, enzymatic deficiencies, immune dysfunction and environmental factors including the exposure to mercury through vaccinations, dental amalgams and eating seafood. A mercury-based preservative, thimerosal, is used in some ophthalmologic and nasal solutions as well as in a number of vaccines. Mercury and other heavy metals are also present in air, water, soil, and in plants. It is agreed upon in the medical community that heavy metals have cumulative toxicities. Different heavy metals combined together may exhibit a significant toxic effect even though individually they may not be at toxic levels.

There has been in excess of a 1000% increase in the prevalence of autism over a twenty year period in the United States, the United Kingdom, the Middle East and in Asia. What has changed in the last twenty years to warrant this autism “explosion”? What can be done to halt this devastating increase? First, consider that the following modifications to vaccine administration are evident in the coun-

tries where the autism rate is exploding:

- ❖ The number of vaccines given to children from birth through age two has increased from eight in 1980 to twenty-two in the year 2000.
- ❖ Combination vaccines including the MMR (measles, mumps and rubella) came into use.
- ❖ The amount of toxic mercury a child received from the vaccines went up to as much as 100 times the amount allowed by the Environmental Protection Agency.
- ❖ Several combination vaccines are given simultaneously, often at the same physician visit.

Mercury is neurotoxic and affects every organ in the body, but acts primarily on the brain, immune system, gut, and kidney. As mercury damages the immune system, the child becomes unable to protect itself against cell damage from the viruses present in the vaccines. Mercury also inhibits glutathione, which is one of the most important anti-oxidants in the body against viruses and toxins.

WHY AREN'T ALL CHILDREN AFFECTED EQUALLY?

If the vaccine programs have caused this increase in autism, why don't all children respond the same? Though the absolute answer to this question is still controversial, the health of the child's immune system is a primary factor. There can also be some genetic implications which

are probably also tied to immune factors. If a child is healthy at the time of immunization and that child has a normal, uncompromised immune system, ingested heavy metals are excreted and the exposure to the multiple viruses of the vaccine are tolerated in most cases. Con-

Detoxification of Heavy Metals Treatment of Autism (continued)

versely, some children who exhibit health issues at the time of immunization, or who have an abnormal immune response due to genetics or a medical condition, cannot rid the body of the toxins, and develop oxidative stress which can lead to autism. Other children just cannot tolerate the multiple combination vaccines they get at one sitting in the doctor's office.

Female dentists are more likely to have an autistic child than mothers with other occupations. This certainly supports a mercury connection. There is now even interest in determining the frequency of autism in the children of male dentists to determine whether mercury could be transported through sperm to the mother and child.

HOW DOES MERCURY AFFECT THE IMMUNE SYSTEM AND THE BODY?

There are many biological effects of mercury on the body. Liver detoxification pathways are often impaired, which can prevent efficient excretion of the toxin. In a 1998 study published in "Toxicology and Industrial Health", all autistic children were found to be impaired in at least one of four liver detoxification pathways, which tends to support the theory that normal subjects detoxified the mercury or metals they were exposed to. It is known that mercury can effect almost any enzymatic reaction.

Mercury appears to destroy the antioxidant systems in cells, which in turn prevents the body's normal neutralizations of invading toxins. Cell antioxidant compounds such as glutathione and selenium are bound by mercury. Once bound, they are unable to perform their antioxidative roles and the ability to remove mercury and other heavy metals is impaired.

Mercury can lodge in all body organs and tissues. It is known to accumulate in the brain, kidneys and liver, causing mercury-induced oxidative stress. It also can be present in the gut, which is a concern due to the fact that most autistic children have severe gut dysbiosis.

Numerous neurochemical reactions are negatively affected by mercury toxicity, including serotonin release and transport, dopamine level systems, and epinephrine and norepinephrine levels. Mercury exposure also can produce excessive sweating, poor circulation and an elevated heart rate.

Immune system deficiencies from metal poisoning contribute to other conditions also widely found in autism, including allergies, sensitivities to foods, rheumatoid arthritis, and susceptibility to viruses, bacteria and yeast.

Mercury in the brain disrupts many biochemical activities, leading to brain dysfunction. There is cell membrane damage, protein distortion and disruptive mitochondrial activities, all potentially leading to autistic traits associated with mercury poisoning. These include:

- » Impaired socialization
- » Speech loss or delay
- » Lack of eye contact
- » Hand flapping
- » Poor hand-eye coordination
- » Self stimulation
- » Poor sleep
- » Head banging or toe walking
- » Abnormal GI tract
- » Sound sensitivity

TESTING FOR MERCURY TOXICITY

Testing for mercury toxicity is not always easy. Normally, heavy metals such as lead, cadmium, and tin are easily detected using blood cell content, hair analysis or urine tests. This is not usually the case with mercury. After exposure to mercury, detectable levels known as “loosely bound” mercury are present in the blood for only a short time, a few weeks up to a couple of months. After that time, the mercury becomes attached to enzymes and proteins containing sulfhydryl groups and is then known as “tightly bound” mercury. Once tightly bound, it is distributed to organs and body tissues including the liver, kidney, brain, and gut and is no longer detectable in blood, hair and urine.

Some physicians use a mercury challenge test to determine mercury toxicity. In this test, a chelating di-sulfhydryl compound such as meso-2,3-dimercaptosuccinic acid (DMSA) or 2,3-dimercapto-1-propanesulfonic acid (DMPS) is administered and urine metal levels are measured. Though both of these compounds are effective, DMSA is

the choice of DAN physicians because of its proven safety in children. These challenge tests can be very useful, but it must be cautioned that if mercury is very tightly bound, this test can be negative even though mercury is still present. For this reason, some physicians rely more on the physical signs of mercury poisoning or on lab test results which suggest mercury toxicity.

Physical signs which may be present include dilated pupils, increased heart rate, a mercury rash, excessive sweating, knee jerks, hand flapping, and many more. Lab test results which are often indicative of the presence of toxic mercury consist of specific urine enzyme tests, hair analyses of heavy metals other than mercury, low glutathione, low glutathione peroxidase, low immune system markers (IgE, IgG, NK cells), and plasma sulfate. When a challenge test is negative but mercury toxicity is suspected due to physical signs or lab results, many doctors proceed with a detoxification protocol.

PRELIMINARY GUIDE TO DETOXIFICATION THERAPY

All heavy metal detoxification should be done under the care of a physician or health professional. There are several reasons for this. Monitoring and interpreting of test results is essential and side effects can be numerous. Both of these situations require professional consultation. In addition, before beginning any detoxification efforts, a thorough assessment of the patient’s health and nutritional status is imperative. The following issues need to be addressed with the doctor:

- Most doctors require removal of mercury-containing dental amalgams
- Stop the consumption of most seafood (salmon and sardines may be okay)
- No more thimerosal-containing vaccines

- Proper liver and kidney function must be established
- Vitamin, mineral and fatty acid deficiencies should be corrected
- The condition of the gut, including intestinal permeability, must be determined and treated if necessary
- A casein and gluten free diet is advisable in most of the treated kids

(continued)

Detoxification of Heavy Metals Treatment of Autism (continued)

If a yeast or bacterial overgrowth is present in the gut, or a “leaky gut” is diagnosed, Kirkman Laboratories offers several products to help correct these conditions:

- Pro-Bio Gold® is a casein and gluten free multi-strain probiotic containing 20 billion organisms per dose. This product quickly improves the intestinal flora, replacing “bad bacteria” with “friendly” organisms. It also controls Candida overgrowth.
- Colostrum Gold® is a casein and gluten free product containing strong immune boosters, including lactoferrin and powerful growth factors. This product also helps control intestinal overgrowths and helps heal gut tissues.
- L-glutamine is an amino acid which has powerful gut healing and immune enhancing properties.
- These three products work synergistically with each other.

THE PROTOCOLS

Once the criteria in the previous section have been properly addressed, a heavy metal detoxification program may begin. The process starts with identifying the special chemicals which will provide a mechanism of removing the metals from the body. These chemicals are called chelating agents and the preferred ones are currently meso-2,3-dimercaptosuccinic acid (DMSA) and alpha-lipoic acid. The safety of these compounds has been well established, even in children. Both work by supplying sulfhydryl groups in their chemical structure, which complex mercury and other metals and transport them out of the body.

Detoxification using chelating agents is done in “on and off” cycles. Because these agents are changing normal body chemistry, it is important to give rest periods from the process so that intracellular metals being chelated can diffuse out into plasma. The on-off cycles vary among physicians, but the cycle used most often is three days on and eleven days off of the chelating agents. Other cycles used include three on/four off and five on/fourteen off.

DMSA is a water soluble detoxifier and is generally started first. Being water soluble, it probably does not cross the blood-brain-barrier (BBB) and therefore is a good choice for removing the loosely bound mercury and other metals. Most doctors dose DMSA at 10 mg. per kilogram of

body weight three times per day, every eight hours. Extremely sensitive patients may get lower doses, while very toxic individuals may get a larger dose. After three days of the above regimen, there is a rest period of eleven days. It is also acceptable to use half the above dosages every four hours around the clock. Some physicians prefer this schedule. Both are equally effective, though one may work better than the other in certain individuals.

The three on/eleven off cycle is repeated three to four times, after which urine metal testing is done to determine the efficacy of the process. When it is determined that all of the loose metals have been removed by the DMSA, indicated by a leveling off of urine values at low levels, alpha-lipoic acid is added. Lipoic acid is both water and oil soluble, so it is carried into areas of the cell not penetrated by DMSA. Lipoic acid may actually cross the BBB.

The lipoic acid is given with DMSA. Many differences of opinion exist among the various doctors doing metal detoxification as to how much lipoic acid to use. Somewhere between 1/2 to 1/6 the amount of DMSA is the norm. That amount is usually given twice per day, morning and evening. Some physicians give it on the same days that DMSA is given, while some give it on later days

in the cycle when DMSA is stopped. Your doctor will have to make his position clear to you. Another variation of lipoic acid administration is that some clinicians recommend giving the lipoic acid a couple of hours after the DMSA.

Kirkman Laboratories now offers four products which are sold only through a physician approval process.

- "Di-Sulfhydryl 25 mg." contains 25 mg. of DMSA (meso-2,3-Dimercapto Succinic Acid), in a flavored base
- "Di-Sulfhydryl 50 mg." contains 50 mg. of DMSA in a flavored base
- "Di-Sulfhydryl Hypoallergenic 50 mg." contain 50 mg. of DMSA
- "Di-Sulfhydryl Hypoallergenic 100 mg." contains 100 mg. of DMSA

The first two products are in plant cellulose capsules and are in a flavored base which covers up the objectionable taste and odor of DMSA. These products can be swallowed or opened up so the contents can be mixed in water or juice for easy compliance, even in small children. When dispersed in water, juice or other suitable liquid, the contents are pleasant tasting and do not have the typical sulfur odor of DMSA.

The hypoallergenic versions contain only plant cellulose and are intended to be swallowed. Many parents, however are reporting excellent compliance by mixing in juice, lemonade or other beverages.

Products containing DMSA must be used only by individuals under the care of a physician due to potential side effects and due to the necessity of monitoring laboratory testing.

It must also be noted that some physicians start DMSA and lipoic acid at the same time, at the beginning of the detoxification process. When this protocol is used, the same on/off cycles are employed.

TO ORDER THESE PRODUCTS

To order these products from Kirkman, your physician must do one of the following:

1. Call Kirkman with patient information and advise Kirkman of the physician's DEA number or
2. Fax the patient information and DEA number (503) 682-0838 or
3. E-mail the patient information and DEA number (phys@kirkmanlabs.com)

Once this information is received from the physicians office, the Kirkman order desk can accept orders. It is very important when buying DMSA that a pharmaceutical grade is guaranteed from the supplier. The chelation process can be compromised by poor quality materials and all DMSA is not the same. Kirkman uses only pharmaceutical grade material which has been tested for potency, purity and solubility. Kirkman offers two versions of alpha-lipoic acid capsules. It is also important to use a high quality, pharmaceutical grade lipoic acid to get the desired effects. There is a lot of poor quality product in the US which may not be pure or fully potent. Kirkman uses exclusively LIPOEC® brand manufactured by COGNIS Nutrition and Health in LaGrange, IL. COGNIS is a wholly owned subsidiary of Henkel Corporation, the inventors of lipoic acid. In a comparison test of LIPOEC® against eight other manufacturer's lipoic acids, the COGNIS product far surpassed all others in purity and had a potency of 100%.

Kirkman offers Lipoic Acid in 25 mg. and 50 mg. capsules. The 25 mg. is flavored so as to cover up the burning sensation lipoic acid imparts. This form is usually given by opening up the capsule and dispersing the powder in about 4 ounces of water or preferably juice. The 50 mg. is a HypoAllergenic capsule which is intended to be swallowed.

NUTRITIONAL SUPPLEMENTATION DURING HEAVY METAL DETOX

The chelation process can be very taxing on the body, so nutritional support is necessary. Furthermore, certain vitamin and mineral supplements actually aid in the detoxification process. Some individuals may require special supplementation based on specific lab results, but as a general rule the following guide lists the supplements used by most of the chelating physicians:

1. A multiple vitamin is required every day, both on and off. Those individuals taking a Nu-Thera™ product can just continue and use it as the multiple vitamin. Also available for this supplementation:
 - Kirkman Multiple Vitamin Pro-Support
2. A multiple mineral supplement is required. Most doctors give this only on the DMSA off days, though some do it daily. Available:
 - Kirkman Multiple Mineral Pro-Support
3. A zinc supplement needs to be taken in the evening, about two hours after the last meal on the DMSA off days. Twenty to sixty milligrams is the usual dose, depending on the size of the child. There is actually a growing list of doctors who also give the zinc on the DMSA days. Available:
 - Kirkman Zinc Liquid (20 mg. per teaspoon)
 - Kirkman Zinc HypoAllergenic capsules (20 mg.)
4. Vitamin C protects against toxic mercury. Usually a buffered form is recommended at 1000 to 3000 mg. daily.
 - Kirkman Chewable C Tablets 250 mg.
 - Kirkman HypoAllergenic Vitamin C Capsules 250 mg.
 - Kirkman Buffered Vitamin C Powder
5. Glutathione in its reduced form prevents DMSA from being inactivated in the body. Its antioxidant properties also protect the cells from mercury. It is usually supplemented at 50-200 mg. daily (based on body weight). Available from Kirkman:
 - Glutathione HypoAllergenic Capsules 100 mg.
 - Chelation Aid Pro Support II (Contains 100 mg. Glutathione) plus Glycine, Taurine and Vitamin C

6. Melatonin is usually associated with improved sleep patterns, which is a nice benefit during chelation. It also protects against toxic mercury due to its antioxidant properties. Available from Kirkman:
 - Melatonin Plus Magnesium HypoAllergenic Capsules (1 mg.)
 - Melatonin Sublingual (or chewable) Tablets 1 mg.
 - Melatonin Sublingual (or chewable) Tablets 3 mg.

7. Selenium at 100-200 mcg. daily is given during metal detox because it is one of our body's natural defense mechanisms against heavy metal toxicity. Available:
 - Selenium HypoAllergenic Capsules 100 mcg. (from L-Selenomethionine)

8. Liver support supplements are also recommended by many of the chelating physicians. Taurine and Glycine are amino acids that offer hepatic support and also help stabilize neurotransmitter function. These are used by most doctors. Some also add Milk Thistle capsules (Usually 100 mg.) for further liver support. Available from Kirkman:
 - Chelation Aid Pro-Support II contains 150 mg. of Taurine and 150 mg. of Glycine plus Glutathione and Vitamin C
 - Taurine HypoAllergenic Capsules 300 mg.
 - Glycine HypoAllergenic Capsules 250 mg.
 - Milk Thistle HypoAllergenic Capsules 100 mg. containing 80% Silymarin

9. B-Complex Vitamins are important during periods of oxidative stress. For this reason an additional B-Complex supplement is often used during chelation. Kirkman offers:
 - B-Complex Pro-Support (Containing all B-Complex nutrients plus P5P, the active form of vitamin B-6)

10. Aluminum is not chelated by DMSA. Where aluminum is an issue, a form of glycine is used to complex the aluminum for transport out of the body. Kirkman offers the following products for aluminum complexing:
 - Magnesium Glycinate Powder or Capsules
 - Glycine HypoAllergenic Capsules

SIDE EFFECTS DURING HEAVY METAL DETOXIFICATION

One of the reasons it is so important to be under the care of a health professional during the chelation process is because of the many side effects which can occur. The ones most frequently encountered are:

- Accentuation of autism traits present in a given child
- Diarrhea and/or nausea
- Fatigue
- Red, bumpy rash (often quite extensive)
- Metallic taste in the mouth
- Sulfur smell to urine and/or stool
- Decreased white blood cell counts
- Liver involvement
- Kidney involvement
- Headache
- Seizure disorders (At the very beginning of exposure to DMSA)
- Positive results on DMSA days and regression on off days

Report any of these side effects to your doctor at once. Most of the time they are to be expected and usually not significant enough to stop the process. Sometimes lower dosing may be in order.

LABORATORY MONITORING TESTS DURING DETOXIFICATION

Your physician will require certain laboratory testing during the chelation process to ensure that detoxification is taking place and that the body is responding in the appropriate manner without the introduction of health issues. A very basic list of lab tests usually performed is given below, but this is by no means a complete list. Your doctor may add others depending on the concerns for an individual patient.

- Urine metals during DMSA use (Usually after each 3-4 rounds)
- Urine and stool metals during lipoic acid use
- Complete Blood Count (CBC) with differential count
- Serum Electrolytes
- Liver function tests
- Intracellular red blood cell minerals

EXPECTATIONS AND RESULTS OF DETOXIFICATION EFFORTS

Many of the physicians Kirkman is involved with report remarkable success stories using the chelation process. Dr. Stephanie Cave and Dr. Amy Holmes of Baton Rouge, LA report that 70% of their patients show improvement to some degree. That degree of improvement depends on several factors, the most important of which seems to be the age of the child. The young patients one to three years old show the most improvement, with some actually showing complete recovery. The children aged four to six show the next degree of improvement, while the older children respond more slowly or to a lesser degree. Because chelation in autism is somewhat new, it has yet to be determined whether there is permanent, irreversible damage to the older children or whether it just takes them longer to improve. Dr. Jeff Bradstreet of Palm Bay, FL reports similar results in his very large practice dedicated to autism.

Another factor relating to expected results involves whether the mother was exposed to mercury and/or other toxic metals prior to conception or during pregnancy. In these scenarios, there may have been permanent damage to the fetus, which may be more irreversible than direct exposure to the child.

Obviously, this process is too new for all the answers to be known. More time and clinical studies are needed to assess the degree of improvement that can be expected in the detoxification of autistic children. We do know, however, that kids are getting better and that gives us all the hope and the faith to push forward.

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



THE IMPORTANCE OF INTESTINAL HEALTH

The "Gut" Issue and Autism

For children with autism spectrum disorders gastrointestinal health is a key issue and dysfunction of the intestinal tract has a significant impact on their health and well-being. To understand the GI problems that the autistic child experiences we must first explore what role the intestinal tract plays and look at what GI conditions tend to be commonly part of their medical problems.

Proper nutrition involves getting all of the essential nutrients (proteins, carbohydrates, fats, vitamins, minerals and water) supplied and utilized in adequate balance to maintain a healthy state. The functioning of the GI tract is dependant on nutrients being properly digested, absorbed and then eliminated. Optimal nutrition is essential for reproduction, growth and maintenance and for normal organ development and functioning. The gastrointestinal tract also has a key role in providing resistance to infection/disease as well as for the repair and healing of the body. When dysfunction, disease or impairment of the intestinal tract exists there is a significant impact on the health and functioning of the individual.

The intestinal tract is an integral part of the body's immune system. Michael D. Gershon, M.D., author of "The Second Brain" describes that ***two-thirds of all immune activity occurs in the gut***. This is a remarkable discovery and helps us understand the inner connections between the immune, gastrointestinal, and central nervous system. For this reason it is crucial to restore the health and functioning of the intestinal system as it has such a significant impact in the overall health and well-being of those with autism spectrum disorders.

GENERAL OBSERVATIONS

A number of environmental exposures create a situation whereby the gastrointestinal tract can malfunction allowing diseases to occur. Nutritional deficiencies may trigger or exacerbate gastrointestinal problems and exposures to specific medications (aspirin, nonsteroidal anti-inflammatory agents, etc.), use of antibiotics, the problem of undigested protein peptides from gluten and casein, as well as exposure to food allergens can cause problems in the digestive system of the autistic child. Additionally exposure to chemical toxins (mercury, lead, pesticides, solvents, etc) and infections (bacterial, viral and/or yeast) can adversely affect the gastrointestinal tract and ultimately compromise their health.

Remember that the intestinal lining plays a crucial role, serving as a living barrier guarding between the outer world (food allergens, toxins, bacteria, heavy metals, etc.) and our inner environment. It has the daunting burden and responsibility of keeping harmful substances from passing through this barrier, at the same time allowing all the beneficial ones to get through. Correcting the problems that adversely affect the intestinal membrane and beginning the process of healing and restoration of these tissues is of paramount importance in the health of those with autism spectrum disorders

The Importance of Intestinal Health (continued)

GASTROINTESTINAL DYSBIOSIS

Normal digestion completely breaks down foods into their component amino acids, tiny peptides, glycerides and saccharides. All too often however, in a segment of children with autism, digestion is not complete and intestinal dysbiosis results. Dysbiosis is a condition in which there is an imbalance of the normal microbial environment of

the intestinal tract. This can result in the overgrowth of yeast/fungi (*Candida albicans*), bacteria (*Clostridium difficile*, *Klebsiella*, *Bacteroides*, etc.), and parasites that adversely affect the intestinal lining resulting in a condition referred to as intestinal permeability.

INTESTINAL PERMEABILITY/LEAKY GUT

Chronic inflammation and damage to the mucosal membrane of the intestinal tract results from the overgrowth of these pathogens leading to a condition described as “leaky gut”/intestinal permeability. This results in the development of microscopic holes in the intestinal membrane that allow substances to penetrate the barrier and travel/enter into the systemic circulation provoking a number of adverse responses. The impact of leaky gut is that it triggers a cascade of health problems including:

1. Absorption of significant amounts of food antigens with resulting delayed food hypersensitivities
2. Chronic inflammation of the gut resulting in bowel problems

3. Depression of the immune system and/or over activation of the immune response leading to autoimmunity
4. Incomplete digestion of protein peptides from casein and gluten leading to the formation of opiate peptides causing CNS symptoms
5. Chronic fatigue
6. Heavy metal/mercury toxicity and other symptoms found in children with autism spectrum disorders.

D’Eufema and his colleagues found that children with autism have abnormal intestinal permeability problems resulting in higher rates of leaky gut when compared to control subjects. Thus addressing the issue of the leaky gut has significant consequences to the health of autistic children.

FOOD ALLERGY/SENSITIVITY

Children with autism tend to have a greater susceptibility to food allergies/hypersensitivities. These sensitivities can potentially result from continuous, repetitive and cumulative use of commonly eaten foods such as wheat, milk, eggs, sugar, soy, yeast, etc. Appreciable quantities of these food remnants can penetrate the normal intestinal mucosa barrier and

enter the systemic circulation where they provoke/trigger immune responses and result in delayed food hypersensitivity. Dr.’s Rinkle and Randolph, in their book *Food Allergy*, clearly describe these food sensitivities as hidden, masked or delayed-onset in nature which can then contribute to both physical as well as behavioral symptoms.

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The Importance of Intestinal Health (continued)

INCOMPLETE DIGESTIVE BREAKDOWN OF PROTEINS

Additionally deficiencies in digestive enzymes contribute to the incomplete breakdown of certain proteins, namely casein (found in milk and dairy products) and gluten (found in wheat, oats, barley and rye, etc.). What happens is that these peptides can leak from the intestinal lining into the bloodstream. Once in the bloodstream they circulate throughout the body and react at specific sites in the brain referred to as opiate receptors. Of interest is that these peptides, referred to as gluteomorphin and casomorphin, can stimulate these opiate receptors found in the brain, which can significantly affect behavior, emotions, cognitive ability, as well as pain threshold, and other symptoms commonly recognized in children with autism. The use of specifically derived digestive enzymes targeted to breakdown these incompletely digested peptides can have a profound influence in

some of these children. (Dr.'s Reichelt, Shattock, Cade, Shaw, and Pangborn)

Recently a Multi-Center Pilot Study was undertaken cosponsored by the Autism Research Institute and Kirkman Laboratories and coordinated by five medical practitioners working with children with autism spectrum disorders. The study involved a twelve-week clinical trial evaluating the response of a unique peptidase/protease enzyme specifically designed to breakdown casein and gluten as well as increase the levels of the Dipeptidyl peptidase IV (DPP-IV) enzyme. It was clearly established that this enzyme formulation, referred to as EnZymAid™, has been established as providing clearly documented benefit in children with autism spectrum disorders.

CANDIDA RELATED COMPLEX

Dr. William Crook, a recognized authority in the area of Candida Related Complex, has published some excellent books related to the adverse effects of yeast overgrowth in the body. A significant amount of children with autism have persistent problems with *Candida albicans* invading and setting up residence in the membrane of their intestinal tract. This results from the repetitive use of antibiotics (for chronic infections) that kills off the normal flora allowing the pathogenic bacteria to flourish and grow.

When the yeast take control and colonize the membrane of the bowel they can change forms

from a budding yeast spore to a more invasive "hypha" or "mycelium" form. The hypha yeast actually colonize and imbed themselves in the membrane that lines the intestinal tract where they exert powerful control and have the ability to deeply penetrate the tissue. Of interest is that this attachment is made easier by damage done to the intestinal lining by yeast colonies that secrete enzymes (proteases and phospholipase) that breakdown the lining allowing the budding yeast to attach and penetrate the mucosal tissue. This destruction of the GI membrane can result in a cascade of symptoms including inflammation of the intestinal membrane.

The Importance of Intestinal Health (continued)

To compound the problem when these yeast and bacteria colonize the intestinal tract they produce toxins and byproducts that cross the mucosal membrane and pass/are absorbed into the circulation where they can travel to different tissue and organs in the body including the brain. This is referred to as “translocation” where the harmful bacteria, yeast and/or toxins pass into the lymph nodes surrounding the intestinal tract as well as into the circulation, raising havoc with the immune and nervous systems.

Of interest is the work by Guentzel and his associates, published in *Infection and Immunity*, which describes that infant mice were a great deal more susceptible to Candida overgrowth (infections) than older mice. If these mice were administered antibiotics at an early age it was recognized that they would develop persistent candidiasis infections compared to the older mice. This significant overgrowth of Candida in the intestinal tract increased on an average of 130 fold. Human studies have demonstrated similar results. This may explain some of the persistent Candida infections commonly seen in the autistic children despite repeated anti-fungal treatments with different localized (Nystatin) and systemic antifun-

gals (Nizoral, Sporonox, etc.). ***Given this situation there is an important role for the use of probiotic supplementation to maintain a full spectrum of health promoting friendly bacteria in the gastrointestinal tract.***

Hundreds of species of friendly bacteria flourish in the 25 to 28 feet of the intestinal tract. Some are “resident” microorganisms including Lactobacillus acidophilus, L rhamnosus, L casei, Bifidobacterium bifidum/ lactis, etc. that attach to the mucosal lining and colonize the intestinal tract crowding out pathogenic/unfriendly bacteria. Additionally there are “transient” friendly flora. including S. thermophilus and L. bulgaricus (recognized as the cultures in yogurt) that travel through the intestinal lining and exert many positive benefits. These resident and transient friendly bacteria may be some of the most important nutritional influences on the health and function of the intestinal tract of those with autism. Many children with autism require several times the amount of probiotics than others, suggesting that replacement of these friendly bacteria is a key aspect in the maintenance of their GI health.

PANCREATIC INSUFFICIENCY

It has been suggested the intestinal cells in some autistic children can malfunction and adversely affect the production of the hormone secretin. It is recognized that secretin is produced by the cells of small intestine and its primary function is to cause the pancreas to release sodium bicarbonate following a meal. The stomach secretes acid to help digest the meal and then when the food goes into the small intestine the pancreas secretes digestive enzymes to further digest the foods. The acid from the stomach

then needs to be neutralized by bicarbonate from the pancreas so that the natural digestive enzymes can function optimally. It has been found that if the autistic child has a deficiency in the production/secretion of secretin then bicarbonate will not be adequately produced, thus resulting in foods being improperly digested.

According to Dr. Bernard Rimland secretin is intimately involved in many activities of the brain,

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The Importance of Intestinal Health (continued)

which include stimulating the production and utilization of the neurotransmitter serotonin. This may explain the intimate connection between the central nervous system and gastrointestinal systems in autism spectrum disorders.

Some autistic children, who have a deficiency in this area, can be helped by use of a mixture of

bicarbonates (sodium, potassium and calcium bicarbonate) taken orally following meals or as directed by a clinician. Additionally, supplementation with digestive enzymes may provide benefit to many of these children including use of both high peptidase enzymes as well as use of a full spectrum of digestive enzyme supplements.

MALDIGESTION/HYPOCHLORHYDRIA

Some children with autism experience maldigestion of foods, which occurs when hypochlorhydria (low stomach acid/decreased gastric acidity) exists. Gastric acid secretions are known to prevent excessive growth of bacteria in the small intestine and if they are not present in sufficient amounts the bacteria will not only irritate the lining of the intestinal tract but

chronic intestinal infections may occur. Additionally when there is low gastric acidity some autistic children can experience indigestion, diarrhea, constipation, undigested food in stool, sense of fullness after eating, upper digestive gassiness, rectal itching, etc.

VIRAL VACCINE IMPACT

There is clear documentation that some live viral vaccines may be responsible for gastrointestinal abnormalities seen in some autistic children. Dr. Andrew Wakefield and his colleagues at the Royal Free Hospital in England published several articles in *The Lancet* suggesting that the measles, mumps and rubella (MMR) vaccine (containing a live measles virus) could result in damage to the intestinal lining of children with autism. As a result biopsies have revealed evidence of the presence of the live measles virus

in the lining of intestinal membrane with associated inflammation, which has led to this condition being described as "autistic enterocolitis." This issue has been debated in the medical community; however, there continues to be well-established documentation in support of this connection.

Contributing to this problem is the well-recognized use of the mercury-containing agent, thimerosal, commonly found as a preservative in many virus vaccines. Additionally there is growing evidence by

The Importance of Intestinal Health (continued)

scientists and researchers that mercury and other heavy metals can damage/destroy the epithelial lining of the gastrointestinal tract leading to the passage of foreign substances through the lining causing further damage to the delicate intestinal membrane by pathogenic organisms.

MERCURY/HEAVY METAL TOXICITY

Medical practitioners, specializing in the field of autism spectrum disorders, have recognized the significant impact that mercury and other heavy metals can have in affecting overall health. To address the consequences of mercury and other heavy metals a Consensus Report has been written and a protocol established. The protocol is a multi-faceted detoxification program that needs to be implemented under the care and treatment

of a medical practitioner. One of the key prerequisites to starting a detox program is that nutritional deficiencies and gastrointestinal problems need to be properly addressed. An important part of this protocol involves the use of a number of nutritional supplements that assist in the chelating process as well as provide the essential nutrients to support the body in clearing these toxins.

A comprehensive review of the detoxification of heavy metals and the supplements used in chelation is included elsewhere in this book.

IMMUNE DEFICIENCY

The body's primary protective mechanism against antigen overload from the bowel is found in the function of secretory immunoglobulin A (sIgA) antibodies. Secretory IgA is found in body secretions specifically in the mucosal membrane of the gastrointestinal tract and the respiratory mucosa. The importance of sIgA is that it is the first line of immunological defense against microbes (bacteria, yeast, virus) and antigens (food and chemicals)

in the GI tract. The sIgA immunoglobulin functions by binding with the pathogenic microorganisms, allergic food protein and/or toxins to form immune complexes, which prevent them from adhering to the surface of the intestinal mucosal membrane.

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The Importance of Intestinal Health (continued)

Research on the use of probiotics (health promoting friendly flora) has demonstrated that they have the ability to strengthen the intestinal tracts immunological barrier. Specific probiotic strains (Chr. Hansen's Probio*Tec strains) are well documented to stimulate both specific and nonspecific immunity, enhanced IgA producing cells with the effect of increasing the T-lymphocytes, which have an important role on the mucosal immune response. Additionally some probiotic strains have been shown to function as immunomodulating agents in the management of allergic inflammation.

Because some children with autism are deficient in the production of IgA they have a more challenging time with lowered immune response and are prone to chronic or recurring infections, allergies and colds. This is where the use of nutritional supplements such as Colostrum can assist in providing important immune factors (Immunoglobulins including IgA, IgM, IgG, etc.), lactoferrin, protein-rich polypeptides (PRP) as well as powerful growth factors to aid in tissue healing and repair.

STEPS IN ADDRESSING THE ISSUE OF HEALING OF THE GASTROINTESTINAL TRACT

The approach to treating gastrointestinal problems is multi-faceted and many health care practitioners utilize a biological approach inclusive of natural products/nutritional supplements that can aid in the digestive process, combat pathogens, and assist with healing of the all important intestinal membrane. The process of healing and restoration of the gut involves a number of important steps; each one leading to the restoration and optimal function of the gastrointestinal tract:

- 1. Removing Intestinal Pathogens And Chemical Toxins**
- 2. Restoring Intestinal/Digestive Function**
- 3. Reestablishing Normal Intestinal Flora**
- 4. Rebuilding/Healing Of The Intestinal Lining**
- 5. Reducing The Oxidative Stress/Damage Of The GI Tract**
- 6. Improving Digestion Through Use Of Digestive Enzymes**
- 7. Strengthening The Intestinal Immune System**

The Importance of Intestinal Health (continued)

1. Removing Intestinal Pathogens and Chemical Toxins

The first line of approach in healing involves the removal of microbes/infectious pathogens (yeast/fungi, bacteria, parasites, protozoa, etc.) that can compromise digestion, absorption of nutrients, and increase permeability.

The second step is aimed at reducing exposure to toxic chemical substances that can damage the intestinal lining including aspirin and nonsteroidal anti-inflammatory drugs NSAIDS. These drugs are likely to increase intestinal permeability, which will allow translocation/passage of antigenic or toxic compounds into the circulation.

Avoidance of food/dietary allergens can be an important part of addressing chronic gas-

trointestinal problems. Partially digested proteins and dietary polypeptides can contribute to food allergy/intolerance as well as trigger the production of endotoxins causing a number of adverse responses. Chronic food allergy problems can result in irritation and then inflammation that leads to intestinal permeability problems.

The final step addresses the problem of "dysbiosis" which involves overgrowth of pathogens including yeast (*Candida albicans*, etc.), bacteria (*Klebsiella*, *Clostridia*, *Helicobacter*, etc.), and viruses. Use natural anti-fungal and/or anti-bacteria agents for the eradication of the pathogenic organism. Use Yeast Control and/or other natural substances.

2. Restoring Intestinal/Digestive Function

Key to the restoration and healing of the gastrointestinal tract is specifically addressing/treating the cause of the dysbiosis (overgrowth of pathogens). There are a number of recognized nutrients and/or botanicals plant extracts that have been found clinically effective in treating the overgrowth of the specific fungi, bacteria, and parasites. The clinician may use a number of pharmaceutical drugs (antibiotics, anti-fungals, etc.) that can be very effective in addressing these problems. However, there are safe and effective natural compounds (including Caprylic acid, goldenseal extract, Pau d' Arco, Olive leaf extract, Oregano, cranberry extract, etc.) that may be safely used alone or in combination with other agents to address these problems.

A key to restoring function in some autistic

children is the use of soluble and insoluble fiber to accomplish a number of crucial functions including:

1. Assisting in binding endotoxins thus preventing them from being absorbed from the GI tract into the systemic circulation.
2. Fermentation by colonic microorganisms resulting in the production of short chain fatty acids (SCFAs) which are utilized as a fuel source for the mucosa and are then metabolized to glutamine for use by the small intestine.
3. Restoring of the structure and function of the intestinal microflora. Especially during the detox programs, the use of a multi-spectrum fiber formulation can be crucial as it binds and then assists in the removal of toxins from the bowel.

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The Importance of Intestinal Health (continued)

3. Reestablishing Normal Intestinal Flora

Use of *Lactobacillus acidophilus*, *Bifidobacterium bifidum* (lactis) and other friendly flora are of paramount importance in reestablishing the health-promoting bacteria in the gastrointestinal tract. There is extensive research and clinical documentation regarding the role of probiotics in supporting and maintaining the integrity of the intestinal membrane. Additionally it is recognized that there are distinct advantages with the use of multi-strains of probiotics in the autistic individual with gastrointestinal involvement. For this reason Kirkman Labs offers a comprehensive line of probiotic formulations to meet the unique needs for higher more therapeutic doses of these health-promoting bacteria.

It is recognized that all bacteria species, except for lactic acid fermenting bacteria (*L. acidophilus*, *B. bifidum*, etc.) require iron for their growth. Lactoferrin is an iron binding protein that can have effect in controlling the growth of pathogens in the gastrointestinal tract. The body protects itself against bacterial infections by producing proteins that bind to iron, which prevents the bacteria from getting the iron that is needed for their growth. Lactoferrin is a specific peptide found in colostrum that helps to absorb/bind iron therefore keeping it away from the bacteria and therefore allowing a conducive environment for the good friendly bacteria to grow.

4. Rebuilding/Healing Of The Intestinal Lining

Glutamine is a conditionally essential amino acid, which helps maintain the integrity of the intestinal wall but also functions as a source of fuel for the brain. Its function is to also increase mucosal healing and to strengthen the spaces in the mucosal membrane thus decreasing the ability of any foreign substances (endotoxins) to pass through or leak through the gut wall and into the circulation. Research has established that the use of gram quantities of L. Glutamine can have a significant impact in healing of the mucosal membrane of the gastrointestinal tract.

gastric mucosa, in reducing hyperacidity and a factor rebuilding the intestinal lining. Gamma oryzanol has been found effective in the treatment of gastric and duodenal ulcers as well as irritable bowel syndrome. It appears to have no evidence of toxicity.

Gamma oryzanol is a potent antioxidant that is an extract of rice bran oil. This naturally occurring substance is recognized in protecting the

Phosphatidyl choline is a component of lecithin and has been shown to protect and support normal mucosal barrier function by strengthening the important mucous-phospholipid bilayer of the intestinal cells.

The Importance of Intestinal Health (continued)

5. Reducing The Oxidative Stress/Damage Of The GI Tract

Antioxidants provide an important defense against free radical induced tissue damage in the mucosal membrane of the intestinal tract. Exposure to environmental chemicals, use of nonsteroidal anti-inflammatory drugs, excessive antibiotics and other drugs, the presence of nutritional deficiencies, chronic inflammatory or allergic conditions as well as a number of other causes result in oxidative stress/damage to the intestinal tract. The result of this depletion of anti-oxidants in the GI tract is to set off a cascade of events resulting in mucosal membrane inflammation and injury to the tissues.

The use of potent natural antioxidants (Reduced L Glutathione, N-acetyl cysteine, Vitamin E and C, Beta carotene, Selenium, Zinc, etc.) have been demonstrated to have an antioxidant

function and to help repair intestinal permeability problems. The use of a variety of plant bioflavonoids has been demonstrated to have antioxidant as well as some antihistamine (anti inflammatory) effect on the gastrointestinal mucosal membrane.

It is critical to correct nutritional deficiencies that may trigger or exacerbate gastrointestinal problems. Specialized laboratory testing can be undertaken by the health care practitioner to assess vitamin and mineral status, fatty and organic acids, as well as other important nutrients. This information can then be utilized to design a comprehensive nutritional supplement program with the goal of repair and restoration of the gastrointestinal tract.

6. Improving Digestion Through Use Of Digestive Enzymes

Because children with autism tend to have problems with deficiencies of digestive enzymes or imbalances in the pH of the stomach/intestines their digestive systems do not completely break down foods. As a result these incompletely digested foods can putrefy and ferment in the intestinal tract leading to the production of endotoxins, which can produce many chronic health problems. Use of digestive enzymes play a significant role in enhancing digestion and addressing the symptoms (gas, bloating, etc.) resulting from fermentation of incompletely digested foods.

The use of plant-based enzymes (Kirkman's EnZymAid™ and EnZym-Complete™ Multi-Enzyme Complex for example) provide

assistance in enhancing digestion and in breaking down potentially allergic components in foods that can cause adverse reactions. These highly concentrated and naturally derived plant based enzyme formulations (unlike animal based pancreatic enzymes) are effective in improving digestion in a full range of pH conditions because they have a wide range of activity by working in a pH range of 2 through 12. They are thus effective in both the stomach (very acidic at pH of 1 to 2) as well as in the small intestine which has a pH of between 4 to 8 and finally in the colon/ large intestine that commonly is alkaline at a pH of 10 to 12. This means that these plant-based enzymes can function in the diverse pH conditions found in the intestinal tracts of children.

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The Importance of Intestinal Health (continued)

7. STRENGTHENING THE INTESTINAL IMMUNE SYSTEM

Gamma-linolenic acid (GLA), an omega 6-fatty acid, found in Evening Primrose oil, borage, flaxseed and black current seed oil stimulate the production of specific prostaglandin's which reduce inflammation, protect the gastric mucosa against damage from irritants and help maintain intestinal permeability. Colostrum has been called "nature's first

food" and is recognized to contain high levels of natural growth and immune factors that have a significant impact in gastrointestinal health. It is crucial to choose a colostrum that comes from pasture fed cows that are certified to be free of synthetic hormones, antibiotics, and pesticides and processed under the strictest of standards to provide a pure and potent product.

FINAL COMMENTS

Achieving and maintaining gastrointestinal health is of paramount importance since proper functioning of the intestinal system has such a significant impact in the overall health and well-being of those with autism spectrum disorders. With the help of a medical practitioner and/or nutritional therapist a comprehensive treatment plan can be established with the ultimate goal of restoring the health and functioning of this crucial intestinal system.

Note:

For indepth information on Kirkman probiotics and enzyme products, see both the Probiotic chapter and the Enzymes chapter of this book.

The following is reprinted from an article on the *Autism Research Institute* website located at <http://www.autism.com/ari/>

Vitamin B6 (and Magnesium) in the Treatment of Autism

Bernard Rimland, Ph.D.
Autism Research Institute
4182 Adams Avenue
San Diego, CA 92116

All 18 studies known to me in which vitamin B6 has been evaluated as a treatment for autistic children have provided positive results. This is a rather remarkable record, since the many drugs that have been evaluated as treatments for autism have produced very inconsistent results. If a drug shows positive results in about half of the evaluation studies, it is considered a success and the drug is then advocated for use with autistic patients. However, despite the remarkably consistent findings in the research on the use of vitamin B6 in the treatment of autism, and despite its being immeasurably safer than any of the drugs used for autistic children, there are at present very few practitioners who use it or advocate its use in the treatment of autism.

Research on the use of vitamin B6 with autistic children began in the 1960s. In 1966 two British neurologists, A. F. Heeley and G. E. Roberts, reported that 11 of 19 autistic children excreted abnormal metabolites in their urine when given a tryptophan load test. Giving these children a single 30 mg tablet of vitamin B6 normalized their urine; however, no behavioral studies were done. A German investigator, V. E. Bonisch, reported in 1968 that 12 of 16 autistic children had shown considerable behavioral improvement when given high dosage levels (100 mg to 600 mg per day) of vitamin B6. Three of Bonisch's patients spoke for the first time after the vitamin B6

was administered in this open clinical trial.

After my book *Infantile Autism* was published in 1964, I began receiving hundreds of letters from parents of autistic children throughout the United States, including a number who had tried the then-new idea of "megavitamin therapy" on their autistic children. Most had begun experimenting with various vitamins on their autistic children as a result of reading books by popular nutrition writers. I initially was quite skeptical about the remarkable improvement being reported by some of these parents, but as the evidence accumulated, my interest was aroused. A questionnaire sent to the 1,000 parents then on my mailing list revealed that 57 had experimented with large doses of vitamins. Many of these had seen positive results in their children. As a result, I undertook a large-scale study, on over 200 autistic children, of megadose quantities of vitamin B6, niacinamide, pantothenic acid, and vitamin C, along with a multiple-vitamin tablet especially designed for the study. The children were living with their parents throughout the U.S. and Canada, and each was medically supervised by the family's own physician. (Over 600 parents had volunteered for the study, but most could not overcome their physicians' skepticism.)

At the end of the four-month trial it was clear that vitamin B6 was the most important of the four vitamins we had investigated, and that in

Vitamin B6 (and Magnesium) in the Treatment of Autism (continued)
Bernard Rimland, Ph.D.

some cases it brought about remarkable improvement. Between 30% and 40% of the children showed significant improvement when the vitamin B6 was given to them. A few of the children showed minor side effects (irritability, sound sensitivity and bed-wetting), but these quickly cleared up when additional magnesium was supplied, and the magnesium confirmed additional benefits.

Two years later two colleagues and I initiated a second experimental study of the use of megavitamin therapy on autistic children, this time concentrating on vitamin B6 and magnesium. My co-investigators were Professors Enoch Callaway of the University of California Medical Center at San Francisco and Pierre Dreyfus of the University of California Medical Center at Davis. The double-blind placebo-controlled crossover experiment utilized 16 autistic children, and again produced statistically significant results. For most children dosage levels of B6 ranged between 300 mg and 500 mg per day. Several hundred mg/day of magnesium and a multiple-B tablet were also given, to guard against B6-induced deficiencies of these other nutrients. (In all probability, the temporary numbness and tingling resulting from B6 megadoses, reported by Schaumburg et al., were the result of induced deficiencies of other nutrients caused by taking B6 alone in enormous amounts—a foolish thing to do.)

In both studies the children showed a remarkably wide range of benefits from the vitamin B6. There was better eye contact, less self-stimulatory behavior, more interest in the world around them, fewer tantrums, more speech, and in general the children became more normal, although they were not completely cured.

People vary enormously in their need for B6. The children who showed improvement under

B6 improved because they needed extra B6. Autism is thus in many cases a vitamin B6 dependency syndrome. After completing his participation in our study, Professor Callaway visited France, where he persuaded Professor Gilbert LeLord and his colleagues to undertake additional B6/magnesium research on autistic children. The French researchers, although skeptical that anything as innocuous as a vitamin could influence a disorder as profound as autism, became believers after their first, reluctantly undertaken, experiment on 44 hospitalized children. They have since published six studies evaluating the use of vitamin B6, with and without additional magnesium, on autistic children and adults. Their studies typically used as much as a gram a day of vitamin B6 and half a gram of magnesium.

LeLord and his colleagues measured not only the behavior of the autistic children, but also their excretion of homovanillic acid (HVA) and other metabolites in the urine. Additionally, they have done several studies in which the effects of the vitamin B6 and/or the magnesium on the brain electrical activity of the patients was analyzed. All of these studies have produced positive results.

LeLord et al. recently summarized their results on 91 patients: 14% improved markedly, 33% improved, 42% showed no improvement, and 11% worsened. They noted that “in all our studies, no side effects were observed....” Presumably, no physical side effects were seen.

Several recent studies by two groups of U.S. investigators, Thomas Gualtieri et al., at the University of North Carolina, and George Ellman et al., at Sonoma State Hospital in California, have also shown positive results on autistic patients.

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Vitamin B6 (and Magnesium) in the Treatment of Autism (continued)
Bernard Rimland, Ph.D.

While no patient has been cured with the vitamin B6 and magnesium treatment, there have been many instances where remarkable improvement has been achieved. In one such case an 18-year-old autistic patient was about to be evicted from the third mental hospital in his city. Even massive amounts of drugs had no effect on him, and he was considered too violent and assaultative to be kept in the hospital. The psychiatrist tried the B6/magnesium approach as a last resort. The young man calmed down very quickly. The psychiatrist reported at a meeting that she had recently visited the family and had found the young man to now be a pleasant and easy-going young autistic person who sang and played his guitar for her.

Another example: a frantic mother phoned me to ask for information on sheltered workshops in her city, since her 25-year-old autistic son was about to be expelled for unmanageable behavior. I knew of no alternate placements for the son, but I suggested that the mother try Super Nu-Thera™, a supplement containing B6, magnesium and other nutrients. Within a few weeks she called again to tell me excitedly that her son was doing very well now and his piecework pay had risen dramatically from the minimum pay of \$1.50 per week to \$25 per week.

In view of the consistent findings showing the safety and efficacy of the nutrients B6 and magnesium in treating autistic individuals, and in view of the inevitability of short and/or long-term side effects of drug use, it certainly seems that this safe and rational approach should be tried before drugs are employed.

The following is reprinted from an article on the *Autism Research Institute* website located at <http://www.autism.com/ari/>

Dimethylglycine (DMG), a Nontoxic Metabolite, and Autism

Bernard Rimland, Ph.D.
Autism Research Institute
4182 Adams Avenue
San Diego, CA 92116

DMG is a rather sweet-tasting substance that was described in a recent article in the *Journal of Laboratory and Clinical Medicine* (1990, 481-86) as a "natural, simple compound with no known undesirable side effects." The article did not pertain to the use of DMG in autism, but instead described an experiment in which DMG was used to try to enhance the function of the immune system of laboratory rabbits. It worked—the immune systems of the animals given DMG showed 300% to 1,000% better response to infection than the controls.

DMG is readily available in many health food stores. It is legally classified as a food. It does not require a prescription. It is manufactured by several companies, and comes in various forms, most commonly in tiny foil-wrapped tablets about 1/3 the size of an aspirin.

The taste is pleasant and children chew the tablets readily. At about 25 cents per tablet, the cost is minimal, since only one to eight tablets a day are usually taken (eight for adults).

"So far so good," you may be saying, "but what does this have to do with autism?"

In 1965, two Russian investigators, M. G. Blumena and T. L. Belyakova, published a report showing considerable improvement in the speech of 12 of a group of 15 mentally handicapped children who had not been able to use speech to communicate. The children had been treated with a substance variously known as calcium pangamate, or pangamic acid, or "vitamin B15." In addition to enriched vocabulary, the children began to use simple sentences, their general mental state im-

proved, and there was better concentration and interest in toys and games. Subsequent research has shown the essential factor in calcium pangamate to be DMG.

Soon afterward psychiatrist Allan Cott visited Moscow and brought back a small supply of pangamic acid, which he tried on a number of children in his practice, some of whom were autistic. Many of Cott's patients responded in the same way the Russian children had. One mother wrote, "It's the most exciting thing I've ever experienced. He was repeating words and he answers questions now...."

At about this time pangamic acid, or B15, entered the U.S. market. Chaos ensued. Every manufacturer touted his product as "the original Russian formula." There were at least four different formulas on the market, partly, it is believed, as a result of deliberate deception and obfuscation on the part of the Russians. DMG, in small amounts, was a component of some of the formulas. The FDA stepped in and lengthy legal battles ensued. One outcome is that the term B15 was outlawed. (Although DMG resembles the B vitamins in many ways—it is found in the same foods, for example—there are no known overt symptoms characteristic of a DMG deficiency.) The significant outcome of the legal battles is that the sale of DMG is now permitted, as long as it is not referred to as a vitamin, and as long as it is sold as a food and not a drug.

I have been following the pangamic acid-DMG situation for almost 25 years. I have mentioned it in some of my lectures, and told parents and professionals about it in conversations and correspondence. Always I would ask, "if you try it, please let

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Dimethylglycine (DMG), a Nontoxic Metabolite, and Autism

Bernard Rimland, Ph.D.

(continued)

me know what results you see, even if no improvement is found."

I am now so firmly convinced that DMG is helpful to a substantial proportion of autistic children and adults that I have decided to "go public" in the Autism Research Review International—to tell people about it freely and openly, so they may try it if they wish.

Some who hear of this boldness may be aghast: "Where are the double blind placebo-controlled scientific studies showing it to be effective in autism?" they will ask. My reply is simple. "There aren't any, and none are needed." There are, of course, numerous double blind non-autism studies of DMG in the scientific and medical literature, using not only humans, but many kinds of laboratory animals, often given very large amounts of DMG. As noted earlier, no adverse side effects have been found with even massive intakes of DMG. (I say "intakes" rather than "dosages" because "dosage" implies that DMG is a drug, which it is not)

Since no company has the exclusive right to make DMG, competition keeps the price—and profits—down. Thus there is almost no chance that anyone will sponsor a \$200,000 double blind study of DMG on autistic children. A parent can buy 30 tablets for about \$8.00. That is a sufficient supply, even for an adult given five or more tablets a day, to determine, in most cases, if it will be helpful. If it is felt to be helpful, fine. If not, you have wasted \$8.00 (except for the boost given to the immune system).

To help the parents receive unbiased input, I usually tell them to refrain from mentioning to teachers, grandparents and others in the child's environment that DMG is being tried. I have numerous letters in my files saying, "Johnny's speech therapist says he has made more progress in the last two weeks than in the last six months. As you suggested, we had told no one at his school that we were trying DMG."

I am 100% in favor of double blind studies on drugs with considerable potential for harm, such as fenfluramine, Haldol, or the like. However, it doesn't make sense to insist on such refinements before trying a perfectly safe substance such as DMG, apple pie, or chicken soup.

If DMG is going to work, its effects will usually be seen within a week or so, though it should be tried for a few weeks or a month before giving up. In some cases dramatic results have been seen within 24 hours: A Los Angeles mother was driving on the freeway, three-year-old Kathy in the back seat, five-year-old mute autistic son Sammy in the front. DMG had been started the day before. Kathy began to cry. Sammy turned and spoke his first words: "Don't cry, Kathy." The mother, stunned, almost crashed the car.

A similar case: A Texas mother secured her six-year-old mute autistic daughter in the front seat, then, before driving off, turned to tell her husband, "I'll drop Mary at the babysitter's house first." Mary, on DMG for two days, startled her parents with her first words: "No! No babysitter!"

Although speech is the most notable positive change in those children helped by DMG, behavioral improvement is also often reported. One father gave his son one DMG tablet per day without mentioning it to the school. He later requested a copy of the school's detailed record of his son's day-by-day behavioral transgressions. The correlation between outburst-free days and the use of DMG was unmistakable.

An article in the New England Journal of Medicine (October 1982) reported that a 22-year-old mentally retarded man who had 16 to 18 seizures per week on standard anticonvulsants, experienced only three seizures per week while on DMG. Two attempts to remove the DMG dramatically increased seizure frequency.

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Dimethylglycine (DMG), a Nontoxic Metabolite, and Autism

Bernard Rimland, Ph.D.

(Continued)

Last year I sent information on DMG to Lee Dae Kun, Director of the Pusan (Korea) Research Center on Child Problems. He tried the DMG on 39 autistic children, ages three to seven, for three months, with the following (summarized) results:

Benefits seen:

Yes: 31 (80%)

No: 8 (20%)

*(Improved speech, eating, excretion, willingness, etc.)
8 children had difficulty sleeping for weeks 1 and 2.
6 children became more active for weeks 1 and 2.*

Lee Dae Kun wrote that the parents, usually skeptical, saw the improvements clearly. He concluded that DMG is very beneficial for children with autism, even if it is not a cure. Information about the use of DMG with older persons is also encouraging. One mother of a 26-year-old who squeezed things (people, TV sets, etc.) very hard when frustrated, tried DMG, quite skeptically, to see if it would stimulate his very sparse speech. It didn't, but brought remarkable improvement in his frustration tolerance. "Even my husband, who was even more skeptical than me, now is a believer," she wrote.

DMG certainly doesn't always help, and it certainly is not a cure, but it is certainly worth trying, in my humble opinion.

If you try it, let me hear from you.



KIRKMAN'S NEW AMINO-SUPPORT

by J. Pangborn, Ph.D., Consultant to Kirkman Laboratories

During the last decade, medical researchers began to uncover a previously unsuspected feature of autism—a gut connection. Our intestinal tract is a tunnel through the body, in which food is digested and to which wastes are added by the liver. In the lower part of the intestinal tract, a vast population of microorganisms works to further process these wastes, sometimes into useful things like vitamins. Meanwhile, in the upper part of this tunnel, foods are being broken down into basic components. Only the basic components are allowed to pass through the tunnel wall into our bodies. The mucosal tissue that lines the intestinal tunnel controls this passage—as long as it remains healthy.

One of the digestive processes that begins in the stomach is digestion of food protein. In the stomach, proteins are broken into fragments called peptides—chains of amino acids from two to perhaps a hundred or more amino acids. These dietary peptides are then further digested in the small intestine to form individual amino acids. An amino acid is one of those basic food components that the intestinal mucosa welcomes into the body; proteins and most peptides are not supposed to be allowed in. The objective of protein digestion is to break down giant, complex chain of amino acids into individual, free-form amino acids. Inside the body, organs and tissues re-assemble these amino acids into body proteins. Muscles, skin, hair, bone, the heart and other organs contain protein that is needed for structure and function. Besides being used for building materials, amino acids form components of the immune system, act as hormones (often when bound together as human peptides), operate tissue cleanup systems (detoxification), and they form enzymes, which are catalysts for operating the body's biochemistry.

In the early 1990s, Dr. Karl Reichelt (Oslo, Norway) and Paul Shattock (Sunderland University, UK) published their research showing dietary peptides in the urine of autistics. Subsequently others, both overseas

and in the US, confirmed these findings. For this to happen, the digestive process and the integrity of the gut mucosa must have failed in some respects. Dr. Andrew Wakefield (UK) has found one definite gut mucosal problem- "ileal hyperplasia" and measles virus in the wall of the lower small intestine. Many researchers and clinicians now believe that the gut-brain connection is part of autism. Biologically active peptides from the diet affect immune response, brain development and behavior.

But there is another aspect to maldigestion and leaky gut. While unwanted peptides get into the body, needed free-form amino acids from dietary protein may be in short supply. To investigate this, clinicians have performed amino acid analysis on blood and urine from autistics. Jon Pangborn (the author of this section of the Kirkman catalog) surveyed over 60 such analyses from various medical practices. In doing so, notable similarities were found in the laboratory-measured patterns of amino acids for autistic children, aged 3 years-9 years. About 55% showed overt signs of protein maldigestion, low levels of some nutritionally essential aminos and, concurrently, elevated levels of some small peptides that were measured in the same test. Sixty-two percent (39 of 63) showed need for taurine, a very biologically active amino acid. Fifty four percent were frankly deficient in the essential amino acid lysine. The Kirkman amino acid product "AMINO-SUPPORT" evolved from this study. Its contents are a weighted average of the needs as shown by statistics from the survey of autistic children and from human needs for amino acids as published by the US National Research Council (Recommended Dietary Allowances, 10th ed, National Academy Press, 1989).

Taurine: Helps form bile, spares magnesium in cells and in the body, normalizes glutamate/OABA neurotransmitter activity, and neutralizes the oxidant called "hypochlorite". Taurine is present in human milk, but not in cows' milk. *(continued)*

KIRKMAN'S NEW AMINO-SUPPORT (continued)

Lysine: A nutritionally essential amino acid that is the anchor for vitamin B6 in enzymes that process the amino or nitrogen part of amino acids. Lysine is present in meat, fish and poultry protein,

Leucine, Isoleucine, and Valine: Essential "branched chain" amino acids that are important for formation of flexible, structural tissue such as skin. Leucine helps control pancreatic insulin release. All protein foods contain these amino acids.

Methionine: The essential precursor of cysteine, taurine and S-adenosylmethionine, "SAM". This amino acid accounts for most of the body's "methylation". It provides sulfur that may eventually be used for sulfation (a type of detoxication or body cleanup process), but it needs vitamins B6, B12, and folate to be properly utilized. Organ meats, poultry, milk, and beef are rich in methionine.

Glutamine: Nonessential, but the major nitrogen carrying amino acid in the animal kingdom. Glutamine makes vitamin B3 work; it may reduce obsessive compulsive behaviors related to diet, and it nourishes gut mucosal cells. All animal protein is rich in glutamine.

Threonine: An essential amino acid that is the precursor of glycine and serine. It is the slowest amino acid to cross the intestinal mucosa and is typically low in malabsorption. Threonine is one of only a few amino acids that allow sugars to bond to proteins or peptides, examples of which are immunoglobulins, interferon, and cell-to-cell recognition molecules. Threonine is found in the same foods as lysine.

Phenylalanine: Another essential amino acid, and the precursor tyrosine which forms adrenal hormones called catecholamines.

Tyrosine: Nonessential (comes from phenylalanine and directly from dietary protein). Tyrosine becomes "dopa", dopamine, noradrenalin, part of thyroglobulin (the part that attaches iodine), and it helps form melanin, a pigment or coloring substance in body tissues. Dairy products, fish and soy contain lots of phenylalanine and tyrosine.

Arginine: Sometimes essential in infants and young children, and "semiessential" throughout life. Our bodies make some but not enough, and diet provides the rest. It helps immune function (stimulates activity of natural killer cells), helps form creatine (for muscle metabolism), and forms urea (for nitrogen detoxification). Seeds, nuts, buckwheat, lamb, beef and soy are rich in arginine.

Asparagine: Nonessential, but the major nitrogen-carrying amino acid in the plant kingdom. Often a limiting amino acid for leukocyte and lymphocyte growth. Asparagine (like threonine), allows sugars to bond to proteins forming structures required for immune response and regulation.

Proline: Not essential, but very necessary for formation of connective tissues, such as ligaments, skin, and the intestinal mucosa. This is the amino acid that gets stuck in lots of peptides found in the urine of autistics, Wheat germ, barley, soy, dairy and fish are rich in proline.

Alpha-ketoglutaric acid: Not an amino acid but an organic acid, "A-KG" balances nitrogen levels in body tissues. AKG counteracts ammonia buildup, as can occur with gut bacterial overgrowth or infection, and it is necessary for cellular energy processes,

KIRKMAN'S NEW AMINO-SUPPORT (continued)

Most individuals tolerate amino acid supplements very well and they can derive remarkable benefits. Amino acids help immune function, build enzymes and support the body's cleanup processes and allow growth and repair of tissue. If your child does not tolerate amino acids, then this is an important clue that something is amiss and some testing, under a doctor's supervision, is advisable. Amino acid intolerance can take many forms such as hyperactivity, increased perseveration, headaches, gastrointestinal distress, or onset of additional inappropriate behaviors. If any of these or other, not previously seen problems occur, then discontinue use of the amino acids and ask your doctor to investigate two possibilities: (1) intestinal dysbiosis (overgrowth of bad flora in the gut) by doing a stool analysis, and (2) problems in metabolizing amino acids by doing a 24-hour urine or fasting blood plasma amino acid analysis. The DAN! Consensus Report, 2001 Edition, provides guidance on doing this testing. It is available from the Autism Research Institute in San Diego, (619) 281-7165.



CASEIN FREE, GLUTEN FREE DIETS AND AUTISM

Many individuals find it necessary to go on casein and/or gluten free diets as a result of food allergies or medical conditions. Celiac disease patients must completely restrict gluten and often products containing lactose. Individuals with autism, ADD, ADHD or PDD usually must restrict casein and gluten. Many people have severe allergies to dairy products or to wheat and grains and must eliminate those allergens from their diet. Whatever the reason, managing a casein free/gluten free (CF/GF) diet is not as easy as it sounds. One must learn what products contain casein and gluten and must get used to carefully reading product labels. In addition, one must learn where casein and gluten can “hide” from the consumer’s view on a label. Once the parameters are understood, what seemed like an impossible diet to comply with becomes much more tolerable and doable.

CASEIN RESTRICTION

Casein is present in dairy products. Eliminating casein sounds simple—just remove all dairy products from the diet including:

- Milk in all forms (including skim, powdered and goat’s milk)
- Butter
- Cheese
- Yogurt
- Lactose
- Whey
- Caseinates

Unfortunately, it is not that simple. Most prepared foods contain dairy products such as powdered milk, cheese or whey. Soup mixes usually do as well. You must read the labels carefully to be sure dairy products are not present in these frozen or canned foods. You must also check bakery goods and snacks for the presence of the above casein sources. Reading the labels is a critical issue.

There are acceptable casein free substitutes available. Milk alternatives made with rice, potato or soy are commercially available in specialty sections of groceries or in health food stores. Some sensitive individuals also react to soy, so be careful on this issue. There are also dairy free yogurts and “mock” cheese products marketed. Using your imagination along with Kirkman’s Fortified Functional Foods will allow you to create your own versions of recipes which traditionally contain dairy products. A 1998 publication by Lisa Lewis, Ph. D. entitled “Special Diets For Special Kids” gives hundreds of valuable creative ideas for casein and gluten free diets. Another valuable guide in how to execute the diet is Karyn Seroussi’s book, “Unraveling The Mystery of Autism And Pervasive Developmental Disorder”, a Simon & Schuster new publication this year.

Eggs and most types of mayonnaise do not contain casein. There are dairy free margarines available but read the labels carefully. Some contain whey.

GLUTEN RESTRICTION

Gluten restriction is more difficult and requires more effort than casein restriction. It is also easier to be “fooled” because gluten can be hidden in a lot more products. The following grains contain gluten and must be avoided:

- Wheat
- Oats
- Barley
- Rye
- Semolina
- Spelt
- Triticale
- Kamut

These grains are present in most commercial cereals, breads, flours, baked goods, instant mixes and prepared foods. Reading the label carefully is mandatory to ensure of their absence. Often this becomes difficult, however, because natural or artificial flavorings along with spices, gravies and dressings can also contain gluten. If in doubt, you will have to check with the manufacturer of the product.

Fortunately, there are safe alternative grains and flours for gluten free diets. Acceptable grain substitutes are:

- Sweet rice
- Brown rice
- White rice
- Tapioca
- Potato starch
- Beans flours (Garfava and Garbonzos)
- Lentil
- Corn
- Soy

Another factor which makes gluten free dieting difficult is the “contamination factor.” For example, wheat flour makes a very good anti-caking or anti-stick compound for some manufactured or packaged products and is not listed on the label because it is not a component of the actual product. Rather it used to “dust” the equipment to prevent tackiness. Also, a factory packaging a gluten free product may use the same packaging line as it did for one containing gluten without a thorough cleaning in between. Know your supplier and if in doubt, call and ask about potential contaminations and demand to receive a copy of their standard operating procedures which outline how equipment is cleaned. If the supplier or manufacturer will not share this information with you, chances are they are hiding something.

If everyone in the family is not gluten free, be careful of in-home contamination from pot, pans, cutting boards, utensils, countertops and dishes. Most individuals sensitive to gluten are sensitive at minute levels (a few parts per million). What might seem insignificant such as wheat residue on a breadboard could have serious repercussions to the gluten sensitive person.

As with casein, Lisa Lewis, Ph. D. has extremely valuable and creative ideas for gluten free cooking in her 1998 book “Special Diets For Special Kids.” Karyn Seroussi explains how to comply in her Simon & Schuster publication this year, “Unraveling The Mystery Of Autism And Pervasive Developmental Disorder.” Both of these books are remarkably helpful in understanding and implementing a CF/GF diet.

CASEIN FREE, GLUTEN FREE DIETS

WHY ARE CASEIN AND GLUTEN SO IMPORTANT IN AUTISM AND OTHER DEVELOPMENTAL DISORDERS?

A significant number of studies by doctors specializing in autism and developmental disorders have established elevated urinary excretion of peptides in children with autism. These elevated peptides are those derived from milk and wheat, namely casein and gluten. It appears that these peptides are incompletely digested as a result of a deficiency of enzymes that break down peptides. The peptide from casein is called casomorphin and the one from wheat is called gluteomorphin.

The significance of this is that these peptides from casein and gluten react with opiate receptors in the brain, causing morphine like reactions. They affect areas of the brain which are involved in learning and

speech. A porous intestinal wall commonly known as a "leaky gut" and very prevalent in developmental disorders is believed to enhance this opiod reaction as the peptides get directly into the bloodstream.

Children with developmental disorders commonly improve when casein and gluten are removed from the diet. Because casomorphin and gluteomorphin often trigger opiate or morphine-like reactions in the body, withdrawal symptoms sometimes occur when casein and gluten are removed from the diet. Hyperactivity, insomnia, aggressiveness and refusal to eat would be possible symptoms. A more gradual removal of the casein and gluten may be necessary in these cases. Eventually, the symptoms do disappear.

FREQUENTLY ASKED QUESTIONS ON CASEIN/GLUTEN FREE DIET PROGRAMS

Q: Doesn't everyone need to drink milk to get calcium?

A: No. Calcium is available from non dairy sources such as potato, rice or soy milks plus calcium supplements can be used to insure the daily recommended amount is consumed.

Q: Don't all children need milk to be healthy?

A: The American Dairy Association has led parents to believe that. The truth is, that children do very well without milk, as long as calcium requirements are obtained elsewhere. There is actually some information which suggests that a cow hormone actually blocks calcium absorption in humans.

Q: What else besides milk has casein?

A: All forms of milk (powdered, goat's, skim) plus cheese, butter, cream cheese, cottage cheese, butter, whey and caseinates.

Q: What contains gluten?

A: Wheat, oats, barley, rye, semolina, some food starches, alcohol from grain, spelt, and kamut. Almost all prepared packaged foods contain gluten and almost all restaurant food. Flour, crackers, and snack foods also generally contain gluten.

Q: My child only likes McDonald's Chicken McNuggets as a protein source. Do they have gluten?

A: Yes, they are rolled in wheat flour before frying. You can make your own nuggets, however using rice flour or bean flour. These will be gluten free.

Q: Do french fries have gluten?

A: Only if wheat flour is used as an anti-stick agent. Ask the restaurant. Also be careful about the possible contamination with gluten if the fries are cooked in pre-used frying oil.

Q: Do vitamins and other supplements have casein or gluten?

A: They can have. Check the label's list of ingredients (required) and check for milk products like caseinates, lactose or whey and for any grains or starches which could contain gluten. Also, some flavoring can contain gluten.

Q: I've removed casein and gluten from my child's diet and she still seems to be allergic to foods. What does this mean?

A: First, check to make sure no hidden casein or gluten could be present. Some individuals are also allergic to soy and corn. Try eliminating these one by one from the diet.



COD LIVER OIL

"Kirkman Laboratories only uses Cod Liver Oil which contains all natural vitamins A & D. No synthetic standardization has occurred"

Cod Liver Oil is being used in autism and ADHD based on the findings of Dr. Mary Megson in Virginia. Dr. Megson has found that many autistic/ADHD children have "G" protein defects which cause classic symptoms of these disorders. "G" proteins are cellular proteins which are responsible for sending signals in sensory organs. These sensory organs regulate vision, hearing, smell, taste and touch and are therefore very involved in awareness and response behavior. "G" proteins stimulate Vitamin A receptors and when these G protein pathways are blocked, Vitamin A absorption is restricted. With Vitamin A stores depleted, behavior, vision and learning are severely affected and the immune system is suppressed.

Dr. Megson uses cod liver oil to bypass "G" protein pathways which are blocked. Cod Liver Oil contains 10% of the cis form of Vitamin A, plus "14 hydroxyretroretinol". Dr. Megson has found that these natural forms of Vitamin A in Cod Liver Oil stimulate retinoid receptors resulting in a dramatic improvement of behavior, awareness and vision. Dr. Megson also often uses a dose of the drug Bethanichol in conjunction with the Cod Liver Oil to stimulate pathways in the parasympathetic nervous system which are also blocked by "G" protein abnormalities.

It is important when using Cod Liver Oil to be extremely careful in selecting a source. Many Cod Liver Oils available in various outlets are standardized with synthetic Vitamin A palmitate. Furthermore, much of the oil available is contaminated with heavy metals, pesticides or PCB's. It is also critical to insure that Cod Liver Oil is stable and does not turn rancid.

Kirkman Laboratories only uses Cod Liver Oil which contains all natural vitamins A & D. No synthetic standardization has occurred. In addition, our oil has been vacuum dried and deodorized plus it has gone through a filtration and distillation process to remove heavy metals, pesticides and PCB's. A complete analysis of the oil has verified the absence of these compounds to detectable limits.

Cod Liver Oil can become rancid over time from exposure to air and heat by autoxidation. When this occurs, peroxides develop in the oil. Kirkman adds vitamin E to our Cod Liver Oil to stop any potential oxidation process. In addition, a peroxide test is performed on every batch to insure freshness. The European Pharmacopeia allows up to 10.0 millequivalents/kilogram of peroxides in Cod Liver Oil to be considered fresh and non-rancid. Kirkman's product has a typical peroxide value of only 2.9 mEq/kg.

OTHER PROPERTIES OF NATURAL COD LIVER OIL

Fish Oils are rich in Omega 3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). Cod Liver Oil is no exception. Each 1/2 teaspoon of Cod Liver Oil contains 250 mg of EPA and 250 mg of DHA. Omega 3 fatty acids have been shown to be useful in cardiovascular health, inflammatory diseases and in neurological problems. In addition, Omega 3 fatty acids have proven to be effective in developmental behavioral dysfunction in children. A study published in the American Journal of Clinical Nutrition in 1995 reported that 53 children with ADHD had significantly lower concentrations of Omega 3 fatty acids than control children. Many autistic children have also been found to be deficient in these Omega 3 fatty acids.

Many of the doctors and biochemists which Kirkman works with recommend supplementation with Omega 3 and Omega 6 fatty acids in autism and other developmental disorder such as ADD, ADHD, and PDD. A laboratory profile of amino acids is often done to determine which type of product is required.

The oil used in Kirkman's Cod Liver Oil capsules has a more concentrated form of vitamins A and D. These capsules do not contain measurable amounts of Omega-3's.



DIGESTIVE ENZYME FORMULATIONS

An Approach to Digestive Wellness & Health

Kirkman Laboratories offers a comprehensive approach to optimal digestion with four enzyme formulations to address the unique needs of those with autism spectrum disorders. EnZymAid™, EnZymAid Companion™, and EnZym-Complete™, along with a unique Dipeptidyl peptidase IV (DPP-IV) enzyme, called DPP-IV Forster™, provide the ultimate in enzyme supplementation for those with ASD. These formulations are state of the art, scientifically formulated, and supported by clinical use. Children with ASD have impaired digestive functioning and thus optimizing digestion can have a significant impact in their health. Digestive enzymes offer one of the most important nutritional supports and plays a key role in the health and functioning of their crucial gastrointestinal tracts.

With the expertise of physicians, in consultation with Jon Pangborn, Ph.D., Kirkman Laboratories brings you exceptional enzyme formulations that meet the highest standards for potency, activity and tolerance as well as comprehensive formulations that can address the multi-faceted needs of ASD children. Dr. Pangborn (in conjunction with Dr. Bernard Rimland) formulated the first digestive enzyme specifically designed to meet the needs for degrading opiate peptides resulting from the incomplete digestion of casein and gluten. These two experts bring a wealth of experience in nutritional intervention and biomedical treatment approaches to the development of these enzyme formulations.

BACKGROUND

Enzymes are an integral part of the digestive process. From the time the food enters the mouth the enzymes are actively at work breaking down foods into smaller units until it can be absorbed through the intestinal wall and the nutrients carried into the body. Of interest is that the body produces many of these enzymes with the additional help of enzymes naturally found in the food. It is well recognized that all raw foods naturally contain the proper type and proportion of enzymes necessary to digest them quite effectively. When raw foods are eaten the chewing ruptures the cell membranes and releases the indigenous food enzymes to begin the selective breakdown of the substrates.

Ideally the human body is able capable of producing the full spectrum of enzymes (with the exception of cellulase) which is necessary to digest food and allow for the absorption of crucial nutrients. The problem is that most food enzymes are essentially destroyed at the typical temperatures used to cook and process them leaving these

foods devoid of crucial enzyme activity. This places the full burden of digestion on the body and the digestive process becomes overtaxed resulting in digestive problems and malabsorption of nutrients that can have far reaching effects over time.

The consequences of poor digestion/indigestion can result in complaints of fullness or bloating after meals, gas/flatulence problems, and poor absorption of nutrients. The long-term consequences of malabsorption have been linked to a number of complaints including allergic reactions, impaired immunity, nutrient deficiencies, poor/impaired wound healing, skin problems (acne) as well as behavioral symptoms. It is also recognized that the control of yeasts and parasites in the gastrointestinal system is in part dependant upon the secretion of enzymes. Thus supplementing with a full range of digestive enzymes can have far-reaching effects that extend past enhancement of overall digestion.

DIGESTIVE ENZYME FORMULATIONS (continued)

GENERAL OBSERVATIONS:

Optimal and effective nutrition is essential for reproduction, development, maintenance and healing of the body. Because children with autism tend to have problems with deficiencies of digestive enzymes (imbalances in the pH of the stomach/intestines, etc.) this leads to foods not being completely broken down. It is recognized that insufficient amounts of digestive enzymes can cause or worsen digestive disorders involving permeability, maldigestion, and food sensitivity problems. As a result these incompletely digested foods can putrefy and ferment in the intestinal tract leading to the production of endotoxins, which can produce many chronic health problems commonly seen in children with ASD.

To complicate the problem many children with autism have significant gastrointestinal abnormalities including intestinal dysbiosis (over growth of bacteria, yeast, viruses, fungi and other pathogens), gut permeability problems (described as "leaky gut"), food allergy/sensitivity, malabsorption (a deficiency in the absorption of nutrients from the intestinal tract into the bloodstream resulting from ineffective or inadequate breakdown of foods), as well as pancreatic dysfunction and deficiencies. These conditions may result in the impaired ability to adequately breakdown and digest a full spectrum of foods including carbohydrates, fats, proteins and protein peptides from gluten and casein. One of the consequences is the formation of opiate or morphine-like peptides, referred to as casomorphin and gluteomorphin peptides. These peptides are recognized to function as false neurotransmitters, adversely affecting the central nervous system and triggering a number of adverse neurological and physiological consequences. Once absorbed into the bloodstream these peptides are known to stimulate undesirable immune and inflammatory responses in the body.

Use of digestive enzymes can play a significant role in enhancing digestion and in breaking down a broad spectrum of foods more adequately as well as degrade potentially allergic components in foods that can cause adverse reactions as well as opiate peptides. Some children diagnosed on the autism spectrum have problems with the inability to secrete sufficient quantities of hydrochloric acid (HCL) as well as deficiencies in the production of crucial

digestive enzymes in the small intestines. Both of these problems can have a profound effect in the overall ability of thoroughly digesting a full spectrum of foods to provide essential nutrients for growth.

This condition is known as hypochlorhydria (low or insufficient stomach acids) and carries with it a number of consequences and concerns. This is because HCL is considered crucial for proper protein digestion in the stomach where it helps adjust the pH (acid-base balance) so that the stomach is more acid (lower pH), allowing for better digestion of these foods. If the stomach does not have sufficient amounts of acid, then foods will not be properly broken down and are delivered into the intestinal tract as partially digested peptides (many opiate peptides can be formed if milk and wheat are eaten). Additionally without adequate acids in the stomach then bacterial and/or yeast organisms can begin to grow and proliferate, because there are insufficient amounts of these acids to keep these pathogens under control.

The use of HCL supplementation (Betaine Hydrochloride) to address this problem may only help on a short term/temporary basis. With long-term continuous supplementation of HCL this may have an adverse effect on the body, by actually resulting in higher acidity levels of the blood. How the body responds to this more acidic state in the bloodstream is by buffering it with its own alkaline reserves (in the form of sodium and potassium bicarbonate) to maintain a stable acid-base balance in the bloodstream. As the body is continuously forced to draw from its alkaline reserves (sodium/potassium bicarbonate to maintain a normal pH/acid-base balance), this will ultimately have a negative effect on the availability of these buffers to be used during digestion. In the long run it has been suggested that this will lead to a further deficiency of the bicarbonates in the intestinal tract. Many children with autism have known deficiencies (either low or inhibited levels) in the production of sodium bicarbonate to start with so this further accentuates the problems. Additionally without a sufficient supply of sodium bicarbonate being secreted by the pancreas into the small intestine then digestion of foods is compromised.

Of interest is that supplementation with plant based enzymes will lessen the burden of having to produce large amounts of HCL to digest the foods. The plant enzymes will begin the job of breaking down foods in the stomach before they are delivered into the small intestine where they will be exposed to other enzymes, continuing the job of digestion.

USE OF PLANT BASED INSTEAD OF ANIMAL BASED ENZYMES

The goal of supplementation is to use enzymes in sufficient quantities to adequately break down the foods being ingested so that there is optimal absorption of essential nutrients along with adequate breakdown of reactive peptides. All of Kirkman's enzyme formulations are "plant derived" which are utilized in place of "animal derived" (pancreatic based enzymes). This is because the plant enzyme possess a number of important qualities that make them ideal for use with those with ASD which include:

1. The plant-based enzymes offer the broadest and "most complete" spectrum of enzyme activity including protease, amylase, lactase, maltase, lipase, invertase/sucrase and cellulase enzymes. This provides the most comprehensive approach to optimal digestion and relieves the pancreas of some of the burden of having to produce as much of these digestive enzymes to thoroughly digest the foods.
2. These highly concentrated and naturally derived plant based enzyme formulations (unlike animal based pancreatic enzymes) are effective in improving digestion in a full range of gastrointestinal pH conditions. This is because they have the ability to digest a broad spectrum of foods over a significantly wide range of activity by working in a pH range of 2 through 12. They are thus effective in both the stomach (very acidic at pH of 2) as well as in the small intestine which has a pH of between 4 to 8 and finally in the colon/large intestine that is commonly alkaline at a pH

of 10 to 12. This means that these plant-based enzymes make an excellent choice over pancreatic enzymes for use in autistic children.

3. They start their digestive activities in the stomach and function throughout the entire gastrointestinal tract. The pancreatic enzymes will not survive the stomach acids (that is why they are tableted or microcoated) so they can get through the stomach acids without being degraded) and they will only begin their activity in the more alkaline environment of the small intestine.
4. These enzymes are derived from specially cultivated plant sources, specifically the *Aspergillus oryzae* species of plant molds, that have been cultivated for this specific action and used as nutritional supplements for decades. They go through an extensive purification process and produce one of the most effective and safest enzymes for nutritional supplementation used by sensitive individuals. Other enzymes available as nutritional supplements are Pancreatic enzymes, derived from the pancreas (pancreatic tissue) obtained from slaughter house bovine (cow) and porcine (pig) sources.
5. Although these enzymes are derived from plant molds they do not retain any of the microbial residue from which they are originally derived. These enzymes undergo an extensive filtering process that separates the active enzyme from the original plant mold and this leaves a pure enzyme with high enzymatic activity.

GLUTEN AND CASEIN FREE

EnZym-Complete™, EnZymAid™, EnZymAid Companion and DPP-IV For te™ are all manufactured following the highest pharmaceutical and nutraceutical standards. All of these formulations have been tested and are certified to be casein and gluten free, which is of prime importance for those with autism spectrum disorders.

DIGESTIVE ENZYME FORMULATIONS (continued)

HYPOALLERGENIC FORMULATION

Kirkman Labs digestive enzyme formulations are designed for the sensitive individual who requires a hypoallergenic formulation free of potentially reactive ingredients. All formulations are made without the use of rice bran and beetroot fiber base ingredients. For encapsulation only plant cellulose is used as a filler and the essential amino acid L. leucine is used when needed to replace other lubricants (magnesium stearate, stearic acid, etc.) commonly used in encapsulating the product.

All of our enzyme formulations are designed to be free of milk, casein, wheat, gluten, gliadin, corn, rice bran, soy, egg, yeast, sugar, starch, MSG, stearates, palmitates, artificial sweeteners, colors or flavors, preservatives, salicylates and other common allergens.

One unique aspect of the Papain enzymes used in our formulations is that this enzyme is guaranteed to be "sulfite free". It provides one of the purest and highest quality papain's available today. Many manufacturers will use a cheap source of their papain enzyme, however levels of sulfite are present.

ENZYME ACTIVITY METHODS FOR DIETARY SUPPLEMENTS

Kirkman Laboratories is working with an enzyme supplier who is recognized in the industry as the premiere manufacturer and definitive leader in the specialty area of plant based enzymes. They utilize authorized compendial methods of measuring and expressing enzyme activity that have undergone scientifically sound development and validation procedures, recognized by the Enzyme Technical Association. Some of these measurements are expressed in FCC units and others are expressed in newer technological and more definitive characterization of activity, recognized by the ETA as equally acceptable units of activity. The potencies for these enzymes are expressed in the enzyme industries most current FDA recognized standard for determining the activity of enzymes.

For example when testing the enzyme activity of bromelain the FCC activity standards may not represent the most accurate levels of this enzyme. On some enzyme labels bromelain is measured in Papain Units (FCCPU) however the more appropriate and current standard for testing of bromelain is by utilizing Bromelain Tyrosine Units (BTU's) as is found on our enzyme labels. Because not all enzyme formulations follow this new standard, whenever possible we provide the approximate/equivalent activity units in parenthesis. For example: Bromelain will be accurately expressed as BTU's (Bromelain Tyrosine Units) however next to this level will be equivalent to FCCPU (Papain units)



ENZYMES & DIETARY PEPTIDES

Jon B. Pangborn, Ph.D., F.A.I.C.
Consultant to Kirkman Laboratories
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BACKGROUND

In 1980, Drs. O. Trygstad, K. Reichelt and others published initial findings that psychiatric cases, including autistic individuals, present notably elevated levels of unusual peptides in their urine.¹ Since that time, Reichelt and others have confirmed and expanded these findings and have identified particular peptides in autistics as having dietary origin.^{2,3,4,5,6} Examination of these peptides by amino acid sequencing has shown them to be "exorphins", or opiate-acting peptides.^{4,7,8,9,10} Passage of such peptides into human blood has been documented.^{11,12} Specific examples of exorphins are beta-casomorphins (from casein in dairy products), and gliadorphin and gluteomorphin (from gluten foods: wheat, oats, rye, barley).^{7,8,9,12} On observational grounds, Jaak Panksepp predicted this neurochemical theory of autism in 1979¹³, and it is an extension of deWied's pioneering work on abnormal neuropeptides and psychopathology.^{14,15}

Abnormal intestinal permeability in autistic children has been confirmed¹⁶, allowing a pathway for uptake of exorphin peptides. That these peptides alter neuronal development in the CNS is also documented.^{17,18} Not only is there an opiate-like effect, but brain cell growth and structure is adversely affected by these peptides as is immune response. Hence, removal of the peptides does not immediately reverse the condition; rather, gradual improvement must be hoped for. In addition to dietary-source exorphins, internally-generated (endogenous) endorphin excesses with associated immunoreactivity have been described in a type of autism (Rett's syndrome).¹⁹ Thus, removal of the dietary source of the offending peptides is not expected to immediately reverse the autistic condition; instead, a gradual healing process might be achieved. Nevertheless, removal of the offending exorphin peptides can have some short-term, observable benefits in many autistics such as behavioral improvement, better eye contact and the beginnings of improved (or recovered) vocalization.

POSSIBLE INITIAL RESPONSES TO HIGH PEPTIDASE ENZYMES INCLUDING EnZymAid™, EnZym-Complete with DPP-IV™ and DPP-IV Forte™

These digestive-aid enzymes are designed to digest dietary proteins and peptides, and this function begins in the stomach. (The enzymes are not destroyed by normal stomach acidity.) With improved digestion, the effects of some previously on-going and improper processes may be accentuated temporarily.

First, the exposure to dietary opiate peptides is decreased or eliminated as casein and gluten are digested by the enzymes. This usually brings about a period of opiate withdrawal, which may last 5 to 10 days or longer in some cases. During this period, the individual may become irritable or tantrum, develop hyperactivity, experience an increase in stimming or may present increased levels of inappropriate behavior or regression.

Cravings for discontinued foods can occur which may potentiate these withdrawal symptoms. Not all children experience withdrawal or adverse symptoms when starting the enzymes; prior elimination of gluten and casein foods from the diet can lessen or eliminate withdrawal symptoms.

The reduction of undigested dietary peptides from the lower gastrointestinal tract can discontinue a food supply that may have fostered the growth of dysbiotic, possibly pathogenic flora in the gut. Intestinal dysbiosis is commonly presented by autistics and may include yeast/fungi overgrowth, parasites and unusual or pathogenic bacteria. This, together with increased permeability of the gut wall allows for increased toxic

ENZYMES & DIETARY PEPTIDES (continued)

burden in autism. A temporary result of using these enzymes can be die-off of such flora with consequent release of even more toxins. The die-off period usually does not last more than two to three weeks but may continue longer with persistent, adaptable dysbiotic strains.

With more complete digestion of dietary protein comes a more normal amount of free-form essential and protein amino acids. In a few individuals, this can lead to a third effect if there is an underlying problem with transport and metabolism of amino acids. An example of such a problem is malabsorption of the essential amino acid tryptophan, which can lead to an increase in indolylacrylylglycine ("IAG"). With this unusual problem, increased tryptophan (from better digestion) leads to a toxic organic acid, indoleacrylic acid, and this organic acid is detoxified by attaching glycine to it,

forming IAG. So, an occasional consequence of digestive enzyme use is increased IAG. (Vitamin B₆, adequate iron, and proper antioxidant balance helps to normalize tryptophan metabolism.)

So, an initial period of adverse response to digestive aids can occur in some autistics. And, if this problem period continues beyond two or three weeks, please consult the doctor who is attending the autistic individual. Clinical laboratory tests can be informative in cases of prolonged problems – a comprehensive stool analysis (like a CDSA from a specialty laboratory), an amino acid analysis (24-hour urine preferred but fasting plasma is OK), and a food allergy workup. (Food allergies can cause inflammation of the intestinal mucosa and worsening of the responses described above.)

LIMITING ADVERSE RESPONSES

The use of these digestive enzymes is not a substitute for an elimination diet: removal of casein sources (dairy products, goat too) and gluten/gliadin sources (wheat, oats, rye, barley, triticale, spelt, kamut, etc.). Progressive removal of such foods from the diet followed by introduction of one of these enzyme formulations can stage the removal of dietary opioids and can lessen the intensity of the withdrawal (which is then extended over a longer period of time). Not all autistics have a casein or gluten exorphin problem, and a trial avoidance period (30 to 60 days) followed by reintroduction of casein/gluten can often show need for such an exclusion. Note that food allergy tests which measure immunologic response to casein or gluten via IgE or IgG levels do not apply to exorphin chemistry. A negative IgE or IgG to these foods does not tell the tale.

A stool analysis with bacteriology and mycology performed ahead of dietary therapy and enzyme use can also lessen effects if the analysis leads to early rectification of bowel flora. Getting the bad bugs wiped out and replaced with beneficial probiotics (Kirkman

Pro-Bio Gold™, Culturelle™, Pro-Culture Gold™, Multi-Flora Spectrum™, etc.) just ahead of dietary therapy, or along with it (but before starting the enzymes) is a good idea. This also stages the responses and gets the die-off (or most of it) over with before the enzymes are introduced.

Often, an amino acid analysis, when done up front with the stool analysis, can forewarn of metabolism problems. This, however, is not foolproof because subsequent dietary restrictions plus use of digestive enzymes can significantly alter the amino acid picture. If adverse response to these enzymes persists beyond three weeks, then an amino acid analysis, a stool analysis with bacteriology and mycology, and a food-allergy workup are advisable through your doctor.

COMMONLY ASKED QUESTIONS, ANSWERS

1. *Q. Can I reduce the gluten and casein foods in my child's diet and use the enzyme*

formulations to take care of the rest? A. No, not a good idea. You'd be depending on the enzyme to contact all the gluten and casein molecules that were eaten and to digest all of it quantitatively. Remember the casomorphin and gliadorphin exorphins are active as false neurotransmitters even at micro-quantities.

2. *Q. I completely control my child's diet and he/she gets zero casein and gluten. Why do I need to use EnZymAid™ or EnZym-Complete with DPP-IV™ at all?* A. Five reasons: (1) Food that you buy, even "ingredient" foods, may contain unlabelled casein/gluten; (2) It is not proven that offending exorphins come only from traditionally-recognized casein/gluten foods; (3) As your child develops, attends remedial programs or is out of direct care, dietary mistakes will occur; (4) Autistics as a group are typically deficient in zinc, the activator of most digestive peptidase enzymes and these enzyme formulations can partially compensate for this likely deficit in digestive capability. (Zinc supplementation, away from meals, is also recommended if an element analysis of blood cells or hair shows the need.) Rectification of zinc levels may take considerable time in autism; (5) Besides the peptide problem, autistics frequently have problems with carbohydrate and fat digestion. If that is known or suspected, then EnZym-Complete with DPP-IV™ is most appropriate because it contains the broadest range of important digestive enzymes.
3. *Q. Before my child started using EnZymAid™, his urine IAG was 15. After a month on the enzyme, his level was at 25. Why?* A. Although most show a decline in the IAG peptide with use of EnZymAid, some show an increase. This response probably means that a lot more free tryptophan has become available

from dietary protein. There are two reasons: i. The digestive enzyme is working; ii. The protein content of the diet is higher in tryptophan because meat, fish and poultry have been substituted for dairy and grains. Also, there is a third concern. Tryptophan may not be doing what it's supposed to. Either there is underlying intestinal malabsorption (investigate pancreatic dysfunction and allergic sensitivity to foods now in the diet), or there is a problem in tryptophan metabolism (check via amino acid analysis).

4. *Q. My child is in his fourth week of extreme inappropriate behavior and irritability after starting the enzymes. What do I do now?* A. Contact your doctor. Continue or discontinue the enzyme per his/her advice. Suggest that your child be evaluated for: intestinal dysbiosis, food allergies, amino acid metabolism disorders. Also, review your child's diet; is he/she really off casein and gluten?
5. *Q. A lab measured my child's exorphin peptides (e.g., beta-casomorphin 7), and his levels have increased while on the enzyme formulations but his behavior and functioning have improved. What's going on?* A. The behavioral and functional improvements are of key importance; continue what you are doing. Stopping or changing because of one questionable lab result has disappointed several parents. The exorphin peptides were originally identified and measured as a group and individually by a procedure called HPLC (high-performance liquid chromatography). Not all labs use this procedure; some use RIA (radioimmune assay). Cross-reactivities and uncertainties currently plague this analysis when done by RIA. Children guaranteed by their parents to not be consuming any casein have RIA lab reports with high casomorphins

ENZYMES & DIETARY PEPTIDES (continued)

(ditto for gliadorphin). We hope that with experience and improved testing procedures that this will be sorted out in the future.

6. *Q. Can I abandon the gluten/casein-free diet and allow my child to liberally eat all dairy products as well as wheat and other gluten containing foods along with the digestive enzymes?* A. The current position, held by many of the respected authorities utilizing a biomedical approach to autism, is that caution should be taken in abandoning the diet with exclusive use of the high peptidase enzymes. The expectation that digestive enzymes will degrade every exorphin peptide that is

produced is not realistic. The results of the EnZymAid™ Pilot Study indicated that the most significant initial response was seen in a group of children/teens that were eating gluten grains and dairy products along with this specially formulated enzyme. However, the magnitude of initial improvement is not the real issue. Rather, the ultimate achievable improvement is the goal to be sought and that is best realized through both dietary restriction (when appropriate) and nutritional/enzyme therapy.

*Jon B. Pangborn, Ph.D., Ch.E.
Fellow, American Institute of Chemists
Consultant to Kirkman Laboratories*

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PROBIOTICS

THE ROLE OF PROBIOTICS IN THE HEALTH AND FUNCTIONING OF THE GASTROINTESTINAL TRACT

Probiotics have been called “sustainers of life” and nature’s “internal healers” because of their crucial role in the health and functioning of the gastrointestinal tract. These friendly bacteria are acknowledged to keep the intestinal tract in balance and exert other life-sustaining functions. The gastrointestinal abnormalities experienced by those with autism spectrum disorders have been acknowledged to respond to the use of this friendly flora. Thus the use of probiotic supplementation becomes a key component, in a comprehensive treatment program aimed at healing and restoration of the intestinal tract.

Achieving and maintaining gastrointestinal health is of paramount importance since proper functioning of the intestinal system has such a significant impact in the overall health and well being of those with autism spectrum disorders (ASD). With the help of a health care practitioner a comprehensive treatment plan can be established with the goal of restoring the health and functioning of this crucial intestinal system. Probiotics will no doubt be a key part of such a program.

Dr. Eli Metchnikoff, a scientist from Eastern Europe, was awarded a Nobel Prize in 1908 for his research regarding the role of friendly bacterial flora in gastrointestinal health. He was the first to hypothesize that the long, healthy lives of Bulgarian peasants were the result of a diet containing fermented milk products, specifically yogurt. He recognized that the bacteria in yogurt prevented or reversed gastrointestinal infections. In the decades following he continued his research and was able to prove that the Lactobacillus strains of probiotic flora could combat pathogenic organisms and reduce the toxic by-products (endotoxins) that they produce.

There is a long history of use of natural probiotics (in the form of culture dairy products including fermented milk, yogurt, kefir, etc.) to support intestinal health. The name probiotic means “for life”; with the Latin word Pro meaning for or forward and the word Biotics (biotikos), Greek

meaning “living.” Probiotics are friendly bacteria that are supportive of life, with the remarkable ability to beneficially affect the delicate balance of the intestinal bacteria and with the capacity to prevent or significantly reduce the effects of harmful pathogenic organisms.

Gastrointestinal dysfunction is recognized to occur after the body has been assaulted by continuous, repetitive and cumulative exposures to a wide range of influences. These influences are comprised of exposures to the foods we eat, drugs we take (antibiotics, etc.), chemical contaminants and additives in the diet, environmental exposures to toxins (heavy metals, pesticides, etc.), pathogenic infections of the intestinal system; each one of these contributing to the total load of physiological stress on the intestinal tract and its immune system. The goal of restoring gastrointestinal health and healing starts with addressing each of the factors and/or influences that contributes to intestinal dysfunction.

ROLE OF PROBIOTICS IN GASTROINTESTINAL HEALTH

Research on the use of probiotics has demonstrated that they have the ability to strengthen the intestinal tract’s immunological barrier. Specific probiotic strains (ProBio*Tec® and LGG strains) are well documented to stimulate both specific and nonspecific immunity, along with enhancing sIgA producing cells in the mucosal

membrane. Probiotics help control the overgrowth of harmful bacteria, virus, and yeast (*Candida albicans*) and have documented ability to adhere to human mucosa and colonize the intestinal membrane. They have high tolerance for stomach acids (pH of 2 for BB-12 and a pH of 3 for LA-5 *L. acidophilus*) as well as

PROBIOTICS (continued)

tolerance to bile salts. These probiotic strains are recognized to produce anti-microbial substances, which are active against pathogens including salmonella species, E. coli, clostridium, etc. They are recognized for their clinical effectiveness with controlling diarrhea & constipation, gastroenteritis associated with rotavirus shedding, traveler's diarrhea including antibiotic associated diarrhea, as well as infections of the genitourinary tract.

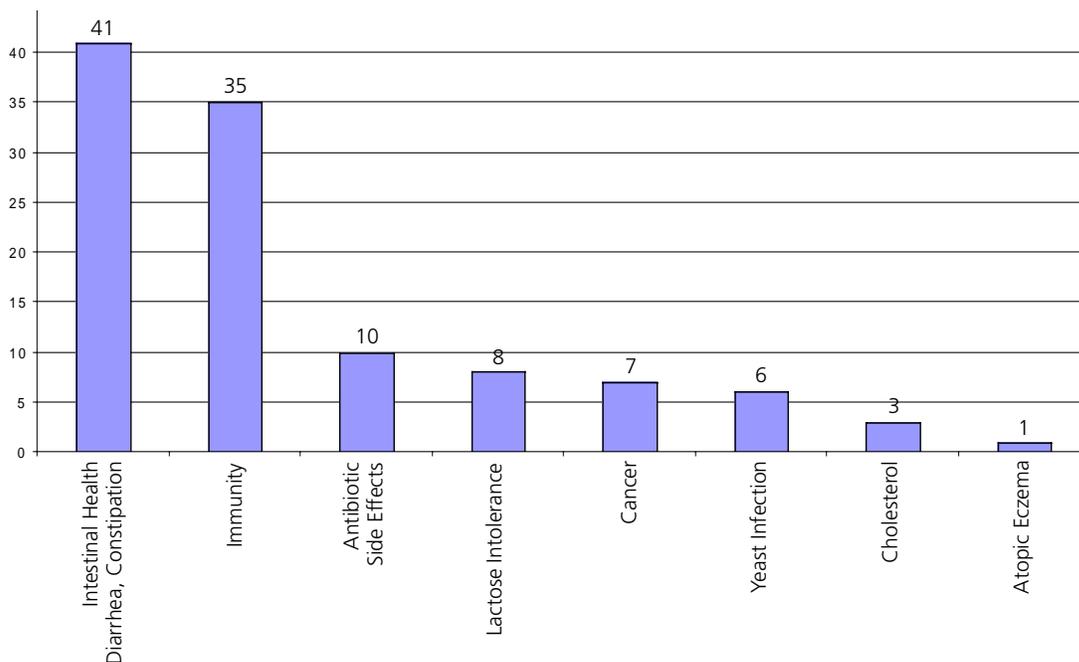
These probiotic strains have been shown to function in the management of allergic inflammation, alleviating

the symptoms of lactose intolerance, in enhancing the nutritional content and bioavailability of nutrients, in the production of natural antibacterial substances, in an inhibitory effect on carcinogenic and mutagenic activity (specifically in the colon) as well as in demonstrated reduction of serum cholesterol. Just as important as the positive clinical effects of these probiotic strains, are the documentations of their safety and tolerance. Please refer to the table at the end of this section entitled. Clinically Proven and Tested Probiotic Strains, which provides support documentation pertaining to each of these strains.

CLINICAL TRIALS BY HEALTH BENEFIT

Probio-Tec™ Probiotics

Number of Clinical Trials by Health Benefit



Note: Many studies examined more than one health benefit, but are categorized under one benefit only.

THE ROLE OF PROBIOTIC SUPPLEMENTATION IN ADDRESSING PATHOGENIC ORGANISMS IN THE GUT

CANDIDA RELATED COMPLEX

Dr. William Crook, a recognized authority in the area of Candida Related Complex, published *The Yeast Connection* and numerous other excellent books related to the adverse health effects of chronic *Candida albicans* infections. A large percentage of children with autism have persistent problems with *Candida* invading and setting up residence in the membrane of their intestinal tract. When the yeast take control and colonize the membrane of the bowel they can change forms from a "budding yeast spore" to a more invasive "hypha" or "mycelium" form. The hypha yeast actually imbed themselves in the mucosal membrane, where they exert powerful control and have the ability to deeply penetrate the tissue. This attachment is made easier by damage to the intestinal lining by yeast colonies that secrete enzymes (proteases and alkaline phosphatases, coagulase, phospholipase, etc.) that further breakdown the intestinal allowing greater penetration of the mucosal tissue.³ Additionally these acid proteases are through to cleave secretory IgA from the mucosal membrane thus allowing the *Candida* to get a greater foothold without the protection of sIgA's presence. This destruction of the GI membrane can result in a cascade of symptoms including inflammation of the intestinal tract that destroys the mucosal cells.⁴

To compound the problem when colonizing the intestinal tract the yeasts produce toxins and byproducts that cross the mucosal membrane and are absorbed into the circulation where they can travel to different tissue and organs in the body including the brain. This is referred to as "translocation" when the harmful bacteria, yeast and/or toxins pass into the lymph nodes surrounding the intestinal tract, as well as into the circulation, raising havoc with the immune and nervous systems. These pathogenic organisms leave a path of destruction along the way. The toxins and byproducts

produced by these microbes include a number of different substances like amines, ammonia, hydrogen sulfide, indoles, and phenols that can accentuate the damage to the intestinal lining.⁵

Of interest is the work by Guentzel, published in *Infection and Immunity*, which describes that infant mice were found far more susceptible to *Candida* overgrowth (infections) than older mice. If these mice were administered antibiotics at an early age it was recognized that they would develop persistent *Candida* infections compared to the older mice. This significant overgrowth of *Candida*, in the intestinal tract, increased on an average of 130 fold.⁶ Human studies have demonstrated similar results.⁷ This may explain some of the persistent *Candida* infections commonly seen in autistic children following repeated courses of antibiotics early on in their lives. Despite repeated anti-fungal treatments with different localized antifungals (Nystatin) and systemic antifungals (Nizoral, Sporonox, etc.) the *Candida albicans* maintains its stronghold in the intestinal tract. Given this situation there is a crucial role for the use of probiotic supplementation to maintain a full spectrum of health promoting friendly bacteria in the gastrointestinal tract and to displace these pathogenic organisms. How probiotics do this is by competing for attachment sites on the mucosal membrane and if delivered in large quantities they can crowd out these enemies, stimulate the intestinal immune response, manufacture natural antibiotics and hydrogen peroxides that prove hostile to these unfriendly yeasts.

BACTERIA'S ROLE IN INTESTINAL DISEASE

A full spectrum of pathogenic bacteria including *Clostridia defficile*, *P. klebsiella*, *Bacteroides*, *Staphylococci*, *Helicobacter* and many others are commonly recognized to be the cause of intestinal infections in

PROBIOTICS (continued)

those with autism, however *Clostridia defficile* is most frequently associated with gastrointestinal infections in autistic children.

Clostridia defficile are bacteria generally present in small amounts in the intestinal tract, however when the normal intestinal equilibrium is disturbed, clostridia can flourish and cause major disruption and damage in the intestinal membrane. Clostridia are spore-forming bacterial organisms that are very resistant and difficult to kill despite the use of high powered, broad spectrum antibiotics including Vancomycin, (usually the last line of defense against pathogenic bacteria). These bacteria are recognized as strict anaerobes, meaning that they cannot tolerate oxygen and thus flourish in the intestinal environment that is devoid of oxygen. Unfortunately despite repeated courses of antibiotics the Clostridia frequently resurface after the antibiotic therapy ends. Recently there have been clinical studies demonstrating that probiotics can play a significant role in suppressing the growth of Clostridia.

Dr. William Shaw made important observations, which led to his discovery of a dihydroxyphenylpropionic acid-like (DHPPA-like) compound in the urine of autistic children. This DHPPA-like compound was initially thought to be the result of byproducts from the overgrowth of yeast (*Candida*), however following collaborative studies with a German researcher Dr. Shaw recognized that DHPPA-like compounds were due to the *Clostridia defficile* bacteria and its relatives. He and Dr. Walter Gattaz found that children and adults with *Clostridia defficile* infections of the intestinal tract had high levels of this DHPPA-like compound in their urines. Specific testing of urine in autistic children showed the values of DHPPA-like compounds to be extremely high suggesting that this was an important marker of *Clostridia defficile* infection of the gastrointestinal tract.

REESTABLISHING NORMAL INTESTINAL FLORA

Key to the restoration and healing of the gastrointestinal tract is treating the cause of the dysbiosis and

reestablishing the health promoting bacteria back into their rightful place. Use of *Lactobacillus acidophilus*, *Bifidobacterium bifidum* (*lactis*) and other friendly flora are of paramount importance. There is extensive research and clinical documentation regarding the role of these probiotics in supporting and maintaining the integrity of the intestinal membrane.

PROBIOTIC SUPPLEMENTATION

Hundreds of species of friendly bacteria flourish in the 25 to 28 feet of the intestinal tract. Some are “resident” microorganisms including *Lactobacillus acidophilus*, *L. rhamnosus*, *L. casei*, *Bifidobacterium bifidum/ lactis*, as well as others. These probiotics set up residence by attaching to the mucosal lining and colonize the intestinal tract where they crowd out pathogenic/unfriendly bacteria. Additionally there are “transient” friendly flora, including *Streptococcus thermophilus* and *L. bulgaricus* that do not set up residence but instead travel through the intestinal tract and exert many positive benefits. These resident and transient friendly bacteria may be some of the most important nutritional influences on the health. Their supplementation is of paramount importance as part of a comprehensive gastrointestinal protocol aimed at healing.

Kirkman Laboratories provides the “Gold Standard” in probiotic supplementation utilizing the most extensively researched and clinically documented strains of health promoting microorganisms. Additionally great care is taken in the manufacturing of these supplements to maintain the highest potency and stability of these live microorganisms. Formulations are based on scientific research and documented clinical efficacy. With the expertise of our scientific/technical consultant Jon Pangborn, Ph.D., Kirkman will continue to bring you products that meet the highest standards in the industry. Please refer to Kirkman Laboratories website at www.kirkmanlabs.com for detailed information on all of our probiotic formulations.

PROBIOTIC STRAINS UTILIZED IN KIRKMAN LABS SUPPLEMENTS

LACTOBACILLUS ACIDOPHILUS (LA-5)

L. acidophilus is probably the most recognized as well as prominent strain that sets up residence (implants itself) in the mucous membrane of the mouth, the small intestine as well as in the lining of the genitourinary tract. It performs many crucial functions including inhibiting pathogenic organisms and preventing them from multiplying and colonizing. *L. acidophilus* aids in the digestion and absorption of nutrients, helps with the maintenance of regularity and helps alleviate lactose intolerance caused by the deficiency of the enzyme lactase. Additionally *L. acidophilus* has been shown to have a high tolerance for acids and bile salts, which makes it a viable and hearty microorganism.

The LA-5 strain has been documented to produce a broad spectrum of natural anti-microbial substances including bacteriocin (named acidocin), lactocidin, acidophilin, etc. that have activity against disease producing microorganisms, such as: *Escherichia coli* (*E. coli* causing “Montezuma’s revenge” and chronic renal failure), *Staphylococcus aureus* (food poisoning and toxic shock syndrome), *Salmonella* (food poisoning), *Candida albicans* (yeast overgrowth and oral thrush), *Shigella* (dysenteries) as well as other undesirable and pathogenic organisms including (most recently) the strains of *Bacillus*, *Micrococcus* and *Cornebacteria*. Of interest is that *Lactobacillus acidophilus*, LA-1, has been shown to possess the ability to adhere to human enterocytes such as Caco-2 cells in culture, which is important to prevent the attachment and invasion of pathogenic bacteria.¹⁰

Another study utilized a combination of Probio*Tec™ probiotic strains (LA-5, BB-12, *Streptococcus thermophilus* and *L. bulgaricus*) evaluating their effectiveness against *Clostridia defficile*. In a double-blind, placebo-controlled trial at Hudding University in Sweden, a group of subjects were given the antibiotic Clindamycin, 4 times daily for 7 days, plus a probiotic or a placebo capsule. The results showed that only 18% of the probiotic group was colonized with *Clostridium defficile* compared to 47% of the placebo group. Recolonization was faster in the supplemented group, which may be of importance in preventing colonization with *C. defficile*.¹⁵ Thus the use of the Pro-Bio Gold™ formulation (which contains the strains in the study) in combination with the Culturelle with LGG may provide a comprehensive approach to dealing with *C. defficile* infections in children with ASD.

LACTOBACILLUS RHAMNOSUS

One of the crucial functions of *L. rhamnosus* is its role as a primary “resident” in the 28 feet of the small intestine. This important lactobacilli recently gained a great deal of attention for its ability to adhere to the intestinal mucosa and colonize the gastrointestinal tract, thus exerting important health-promoting functions. *Lactobacillus rhamnosus* has been shown effective in inducing an increase of the immunoglobulin IgA in the mucus membrane of the intestine, crucial for autistic children who are recognized to have low sIgA levels. This strain functions by competitive exclusion of pathogenic organisms including *E. coli*, *Listeria*, *Clostridia*, *Shigella* and *Salmonella*, etc. resulting in the prevention of gastrointestinal infections and diarrhea.

According to Canadian microbiologist Eduardo Brochu, Ph.D., *L. rhamnosus* does not only colonize, acidify and protect the small intestine, but it can quickly establish itself in the large intestine, inhibit the growth of *Streptococci* and

PROBIOTICS (continued)

Clostridia, create anaerobic conditions which favor the implantation of Bifidobacterium and produce the biologically desirable L (+) lactic acid.¹¹

LACTOBACILLUS GG

Culturelle™ with LGG is recognized as a one of the most researched strain of probiotics. The initial research on this Lactobacillus rhamnosus strain was undertaken by two Boston scientists, Dr.'s Sherwood Gorbach and Barry Golden. They isolated this strain, which they called Lactobacillus GG, and it received a patent in the US in 1987. This formulation is available only as a single strain offering 20 billion CFUs per capsule. It can be used alone or in combination with multi-strain formulations to provide comprehensive effects against Clostridia defficile infections.

Like other Lactobacilli strains, LGG possesses many crucial benefits for gastrointestinal health, including control of the overgrowth of harmful bacteria, adheres and colonizes the gastrointestinal tract, enhances the bodies natural defenses, assists with lactose digestion, prevents milk based allergic reactions and plays an important role with acute diarrhea caused by antibiotics, rotavirus and bacteria. Its most impressive quality, in relationship to use in autism, is its reported effectiveness against severe intestinal infections, specifically Clostridia defficile. Studies undertaken on the LGG strain demonstrate its exceptional ability to control the infection and re-colonization of the Clostridia defficile organism in the gastrointestinal tract.¹²

BIFIDOBACTERIUM BIFIDUM / LACTIS (BB-12)

Bifidobacterium bifidum, recently identified as B. lactis, is the most prominent microorganism strain setting up residence in the lining of the large intestine, the last part of the small intestine as well as in the vaginal tract. The B. bifidum (B. lactis) performs several important functions including inhibiting/preventing the colonization of invading pathogenic bacteria (clostridium, salmonella, etc.) as well as yeast (Candida albicans). It accomplishes this by attaching to the intestinal membrane, crowding out the pathogens as well as competing for nutrients.

B. bifidum is known for producing acetic and lactic acids, which lowers the pH. (Increases the acidity) of the intestine thus inhibiting the undesirable bacteria from growing. A double-blind, placebo-controlled study was undertaken with the BB-12 strain, which indicated that symptoms of atopic dermatitis were significantly reduced with its supplementation. Researchers found an increase of IgA production in the intestinal membrane, which may be helpful in reducing the risk of exposure to food antigens. Additionally an in vitro study showed that BB-12 increased the IgA production in the intestine and according to the researchers may be helpful in reducing the risk of exposure to food antigens and in the prevention of allergies in breast-fed infants.¹⁴

The BB-12 strain (Bifidobacterium bifidum/lactis) is among the most investigated and tested bifidobacterium strains available today. Numerous clinical trials have been undertaken on this strain showing its versatile activity in protecting the intestinal flora and in its potential application related to allergic inflammation. A recent double-blind, placebo-controlled trial was undertaken with 27 infants diagnosed with atopic eczema. The infants were given a formulation with the Bifidobacterium BB-12, and another with LGG and the third was a placebo group getting a formulation without the probiotic. After two months the probiotic supplemented group showed significant improvement in skin condition compared to the un-supplemented group. According to the authors "the results provide the first clinical demonstration of

specific probiotic strains modifying the changes related to allergic inflammation. The data further indicate that probiotics may counteract inflammatory responses beyond the intestinal milieu.”¹⁴

LACTOBACILLUS CASEI

L. casei shares some of the same immune-modulating effects seen with other lactobacilli family members. It is commonly found in the mouth and membrane of the small intestine where it inhibits pathogenic bacteria. The *L. casei* strain, used in this formulation, is documented to secrete “peptidoglycan” which stimulates phagocytosis by macrophages. The cell wall of this strain has been demonstrated to contain “teichonic acid”, which plays a role in adherence of microorganisms to epithelial tissue.¹⁵

Another important quality of this particular strain is that it was the most effective in enhancing the number of IgA-producing cells, which have an important role on the mucosal immune response. Additionally when tested in malnourished mice, it increased IgA and IgM concentrations, and improved the intestinal flora qualitatively and quantitatively.¹⁶

LACTOBACILLUS BULGARICUS

L. bulgaricus, is most notably known as the culture used in yogurt making. This microorganism does not set up residence but transiently exerts a powerful influence primarily in the large intestine. In the bowel it helps to decompose certain food components in fecal matter, assists in preventing putrefaction and can play a beneficial role in helping to maintain regularity. *L. bulgaricus*, in combination with other friendly bacteria has also shown an effect against *Candida albicans*.¹⁵

STREPTOCOCCUS THERMOPHILUS

S. thermophilus is also considered a transient bacterium in the human intestine where it exerts some positive influences on gastrointestinal health. One important function is the ability of these friendly bacteria to enhance milk digestion through production of the enzyme lactase. Together with *Lactobacillus bulgaricus*, *S. thermophilus* produces a culture that is used in making yogurt. This strain produces lactic acid, which encourages a good environment for the resident flora (acidophilus and bifidobacteria) as well as inhibiting the less desirable and pathogenic bacteria.

A double-blind, placebo-controlled trial in hospitalized infants was conducted, at John Hopkins University Hospital, utilizing *S. thermophilus* and BB-12 showing significant reduction in the incidence of diarrhea and rotavirus shedding.¹⁷

LACTOBACILLUS PLANTARUM

L. plantarium has unique adhesiveness and prevents *E. coli* from adhering to the mucosa of the intestinal tract, which prevents endotoxins from being delivered into the circulation.¹⁸ Additionally *L. plantarium* is recognized to show strong ability to counteract sepsis of intestinal origin and specifically *Clostridia defficile* infections.¹⁹

PROBIOTICS (continued)

LACTOBACILLUS SALIVARIUS

This member of the lactobacillus family has been shown to produce alpha-galactosidase, which can help reduce flatulence and has the additional qualifications of being highly resistant to tetracycline and other antibiotics. L. Salivarius is a hardy probiotic strain and is able to maintain its potency at room temperature. Of interest are studies that have demonstrated the ability of Lactobacillus salivarius to inhibit H pylori colonization of human epithelial cells in vitro.⁵¹

LACTOBACILLIS HELVETICUS

This unique Lactobacillus strain is fairly new as a nutritional supplement however it appears, along with Lactobacillus rhamnosus, to contain analogs of the Dipeptidyl peptidase IV (DPP-IV) enzyme which is recognized for its ability to digest exorphins.^{20,21} The L. rhamnosus and L. helveticus strains may have important application for those with autism given the presence of levels of DPP-IV analog produced from these friendly bacteria.

LACTOBACILLUS RUTERI

L. ruteri is emerging as a probiotic strain with its own impressive qualifications including its demonstrated ability to stabilize the intestinal flora especially when used in combination with L. acidophilus and B. bifidum. L. ruteri promotes additional benefits such as protection against pathogens and involvement in tissue morphogenesis.⁵³

SACCHAROMYCES BOULARDII

Saccharomyces boulardii is considered a non-pathogenic, non-colonizing yeast species closely related to the brewers/ bakers yeast. This yeast has gained a great deal of attention in the autism community, when it was demonstrated that Saccharomyces boulardii could be used to prevent Clostridia defficile infections as well as reinfections.²² There are recent studies to show the use of Saccharomyces boulardii as a potential adjunctive treatment for children with autism,⁵² as well as for its application in treatment of recurrent Clostridium defficile disease.²³

There are clinicians utilizing the Saccharomyces boulardii with reports of great success with their patients. Kirkman Laboratories has been asked to make this supplement available for use in the autism community.

BETA 1,3/1,6 GLUCAN WITH LACTOBACILLUS PLANTARUM

Kirkman has finalized the development of a probiotic formulation that contains the stellar immune stimulating properties of Beta 1,3/1,6 glucan in combination with lactobacillus plantarum (Prolimmune Support). Beta 1,3/1,6 glucan is recognized as a safe and very potent nutritional supplement that has a powerful impact in stimulating the immune response to help the body defend itself against foreign substances. The Beta-1,3/1,6 glucan compound is plant based, as it is derived

from the cell wall of the *Saccharomyces cerevisiae* organism, which is a relative of *Saccharomyces boulardii*. What makes it different however is that it is not the live yeast but a micro-particulate “ghost” cell of purified beta glucan that possesses potent biological activity.

The Beta-1,3/1,6 glucan is completely safe, non-toxic and the purest supplement available. There are no known toxic or mutagenic related problems demonstrated with this supplement. In fact studies in patients with severely compromised immune systems and those with cancer have shown tolerance as well as positive clinical response. Although Beta-1,3/1,6 glucan is derived from yeast, it is recognized as a pure isolate and does not contain any yeast proteins that can trigger an allergic reaction. Extensive use of this nutrient has provided well-documented evidence pertaining to its safety, even in the sensitive individual.

The use of Beta 1,3/1,6 glucan in combination with specific strains of health promoting probiotics appears to offer one of the safest and effective means of providing enhanced probiotic supplementation. This supplement is the first of its kind to offer the stellar qualities attributed to both of these unique components.

ADVANCING THE STANDARDS OF PROBIOTICS

Kirkman Laboratories offers a comprehensive approach to optimal probiotic supplementation. We are committed to maintaining the highest standards in manufacturing an exceptional line of probiotics. Following is an overview of the qualities found in this probiotic line:

KIRKMAN LABORATORIES QUALITY PRODUCT STANDARDS

- In-House Manufacturing Facility
- Pharmaceutical Grade Raw Materials
- Highest Quality, Purity and Bioavailability
- Elemental Values of Nutrients Listed
- Custom Formulating of Products
- Exclusive Use of Plant Cellulose Capsules (no Gelatin)
- Hypoallergenic Supplement Line
- Independent Laboratory/Stability Testing
- Certified Gluten and Casein Free
- Commitment to Clinical Trials

EXCEPTIONAL PROBIOTIC FORMULATIONS

- Certified Strains/DNA Fingerprinting
- Nitrogen Flushing for Stability
- Available in Capsules and Powders
- High Potency Formulations
- Use of Glass Amber Bottles
- Extensive Clinical Testing
- Guaranteed Potency Through Expiration
- Inulin Used in Place of Maltodextrin

PROBIOTICS (continued)

EXCEPTIONAL QUALITY STRAINS/DOCUMENTED PROBIOTIC STRAINS

Our probiotics are from Chr. Hansen, the definitive leader in the nutraceutical industry, supplying probiotic raw material from the worlds premiere probiotic manufacturers. All probiotic strains utilized in our formulations meet the highest of standards. They undergo innovative strain verification involving DNA fingerprinting and special enumeration testing to assure the highest potency and activity. All of these qualities provide a significant measure of assurance that exceptional probiotic formulations are available for use in an intestinal treatment protocol. Because of our partnering with Chr. Hansen, Kirkman Labs has accessibility to extensive technical support and the ability to stay at the forefront of probiotic research and innovative product development.

UNIQUE PROBIOTIC BASE

Kirkman utilizes a unique all natural base ingredient called Inulin in place of the standard maltodextrin (derived from wheat, corn or rice) commonly utilized in most probiotic formulations. Inulin is derived from the chicory root vegetable and belongs to a class of compounds known as oligosaccharides. This oligosaccharide is non-digestible; as a result it is not broken down by the gastrointestinal tract but passes into the colon intact. Once in the large intestine inulin is selectively utilized by bifidobacterium as a fuel source for growth and reproduction of these important beneficial bacteria. These characteristics make inulin an ideal probiotic base.²⁴

Inulin also serves as a “prebiotic” which functions in nourishing and supporting the growth of healthy/friendly intestinal flora. In this role it has a positive impact in increasing the levels of lactic acid bacteria, so important in maintaining a healthy gastrointestinal tract. A unique quality of inulin is that it does not affect or alter blood sugar levels and is generally well tolerated by the diabetic. One of the compelling attributes of inulin is that it appears to be exceedingly well tolerated by the sensitive individual and because it is derived from an exotic root vegetable it is considered hypoallergenic. It has a pleasant taste and dissolves easily when the powder is mixed with foods and/or beverages.²⁵

Kirkman exclusively utilizes the naturally derived inulin oligosaccharide in place of the commercial fructo-

oligosaccharides (FOS) commonly found in many probiotic formulations. It appears that inulin is resistant to utilization by pathogenic bacteria including *Klebsiella pneumoniae*, unlike some types of FOS.³⁸ This makes inulin a safe and well-tolerated probiotic base, supplying growth factors that are documented to support beneficial intestinal flora.

SAFETY ISSUES:

Lactic acid bacteria have had a long history of safe use as nutritional supplements. A number of studies have been undertaken regarding the safe use of the Probio*tec® probiotic strains at doses ranging between 10 to 42 billion CFUs (colony forming units) per day administered in capsule/powdered form. Additionally there are clinical studies utilizing between 10 to 100 billion CFUs of these lactic acid bacteria (in fermented milk). In one study 13 malnourished hospitalized infants with diarrhea due to post-gastroenteritis syndrome were administered the Probio*tec® *L. acidophilus* and *L. casei* strains. The results of this supplementation eliminated the symptoms/disease in four days and in all cases it was possible for the children to return to normal feeding. Clearly this speaks to the safety and efficacy of utilizing these certified strains at higher doses for more intensive care needs.

There are additional, compelling studies to show the safety of the *L. acidophilus* and *B. bifidum* (lactis) strains in patients with compromised immune systems.

A randomized, double-blind, placebo-controlled study was undertaken, evaluating the prophylactic effect of LA-5 and BB-12 on infections in patients undergoing chemotherapy for acute leukemia. A dose of a total of 24 billion CFUs per day was administered for 30 days, beginning at the start of chemotherapy. The results showed that no lactobacilli were cultured from the blood, indicating no risk of septicemia from the probiotic. The LGG probiotic strain has also undergone extensive clinical evaluation with 20 to 40 billion CFUs safely and effectively utilized. All of these results are encouraging and provide support for use of these specific strains in children with autism who have compromised immune systems.

DOSING OF PROBIOTICS

Our entire line of probiotic supplements are available in plant cellulose capsules. Capsules deliver 7.5 to 30 billion CFUs. The capsules may be swallowed whole or opened and the contents mixed with food or beverages.

HOW AND WHEN TO TAKE PROBIOTICS

The question of when to take probiotics has been the subject of great debate with some health practitioners. Some suggest that probiotics be taken on an empty stomach (between meals) and others advise that they be taken with food and/or beverages.

For the answer we have consulted with several microbiologist who are in agreement with the recommendation that for optimal results probiotics should be taken with meals. It has been suggested that live microorganisms have three requirements, allowing them to grow and set up residence in the gastrointestinal tract. They need: (1.) shelter (2.) warmth and (3.) a food source. When taken with meals these bacteria are afforded some protection and are buffered from the stomach acids as they make their way to the small intestine with the

objective of adherence and colonization of the GI mucosal membrane. When these friendly flora are traveling through the GI tract (in companionship with food) they have a warm environment as well as a source of nutrients allowing them to proliferate. These conditions all favor the survival of these health-promoting bacteria so that they can colonize the gastrointestinal tract and exert a positive influence in intestinal health.

There may be some medical conditions or medications that will prevent individuals from taking probiotics with meals. In these instances the experts suggest that the live bacteria be taken between meals with an adequate amount of water to dilute and then move/flush them through the stomach acids and into the intestinal tract.

SUGGESTED USE / DOSAGE RECOMMENDATIONS:

Most all of Kirkman's probiotic formulations are designed to provide high therapeutic doses so it is important to start the probiotics with a lower doses and gradually increase. Follow the directions on the label and/or preferably follow the specific directions of your medical/health care practitioner

Take one (1) capsule or 1/2 to 1 tsp. daily and/or as / directed by a medical practitioner. For more intensive use take two (2) capsules daily, in divided doses, for a minimum of two weeks or as specifically recommended. This dose can then be decreased when the gastrointestinal functioning is more balanced.

For infants/children, less than 30 pounds, use one half of the suggested dose and increase as recommended by a practitioner. The capsule may be opened, divided and taken at separate times during the day. Higher amounts may be safely utilized but only under the care of a health care practitioner.

PROBIOTICS (continued)

DIRECTIONS FOR USE:

For optimal results it is recommended that the probiotics be taken with food (meals). This formulation may be taken in conjunction with digestive enzymes and other nutritional supplements without affecting their potency, stability or function. However avoid the use of potent herbs or anti-microbial foods/supplements such as garlic at the same time as the microorganisms are ingested.

PROBIOTICS DO NOT CONTAIN:

All of Kirkman Labs probiotic formulations been formulated to be free of milk, casein, wheat, gluten, corn, soy, yeast, sugar, starch, MSG, maltodextrin, stearates, artificial sweeteners, colors or flavors, preservatives, salicylates, and other common allergens. This is to assure that the purest and most non-reactive supplements are available, to meet the needs of the most sensitive of individuals. Kirkman Laboratories has set the highest standard and initiated independent laboratory testing to assure the potency as well as to certify that this supplement is free of gluten and casein

These statements have not been evaluated by the Food and Drug Administration.
These products are not intended to diagnose, treat, cure or prevent any disease.



THE USE OF PROBIOTICS IN COMBINATION WITH DIGESTIVE ENZYMES

Questions have been raised suggesting that probiotics cannot be taken at the same time as digestive enzymes. What has been stated is that these enzymes degrade the attachment sites on the surface of the mucosal membrane thus preventing the probiotics from setting up residence and establishing themselves on this tissue. The thought that digestive enzymes inactivate certain proteins known as "attachment factors" on the intestinal membrane is not supported by the medical literature. In fact there is compelling documentation indicating that probiotic organisms actually contain important digestive enzymes as part of their makeup.

The purpose of our discussion is to dispel the concerns regarding the use of probiotics with enzymes and to help establish a better understanding of the fact that they can safely and effectively be taken in combination with one another.

Probiotics are some of the most unique organisms in that they contain a number of important compounds that have health promoting and sustaining benefits in the intestinal tract. These include **anti-microbial** agents (like Acidocin) which inhibit pathogenic organisms, **teichonic acid** found in the cell wall of specific lactobacillus strains which plays a role in adherence of probiotic microorganisms to epithelial tissue, as well as the presence of naturally occurring digestive **enzymes** that are produced/secreted by the live probiotic organisms.

The reason that live probiotics and digestive enzymes can be safely taken together is that the lactic acid bacteria actually possess their own enzyme activity which is inherently part of their makeup. Probiotic organisms naturally produce or secrete enzymes as part of their biological activity. When the cell membrane of the live probiotic organism is broken or lysed then the enzymes are liberated and possess the ability to function in breaking down/assisting with the digestion of foods. There is scientific support and clinical documentation showing that probiotic strains like *S. thermophilus* and

L. bulgaricus naturally contain high levels of the enzyme "lactase", which is important in breaking down the milk sugar known as lactose.

One of the most exciting developments and recent discoveries involves the recognition of the presence of an analog of the Dipeptidyl peptidase IV (DPP-IV) enzyme in specific probiotic strains (those utilized by Kirkman Labs).

The initial observations that some probiotic strains contained DPP-IV enzymes were made by Dr. P. Varmanen and his colleagues, which were published in the Journal of Bacteriology (2000). Laboratory testing further revealed the presence of high levels of DPP-IV in select probiotic strains. The presence of DPP-IV in these friendly flora may explain the significant clinical response noted with use of probiotic formulations taken alone or in combination with DPP-IV containing enzymes (like EnZymComplete with DPP-IV™, EnZymAid™ and DPP-IV Forte™).

This is clearly seen with the recent recognition that certain strains of probiotics contain naturally high levels of Dipeptidyl peptidase IV (DPP-IV). DPP-IV has been recognized to have significant function in degrading casein (from dairy products) specifically as well as cleaving action on gliadin and gluten (found in wheat, oats, rye, barley, spelt, etc.). Of importance is that this DPP-IV enzyme, which is normally found on the mucosal membrane of the intestinal tract is recognized to be deficient and/or completely absent in those with autism. There have been reports of significant improvement in gastrointestinal function and changes in behavior in those utilizing both probiotic and enzyme supplementation. In part this may be the result of the large amount of DPP-IV containing enzyme activity produced by specific probiotic strains.

The fact that enzymes are actually part of the probiotic organisms themselves certainly supports the fact that enzymes and probiotics can be taken together quite

The Use of Probiotics in Combination with Digestive Enzymes (continued)

effectively. Clinical reports and observations from countless physicians and families have provided excellent support for the use as well as safety of taking enzymes and probiotics in combination with one another. Microorganism formulations may be taken in conjunction with digestive enzymes without affecting their potency, stability or function.

Jon Pangborn, Ph.D.

Ilene Buchholz, R.N.



AUTISM, DYSBIOSIS AND PROBIOTICS

Jon B. Pangborn, Ph.D.
Consultant to Kirkman Laboratories

Most biochemically-oriented investigations of autism delve into chromosomal abnormalities, metabolic faults, immune dysregulation, and recently, into possible toxicities. However, there has been a long-standing issue with somewhat less notoriety, intestinal dysbiosis, which appears to be prevalent and important in autism. Intestinal dysbiosis means that normal gut flora have been replaced to some extent with unusual, possibly pathogenic microbes. This often occurs as a result of poor digestion or malabsorption of food and/or overuse of antibiotic medicines.

In the early 1980s there was the case of Duffy Mayo, chronicled in an extensive series of articles published in the Los Angeles Times and subsequently reviewed in the Autism Research Review, vol.2, no.2 (ARI).¹ Duffy had severe intestinal candidiasis. *Candida* is a genus of yeast/fungi that, when excessive, can have deleterious effects (because it produces toxins).² Being a yeast, *Candida* also can ferment undigested carbohydrates, including sugars, to produce acetaldehyde and alcohol.^{3,4,5}

During treatment for candidiasis, Duffy, at first, got worse. This was attributed to "die-off" of the yeast and simultaneous release of toxins from broken yeast cells. Following the die-off reaction, he improved markedly and then began a period of 4 or 5 years of further, continual improvement. By the age of 10 (last report per the Autism Research Review), Duffy had few remaining signs of autism.¹

Per the observations of some very respected physicians, yeast overgrowths such as excesses of *Candida albicans*, are particularly prevalent in autistic individuals.^{6,7,8} *Candida albicans* is a tenacious organism with the ability to change form (dimorphism) from a spherical or "budding" form into an aggressive mycelial phenotype with hyphae or arms that can penetrate into pores in intestinal mucosal tissue.^{9,10} *Candida* yeast also feature

mammalian-like steroid hormones and receptors for same¹¹, and with candidiasis, antigenic triggering of CD4-cell reactivity and immune suppression or dysregulation are observed.^{12,13}

Thus, with candidiasis, we have the multiple threats of microbial toxicity, alcohol and aldehyde excess (inebriation in extreme cases), endocrine dysregulation and immune dysregulation. Also, we have the case history of one autistic individual with extreme *Candida* overgrowth with documented recovery, which took years, but only occurred after treatment that caused *Candida* die-off. And we have doctor observations that candidiasis (and gut dysbiosis in general) is prevalent and important in autism.

Considering this evidence, probiotic use by autistics appears to be not only beneficial, but necessary. And because many autistics present elevations of dietary peptides, maldigestion can be a perpetuating mechanism for intestinal dysbiosis (see "EnZymAid and Dietary Peptides" elsewhere in this catalog). In fact, laboratory instruments show a general hyper-peptiduria for many autistics. Even when gluten and casein foods are eliminated from the diet, some degree of maldigestion still may be occurring, providing a food supply for dysbiotic flora. This can make daily use of probiotics imperative for these individuals.

(References on next page)

AUTISM, DYSBIOSIS AND PROBIOTICS (continued)

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Notes

AMINO ACIDS

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



AMINO SUPPORT™

Flavored Powder

Amino acids are critical for life and health. They make up proteins found in every tissue of the body and play a major role in nearly every body process. Amino acid imbalances can cause metabolic problems that affect the overall health of an individual.

Autism Spectrum Disorder (ASD) is associated with a number of amino acid insufficiencies. Symptoms such as abnormal behavior, hyperactivity, disorientation, depression, seizure activity and intestinal dysfunction can be traced back to insufficient amounts of various amino acids.

Amino Support™ is a complete amino acid product manufactured using free-form amino acids. These free-form amino acids are not derived from animal or protein sources. This product is flavored with a natural wild cherry flavor which masks the usually unpleasant taste normally associated with amino acid products.

Amino Support™ was formulated by Jon Pangborn, Ph. D. using a weighted average of the needs of autistic children and human needs for amino acids as published by the US Research Council (Recommended Dietary Allowances, 10th ed, National Academy Press, 1989).

The Kirkman amino acid product "AMINO-SUPPORT™" evolved from this study. Its contents are a weighted average of the needs as shown by statistics from the survey of autistic children and from human needs for amino acids.

Product Ingredients:

Supplement Facts		
Serving Size: 1 level teaspoon (4 grams)		
Each Serving Contains	Amount per Serving	% Daily Value
Alpha-ketoglutaric acid	450 mg	*
Arginine	110 mg	*
Asparagine	90 mg	*
L-Glutamine	290 mg	*
Isoleucine	240 mg	*
Leucine	300 mg	*
L-Lysine	350 mg	*
Methionine	310 mg	*
Phenylalanine	190 mg	*
Proline	70 mg	*
Taurine	380 mg	*
Threonine	270 mg	*
Tyrosine	90 mg	*
Valine	260 mg	*
5-Hydroxytryptophan	50 mg	*

* Daily Value Not Established

Other Ingredients: Natural Wild Cherry Flavoring, Tapioca Flour, Sucralose, and Silicon Dioxide

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors, preservatives, or yeast.

Recommended Usage:

As a dietary supplement, take 4 grams (1 level teaspoon) in one cup of juice, water or other liquid 1-2 times daily or as directed by a physician.

Packaging & Price:

Item #	Description	Package Size	Price
229/240	Amino Support™ Powder	240 grams	\$39.00



GABA PLUS

Hypoallergenic Capsules

GABA is the short name for Gamma-Aminobutyric Acid, an amino acid which is classified as a neurotransmitter. Neurotransmitters are substances which are deposited at the end of nerve cells which are then picked up by other nerve cells in order to send nerve impulses throughout the brain and nervous system. GABA has the following effect on the body:

- Has a tranquillizing effect
- Calms the body in much the same way as prescription tranquillizers such as Valium
- Stimulates the secretion of Human Growth Hormone
- Improves restful sleep

GABA is known as an inhibitory amino acid in that it fills brain receptor sites so that other messages can not be transmitted. For example, in working with the B-Vitamins Niacinamide and Inositol, anxiety messages are prevented from reaching the motor centers of the brain.

GABA is essential for brain metabolism and has been used in the treatment of epilepsy and hypertension. It is effective also in treating Attention Deficit Disorder. Dr. Jeff Bradstreet treats autistic and PDD patients in his clinic in Palm Bay, Florida and has used GABA in anxiety filled individuals. GABA should be given on an empty stomach.

Because GABA works in conjunction with Niacinamide and Inositol in preventing anxiety and stress related messages from reaching the brain, Kirkman has added these nutrients to this hypoallergenic formula.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Niacinamide	10 mg	50%
Inositol	10 mg	*
GABA	150 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose and Silicon Dioxide.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Children and Adults: Three to eight capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
034/100	GABA Capsules	100 Capsules	\$10.00
034/250	GABA Capsules	250 Capsules	\$20.00



GLUTAMINE

Hypoallergenic Capsules

Glutamine is an amino acid which is required by the body for good health as it is involved in many critical body functions. The body can synthesize glutamine, however in times of stress, infection or disease, it can not make enough and supplementation is desired to prevent a deficiency. Glutamine could be a much overlooked nutrient in the world of autism. The following body processes are involved with glutamine:

- Glutamine strengthens the immune system
- Glutamine helps heal intestinal tissue
- Glutamine enhances mental functioning
- Glutamine synthesizes skeletal muscle proteins
- Glutamine can reduce cravings for sugar

Glutamine is necessary for the health and continuous actions of phagocytes, immune system cells which engulf and "eat up" foreign and worn out matter in the body. When glutamine levels are low, this process is reduced.

Glutamine is instrumental in intestinal repair, especially when illness or infection is present. When the intestines lack proper food to digest, cells can atrophy because they lack the stimulation they need from digesting food. When this occurs, glutamine is then lacking. Because glutamine is required for intestinal healing, the usual thick lining of the intestinal wall gives way to thin unhealthy tissue which can be easily eroded, ulcerated or permeated with bacteria or yeast. The invading organisms then can penetrate the intestinal wall and enter nearby tissue or the bloodstream. This could be important information for the intestinal health of autistic patients and the "leaky gut" phenomenon.

Glutamine is essential for cerebral function and is also often referred to as "brain fuel". It enhances brain function and mental activity and is the basis of the building blocks for RNA and DNA.

Glutamine is necessary for the synthesis of skeletal muscle proteins. Supplementation can be important in times of disease, bed rest, stress or trauma to prevent muscle wasting and muscle weakness. If enough glutamine is available, this loss of skeletal muscle can be avoided.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
L-Glutamine	250 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose and Magnesium Stearate.

Recommended Usage:

Children and Adults: Four to twelve capsules daily or as directed.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Packaging & Prices:

Item #	Description	Package Size	Price
033/100	L-Glutamine Capsules	100 Capsules	\$12.00
033/250	L-Glutamine Capsules	250 Capsules	\$22.00



GLYCINE 250 MG.

Hypoallergenic Capsules

Most of the physicians doing heavy metal detoxification have recently added additional amounts of the amino acid glycine to their protocols. In examining all the benefits of glycine supplementation, it is easy to understand this addition to the chelation regimen.

Glycine alleviates the toxic effects of several substances including phenol, benzoic acid and methionine. Glycine along with cysteine have the ability to stimulate glutathione synthesis in the body. Glutathione is the single most important antioxidant detoxification system in all living things. Mineral salts of glycine have the ability to chelate aluminum and transport it out of the body.

The detoxifying properties of glycine plus its ability to stimulate glutathione production make it important in maintaining healthy hepatic and kidney function. Glycine is also involved in the production of DNA and is involved in wound healing.

Glycine and Taurine (another amino acid) have virtually the same action on neurons in the brain. Both have a relaxing, calming effect, another desirable response when doing stress inducing metal detoxification using DMSA and/or lipoic acid. Glycine and Taurine work synergistically with each other.

Kirkman Glycine capsules are part of the HypoAllergenic line and contains only glycine and plant cellulose. No other additives are present.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Glycine	250 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Recommended Usage:

Children and Adults: Two capsules daily (500 mg.)

Packaging & Price:

Item #	Description	Package Size	Price
091/200	Glycine Capsules	200 Capsules	\$12.50



N-ACETYL CYSTEINE 100 MG.

Hypoallergenic Capsules

N-Acetyl Cysteine (NAC) is used by some physicians during heavy metal detoxification. NAC use increases antioxidant status in individuals with impaired glutathione synthesis. This action is believed to be a result of NAC acting as a precursor for glutathione.

If glutathione conjugation is slow, it will slow the liver's excretion of heavy metals in the bile. NAC can correct this problem thereby preventing side effects from detoxification, chemotherapy and radiation.

NAC is not tolerated well by everyone and certain conditions such as high plasma cysteine contraindicate its use. Your physician needs to be the judge in determining whether NAC should be in your own regimen.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
N-Acetyl Cysteine	100 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Recommended Usage:

Children and Adults: As directed by your physician

Packaging & Price:

Item #	Description	Package Size	Price
094/100	N-Acetyl Cysteine Capsules	100 Capsules	\$14.00



TAURINE

Hypoallergenic Capsules

Taurine has been labeled the “brain amino acid” by some of the medical community. Taurine is abundant in the tissues of the central nervous system, skeletal muscles and in heart tissue. Taurine acts on the central nervous system by:

- Nourishing the brain cells
- Stabilizes brain cell membranes
- Works with choline to help maintain the neurotransmitters that promote thinking ability

Taurine may help prevent seizures and in some situations brain malfunctions such as epilepsy can respond to taurine.

Dr. Jeff Bradstreet, a physician in Palm Bay, Florida who treats autistic patients reports good success in treating autism with Taurine. He uses 1000 mg. several times daily.

Taurine is found in high concentrations in the brain and actually has a protective effect on brain cells and tissue. It is found to be four times more concentrated in children’s brains than in adults. Taurine may be beneficial in other developmental disorders and in Down’s Syndrome.

Taurine has also been shown to have a positive protective effect on good vision. Animals fed a taurine-deficient diet will develop macular degeneration which is a leading cause of blindness in older adults in the United States. Taurine may prevent macular degeneration by protecting the rods and cones of the retina that are instrumental for good vision.

Kirkman’s Taurine capsules are part of the hypoallergenic product line which contain no known allergens and are made with capsule shells made of plant cellulose instead of the traditional animal gelatin shell.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Taurine	325 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Children: Three to four capsules daily or as directed

Adults: Four to eight capsules daily or as directed

Packaging & Price:

Item #	Description	Package Size	Price
032/100	Taurine Capsules	100 Capsules	\$12.00
032/250	Taurine Capsules	250 Capsules	\$25.00





NOTES

Casein Free Gluten Free Sugar Free Fortified Functional Foods

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



KIRKMAN CASEIN/GLUTEN/SUGAR FREE FORTIFIED FUNCTIONAL FOODS

Many autistic children are required to be on a casein free, gluten free diet. Furthermore, many autistic children must avoid sugar because of intestinal dysbiosis. Couple these dietary restrictions with the fact that autistic children have compromised immune systems, and parents are faced with a very difficult task in providing proper nutrition in these children's diets. Getting enough calcium is especially difficult when kids are on a dairy free regimen. Immune boosting nutrients are critical for good health and are known to be absorbed better if given more than once a day and often show improved absorption when ingested with or in foods.

Kirkman has come up with one way to help, by formulating a line of **fortified foods which are rich in calcium and also contain other important vitamins, minerals, and immune boosters such as magnesium, zinc, vitamin E and vitamin C**. These food items are great tasting so the kids will enjoy eating them while they automatically get these very important, much needed nutrients.

Items in the line include:

- Five Recipe Cookie Mix (Sugar, Lemon, Chocolate Chip, Peanut Butter and Oatmeal Type)
- Doughnut Mix
- Pancake Mix (Also great as waffles)
- Sugar-Free Drink Mix

These product recipes contain none of the traditional grain or dairy products normally found in commercial preparations. Gluten containing grains have been replaced with rice flours, potato starch and tapioca while dairy components have been replaced with milk substitutes and non casein containing alternatives. Natural thickening agents including guar and xanthan gums are used instead of corn starch and other typical consistency modifiers. Sweeteners include sorbitol and sucralose, a completely safe, clinically tested, sweetening agent manufactured by a division of Johnson and Johnson™. Only natural flavorings are utilized.

These products contain sorbitol as a sweetener and bulking agent. Sorbitol is not tolerated well by some individuals. In these cases some gas or diarrhea can result. The Food and Drug Administration requires a label statement warning against diarrhea if the daily consumption of sorbitol exceeds 50 grams in an adult. Since we are usually dealing with children, proceed cautiously when introducing these products. Even though the amount of sorbitol in each of these food products is minimal per serving size, make sure the cumulative total is not in excess.

Also included in this functional food line are three naturally flavored syrups which can be used to flavor supplements, vitamin cocktails, or foods, plus they can be used as terrific syrups for pancakes or waffles. Flavors available are maple, strawberry and wild cherry. Some parents report diluting them slightly with water and then mixing in various supplements make it easy to get their children to comply with their vitamin regimen. They can also be used to sweeten foods and to make Popsicles. Get creative and experiment with them. They may surprise you and make giving nutritional supplements easier.



5 IN 1 "COOKIE BASE" MIX

(Calcium Enriched, also with Magnesium, Zinc and vitamin E)
Casein Free/Gluten Free/Sugar Free

A great tasting fortified cookie base with package instructions for sugar cookies, lemon cookies, chocolate chip cookies, peanut butter cookies and "oatmeal type" cookies.

Each cookie contains the following fortified nutrients:

		<i>% Daily Value</i>
Calcium	200 mg.	20%
Magnesium	10 mg.	2.5%
Zinc	5 mg.	33%
Vitamin E	10 IU	33%

INGREDIENTS: Brown rice flour, sweet rice flour, potato starch, sorbitol, calcium carbonate, calcium citrate, magnesium citrate, zinc citrate, dl-alpha tocopheryl acetate, xanthan gum, salt, baking soda, vanilla bean, baking powder, guar gum, natural flavors, and sucralose.

Each package makes approximately 50 cookies.

Packaging & Price:

Item #	Description	Package Size	Price
121/594	Five Recipe Cookie Base	594 g. (20.9 oz)	\$5.00



PANCAKE/WAFFLE MIX

(Calcium Rich with Vitamin E, Magnesium and Zinc added)
Casein Free/Gluten Free/Sugar Free

A terrific tasting pancake mix very rich in calcium and fortified to contain other immune boosting nutrients. This mix also makes great waffles. Each package makes approximately 24 pancakes.

Each pancake contains:

		<u>% Daily Value</u>
Calcium	450 mg.	45%
Magnesium	20 mg.	5%
Zinc	5.3 mg.	35%
Vitamin E	15 IU	50%

Note: Waffles may be larger depending on how they are made. If the package makes 12 waffles for instance, the above nutrient contents would double.

INGREDIENTS: White rice flour, potato starch, sorbitol, tapioca starch, calcium carbonate, magnesium citrate, zinc citrate, dl-alpha tocopheryl acetate, baking powder, xanthan gum, baking soda, natural flavoring, vanilla bean, and sucralose.

Packaging & Price:

Item #	Description	Package Size	Price
121/454	Pancake (Waffle) Mix	454 g. (16 oz)	\$5.00



DOUGHNUT MIX

(Calcium Enriched with Vitamin E, Magnesium and Zinc added)
Casein Free/Gluten Free/Sugar Free

A delicious, easy to use doughnut mix. This blend is rich in calcium and is also fortified with immune boosting nutrients. Each package makes approximately 30 doughnuts. Each doughnut contains:

		<u>% Daily Value</u>
Calcium	250 mg.	25%
Magnesium	10 mg.	2.5%
Zinc	5 mg.	33%
Vitamin E	15 IU	50%

INGREDIENTS: White rice flour, potato starch, sorbitol, tapioca starch, calcium carbonate, magnesium citrate, zinc citrate, dl-alpha tocopheryl acetate, soy flour, baking powder, xanthan gum, vanilla bean, apple pie spice, salt, sucralose.

Packaging & Price:

Item #	Description	Package Size	Price
123/434	Doughnut Mix	434 g. (15.3 oz)	\$5.00





TROPICAL PUNCH DRINK MIX

(Fortified with Calcium, Vitamin C, Magnesium and Zinc)
Casein Free/Gluten Free/Sugar Free
Low Calorie, Naturally Flavored

A delicious, healthy drink mix which can be enjoyed by the whole family. Dissolve 2/3 teaspoon (3.6 grams) in six ounces of cold water (more or less to suit taste). Add ice cubes and enjoy.

Each 2/3 teaspoon supplies:

		<i>% Daily Value</i>
Vitamin C	75 mg.	125%
Calcium	160 mg.	16%
Magnesium	15 mg.	4%
Zinc	6 mg.	40%

Ingredients: Sorbitol, Citric Acid, Calcium Carbonate, Ascorbic Acid, Magnesium Citrate, Zinc Citrate, Tapioca, Sodium Starch Glycolate, Natural Tropical Punch Flavoring, Silicon Dioxide, Sucralose, and Natural Grape Powder.

Packaging & Price:

Item #	Description	Package Size	Price
124/7	Tropical Punch Drink Mix	216 g. (7.6 oz)	\$9.50



FLAVORING SYRUP

Maple/Strawberry/Wild Cherry Flavors *Casein Free/Gluten Free/Sugar Free*

Kirkman's flavoring syrups are formulated for flavoring foods such as pancakes, waffles and other breakfast treats, and also for helping parents change the taste and texture of medicines and nutritional supplements their children must use. The maple syrup is great on pancakes and waffles and contains no sugar. The taste is every bit as good as the commercial maple syrups available in your grocery store which are loaded with sugar.

This syrup is very good at helping to mask nutritional supplements and medicines your child must take. It mixes easily into water, semi-solid foods, juices, etc. It can be heated, refrigerated or even frozen to flavor Popsicles. Frozen ices are becoming an excellent way of giving certain supplements because the cold diminishes some bad tastes (B vitamins for example).

Ingredients:

Maple Flavored Syrup - Glycerine, distilled water, natural maple flavoring, sucralose, sodium benzoate, potassium sorbate.

Strawberry Flavored Syrup - Glycerine, distilled water, natural strawberry flavoring, sucralose, sodium benzoate, potassium sorbate.

Wild Cherry Flavored Syrup - Glycerine, distilled water, natural wild cherry flavoring, sucralose, sodium benzoate, potassium sorbate.

Packaging & Price:

Item #	Description	Package Size	Price
125/8	Maple Flavoring Syrup	8 oz	\$7.00
126/8	Strawberry Flavoring Syrup	8 oz	\$7.00
127/8	Wild Cherry Flavoring Syrup	8 oz	\$7.00

Notes

Chelation Products

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



DMSA

25mg/50mg/100mg

Kirkman Laboratories now offers four products which are sold only through a physician approval process.

- “Di-Sulfhydryl 25 mg.” contains 25 mg. of DMSA (meso-2,3-Dimercapto Succinic Acid), in a flavored base
- “Di-Sulfhydryl 50 mg.” contains 50 mg. of DMSA in a flavored base
- “Di-Sulfhydryl Hypoallergenic 50 mg.” contains 50 mg. of DMSA
- “Di-Sulfhydryl Hypoallergenic 100 mg.” contains 100 mg. of DMSA

The first two products are in plant cellulose capsules and are in a flavored base which covers up the objectionable taste and odor of DMSA. These products can be swallowed or opened up so the contents can be mixed in water or juice for easy compliance, even in small children. When dispersed in water, juice or other suitable liquid, the contents are pleasant tasting and do not have the typical sulfur odor of DMSA.

The hypoallergenic versions contain only plant cellulose and are intended to be swallowed. Many parents, however are reporting excellent compliance by mixing in juice, lemonade or other beverages.

Products containing DMSA must be used only by individuals under the care of a physician due to potential side effects and due to the necessity of monitoring laboratory testing.

IMPORTANT

To order these products from Kirkman, your physician must do one of the following:

- 1. Call Kirkman with patient information and advise Kirkman of the physician's DEA number or**
- 2. Fax the patient information and DEA number (503) 682-0838 or**
- 3. E-mail the patient information and DEA number (phys@kirkmanlabs.com)**

Once this information is received from the physicians office, the Kirkman order desk can accept orders.



DMSA

25mg/50mg/100mg

Product Ingredients:

Di-Sulfhydryl 25 mg. Flavored

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
DMSA	25 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Meso-2,3-Dimercapto Succinic Acid, Citric Acid, Natural Flavorings, Plant Cellulose, Silicon Dioxide, Sucralose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Di-Sulfhydryl 50 mg. Flavored

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
DMSA	50 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Meso-2,3-Dimercapto Succinic Acid, Citric Acid, Natural Flavorings, Plant Cellulose, Silicon Dioxide, Sucralose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Di-Sulfhydryl 50 mg. Hypoallergenic

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
DMSA	50 mg	*

* Daily Value Not Established

Other Ingredients: Meso-2,3-Dimercapto Succinic Acid, Plant Cellulose, and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Di-Sulfhydryl 100 mg. Hypoallergenic

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
DMSA	100 mg	*

* Daily Value Not Established

Other Ingredients: Meso-2,3-Dimercapto Succinic Acid, Plant Cellulose, and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Recommended Usage:

DMSA must be used only by individuals under the care of a physician, who will prescribe the proper usage.

Packaging & Price:

Item #	Description	Package Size	Price
053/90	Di-Sulfhydryl (DMSA) 25 mg. Flavored Capsules	90 Capsules	\$40.00
053/180	Di-Sulfhydryl (DMSA) 25 mg. Flavored Capsules	180 Capsules	\$70.00
061/90	Di-Sulfhydryl (DMSA) 50 mg. Flavored Capsules	90 Capsules	\$70.00
060/90	Di-Sulfhydryl (DMSA) 50 mg Hypoallergenic Capsules	90 Capsules	\$50.00
070/90	Di-Sulfhydryl (DMSA) 100 mg Hypoallergenic Capsules	90 Capsules	\$95.00



ALPHA-LIPOIC ACID 25 MG

Flavored Capsules

Kirkman now offers alpha-lipoic acid capsules. Lipoic acid improves liver detoxification and also carries DMSA into the cells where it can more rapidly detoxify heavy metals. Lipoic acid is also one of the strongest anti-oxidant compounds available. It is important to use a high quality lipoic acid to get the desired effects. There is a lot of poor quality products in the US which may not be pure or fully potent. Kirkman uses exclusively LIPOEC® brand manufactured by COGNIS Nutrition and Health in LaGrange IL. In a comparison test of LIPOEC® against eight other manufacturer's lipoic acids, the COGNIS product far surpassed all others in purity and had a potency of 100%.

Kirkman's alpha-Lipoic Acid 25 mg. Flavored Capsules can be swallowed or opened up and the contents mixed with 2-3 oz. of water, juice or other suitable beverage. The flavored base covers up the objectionable burning sensation lipoic acid normally exhibits.

Product Ingredients:

Recommended Usage:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Alpha Lipoic Acid	25 mg	*

* Daily Value Not Established

Other Ingredients: Lipoic Acid, Sorbitol, Citric Acid, Plant Cellulose, Sucralose, Menthol Flavor, Silicon Dioxide, and Natural Fruit Flavor.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Packaging & Price:

Item #	Description	Package Size	Price
064/90	Alpha Lipoic Acid 25 mg. Capsules	90 Capsules	\$16.00



ALPHA-LIPOIC ACID 50 MG

Hypoallergenic Capsules

Kirkman now offers alpha-lipoic acid capsules. Lipoic acid improves liver detoxification and also carries DMSA into the cells where it can more rapidly detoxify heavy metals. Lipoic acid is also one of the strongest anti-oxidant compounds available. It is important to use a high quality lipoic acid to get the desired effects. There is a lot of poor quality products in the US which may not be pure or fully potent. Kirkman uses exclusively LIPOEC® brand manufactured by COGNIS Nutrition and Health in LaGrange IL. In a comparison test of LIPOEC® against eight other manufacturer's lipoic acids, the COGNIS product far surpassed all others in purity and had a potency of 100%.

Kirkman's alpha-Lipoic Acid 50 mg. Hypoallergenic Capsules should be swallowed. If swallowing the capsule is difficult for the individual, try using Kirkman's other Lipoic Acid product, 25mg. flavored capsules.

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Alpha Lipoic Acid	50 mg	*

* Daily Value Not Established

Other Ingredients: Lipoic Acid, Plant Cellulose, Menthol Flavor, and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Recommended Usage:

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Packaging & Price:

Item #	Description	Package Size	Price
065/90	Alpha Lipoic Acid 50 mg. Capsules	90 Capsules	\$20.00



CHELATION AID PRO-SUPPORT II

This product aids the chelation process and provides hepatic support during chelation. The formulation is as follows:

Each two capsules provide:

Reduced Glutathione	100 mg.
Glycine	150 mg.
Taurine	150 mg.
Vitamin C	60 mg.

This product is in a flavored base to cover up the objectionable taste and odor of some of the ingredients. The capsules may be swallowed or opened up and the contents mixed with 2-3 ounces of water or juice.

In this formulation, the Glutathione prevents DMSA from being inactivated in the body so it can bind to mercury. It is a strong antioxidant against toxins in the cell.

Vitamin C increases the conversion of organic mercury to the less toxic inorganic form, while Glycine and Taurine offer complete hepatic support.

Product Ingredients:

Supplement Facts		
Serving Size: 2 Capsules		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	60 mg	100%
Reduced Glutathione	100 mg	*
Glycine	150 mg	*
Taurine	150 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Citric Acid, Ascorbic Acid, Sodium Ascorbate, Natural Orange Flavor, Natural Menthol Flavor, Sucralose, Silicon Dioxide, and Magnesium Stearate (vegetable source).

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Recommended Usage:

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Recommended Usage:

Item #	Description	Package Size	Price
089/90	Chelation Aid Pro-Support II Flavored Capsules	90 Capsules	\$20.00
089/180	Chelation Aid Pro-Support II Flavored Capsules	180 Capsules	\$35.00



CHELATION AID PRO-SUPPORT II

Hypoallergenic Capsules

This product aids the chelation process and provides hepatic support during chelation. The formulation is as follows:

Each two capsules provide:

Reduced Glutathione	100 mg.
Glycine	150 mg.
Taurine	150 mg.
Vitamin C	60 mg.

The capsules may be swallowed or opened up and the contents mixed with 2-3 ounces of water or juice.

In this formulation, the Glutathione prevents DMSA from being inactivated in the body so it can bind to mercury. It is a strong antioxidant against toxins in the cell.

Vitamin C increases the conversion of organic mercury to the less toxic inorganic form, while Glycine and Taurine offer complete hepatic support.

Product Ingredients:

Supplement Facts		
Serving Size: 2 Capsules		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	60 mg	100%
Reduced Glutathione	100 mg	*
Glycine	150 mg	*
Taurine	150 mg	*
* Daily Value Not Established		

Other Ingredients: Calcium Sulfate, Ascorbic Acid, Sodium Ascorbate, Silicon Dioxide, and Calcium Caprylate.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Recommended Usage:

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Packaging & Price:

Item #	Description	Package Size	Price
090/90	Chelation Aid Pro-Support II Hypoallergenic Capsules	90 Capsules	\$20.00
090/180	Chelation Aid Pro-Support II Hypoallergenic Capsules	180 Capsules	\$35.00





GLYCINE 250 MG

Hypoallergenic Capsules

Most of the physicians doing heavy metal detoxification have recently added additional amounts of the amino acid glycine to their protocols. In examining all the benefits of glycine supplementation, it is easy to understand this addition to the chelation regimen.

Glycine alleviates the toxic effects of several substances including phenol, benzoic acid and methionine. Glycine along with cysteine have the ability to stimulate glutathione synthesis in the body. Glutathione is the single most important antioxidant detoxification system in all living things. Mineral salts of glycine have the ability to chelate aluminum and transport it out of the body.

The detoxifying properties of glycine plus its ability to stimulate glutathione production make it important in maintaining healthy hepatic and kidney function. Glycine is also involved in the production of DNA and is involved in wound healing.

Glycine and Taurine (another amino acid) have virtually the same action on neurons in the brain. Both have a relaxing, calming effect, another desirable response when doing stress inducing metal detoxification using DMSA and/or lipoic acid. Glycine and Taurine work synergistically with each other.

Kirkman Glycine capsules are part of the HypoAllergenic line and contains only glycine and plant cellulose. No other additives are present.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Glycine	250 mg	*
* Daily Value Not Established		

Other Ingredients: Plant Cellulose

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Recommended Usage:

Children and Adults: Two capsules daily (500 mg.)

Packaging & Price:

Item #	Description	Package Size	Price
091/200	Glycine Capsules	200 Capsules	\$12.50



MAGNESIUM GLYCINATE

Hypoallergenic Capsules

DMSA does not chelate aluminum. In order to remove aluminum during the chelation process, most physicians are using Magnesium Glycinate or intravenous vitamin C.

Magnesium Glycinate is not a good tasting chemical so compliance has been difficult for most parents. Kirkman has solved that problem. Our Magnesium Glycinate Hypoallergenic capsules are dosed at 100 mg. of elemental magnesium from 552 mg. of magnesium glycinate. The glycinate portion of this chemical is the chelating portion of this molecule. Kirkman uses only Albion brand magnesium glycinate because this is the only company with clinical studies which guarantee proper utilization. Magnesium glycinate is also an excellent source of magnesium which is gentle on the digestive system and does not cause diarrhea as many magnesium supplements do.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Magnesium (as Glycinate)	100 mg	25%
From:		
Magnesium Glycinate®	552 mg	*

* Percent Daily Value Not Established

Other Ingredients: Plant cellulose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

® Magnesium Glycinate is a registered trademark of Albion.

Recommended Usage:

One capsule daily or as directed by your physician.

Packaging & Prices:

Item #	Description	Package Size	Price
096/100	Magnesium Glycinate Hypoallergenic Capsules	100 Capsules	\$11.50





MAGNESIUM GLYCINATE

"Sweet" Powder

DMSA does not chelate aluminum. In order to remove aluminum during the chelation process, most physicians are using Magnesium Glycinate or intravenous vitamin C.

Magnesium Glycinate is not a good tasting chemical so compliance has been difficult for most parents. Kirkman has solved that problem. Our Magnesium Glycinate "Sweet" Powder is a naturally sweetened product which can be dissolved in juice with a resulting sweet palatable liquid. No bad taste is evident so compliance is easy. It can even be dissolved in water with only a slight aftertaste. Each 1/4 teaspoon (one gram) supplies 997 mg. of magnesium glycinate (in buffered form) containing 182 mg. of elemental magnesium. The glycinate portion of this chemical is the chelating portion of this molecule. Kirkman uses only Albion brand magnesium glycinate because this is the only company with clinical studies which guarantee proper utilization. Magnesium glycinate is also an excellent source of magnesium which is gentle on the digestive system and does not cause diarrhea as many magnesium supplements do.

Product Ingredients:

Supplement Facts

Serving Size: 1/4 teaspoon (1 gram)

Each Serving Contains	Amount per Serving	% Daily Value
Magnesium	182 mg	45%
From		
Magnesium Glycinate	997 mg	*

* Daily Value Not Established

Other Ingredients: Magnesium Glycinate and sucralose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Recommended Usage:

1/4 teaspoon daily or as directed by your physician.

Recommended Usage:

Item #	Description	Package Size	Price
092/4	Magnesium Glycinate Powder	4 oz	\$15.00



MELATONIN 1 MG

Chewable Tablets

Melatonin is a hormone secreted in the human body by the pineal gland. It is manufactured in that gland from serotonin. It is believed that manufacturing and secreting melatonin is the sole function of the pineal gland.

Melatonin supplementation is used principally for:

- Inducing sleep by curbing insomnia
- Reducing jet-lag
- As a powerful antioxidant

It is used in chelation because it protects against mercury even in the toxic thimerosal form. Melatonin is given by some physicians prior to starting chelation and during the DMSA "on days" as well as some of the "off days." Check with your physician for individual use.

Several double blind studies have shown that melatonin supplementation is effective in promoting sleep when melatonin levels are low. If one takes melatonin when levels are not reduced, then it has no effect. The reason for this is that the body normally secretes melatonin just before bedtime. Darkness stimulates melatonin secretion while light suppresses it. This process is all controlled by an internal body clock governing hormonal secretions and is called "natural circadian rhythm". Low melatonin levels are a very common cause of insomnia and restlessness.

In jet-lag, the natural body clock may not allow for secretion of melatonin at the appropriate time, thereby making melatonin supplementation useful.

Melatonin possesses antioxidant qualities. Rats fed melatonin live 24% longer than non supplemented rats and it is believed that its antioxidant qualities are responsible for this phenomenon.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Melatonin	1 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Mannitol, Sodium Starch Glycolate, Magnesium Stearate, and Natural Menthol Flavor.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

Children or adults: One tablet one hour before bedtime. Tablets may be dissolved under the tongue or chewed.

Packaging & Price:

Item #	Description	Package Size	Price
068/100	Melatonin 1mg Capsules	100 Capsules	\$7.00





MELATONIN 3 MG

Chewable Tablets

Melatonin is a hormone secreted in the human body by the pineal gland. It is manufactured in that gland from serotonin. It is believed that manufacturing and secreting melatonin is the sole function of the pineal gland.

Melatonin supplementation is used principally for:

- Inducing sleep by curbing insomnia
- Reducing jet-lag
- As a powerful antioxidant

It is used in chelation because it protects against mercury even in the toxic thimerosal form. Melatonin is given by some physicians prior to starting chelation and during the DMSA "on days" as well as some of the "off days." Check with your physician for individual use.

Several double blind studies have shown that melatonin supplementation is effective in promoting sleep when melatonin levels are low. If one takes melatonin when levels are not reduced, then it has no effect. The reason for this is that the body normally secretes melatonin just before bedtime. Darkness stimulates melatonin secretion while light suppresses it. This process is all controlled by an internal body clock governing hormonal secretions and is called "natural circadian rhythm". Low melatonin levels are a very common cause of insomnia and restlessness.

In jet-lag, the natural body clock may not allow for secretion of melatonin at the appropriate time, thereby making melatonin supplementation useful.

Melatonin possesses antioxidant qualities. Rats fed melatonin live 24% longer than non supplemented rats and it is believed that its antioxidant qualities are responsible for this phenomenon.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Melatonin	3 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Mannitol, Sodium Starch Glycolate, Magnesium Stearate, and Natural Menthol Flavor.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

Children or adults: One tablet one hour before bedtime. Tablets may be dissolved under the tongue or chewed.

Packaging & Price:

Item #	Description	Package Size	Price
069/100	Melatonin 3mg Capsules	100 Capsules	\$14.00



MILK THISTLE

Capsules

Milk Thistle is a herb recognized since ancient times for its medicinal value. It grows in moderate climates of North America and Europe, easily recognized by its large purple thistle-like flower heads.

By the Middle Ages, the seed of the milk thistle plant was used to treat liver diseases, to promote the flow of bile and as a general tonic for the stomach, spleen, gallbladder and liver.

Milk Thistle contains three potent liver protective flavonoids: silybin, silydianin and silychristin. Collectively these are known as silymarin. To be effective milk thistle products must be standardized to contain this active blend. Kirkman's Milk Thistle is standardized to contain 80% silymarin. Silymarin counteracts the toxic effects of a wide variety of poisons including alcohol, acetaminophen overdose, carbon tetrachloride and heavy metals. Recent research has indicated that silymarin helps to protect against the depletion of the antioxidant glutathione in liver cells.

Chelation of heavy metals can be taxing on the liver. The movement of the metals during the process plus the action of DMSA, DMPS, or lipoic acid in the body can put a stress on the liver. As a result, many chelating physicians are recommending milk thistle supplementation during chelation.

Kirkman offers Milk Thistle Hypoallergenic Capsules 100 mg. which provide 80 mg. silymarin.

Product Ingredients:

Recommended Usage:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Milk Thistle (Seeds)	100 mg	*
containing:		
Silymarin	80 mg	*
* Daily Value Not Established		

One to two capsules or as directed by your physician.

Other Ingredients: Milk Thistle, Plant Cellulose, and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Packaging & Price:

Item #	Description	Package Size	Price
077/100	Milk Thistle Capsules	100 Capsules	\$14.00





MULTIPLE MINERAL COMPLEX PRO-SUPPORT

Hypoallergenic Capsules

Mineral Supplementation is critical in chelation. Some doctors give the minerals only on the DMSA "off" days, others throughout the chelation steps. Kirkman offers Multi-Mineral Complex Pro-Support Hypoallergenic capsules for mineral replacement. This formulation has rather low zinc levels so as to allow for the often recommended zinc supplementation prior to bedtime. Zinc supplements taken away from food are better absorbed. Kirkman offers liquid zinc and zinc capsules for the additional zinc as recommended by your physician. (See our Zinc Product Article Section in the mineral section of this book)

Product Ingredients:

Supplement Facts		
Serving Size: 2 Capsules		
Each Serving Contains	Amount per Serving	% Daily Value
Calcium	125 mg	12.5%
Iron	2 mg	11%
Magnesium	60 mg	15%
Zinc	7 mg	46%
Iodine	10 mcg	6%
Manganese	300 mcg	15%
Selenium	25 mcg	35%
Chromium	30 mcg	25%
Molybdenum	5 mcg	6%
Boron	500 mcg	*

* Daily Value Not Established

Ingredients: Calcium citrate, ferrous fumarate, magnesium citrate, magnesium glycinate, magnesium oxide, zinc citrate, manganese citrate, selenium amino acid complex (AAC), chromium AAC, molybdenum AAC, boron AAC, potassium iodide, and magnesium stearate (vegetable source).

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Packaging & Price:

Item #	Description	Package Size	Price
063/180	Multi-Mineral Complex Pro-Support Capsules	180 Capsules	\$15.00



MULTIPLE VITAMIN PRO-SUPPORT

Hypoallergenic Capsules

Some of the physicians doing chelation recommend no minerals on the DMSA days. Since Kirkman's Nu-Thera products and most multiple supplements contain minerals, a vitamin product without minerals may be desired. As a result, Kirkman is now offering Multiple Vitamin Pro-Support in a Hypoallergenic formula encapsulated in a number 3 plant cellulose capsule.

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	2500 IU	50%
Vitamin D	200 IU	50%
Vitamin E (Acetate)	30 IU	100%
Vitamin C	60 mg	100%
Vitamin B-1 (Mononitrate)	3 mg	200%
Riboflavin (B-2)	3.4 mg	200%
Niacinamide	20 mg	100%
Vitamin B-6 (Pyridoxine Hydrochloride)	4 mg	200%
Folic Acid	400 mcg	100%
Vitamin B-12	12 mcg	200%
Biotin	100 mcg	33%
Pantothenic Acid (d-calcium pantothenate)	10 mg	100%

* Daily Value Not Established

Other Ingredients: Plant Cellulose, Magnesium Stearate, and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Packaging & Price:

Item #	Description	Package Size	Price
067/90	Multi-Vitamin Pro-Support Capsules	90 Capsules	\$10.00



N-ACETYL CYSTEINE 100 MG

Hypoallergenic Capsules

N-Acetyl Cysteine (NAC) is used by some physicians during heavy metal detoxification. NAC use increases antioxidant status in individuals with impaired glutathione synthesis. This action is believed to be a result of NAC acting as a precursor for glutathione.

If glutathione conjugation is slow, it will slow the liver's excretion of heavy metals in the bile. NAC can correct this problem thereby preventing side effects from detoxification, chemotherapy and radiation.

NAC is not tolerated well by everyone and certain conditions such as high plasma cysteine contraindicate its use. Your physician needs to be the judge in determining whether NAC should be in your own regimen.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
N-Acetyl Cysteine	100 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Recommended Usage:

The medical practitioner supervising the chelation process will give the recommended dosage instructions based upon the patient's individual needs.

Packaging & Price:

Item #	Description	Package Size	Price
094/100	N-Acetyl Cysteine Capsules	100 Capsules	\$14.00



REDUCED L-GLUTATHIONE 100 MG

Hypoallergenic Capsules

Glutathione is a protein that is produced in the liver from the amino acids glycine, glutamic acid and cysteine. It is a very powerful antioxidant that prevents formation of free radicals and inhibits cellular damage. It protects the body against the damage caused by the exposure to toxins such as alcohol and cigarette smoke and is a powerful detoxifier of heavy metals. It is often used in the treatment of blood and liver disorders.

Most physicians who are doing heavy metal chelation with DMSA and/or lipoic acid are supplementing with glutathione because of its detoxifying effects. Glutathione appears to increase the effectiveness of the DMSA and lipoic acid. The "L" reduced form of glutathione is the most active form and is the form Kirkman uses.

Kirkman's Glutathione capsules are hypoallergenic and contain no casein, gluten, wheat, corn, soy, dairy products, sugar, artificial colors or artificial flavors.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
L-Glutathione (Reduced Form)	100 mg	*

* Daily Value Not Established

Other Ingredients: L-Glutathione, Plant Cellulose, Leucine, and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Recommended Usage:

One capsule daily or as directed by your physician.

Packaging & Price:

Item #	Description	Package Size	Price
076/100	Reduced L-Glutathione Capsules	100 Capsules	\$20.00



SELENIUM 100 MCG

Hypoallergenic Capsules

Selenium is an essential trace mineral which functions primarily as an anti-oxidant in the body. It works with vitamin E in preventing free radical damage to cell membranes. Low levels of selenium are associated with a higher risk of cancer, cardiovascular disease, immune deficiencies and premature aging.

Selenium deficiency results in depressed immune function due to decreased levels of white blood cells and natural killer cells. Increased susceptibility to infections results. With the yeast and bacterial infections usually present in autism, selenium is an important supplement.

Selenium is antagonistic to heavy metals including lead, mercury, aluminum and cadmium. Selenium actually aids in their removal from the body. As a result doctors doing DMSA and Lipoic Acid chelation therapy supplement with high levels of selenium, 100 to 200 mcg.

Kirkman's selenium capsules utilize L-Selenomethionine as the selenium source. This is a biologically active form which is very effectively absorbed in clinical studies. This product is hypoallergenic in that it contains no casein, gluten, wheat, corn, dairy products, artificial flavors/colors or soy.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Selenium	100 mcg	142%

Other Ingredients: Plant cellulose, L-selenomethionine, and L-Leucine.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings and flavorings.

Recommended Usage:

One to two capsules daily or as directed.

Packaging & Price:

Item #	Description	Package Size	Price
071/100	Selenium Hypoallergenic Capsules	100 Capsules	\$10.00



TAURINE

Hypoallergenic Capsules

Taurine has been labeled the “brain amino acid” by some of the medical community. Taurine is abundant in the tissues of the central nervous system, skeletal muscles and in heart tissue. Taurine acts on the central nervous system by:

- Nourishing the brain cells
- Stabilizes brain cell membranes
- Works with choline to help maintain the neurotransmitters that promote thinking ability

Taurine may help prevent seizures and in some situations brain malfunctions such as epilepsy can respond to taurine.

Dr. Jeff Bradstreet, a physician in Palm Bay, Florida who treats autistic patients reports good success in treating autism with Taurine. He uses 1000 mg. several times daily.

Taurine is found in high concentrations in the brain and actually has a protective effect on brain cells and tissue. It is found to be four times more concentrated in children’s brains than in adults. Taurine may be beneficial in other developmental disorders and in Down’s Syndrome.

Taurine has also been shown to have a positive protective effect on good vision. Animals fed a taurine-deficient diet will develop macular degeneration which is a leading cause of blindness in older adults in the United States. Taurine may prevent macular degeneration by protecting the rods and cones of the retina that are instrumental for good vision.

Kirkman’s Taurine capsules are part of the hypoallergenic product line which contain no known allergens and are made with capsule shells made of plant cellulose instead of the traditional animal gelatin shell.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Taurine	325 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Children: Three to four capsules daily or as directed

Adults: Four to eight capsules daily or as directed

Packaging & Price:

Item #	Description	Package Size	Price
032/100	Taurine Capsules	100 Capsules	\$12.00
032/250	Taurine Capsules	250 Capsules	\$25.00





NOTES

Colostrum

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



COLOSTRUM GOLD® LIQUID

Colostrum is a potent immune defense against bad bacteria and yeast for an autistic child and has been called “nature’s first food”. All female mammals produce Colostrum just before they give birth. The yellow fluid is excreted for approximately three days following birth. After this, Colostrum is no longer secreted with the milk.

Colostrum supplies immune and growth factors and a perfect combination of vitamins and minerals to insure the health, vitality, and growth of the newborn.

Colostrum is highly beneficial in the unique manner in which it provides the body with numerous immune factors in the stomach and intestinal tract. This makes Colostrum very effective against yeast and harmful bacteria.

Fortunately the numerous immune factors found in Colostrum are transferable from one species to another. This means that humans can use the immune-rich Colostrum from cows.

Kirkman's Colostrum Gold® has been perfected by quality control methods to yield a pure and potent product. Colostrum is obtained from hormone, pesticide and antibiotic free cows only during the first 24 hours after they give birth.

Kirkman's Colostrum Gold® liquid is:

- manufactured according to GMP(Good Manufacturing Practices)
- sourced from USDA and FDA certified dairies
- collected within 12 hours of production
- free of synthetic hormones, pesticides and antibiotics
- processed using minimal heat to ensure the bioavailability of its nutritional factors
- unadulterated to maintain its natural wholeness and nutrition
- formulated for autistic children and adults to be lactose, gluten and casein free.

Product Ingredients:

Supplement Facts

Serving Size: 1/2 Teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Bovine Colostrum	2.5 grams	*

* Daily Value Not Established

Other Ingredients: Sucralose, Natural Raspberry Flavoring, and Citric Acid.

Recommended Usage:

1/2 Teaspoon twice a day.

Note: Take 1/2 hour before mealtime.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Packaging & Price:

Item #	Description	Package Size	Price
803/4	Colostrum Gold® Flavored Liquid	4 oz.	\$20.00
803/8	Colostrum Gold® Flavored Liquid	8 oz.	\$34.00
803/16	Colostrum Gold® Flavored Liquid	16 oz.	\$49.00



COLOSTRUM GOLD®

HYPOALLERGENIC LIQUID

Colostrum is a potent immune defense against bad bacteria and yeast for an autistic child and has been called “nature’s first food”. All female mammals produce Colostrum just before they give birth. The yellow fluid is excreted for approximately three days following birth. After this, Colostrum is no longer secreted with the milk.

Colostrum supplies immune and growth factors and a perfect combination of vitamins and minerals to insure the health, vitality, and growth of the newborn.

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- sourced from USDA and FDA certified dairies
- collected within 12 hours of production
- free of synthetic hormones, pesticides and antibiotics
- processed using minimal heat to ensure the bioavailability of its nutritional factors
- unadulterated to maintain its natural wholeness and nutrition
- formulated for autistic children and adults to be lactose, gluten and casein free.
- contains no flavors, sweeteners, preservatives or diluents.

Product Ingredients:

Supplement Facts

Serving Size: 1/2 Teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Bovine Colostrum	2.5 grams	*

* Daily Value Not Established

Recommended Usage:

1/2 Teaspoon twice a day.

Note: Take 1/2 hour before mealtime.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Packaging & Price:

Item #	Description	Package Size	Price
804/4	Colostrum Gold® Unflavored Liquid	4 oz.	\$20.00
804/8	Colostrum Gold® Unflavored Liquid	8 oz.	\$34.00
804/16	Colostrum Gold® Unflavored Liquid	16 oz.	\$49.00





NOTES

CoEnzyme Q 10 (CoQ10)

One of the most versatile, multi-purpose nutritional supplements used in autism is CoEnzyme Q-10 along with its analog Idebenone. The powerful anti-oxidant properties of these compounds help guard against free radical damage making them also useful in heavy metal detoxification. Furthermore, these compounds improve immune function, mood, social skills and focus. Candida inhibition is another important effect. The following articles describe in more detail the importance of CoQ10 and Idebenone in autism.

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



COENZYME Q10 (COQ10) TABLETS

Coenzyme Q10 is known also as “ubiquinone” and most commonly as CoQ10. This substance is the energy producing unit of our body cells. Every process in our bodies requires CoQ10.

The human body manufactures CoQ10 but many people don’t make it efficiently due to the highly complicated biochemical process involved. Diets and digestive problems in autism certainly suggest the possibility of a CoQ10 deficiency.

Benefits of CoQ10 in autism are:

- Supplies energy necessary for proper Immune Response
- Strong antioxidant power to help prevent free radical damage
- Provides energy for the natural detoxification process in the liver
- Helps fight off Candida and bacterial and viral infections
- Helps correct immunodeficiencies
- Enhanced Focus
- Mood Elevation
- Desire to engage in more conversation

Kirkman’s CoQ10 comes in 25 mg. and 100 mg. chewable tablets which are sugar free and naturally flavored. The tablets are casein, gluten, preservative and color free as well.

Product Ingredients:

25 mg. Chewable Tablets

Supplement Facts

Serving Size: 1 Tablet

Each Serving Contains	Amount per Serving	% Daily Value
CoQ10 Enzyme	25 mg	*

* Daily Value Not Established

Other Ingredients: Silica, Magnesium Stearate, Stearic Acid, Sorbitol, Citric Acid, and Natural Raspberry Flavor.

100 mg. Chewable Tablets

Supplement Facts

Serving Size: 1 Tablet

Each Serving Contains	Amount per Serving	% Daily Value
CoQ10 Enzyme	100 mg	*

* Daily Value Not Established

Other Ingredients: Silica, Magnesium Stearate, Stearic Acid, Sorbitol, Citric Acid, and Natural Raspberry Flavor.

Recommended Usage:

Children 2-5 years of age	One tablet daily
Children 6-10 years	Two tablets daily
Adults and older children	Three to four tablets daily

DOES NOT CONTAIN: sugar, starch, soy, fish oil, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial coloring.

Packaging & Price:

Item #	Description	Package Size	Price
010/100	CoQ10 25 mg. Tablets	100 Tablets	\$20.00
010/250	CoQ10 25 mg. Tablets	250 Tablets	\$45.00
220/100	CoQ10 100 mg. Tablets	100 Tablets	\$35.00



COENZYME Q10 (COQ10)

Hypoallergenic Capsules

Coenzyme Q10 is known also as “ubiquinone” and most commonly as CoQ10. This substance is the energy producing unit of our body cells. Every process in our bodies requires CoQ10.

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- Provides energy for the natural detoxification process in the liver
- Helps fight off Candida and bacterial and viral infections
- Helps correct immunodeficiencies
- Enhanced Focus
- Mood Elevation
- Desire to engage in more conversation

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
CoQ10 Enzyme	25 mg	*

* Daily Value Not Established

Other Ingredients: Plant cellulose, silicon dioxide, and magnesium stearate (vegetable).

DOES NOT CONTAIN: sugar, starch, soy, fish oil, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial coloring.

Recommended Usage:

Small Children: One to two capsules daily
Older Children & Adults: Two to four capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
038/100	CoQ10 25 mg. Hypoallergenic Capsules	100 Capsules	\$25.00
038/250	CoQ10 25 mg. Hypoallergenic Capsules	250 Capsules	\$58.00



IDEBENONE

HYPOALLERGENIC CAPSULES

Idebenone is an analog (variation) of Coenzyme Q10, a powerful anti-oxidant biochemical known also as “ubiquinone” and most commonly as CoQ10. This substance is the energy producing unit of our body cells. Every process in our bodies requires CoQ10. Without CoQ10 life stops.

Benefits of CoQ10 in autism are:

- Supplies energy necessary for proper Immune Response
- Strong antioxidant power to help prevent free radical damage
- Provides energy for the natural detoxification process in the liver
- Helps fight off Candida and bacterial and viral infections
- Helps correct immunodeficiencies
- Enhanced Focus
- Mood Elevation
- Desire to engage in more conversation

Idebenone supplies the all of the same benefits as CoQ10 plus some distinct advantages based on its more complex chemical structure. Though very similar in chemical make-up to CoQ10, its longer chain organic structure gives it extra powerful anti-oxidant properties making it a more effective “free radical quencher” resulting in less cell and tissue damage.

Some leading doctors treating autism believe that Idebenone offers three very distinct advantages over CoQ10 in supplementing developmental disorders.

- Studies show that Idebenone enhances brain structure and function
- Its superior anti-oxidant properties protect body organs more efficiently
- Offers protection against excitatory amino acid neurotoxicity from ingestion of these ingredients through the diet (Examples: MSG, artificial sweeteners, canned soups and meats, spices, etc.)

Product Ingredients:

Supplement Facts		
Serving Size: 1 Capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Idebenone	45 mg	*
* Daily Value Not Established		

Other Ingredients: Plant cellulose, silicon dioxide, and magnesium stearate (vegetable).

DOES NOT CONTAIN: sugar, starch, soy, fish oil, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial coloring.

Recommended Usage:

Small Children: One to two capsules daily
 Older Children & Adults: Two to four capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
217/60	Idebenone 45 mg. Hypoallergenic Capsules	60 Capsules	\$25.00

DMG

(Dimethylglycine)

TMG

(Trimethylglycine)

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



DMG (DIMETHYLGLYCINE)

Hypoallergenic Capsules

This natural food supplement has been used for years by athletes and others looking for added stamina, higher blood oxygenation, and improved immune systems. In 1965 two Russian investigators published a report showing considerable improvement in the speech of handicapped children who had not been able to use speech to communicate. A later study of autistic children conducted by Lee Dae Kun, Director of the Pusan (Korea) Research Center on Child Problems found that 80% of those participating showed benefits from the use of DMG while 20% did not. These well documented studies show a beneficial relationship between DMG and improved behavior in autistic patients.

Dr. Bernard Rimland, Director of the Autism Research Institute, has suggested that parents of autistic children and adults try DMG.

Each Kirkman DMG capsule contains 125 mg of DMG. The cellulose based capsules are hypoallergenic. The capsules are a very small size for ease of swallowing, but can be pulled apart and the powder ingredient mixed in a food or beverage if desired. Kirkman DMG capsules are casein and gluten free.

- 100% Hypoallergenic
- Casein & Gluten Free
- Easy to use small capsule size that can be pulled apart

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Dimethylglycine (HCL)	125 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose, Magnesium Stearate and Silica.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Capsules

Small Children 1 – 4 capsules per day
 Older Children & Adults 5 to 8 capsules per day

1 time per day at the beginning of the day

Packaging & Price:

Item #	Description	Package Size	Price
020/100	DMG (Dimethylglycine) Capsules	100 Capsules	\$22.00
020/250	DMG (Dimethylglycine) Capsules	250 Capsules	\$44.00



DMG (DIMETHYLGLYCINE) LIQUID

This natural food supplement has been used for years by athletes and others looking for added stamina, higher blood oxygenation, and improved immune systems. In 1965 two Russian investigators published a report showing considerable improvement in the speech of handicapped children who had not been able to use speech to communicate. A later study of autistic children conducted by Lee Dae Kun, Director of the Pusan (Korea) Research Center on Child Problems found that 80% of those participating showed benefits from the use of DMG while 20% did not. These well documented studies show a beneficial relationship between DMG and improved behavior in autistic patients.

Dr. Bernard Rimland, Director of the Autism Research Institute, has suggested that parents of autistic children and adults try DMG.

Kirkman's DMG liquid has a pleasant raspberry flavor and is stabilized for a long shelf life. As a liquid it is especially easy to use with small children who cannot swallow capsules. As with all Kirkman products, the DMG liquid is casein and gluten free.

- Pleasant Raspberry Flavor
- Casein & Gluten Free
- Easy to use with small children

Product Ingredients:

Supplement Facts

Serving Size: 1teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Dimethylglycine (HCL)	125 mg	*

* Daily Value Not Established

Other Ingredients: Potassium Sorbate, Sodium citrate, Glycerine, Sorbitol, Natural Raspberry Flavoring, Purified Water, and Editate Sodinate.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Teaspoons

Small Children	1 – 4 teaspoons per day
Older Children & Adults	5 to 8 teaspoons per day

1 time per day at the beginning of the day.

Packaging & Price:

Item #	Description	Package Size	Price
008/16	DMG (Dimethylglycine) Liquid	16 oz	\$22.00





DMG WITH FOLIC ACID & VITAMIN B12

Hypoallergenic Capsules

This natural food supplement has been used for years by athletes and others looking for added stamina, higher blood oxygenation, and improved immune systems. In 1965 two Russian investigators published a report showing considerable improvement in the speech of handicapped children who had not been able to use speech to communicate. A later study of autistic children conducted by Lee Dae Kun, Director of the Pusan (Korea) Research Center on Child Problems found that 80% of those participating showed benefits from the use of DMG while 20% did not. These well documented studies show a beneficial relationship between DMG and improved behavior in autistic patients.

Dr. Bernard Rimland, Director of the Autism Research Institute, has suggested that parents of autistic children and adults try DMG. DMG can affect the amount of folic acid in our body. To maintain the proper balance of folic acid, Kirkman offers a DMG with added folic acid and vitamin B-12. In most cases this will prevent hyperactivity which is one symptom of folic acid deficiency. Because folic acid can sometimes mask a B-12 deficiency, vitamin B-12 has been added as well.

Each Kirkman DMG capsule contains 125 mg of DMG from DMG hydrochloride plus 400 mcg. of folic acid and 6 mcg. of Vitamin B-12. The cellulose based capsules are hypoallergenic. The capsules are a very small size for ease of swallowing, but can be pulled apart and the powder ingredient mixed in a food or beverage if desired. Kirkman DMG capsules are casein and gluten free.

- 100% Hypoallergenic
- Casein & Gluten Free
- Easy to use small capsule size that can be pulled apart

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	400 mcg	100%
Vitamin B-12	6 mcg	100%
Dimethylglycine (HCL)	125 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose, Magnesium Stearate and Silica.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Capsules

Small Children 1 – 4 capsules per day
 Older Children & Adults 5 to 8 capsules per day

1 time per day at the beginning of the day.

Packaging & Price:

Item #	Description	Package Size	Price
027/100	DMG (Dimethylglycine) w/ Folic Acid & B-12 Capsules	100 Capsules	\$28.00
027/250	DMG (Dimethylglycine) w/ Folic Acid & B-12 Capsules	250 Capsules	\$49.00



DMG WITH FOLIC ACID & VITAMIN B12

LIQUID

DMG can affect the amount of folic acid in our body. To maintain the proper balance of folic acid, Kirkman Labs has developed a DMG product combined with Folic Acid and vitamin B12. In most cases this will prevent hyperactivity which is one symptom of folic acid deficiency. Because added folic acid can sometimes mask a vitamin B12 deficiency, vitamin B12 has been added to the product as well.

Kirkman's DMG with Folic Acid and Vitamin B12 is a pleasant tasting liquid. It can be used either alone or mixed with other beverages. It contains a stabilizer for extended shelf life. Kirkman's DMG with Folic Acid and Vitamin B12 is casein and gluten free.

- Easy to use and pleasant tasting liquid
- Fortified with Folic Acid and Vitamin B12 to reduce hyperactivity
- Stabilized for extended shelf life
- Casein & gluten free

Product Ingredients:

Supplement Facts

Serving Size: 1 teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	400 mcg	100%
Vitamin B-12	6 mcg	100%
Dimethylglycine (HCL)	125 mg	*

* Daily Value Not Established

Other Ingredients: Potassium Sorbate, Sodium citrate, Glycerine, Sorbitol, Natural Raspberry Flavoring, Purified Water, and Editate Sodinate.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Liquid

Small Children	1 - 4 teaspoons per day
Older Children & Adults	5 - 8 teaspoons per day

1 time per day at the beginning of the day.

Packaging & Prices:

Item #	Description	Package Size	Price
009/16	DMG (Dimethylglycine) w/ Folic Acid & B-12 Liquid	16 oz	\$28.00



TMG WITH FOLIC ACID & VITAMIN B12

LIQUID

TMG is DMG with one more methyl group. TMG stands for Trimethylglycine while DMG stands for Dimethylglycine. All TMG products are casein and gluten free.

DMG is well known in the autistic community. For many, it improves speech, behavior, eye contact, social skills and energy levels. TMG is a newer compound with a much shorter clinical history. TMG provides many of the same benefits of DMG, plus some additional benefits to some individuals which are attributed to the extra methyl group. This extra methyl group helps reduce harmful homocystein levels while simultaneously stimulating the production of a precursor called SAME. SAME then in turn raises serotonin levels acting as a natural antidepressant.

TMG is the product of choice in autistic children who are undermethylated which is about 45% of the kids. In children who are overmethylated or normal in methyl activity, DMG would be the product of choice. Only your physician can determine these conditions.

The liquid has a pleasant sweet taste and includes Folic Acid and B-12.

Product Ingredients:

Supplement Facts

Serving Size: 1 teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	200 mcg	50%
Vitamin B-12	6 mcg	100%
Trimethylglycine	500 mg	*

* Daily Value Not Established

Other Ingredients: Potassium Sorbate, Sodium citrate, Glycerine, Sorbitol, Natural Raspberry Flavoring, Purified Water, and Editate Sodinate.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Liquid

Small Children	1 – 2 teaspoons per day
Older Children & Adults	3 to 4 teaspoons per day

1 time per day at the beginning of the day.

Packaging & Price:

Item #	Description	Package Size	Price
011/16	TMG (Trimethylglycine) w/ Folic Acid & B-12 Liquid	16 oz.	\$28.00
011/32	TMG (Trimethylglycine) w/ Folic Acid & B-12 Liquid	32 oz.	\$44.00



TMG WITH FOLIC ACID & VITAMIN B12

POWDER

TMG is DMG with one more methyl group. TMG stands for Trimethylglycine while DMG stands for Dimethylglycine. All TMG products are casein and gluten free.

DMG is well known in the autistic community. For many, it improves speech, behavior, eye contact, social skills and energy levels. TMG is a newer compound with a much shorter clinical history. TMG provides many of the same benefits of DMG, plus some additional benefits to some individuals which are attributed to the extra methyl group. This extra methyl group helps reduce harmful homocystein levels while simultaneously stimulating the production of a precursor called SAME. SAME then in turn raises serotonin levels acting as a natural antidepressant.

TMG is the product of choice in autistic children who are undermethylated which is about 45% of the kids. In children who are overmethylated or normal in methyl activity, DMG would be the product of choice. Only your physician can determine these conditions.

The powder has a pleasant sweet taste and includes Folic Acid and B-12.

Product Ingredients:

Supplement Facts

Serving Size: 1/3 teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	400 mcg	100%
Vitamin B-12	6 mcg	100%
Trimethylglycine	1000 mg	*

* Daily Value Not Established

Other Ingredients: Mannitol, Citric Acid, Sucralose and Natural Raspberry Flavorings.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

POWDER

Small Children	1/6 – 1/3 teaspoon per day
Older Children & Adults	1/3 – 2/3 teaspoon per day

1 time per day at the beginning of the day.

Packaging & Price:

Item #	Description	Package Size	Price
013/4	TMG (Trimethylglycine) w/ Folic Acid & B-12 Powder	4 oz.	\$22.00
013/8	TMG (Trimethylglycine) w/ Folic Acid & B-12 Powder	8 oz.	\$38.00



TMG WITH FOLIC ACID & VITAMIN B12

Hypoallergenic Capsules

TMG is DMG with one more methyl group. TMG stands for Trimethylglycine while DMG stands for Dimethylglycine. All TMG products are casein and gluten free.

DMG is well known in the autistic community. For many, it improves speech, behavior, eye contact, social skills and energy levels. TMG is a newer compound with a much shorter clinical history. TMG provides many of the same benefits of DMG, plus some additional benefits to some individuals which are attributed to the extra methyl group. This extra methyl group helps reduce harmful homocystein levels while simultaneously stimulating the production of a precursor called SAME. SAME then in turn raises serotonin levels acting as a natural antidepressant.

TMG is the product of choice in autistic children who are undermethylated which is about 45% of the kids. In children who are overmethylated or normal in methyl activity, DMG would be the product of choice. Only your physician can determine these conditions.

The capsules are hypoallergenic and contain no known allergens. Folic Acid is added to curb hyperactivity and B-12 is present so that folic acid does not mask a B-12 deficiency.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	200 mcg	50%
Vitamin B-12	6 mcg	100%
Trimethylglycine (HCL)	175 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose, Magnesium Stearate and Silica.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Capsules

Small Children	3-6 capsules per day
Older Children & Adults	4-12 capsules per day

Note: This dosage should be given 1/2 in the AM and 1/2 in the afternoon.

Packaging & Price:

Item #	Description	Package Size	Price
028/250	TMG (Trimethylglycine) w/ Folic Acid & B-12 Capsules	250 Capsules	\$28.00



TMG

Hypoallergenic Capsules

TMG is DMG with one more methyl group. TMG stands for Trimethylglycine while DMG stands for Dimethylglycine. All TMG products are casein and gluten free.

DMG is well known in the autistic community. For many, it improves speech, behavior, eye contact, social skills and energy levels. TMG is a newer compound with a much shorter clinical history. TMG provides many of the same benefits of DMG, plus some additional benefits to some individuals which are attributed to the extra methyl group. This extra methyl group helps reduce harmful homocystein levels while simultaneously stimulating the production of a precursor called SAME. SAME then in turn raises serotonin levels acting as a natural antidepressant.

TMG is the product of choice in autistic children who are undermethylated which is about 45% of the kids. In children who are overmethylated or normal in methyl activity, DMG would be the product of choice. Only your physician can determine these conditions.

The capsules are hypoallergenic and contain no known allergens.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Trimethylglycine	175 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose, Magnesium Stearate and Silica.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Capsules

Small Children	3-6 capsules per day
Older Children & Adults	4-12 capsules per day

Note: This dosage should be given 1/2 in the AM and 1/2 in the afternoon.

Packaging & Price:

Item #	Description	Package Size	Price
021/250	TMG (Trimethylglycine) Capsules	250 Capsules	\$22.00



NOTES

ENZYMES

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



ENZYMAID™

Multi-Enzyme Dietary Supplement

EnZymAid™ was developed to offer a second-generation formulation with enhanced functions to respond to the unique needs of those with autism spectrum disorders. EnZymAid™ is a plant-based enzyme complex that stands apart from other formulations and is on the cutting edge designed to address several important functions that include:

- Specifically targeting the breakdown (cleaving) of casein, gluten and gliadin. This enzyme complex facilitates the breakdown of wheat (gluten) and milk (casein) proteins before the resulting opiate (morphine-like) peptides are absorbed from the small intestine and enter the circulation, where they can trigger a cascade of neurological and physiological symptoms.
- Enhancing the absorption and utilization of important minerals. This is accomplished by the addition of the enzyme phytase, which breaks down phytic acid found in grains, beans, soybean, etc., which is known to interfere with the absorption of crucial minerals including calcium, magnesium, zinc, etc.
- Increasing the expression as well as the amount of the important Dipeptidyl peptidase IV (DPP-IV) enzyme, which has been shown to be inhibited in autism. This is facilitated by the use of galactose as well as the resulting action of the peptidase enzymes that exert DPP-IV activity.

FORMULATION

Each #1 plant cellulose capsule contains:

Caso-glutenase™	10,000 AU*
Bromelain Concentrate	230 BTU (approximately equal to 4,500,000 FCCPU)
Acid Fast Protease	100 SAPU
Lactase	330 LACU
Phytase	125 PU
Galactose	100 mg

*This proprietary blend is comprised of a combination of many different proteases and peptidases, assayed with activity units based on acceptable compendial methods of assay. Since a wide variety of different peptidases/proteases are utilized, the overall activity is noted in special Activity Units (AU). The overall potency of this blend is noted to be moderately high-to-high compared to general enzyme formulations.

Other Ingredients: Plant cellulose (Vegetable capsule) and L.Leucine.

Caso-glutenase™.....10,000 AU

The use of this proprietary enzyme blend provides a higher overall activity than other single peptidase and protease that are available. This enzyme complex has the ability to “digest” or break down casein and gluten more completely than other peptidases. It has a more “balanced” profile of peptidase activity where the breaking of the bonds at the end as well as in the middle of the casein and gluten peptide is more equal. These peptidases also provide levels of Dipeptidyl peptidase activity that contribute to the overall effectiveness of this unique enzyme blend.

EnZymAid™ (continued)

Bromelain Concentrate.....230 BTU

Bromelain is highly recognized and researched for its ability to have proteolytic activity in effectively and safely breaking down casein. The bromelain, in this formulation, is derived from a purified pineapple extract and is exceedingly safe and well tolerated.

Acid Fast Protease..... 100 SAPU

The presence of this acid fast/stable protease allows the enzymes to have a longer range of activity as well as stability when foods are exposed to the presence of acid in the lower part of the stomach. This protease begins the job of breaking down proteins before these foods are delivered into the small intestine.

Lactase.....330 LACU

The dose of the lactase enzyme, in this formulation, is adequate to digest the amount of lactose found in one glass of milk. Since many autistic children are avoiding dairy products this is a more than adequate dose.

Phytase..... 125 PU

Phytase is an enzyme with exceptional qualities and it was added to this formulation for its ability to digest phytic acid (inositol hexakisphosphate), which is present in plants such as wheat, corn, rye, barley, beans, soybean, etc. Phytic acid can negatively affect the absorption of minerals such as calcium, zinc, copper, manganese iron and magnesium. The use of the phytase enzyme, in this formulation, will facilitate the break down of phytic acid and ultimately result in greater bioavailability of these important minerals.

Galactose.....100 mg

Galactose appears to be able to increase the expression of the Dipeptidyl peptidase IV (DPP-IV) gene. This means adding galactose can increase the amount of DPP-IV that is present. Now, if in autistics the situation is not that there is absolutely zero DPP-IV, but rather that the gene has been silenced or "turned down" (down-regulated), then the addition of galactose has the potential to reverse or circumvent that.

Recommended Usage:

Age Guidelines	Start With	Capsule/Dose
2 to 5 years	1/2 capsule	1 capsule (additional caps as needed)
6 to 12 years	1/2 - 1 capsule	1 or more capsules
Teens/Adult	1 capsule	1 to 2 capsules (additional caps as desired)

The dosing for the EnZymAid™ is based on the amount of foods ingested and not solely dependant on the size/weight/age of the individual. Variations in dose will exist however the following provides general guidelines that can be used.

EnZymAid™ (continued)

Recommended Dose:

As a dietary supplement take 1 capsule with each meal or as directed by a medical practitioner. May start with 1/2 the suggested dose and gradually increase to the full dose over a period of a week until the desired response is achieved.

Enzymes should NOT be taken in the absence of normal gastric mucosa, such as is found in individuals who have a peptic or gastric ulcer. Consult with a physician for specific recommendations.

Directions For Use:

For optimal results this enzyme formulation should be taken at the beginning of each meal (or early on into the meal). The capsules may be swallowed whole or for optimal results pull them apart and the contents can be mixed with the first few bites of food or with beverages.

Product Does Not Contain:

Milk, casein, wheat, gluten, corn, soy, yeast, sugar, starch, MSG, stearates, artificial sweeteners, colors or flavors, preservatives, salicylates, and other common allergens. Exclusively designed for the sensitive individual.

Packaging & Prices:

Item #	Description	Package Size	Price
043/90	EnzymAid™ Capsules	90 Capsules	\$25.00
043/180	EnzymAid™ Capsules	180 Capsules	\$46.00

NOTE

**For a copy of the draft of the EnzymAid™ clinical study,
please contact Kirkman Labs.**



ENZYMAID™ - COMPANION

High Potency, Broad Spectrum Digestive Formulation

Kirkman Laboratories EnZymAid-Companion™ contains a unique blend of 18 pure plant based enzymes designed to provide optimal support for digestion. This high potency multi-spectrum formulation contains a blend of highly concentrated enzymes recognized as essential for the effective digestion of all food groups including carbohydrates, proteins, fats, sugars and fiber, under a wide range of pH conditions.

Each enzyme works independently but also in a complementary role to optimally impact digestion of all dietary components. The EnZymAid-Companion™ formulation provides a combination of proteases, amylases, lipases, disaccharides and cellulases to replace the enzymes lost in cooking and lessen the burden on the body's digestive tract so that it can function more optimally. Supplementing with enzymes can improve digestion and help insure that the maximum amount of nutrient absorption is attained.

EnZymAid-Companion™ utilizes plant-derived enzymes in place of animal derived pancreatic enzymes from cattle and pork. These enzymes have been documented to have exceptionally high stability and are active at pH levels of 2 through 12. They are thus effective for individuals who have problems with hypochlorhydria and/or pancreatic insufficiency. These supplements are designed to work in the acidic environment of the stomach as well as in the more alkaline environment found in the small intestine making them an excellent choice for a full range of patients.

INDICATIONS FOR USE:

EnZymAid-Companion™ can be safely as well as effectively taken in combination with EnZymAid™ (the high peptidase/protease enzyme formulation) to provide optimal digestion of a full spectrum of foods (carbohydrates, proteins, fats, sugar and fibers) as well as proteins from casein, gluten and soybean. This formulation can also be used alone as a general broad-spectrum digestive enzyme. It contains lower potencies of the individual enzymes than our *EnzymeComplete with DPPIV* and contains no peptidase activity.

FORMULATION

Each #1 plant cellulose capsule contains:	
Protease (from Vegetable Pancreatin 4X/NF)**	23,562 DAPU
Alkaline Protease	34 DAPU
FP 31 Protease	68 HU
AFP (acid fast protease)	68 SAPU
Kiwi Protease (Actinidin-type)	137 KPU
Bromelain (Pineapple source)	68 BTU = (approx 1,330,435 FCCPU)
Papain (Sulfite-free Papaya source)	343,000 FCCPU
Amylase (from Vegetable Pancreatin 4X/NF)**	67,320 MWU
Alpha Amylase	68 SKBU
Glucoamylase	13.7 AGU
Alpha-Galactosidase	68 AGSU
Lactase	226 LAU
Maltase	137 MWU
Invertase (Sucrase)	275 SU
Cellulase	137 CU
Xylanase (Hemicellulase)	68 XU
Phytase	6.8 PU
Lipase (from Vegetable Pancreatin 4X/NF)**	1500 LU

Other Ingredients: Plant Cellulose



EnZymAid-Companion™ (continued)

FUNCTION OF ENZYMES

Proteases have the role of digesting large protein chains (called polypeptides) into smaller amino acid chains and eventually into single amino acids. The protease and peptidase enzymes have a critical role of breaking down potentially antigenic constituents of foods as well as reactive peptides (casomorphin from milk and gliadomorphin/gliadorphin from wheat) that can trigger a cascade of adverse reactions in the central nervous system and throughout the body.

Amylases play an important role in breaking down starches and other carbohydrates into simple sugars (glucose) for use as an energy source for the body. The amylase enzymes reduce large carbohydrates (starches and other polysaccharides) to disaccharides, which include sucrose, maltose and lactose.

The Lipases digest fats (triglycerides) into free fatty acids and glycerol. Fats are so difficult to properly digest however they are sources of important nutrients (Vitamin A and E as well as omega-3 fatty acids) and thus need to be adequately digested. With the assistance of lipase enzymes they can more effectively perform their appropriate functions and crucial activities.

The Cellulases (which are not generally found in the body's digestive tract) break down the bonds found in fiber. By disrupting the structure of the fiber membrane (which is an integral part and which envelops most of the nutrients in plants) cellulase increases the nutritional value of fruits, vegetables and grains. Enough cellulase is used to release many of the nutrients while still maintaining enough of the plant fibers to retain the beneficial intestinal ("scrub brush") effect of the fiber.

EnZymAid-Companion™ PRODUCT SPECIFICATIONS

ONE (1) CAPSULE PROVIDES	ENZYME ACTIVITY	FUNCTION OF THE ENZYME
<i>Proteolytic Enzymes (Digestion of Proteins)</i>		
Protease (from Vegetable Pancreatin 4X/NF)**	23,562 DAPU	Proteins and peptides are complex and require multiple proteolytic enzymes to optimize their digestion. These proteases are well recognized for their effectiveness in aiding the breakdown of meats, fish, poultry, eggs, soy & other plant proteins and dairy products.
Alkaline Protease	34 DAPU	
FP 31 Protease	68 HU	The use of acid stable and alkaline stable proteases allows for enhanced digestive capacity throughout the entire GI tract and in virtually all pH conditions.
AFP (acid fast protease)	68 SAPU	
Kiwi Protease (Actinidin-type)	137 KPU	The combination of these three protease/peptidase enzymes are documented to have excellent capac- (continued)

EnZymAid-Companion™ (continued)

Bromelain (Pineapple source)	68 BTU	ity to breakdown a variety of protein peptides including those from casein (in milk & dairy) as well as gluten (found in wheat and other gluten grains).
Papain (Sulfite-free Papaya source)	343,000 FCCPU	
<i>Carbohydrolytic Enzymes (Digestion of Carbohydrates and Sugars)</i>		
Amylase (from Vegetable Pancreatin 4X/NF)** 67,320 MWU		
Alpha Amylase	68 SKBU	These enzymes function together to optimize the breakdown and release of glucose from complex carbohydrates as well as starch, polysaccharides and dextrin. Effectively breaks down corn, potato, wheat, sorghum, cassava and other starches.
Glucoamylase	13.7 AGU	
Alpha-Galactosidase	68 AGSU	Improves the ability to digest beans, other legumes and cruciferous vegetables (cauliflower, broccoli, cabbage, etc.).
Lactase	226 LAU	Functions to digest lactose in milk, cheese and other dairy products (equal to approx. 8 ounces of milk).
Maltase	137 MWU	Digests maltose disaacharides (malt and malt barley).
Invertase (Sucrase)	275 SU	Functions in the breakdown of sucrose disaacharides (beet and cane sugar) that is also known as invert sugar.
<i>Cellulase Enzymes (Digestion of Vegetable Fiber)</i>		
Cellulase	137 CU	Supports the digestion of vegetables fibers and allows more complete digestion of grains, cellulose & plant gums.
Xylanase (Hemicellulase)	68 XU	Provides more complete breakdown and digestion of dietary fiber and carbohydrates.
Phytase	6.8 PU	Breaks down phytic acid/phytate in grains and legumes which have been shown to bind digestive enzymes and inhibit mineral absorption.
<i>Lipolytic Enzymes (Digestion of Fats)</i>		
Lipase (from Vegetable Pancreatin 4X/NF)**	1500 LU	Lipase digests/hydrolyzes fats, oils and butter (called triglycerides) into free fatty acids and monoglycerides.

EnZymAid-Companion™ (continued)

* The potencies expressed in this enzyme blend are all authorized compendial methods of measuring and expressing enzyme activity that have undergone scientifically sound development and validation procedures, recognized by the Enzyme Technical Association. Some of these measurements are expressed in FCC units and others are expressed in newer technological and more definitive characterization of activity, recognized by the ETA as equally acceptable units of activity. The potencies for these enzymes are expressed in the enzyme industries most current FDA recognized standard for determining the activity of enzymes.

** The Vegetable Pancreatin contains lipase, amylase and protease enzymes that are recognized to be four times the strength of a regular animal derived Pancreatin (porcine and/or bovine) enzyme. The vegetable/plant-based enzymes work over a longer period of time, in a broader pH range and they actively function throughout the entire intestinal tract.

RECOMMENDED DOSE

As a dietary supplement take 1 to 2 capsules at the beginning of each meal or as directed by a medical practitioner. Capsules may be swallowed whole or pulled apart and the contents mixed with food or beverage. Avoid mixing with food or beverages that will be heated above 130°, as the activity of the enzymes will be destroyed.

DIRECTIONS FOR USE

It is generally recommended that enzyme supplements be taken at the beginning or early on in the meal to assure appropriate digestion. Mix with a small amount of food or beverage and take this prior to or at the beginning of the meal.

The enzymes in this formulation are recognized to be safe, considered nontoxic, of exceptional quality and exceedingly well tolerated. The dose can be adjusted according to the specific needs of the individual. With larger meals additional enzymes (1 or 2 capsules) may be utilized and with small meals or snacks a single capsule may be sufficient to provide adequate digestion of these foods.

HYPOALLERGENIC FORMULATION

Designed for the sensitive individual who requires a hypoallergenic formulation free of potentially reactive ingredients. Plant cellulose capsules are used in encapsulating this product, making these enzyme supplements an excellent choice for the vegetarian. This formulation along with the vegetable capsule is documented to be Kosher Certified.

EnZymAid-Companion™ is supplied in a #1 plant cellulose capsule containing the highest quality plant based enzymes. This formulation is designed to be free of milk, casein, wheat, gluten, gliadin, corn, soy, egg, yeast, sugar, MSG, stearates, palmitates, artificial sweeteners, colors or flavors, preservatives, and other common allergens.

Packaging & Price:

Item #	Description	Package Size	Price
814/90	EnzymAid™ Companion Capsules	90 Capsules	\$25.00



ENZYM-COMplete WITH DPP-IV™

High Potency, Broad Spectrum Digestive Enzyme Formulation With a Dipeptidyl peptidase IV Analog

EnZym-Complete with DPP-IV™ is Kirkman Laboratories highest potency multi-spectrum digestive enzyme formulation designed to provide maximal digestive activity for the unique needs of those with ASD. This formulation contains a unique blend of 19 pure plant based enzymes recognized as essential for the effective digestion of all food groups including carbohydrates, proteins, fats, sugars and fiber, under a wide range of pH conditions. The addition of the Dipeptidyl peptidase-IV (DPP-IV) analog offers one of the most comprehensive and unique digestive enzymes that has the ability to degrade opiate peptides as well as exert other important functions in the body.

Each enzyme works independently but also in a complementary role to optimally impact digestion of all dietary components. The EnZym-Complete with DPP-IV™ formulation provides a combination of proteases, amylases, lipases, disaccharides and cellulases to replace the enzymes lost in cooking and lessen the burden on the body's digestive tract so that it can function more optimally. Supplementing with enzymes can improve digestion and help insure that the maximum amount of nutrient absorption is attained.

FORMULATION:

Each 2 capsules contains the following:

SPECIFIC ENZYME	UNITS OF ACTIVITY *
DPP-IV	50,000 HUT
Protease (from Vegetable Pancreatin 4X/NF)**	38,000 DAPU
Alkaline Protease	50 DAPU
FP 31 Protease	100 HU
AFP (acid fast protease)	100 SAPU
Kiwi Protease (Actinidin-type)	200 KPU
Bromelain (Pineapple source)	100 BTU = (1,956,522 FCCPU)
Papain (Sulfite-free Papaya source)	500,000 FCCPU
Amylase (from Vegetable Pancreatin 4X/NF)**	89,000 MWU
Alpha Amylase	100 SKBU
Glucoamylase	30 AGU
Alpha-Galactosidase	125 AGSU
Lactase	1,000 LAU
Maltase	200 MWU
Invertase (Sucrase)	400 SU
Cellulase	200 CU
Xylanase (Hemicellulase)	100 XU
Phytase	10 PU
Lipase (from Vegetable Pancreatin 4X/NF)**	15,000 LU

EnZym-Complete with DPP-IV™ (continued)

INGREDIENTS:

DPP-IV 50,000 HUT

The EnZym-Complete with DPP-IV™ offers the highest potency proteolytic enzyme formulation with significant peptidase and protease activity. One remarkable peptidase, in this formulation, is a specialized DPP-IV enzyme providing optimal ability to effectively degrade casein and gluten peptides. Dipeptidyl peptidase IV (DPP-IV) is a type of proline peptidase enzyme that is commonly located on the epithelial brush borders of the small intestine (specifically imbedded in the mucosal membrane of the lining of the intestinal tract). The importance of the addition of the DPP-IV analog to this formulation is that this enzyme has been shown to be inhibited, weak or deficient in those with autism spectrum disorders. Use of a DPP-IV acting digestive peptidase could have significant application to those with autism who have defective or inhibited DPP-IV levels.

COMPREHENSIVE PROTEASE / PEPTIDASES ENZYMES (DIGESTION OF PROTEINS)

Proteases have the role of digesting large protein chains (called polypeptides) into smaller amino acid chains and eventually into single amino acids. The protease enzymes have a critical role of breaking down potentially antigenic constituents of foods as well as reactive peptides (casomorphin from milk and glietomorphin/gliadorphin from wheat and other gluten grains) that can trigger a cascade of adverse reactions in the central nervous system and throughout the body.

The full spectrum of different proteases in EnZym-Complete with DPP-IV™ provides the most comprehensive digestion of proteins. Protein and peptides are complex and require multiple proteolytic enzymes to optimize their digestion. This formulation utilizes the broadest range of proteases that will have the most significant impact in breaking apart the proteins most effectively. The reason that numerous proteases are used is because each one has a unique ability to target and attach to the sites on the protein where they will be cut or broken down into their individual amino acids.

EnZym-Complete with DPP-IV™ has a more “balanced” profile of peptidase activity meaning that it breaks the peptide bonds at the end as well as in the middle of the casein and gluten peptide molecule. This allows the activity of hydrolysis to be more equal and have the most comprehensive/complete breakdown/digestion of the proteins/peptides. Some formulations will use a large amount of one or two proteases to do the job of protein digestion however using numerous proteases offers optimal function and a broader spectrum of activity. The proteases /peptidase enzymes in this formulation also exert DPP-IV activity which contributes to its broad range of activity. The following proteolytic enzymes are utilized in this formulation.

Protease (from Vegetable Pancreatin 4X/NF)**	38,000 DAPU
Alkaline Protease	50 DAPU
FP 31 Protease	100 HU
AFP (acid Fast/Stable Protease)	100 SAPU

Unique to this formulation are “alkaline” and “acid-fast/stable” protease enzymes that have a longer range of activity as well as stability when foods are exposed to the presence of acids in the stomach as well as the more alkaline environment in the small intestine.

SPECIALTY PROTEASES

Kiwi Protease (Actinidin-type)	200 KPU
Bromelain (Pineapple source)	100 BTU
(230 BTU = approx. 4,500,000 FCCPU) or (1,956,522 FCCPU)	
Papain (Sulfite-free Papaya source)	1,000,000 FCCPU

EnZym-Complete with DPP-IV™ (continued)

The Kiwi, Bromelain and Papain proteases are clearly recognized and researched for their ability to have excellent proteolytic/peptidase activity in effectively and safely breaking down casein and gluten. Some research suggests that the bromelain has wider specifics and functions than papain as it has been demonstrated to also be an effective anti-inflammatory. The kiwi protease in this formulation is derived from the kiwi fruit, the bromelain is derived from a purified pineapple extract and the papain from a papaya source. Each of these enzymes has been shown to be exceedingly safe and well tolerated digestive enzymes.

The EnZym-Complete with DPP-IV™ formulation utilizes a “sulfite-free” papain extract that is of the highest quality and purity available. Other enzyme formulations may not use this pure extract because of the noted cost difference in comparison to standard papain extracts, which are known to contain sulfite as a stabilizer. All the papain in EnZym-Complete with DPP-IV™ is sulfite-free, not just a small portion of it. This is of importance because children with autism spectrum disorders already have recognized sulfation problems and the use of a sulfite containing enzyme can further compromise this detoxification pathway.

CARBOHYDROLYTIC ENZYMES (DIGESTION OF CARBOHYDRATES AND SUGARS)

EnZym-Complete with DPP-IV™ offers the broadest spectrum and highest potency carbohydrate enzymes which function in digestion of a wide variety of carbohydrates and sugars.

Amylase (from Vegetable Pancreatin 4X/NF)**	89,000 MWU
Alpha Amylase	100 SKBU
Glucoamylase	30 AGU

Amylases play an important role in breaking down starches and other carbohydrates into simple sugars (glucose) for use as an energy source for the body. The amylase enzymes reduce large carbohydrates (starches and other polysaccharides) to disaccharides, which include sucrose, maltose and lactose. These enzymes function together to optimize the breakdown and release of glucose from complex carbohydrates as well as starch, polysaccharides and dextrin which can effectively break down corn, potato, wheat, sorghum, cassava and other starches.

Alpha-Galactosidase	125 AGSU
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Alpha-Galactosidase Improves the ability to digest beans, other legumes and cruciferous vegetables (cauliflower, broccoli, cabbage, etc.).

Lactase	1000 LAU
Maltase	200 MWU
Invertase (Sucrase)	400 SU

The dose of the lactase enzyme, in this formulation, is adequate to digest the amount of lactose found in one glass of milk. Since many autistic children are avoiding dairy products this is a more than adequate dose. Maltase digests maltose disaccharides (Malt) found in a number of processed foods. Invertase (also known as sucrase) breaks down of sucrose disaccharides (commonly from beet and cane sugar which is known as invert or table sugar).

CELLULASE ENZYMES (DIGESTION OF VEGETABLE FIBER)

Cellulase	200 CU
Xylanase (Hemicellulase)	100 XU
Phytase	10 PU

EnZym-Complete with DPP-IV™ (continued)

The Cellulases (which are not generally found in the body's digestive tract) break down the bonds found in vegetable fibers and allows more complete digestion of grains, cellulose and plant gums. Cellulase functions by disrupting the structure of the fiber membrane (which is an integral part and which envelops most of the nutrients in plants) thus increasing the nutritional value of fruits, vegetables and grains.

Xylanase also known as hemicellulase functions by providing more complete breakdown/digestion of dietary fiber and carbohydrates found in foods such as cruciferous vegetables (broccoli, cauliflower, cabbage, etc.) and legumes.

Phytase, an enzyme with exceptional qualities, is utilized for its ability to digest phytic acid (inositol hexakisphosphate), which is present in plants such as wheat, corn, rye, barley, beans, soybean, etc. Phytic acid can negatively affect the absorption of minerals such as calcium, zinc, copper, manganese iron and magnesium. The use of the phytase enzyme, in this formulation, will facilitate the break down of phytic acid and ultimately result in greater bioavailability of these important minerals

LIPOLYTIC ENZYMES (DIGESTION OF FATS)

Lipase

15,000 LU

Of importance to children with autism are problems with the inability to adequately digest fats. The Lipases digest - hydrolyzes fats, oils and butter (called triglycerides) into free fatty acids and monoglycerides. It has been documented in the medical literature that children with autism tend to have a significant/exceeding difficult problem with digestion of fats.

Fats are known as a sources of important nutrients (Vitamin A and E as well as omega-3 fatty acids) and they are known to possess anti-inflammatory functions as well as a role as regulators of neurological activity (Omega 3, DHA, EPA) and thus need to be adequately digested. With the assistance of lipase enzymes they can more effectively perform their appropriate functions and crucial activities.

Other Ingredients: No other ingredients.

* The potencies expressed in this enzyme blend are all authorized compendial methods of measuring and expressing enzyme activity that have undergone scientifically sound development and validation procedures, recognized by the Enzyme Technical Association. Some of these measurements are expressed in FCC units and others are expressed in newer technological and more definitive characterization of activity, recognized by the ETA as equally acceptable units of activity. The potencies for these enzymes are expressed in the enzyme industries most current FDA recognized standard for determining the activity of enzymes.

** The Vegetable Pancreatin in this formulation contains lipase, amylase and protease enzymes that are recognized to be four times the strength of a regular animal derived Pancreatin (porcine and/or bovine) enzyme. The vegetable/plant-based enzymes work over a longer period of time, in a broader pH range and they actively function throughout the entire intestinal tract.

EnZym-Complete with DPP-IV™ (continued)

RECOMMENDED DOSE

As a dietary supplement take 1/4 tsp. mixed in food or a beverage or as directed by a medical practitioner.

The dose can be adjusted (up to 1/2 tsp. or greater) according to the specific needs of the individual. With larger meals additional enzymes may be utilized and with small meals or snacks smaller doses may be sufficient to provide adequate digestion of these foods. Avoid mixing with food or beverages that will be heated above 130° as the activity of the enzymes will be destroyed.

DIRECTIONS FOR USE

It is generally recommended that enzyme supplements be taken at the beginning or early on in the meal to assure appropriate digestion. Mix with a small amount of food or beverage and take this prior to or at the beginning of the meal.

EnZym-Complete with DPP-IV™ may be safely and effectively taken in combination with DPP-IV Forte™ to provide optimal digestion of a full spectrum of foods (carbohydrates, proteins, fats, sugar and fibers) as well as protein peptides from casein, gluten and soybean.

The use of proteolytic enzymes should not be taken in the absence of normal gastric mucosa, such as is found in individuals who have a peptic/duodenal ulcer. Consult with a physician for specific recommendations.

PRODUCT DOES NOT CONTAIN:

Milk, casein, wheat, gluten, corn, soy, yeast, sugar, starch, MSG, stearates, artificial sweeteners, colors or flavors, preservatives, salicylates, and other common allergens. Exclusively designed for the sensitive individual.

The enzymes in this formulation are recognized to be safe, considered nontoxic, of exceptional quality and exceedingly well tolerated.

Packaging & Price:

Item #	Description	Package Size	Price
234/60	Enzym-Complete with DPPIV™	60 capsules	\$20.00
234/120	Enzym-Complete with DPPIV™	120 capsules	\$39.00



DPP-IV FORTE™

A Dipeptidyl peptidase IV (DPP-IV) Analog for Comprehensive Digestion of Opiate Peptides

DPP-IV FORTE™ (containing a Dipeptidyl peptidase IV analog) is one of the most exciting nutritional enzyme supplements available from Kirkman Laboratories. This state-of-the-art enzyme has significant application when used alone or in combination with other nutritional enzymes to optimally fortify digestive processes. This unique enzyme specifically breaks apart proline-containing peptides (casomorphin, gluteomorphin and gliadomorphin), which are generally resistant to being completely broken down by other enzymes. Of importance is that these opiate-like dietary peptides (“exorphins”) have been shown to be excessive in autism. DPP-IV is the digestive enzyme that has specific activity for digestion of these peptides, which are known to come from dairy products and cereal grains. Some researchers even suggest that because there is the absence, deficiency or reduction of the crucial DPP-IV enzyme, that this may explain the high levels of opiate peptides that are seen in autism.

WHAT IS DPP-IV

Dipeptidyl peptidase IV (DPP-IV) is a protein that has multiple functions in the body. It is known under different names depending on where it is found. When DPP-IV is on the surface of the T-cell (lymphocyte), it is called CD26, and it travels in the circulation and helps immune function. When this enzyme is found on and imbedded in the mucosal membrane of the lining of the intestinal tract it is known as DPP-IV. This protein is also located in the surface tissues of the pancreatic duct, bile duct, colon and kidney. Bile-duct cell surface molecule “GP110” is another name for DPP-IV. In 1982, Dr. Gene Stubbs published his findings that a purine-regulating enzyme, called adenosine deaminase, was weak in autistics. A decade later, researchers recognized that DPP-IV is the binding protein or anchor that supports adenosine deaminase. It has been suggested that if DPP-IV levels are reduced or absent then this could explain the lower levels of amino acids seen in the profiles of many autistic children.

The question may be asked if DPP-IV FORTE™ is the actual DPP-IV enzyme that the body manufactures? DPP-IV FORTE™ is an analog of the human produced DPP-IV enzyme, which is cloned from human tissue. For clarification an “analog” is described as something that is similar to another compound. What we can say is that it is a replication of an original element that shares the same biochemical makeup as the original compound, but is derived from a different source. DPP-IV Forte is the plant based equivalent analog to the human tissue DPP-IV enzyme. This enzyme offers the same enzyme activity as human derived DPP-IV with the positive attributes of this most impressive enzyme.

BACKGROUND

Dipeptidyl peptidase IV (DPP-IV) has gained a great deal of attention in the autism community following the work of Dr. Karl Reichelt and Paul Shattock, who found and measured exorphin peptides in the urine of autistic children. Some of the initial pioneering work and observations regarding DPP-IV’s role in ASD were made by Jon Pangborn, Ph.D. and Allan Friedman, Ph.D., both scientists and fathers of autistic children. Dr. Pangborn, in conjunction with Bernard Rimland, Ph.D. (Founder of the Autism Research Institute) directed the DAN! research project on the very first digestive enzyme with high peptidase and DPP-IV activity. Dr. Pangborn subsequently wrote and spoke about the importance of DPP-IV in autism to the medical and autism communities. Dr. Friedman isolated and identified opioid peptides in the urine/serum of autistic children, with recognition that DPP-IV may be absent or deficient in some with autism.

DPP-IV FORTE™ (continued)

Their commitment to and focus on investigating the role of DPP-IV in autism spectrum disorders paved the way for others to make contributions in this area. William Shaw, Ph.D. has studied the role of DPP-IV in autism in the laboratory and has presented evidence regarding numerous environmental exposures that can adversely affect DPP-IV levels in autistic children.

PRODUCT SPECIFICATIONS

Each capsule contains: DPP-IV at 60,000 HUT*

* The potency for the DPP-IV enzyme is expressed in FCC HUT (Hemoglobin Unit on the Tyrosine basis) units, which is one of the recognized standards for determining the activity of this specific enzyme. The DPP-IV levels in DPP-IV Forte™ meet and/or exceed the label claim.

Other Ingredients: None

DPP-IV FORTE™ is encapsulated in the highest quality vegetable capsules. No rice bran or beet root fiber (used by other manufacturers) is used as a base filler product during manufacturing and encapsulation.

Product Does NOT Contain:

Milk, casein, wheat, gluten, corn, soy, yeast, sugar, starch, MSG, stearates, artificial sweeteners, colors or flavors, preservatives, salicylates, and other common allergens. Exclusively designed for the sensitive individual.

RECOMMENDED DOSE

As a dietary supplement take 1 capsule at the beginning of every meal and/or as directed by a health care practitioner.

For more comprehensive digestive activity DPP-IV Forte may be taken in combination with a broad-spectrum enzyme product like EnZym-Complete or EnZymAid-Companion. Additionally this formulation can be effectively taken in combination with EnZymAid (a high peptidase/protease formulation with DPP-IV) for those who are eating larger amounts of protein and/or have exposure to opiate peptides from casein and gluten.

DIRECTIONS FOR USE

It is recommended that enzyme supplements be taken at the beginning or early on in the meal to assure appropriate mixing of and breakdown of all foods and protein peptides. For optimal results the capsules may be pulled apart and the contents mixed with a small amount of food and/or beverages. Avoid mixing with foods or beverages that will be heated above 130° F or microwaved, as the activity of the enzymes may be adversely affected.

DPP-IV FORTE™ (continued)

WHEN TO UTILIZE

The DPP-IV enzyme is indicated when there is hidden, accidental or intended exposures to casein and gluten in the diet. Those following a GF/CF diet as well as those who have accidental or intermittent exposure to gluten and casein-containing foods can safely use this supplement. Kirkman Laboratories supports the use of a gluten-free and casein-free (CF/CF) diet as it has been scientifically and clinically documented to be effective in addressing opiate peptide problems demonstrated in those with autism spectrum disorder.

SAFETY OF PLANT ENZYMES

The DPP-IV enzyme supplement is recognized as safe, considered nontoxic, and of exceptional quality. These plant-derived enzymes are generally well tolerated however like all enzymes use of high amounts can result in loose stools/diarrhea

Those individuals with severe IgE mediated allergic reactions (anaphylaxis, severe asthma) to inhalant mold should consult with a physician before taking plant based enzyme products. Generally these enzymes are exceedingly well tolerated, even in the sensitive individual.

Packaging & Price:

Item #	Description	Package Size	Price
230/60	DPP-IV FORTE™ Capsules	60 Capsules	\$15.00



NOTES



NOTES

Essential Fatty Acids

Essential fatty acids consisting of Omega-3 and Omega-6 compounds are extremely important in autism and for maintaining good health in general. Kirkman offers several different products which supply essential fatty acids. This Kirkman family of products focuses primarily on supplying the Omega-3 acids, because it is well established that western diets are deficient in Omega-3's and way too high in Omega-6's. We supply a granular flaxseed powder which can be used in baking as well as sprinkled on foods and we offer cod liver oil liquid, fish oil capsules and a flavored fish oil emulsion packed in unit doses for convenience.

Essential fatty acid consumption is essential in autism as the following body functions are involved:

- Regulating nerve transmission
- Regulating pressure in the eye, joints and blood vessels
- Regulating the division of cells (growth and healing processes)
- Responding to pain, swelling and inflammation
- Regulating muscle reflexes
- Transporting of oxygen from cells to tissues
- Maintaining health of cell membranes
- Mediating immune response
- Providing energy to the heart muscle
- Reduce several risk factors for coronary heart disease including the reduction of serum cholesterol and triglycerides

The pages which follow go into greater detail of each form of Kirkman Omega-3 products.

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



EFA - PLUS POWDER

EFA-Plus is a high quality, uniquely processed milled flaxseed product which is not only rich in essential fatty acids, but also rich in fiber and amino acids. Special processing of flaxseed by our supplier of the milled seeds has made it possible for Kirkman to offer this essential fatty acid product of premium quality. Special processing includes:

- Selecting only dry, well matured, uniform colored seeds which are free of extraneous material, microbiological pathogens and mold.
- A special cleaning process which removes small and undesirable, immature seeds which contain chlorophyll. Chlorophyll is a pro-oxidant which can cause instability or degradation of some flaxseed.
- A special milling process free of excess heat, insures no deterioration as often occurs with improperly milled flaxseed.

These steps guarantee a stable, exceptionally pure product with nutritional integrity. This product contains 41% Fatty Acids, 28% dietary fiber and 20% protein with a complete amino acid profile. Of the fatty acids present, 57% are polyunsaturated Omega-3's and 16% are polyunsaturated Omega-6's. In addition, EFA-Plus contains high levels of potassium. EFA-Plus is a pleasant tasting milled powder which can be easily incorporated into the diet (See the long article of EFA-Plus on this website under product articles). Omega-3 and Omega-6 fatty acids are deemed essential, because the body can not produce them. All must be consumed from the diet.

Most individuals need to supplement with Omega-3 fatty acids. In autism, it is recommended that a fatty acid profile be done before beginning supplementation. Since the digestive tracts of autistic individuals are anything but normal, the test should be done to insure that the Omega-3/Omega-6 balance is maintained during supplementation. Great Plains Laboratory in Overland Park, Kansas can do this test as well as other laboratories. Dr. Jeff Bradstreet of Palm Bay, Florida, reports that most of his autistic patients require Omega-3 supplements. Dr. Bradstreet also reports that about 1% have an enzymatic deficiency and can not break-down the alpha-linolenic acid form of Omega-3 in flaxseed. Some doctors have found the need to supplement first with an Omega-6 oil such as evening primrose before beginning Omega-3 supplementation. As you can see, it is important to work with the doctor through laboratory testing and medical evaluation when starting essential fatty acids.

Essential fatty acid supplementation is critical in autism. Growth, healing, muscle reflexes, mediating immune response, response to pain, swelling and inflammation, and eye pressure regulation are all affected by a lack of EFAs. Because the health of cell membranes is also affected by a lack of essential fatty acids, the leaky gut may also be involved in deficiency.

The latest scientific research has proven that essential fatty acids need to be in equilibrium in our diet. Omega-3 and Omega-6 consumption should be balanced. It is generally recommended that Omega-3 consumption should be about 4 times as much as Omega-6. In addition, it is recommended by the medical community that saturated fat consumption should be limited. Saturated fats are found in butter, margarine and lard. All Omega-3 and Omega-6 essential fatty acids are polyunsaturated.

KIRKMAN'S EFA-PLUS (continued)

Unfortunately, our normal diets do not achieve those recommended balances. Most North American and Western diets are very low in Omega-3 and extremely high in Omega-6. Too many saturated fats are consumed and the ratio of ingested EFA's averages more like 20:1 Omega-6's to Omega-3's instead of the recommended 4:1 Omega 3's to Omega 6's. Kirkman's EFA-Plus contains 3.5 times the amount of Omega-3's compared to Omega-6's. This helps compensate for the overconsumption of Omega-6 in the diet. Dr. Michael Murray, N. D. and author of The Encyclopedia of Nutritional Supplements feels that the form of essential fatty acids in EFA-Plus may be the best balanced.

Product Ingredients:

Supplement Facts

Serving Size: 5 grams - (1 heaping teaspoon)

Each Serving Contains	Amount per Serving	% Daily Value
Flaxseed	5 grams	*
Providing:		
	1.2 grams of Omega-3	
	0.3 grams of Omega-6	
	1.1 grams of Protein	
	1.2 grams of Dietary Fiber	

* Daily Value Not Established

Ingredients: Specially processed and milled flaxseed.

DOES NOT CONTAIN: casein, gluten, soy, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Children: Five to ten grams daily, or as directed by a physician
 Adults: Ten to twenty grams daily, or as directed by a physician

Packaging & Price:

Item #	Description	Package Size	Price
801/450	EFA-Plus Powder	450 Grams	\$15.00



COD LIVER OIL GELCAPS & LIQUID

Cod Liver Oil is very popular in the treatment of autism and ADHD based on the research of Dr. Mary Megson in Virginia. Dr. Megson has found that the natural Vitamin A in Cod Liver Oil is helping autistic and ADHD children by:

- Improving Vision
- Improving Awareness
- Improving Behavior
- Improving the Immune System

It is extremely important that purchasers of Cod Liver Oil scrutinize the supplier of the product. Many commercially available Cod Liver Oils are standardized with synthetic vitamin A palmitate. Kirkman's product is all natural.

High quality Cod Liver Oil must be free of contaminants and must be tested to guard against rancidity due to oxidation. Kirkman guarantees these quality standards through laboratory testing including:

- Heavy Metal Analysis
- Pesticide Analysis
- PCB Analysis
- Peroxide Value

Our liquid Cod Liver Oil contains Vitamin E as an antioxidant to guard against oxidation after the bottle is opened and exposed to the air.

Kirkman offers both Cod Liver Oil Gelcaps and Cod Liver Oil liquid.

Product Ingredients:

GEL CAPS

Supplement Facts		
Serving Size: 1 Soft Gel Cap		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A	1250 IU	25%
Vitamin D	135 IU	33%

Other Ingredients: Gelatin, Glycerin, and purified water.

DOES NOT CONTAIN: Synthetic vitamin A palmitate, sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

LIQUID

Supplement Facts		
Serving Size: 1/2 teaspoon		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A	2500 IU	50%
Vitamin D	250 IU	62%
Vitamin E	1 IU	0.5%
EPA	250 mg	*
DHA	250 mg	*

* Daily Value Not Established

DOES NOT CONTAIN: Synthetic vitamin A palmitate, sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

As a dietary supplement, take the following daily. These dosages are as suggested by Dr. Mary Megson.

Under two years of age	1250 IU Vitamin A (One capsule or 1/4 teaspoon liquid)
2-5 years	2500 IU Vitamin A (Two capsules or 1/2 teaspoon liquid)
5-10 years	3750 IU Vitamin A (Three capsules or 3/4 teaspoon liquid)
Over 10 years	5000 IU Vitamin A (Four capsules or 1 teaspoon liquid)

Packaging & Price:

Item #	Description	Package Size	Price
802/150	Cod Liver Oil Soft Gelcaps	150 Gelcaps	\$12.00
802/300	Cod Liver Oil Soft Gelcaps	300 Gelcaps	\$18.00
026/8	Cod Liver Oil Liquid (Unflavored)	8 oz.	\$12.00
026/22	Cod Liver Oil Liquid (Unflavored)	22 oz.	\$22.00
228/8	Cod Liver Oil Liquid Lemon-Lime Flavor	8 oz.	\$15.00

***KIRKMAN'S COD LIVER OIL LIQUID IS NOW ALSO AVAILABLE
IN LEMON-LIME FLAVOR!***



ARCTIC COD LIVER OIL™ *from Nordic Naturals*

Nordic Naturals now offers a good tasting high quality cod liver oil. Kirkman will be a distributor for this product so as to offer an alternative to our current cod liver oil products.

This Nordic Naturals product offers:

- Revolutionary Freshness Level and Purity
- No Fishy Aftertaste
- Great Orange Flavor
- Only Natural Occurring Vitamins A and D
- No Heavy Metals, Pesticides or PCB's (Third Party Tested)

Each teaspoon provides:

DHA	675 mg.
EPA	445 mg.
Vitamin A	1915 IU
Vitamin D	20 IU

Ingredients: Virgin cold pressed Arctic Cod Liver Oil, Vitamin E (as an antioxidant) and natural orange essence.

Recommended Usage:

1-2 teaspoons daily.

Packaging & Price:

Item #	Description	Package Size	Price
822/8	Nordic Natural's Arctic Cod Liver Oil Liquid	8 oz.	\$16.00



COROMEGA™

Individual Serving Packets

Kirkman Laboratories is now an official distributor for Coromega™, an Omega-3 Dietary supplement. Coromega™ is a revolutionary new product that provides all the excellent benefits of fish oil with no fishy taste or aftertaste. It is the result of ten years of research and development and is patented worldwide. Coromega™ is a tasty, fresh natural orange flavored, pudding-like emulsion that comes in handy, individual dose, oxidation resistant squeeze-pack foil pouches. For decades, fish oil has been recognized as a great way of supplementing Omega-3 fatty acids to the diet. Unfortunately, fish oil has been difficult to administer to children who can't swallow large capsules. Also, fishy burps made it unpleasant and objectionable. Coromega™ solves these problems. Adults and kids love it. Take it right out of the package or put it in juice, pudding, applesauce or any other vehicle which an individual enjoys.

Coromega™ is an advanced essential fatty acid formula that delivers 650 mg. of Omega-3 (similar to a small serving of salmon), including 350 mg. of EPA and 230 mg. of DHA. Also present are small amounts of vitamins C, E and folic acid.

Essential fatty acid supplementation is critical in autism. Growth, healing, muscle reflexes, mediating immune response, response to pain, swelling and inflammation, and eye pressure regulation are all affected by a lack on EFA's. These are all of obvious importance in autism. Since essential fatty acids are a key ingredient of the membranes in all body tissues, a deficiency of EFA's could be an important factor in the development of a leaky gut in autistic children. Such a deficiency could lead to an increase in the permeability of the mucosal membrane in the intestine. A leaky gut allows undigested food particles and toxins to get into the bloodstream causing reactions throughout the system.

Coromega™ contains 650 mg. of Omega-3 fatty acids per individual serving. There are 28 or 90 servings per box. Kirkman is proud to be a distributor of this revolutionary product. For further information on this product, contact the Coromega™ website at www.coromega.com.

Product Ingredients:

Supplement Facts

Serving Size: 1 packet

Each Serving Contains	Amount per Serving	% Daily Value
Omega-3 fatty acids	650 mg	*
EPA	350 mg	*
DHA	230 mg	*
Stevia Leaf extract	5 mg	*

* Daily Value Not Established

Other Ingredients: fish oil, water, pasteurized egg yolk, sodium ascorbate, natural orange flavor, ascorbic acid, stevia leaf extract, vegetable oil, d-alpha tocopherol, citric acid, sodium benzoate, guar gum, xanthan gum, vanillin, beta carotene, potassium sorbate, menthol, folic acid.

Packaging & Price:

Item #	Description	Package Size	Price
812/28	Coromega™ Packets	28 Packets	\$16.50
812/90	Coromega™ Packets	90 Packets	\$34.50





PRO-EFA OMEGA 3/6/9 & BORAGE OIL *Supplement Capsules*

Kirkman Laboratories is now an official distributor for ProEFA, an essential fatty acid dietary supplement manufactured by Nordic Naturals™. ProEFA is a revolutionary product in that it uses only the highest quality fish oil and borage oil available in the world. This oil is produced using flash distillation and molecular distillation ensuring the highest quality Omega 3 oils while eliminating all PCBs and heavy metal contaminants. The oil is then deodorized which also improves the taste dramatically.

For decades, fish oil has been recognized as a great way of supplementing Omega-3 fatty acids to the diet. Many fish oil supplements are available, but the quality of Nordic Naturals™ ensures the highest quality oils with no contaminants. Borage oil is added as a source of GLA (gamma-linolenic acid). GLA is beneficial for skin moisture and may have a calming effect. Olenic Acid is included as an omega-9 source. The product also contains natural lemon oil which covers up the fish smell and helps avoid fishy burps.

ProEFA is an advanced essential fatty acid formula that delivers 148 mg. EPA, 99 mg. DHA, and 40 mg. of GLA from 180 mg. of borage oil. This formulation is the perfect formula to support the body's manufacture of the vital series 1 and 3 prostaglandins which are important in:

- Regulating nerve transmission
- Regulating pressure in the eye, joints and blood vessels
- Regulating the division of cells (growth and healing processes)
- Responding to pain, swelling and inflammation
- Regulating muscle reflexes
- Transporting of oxygen from cells to tissues
- Maintaining health of cell membranes
- Mediating immune response
- Providing energy to the heart muscle
- Reduce several risk factors for coronary heart disease including the reduction of serum cholesterol and triglycerides

Essential fatty acid supplementation is critical in autism. Growth, healing, muscle reflexes, mediating immune response, responding to pain, swelling and inflammation, and eye pressure regulation are all of obvious importance in autism. Essential fatty acid supplementation is also well documented to improve cardiovascular health and is believed to aid in arthritis and skin conditions.

Since essential fatty acids are a key ingredient of the membranes in all body tissues, a deficiency of EFA's could be an important factor in the development of a leaky gut in autistic children. Such a deficiency could lead to an increase in the permeability of the mucosal membrane in the intestine. A leaky gut allows undigested food particles and toxins to get into the bloodstream causing reactions throughout the system.

(continued on next page)



PRO-EFA OMEGA 3/6/9 & BORAGE OIL

Supplement Capsules (continued)

Product Ingredients:

Supplement Facts	
Serving Size: 1Capsule	
Amount per Serving	% Daily Value
Calories 9	
Calories from Fat 9	
Total Fat 1 g	1.5%*
Saturated Fat 0.2 g	1.5%*
Polyunsaturated Fat 0.7 g	†
Vitamin E (mixed tocopherols) 8 I.U.	26%*
Omega-3 Fatty Acids 288 mg	
EPA (eicosapentaenoic Acid) 148 mg	†
DHA (Docosahexaenoic Acid) 99 mg	†
Borage Oil 180 mg	†
GLA 40 mg	†

* Percent Daily Values are based on a 2,000 calorie diet.
 † Daily Value Not Established

Ingredients: Purified deep sea fish oil, soft gel capsule (gelatin, water, glycerine, lemon oil) Borage oil, lemon oil, mixed tocopherols, antioxidant blend (lecithin, ascorbyl palmitate).

Packaging & Price:

Item #	Description	Package Size	Price
821/90	ProEFA Soft Gel Capsules	90 Capsules	\$17.00



PRO-EPA OMEGA-3

Supplement Capsules

Kirkman Laboratories is now an official distributor for ProEPA, an Omega-3 Dietary supplement manufactured by Nordic Naturals™. ProEPA is a revolutionary product in that it uses only the highest quality fish oil available in the world. This oil is produced using flash distillation and molecular distillation ensuring the highest quality Omega 3 oils while eliminating all PCBs and heavy metal contaminants. The oil is then deodorized which also improves the taste dramatically.

For decades, fish oil has been recognized as a great way of supplementing Omega-3 fatty acids to the diet. Many fish oil supplements are available, but the quality of Nordic Naturals™ ensures the highest quality oils with no contaminants. The product also contains natural lemon oil which covers up the fish smell and helps avoid fishy burps.

ProEPA is an advanced essential fatty acid formula that delivers 600 mg. of Omega-3's including 450 mg. EPA and 100 mg. DHA. Being high in EPA makes it the ideal Omega 3 to support the body's manufacture of the vital series 3 postaglandins which are important in:

- Regulating nerve transmission
- Regulating pressure in the eye, joints and blood vessels
- Regulating the division of cells (growth and healing processes)
- Responding to pain, swelling and inflammation
- Regulating muscle reflexes
- Transporting of oxygen from cells to tissues
- Maintaining health of cell membranes
- Mediating immune response
- Providing energy to the heart muscle
- Reduce several risk factors for coronary heart disease including the reduction of serum cholesterol and triglycerides

Essential fatty acid supplementation is critical in autism. Growth, healing, muscle reflexes, mediating immune response, response to pain, swelling and inflammation, and eye pressure regulation are all of obvious importance in autism. Essential fatty acid supplementation is also well documented to improve cardiovascular health and is believed to aid in arthritis and skin conditions.

Since essential fatty acids are a key ingredient of the membranes in all body tissues, a deficiency of EFA's could be an important factor in the development of a leaky gut in autistic children. Such a deficiency could lead to an increase in the permeability of the mucosal membrane in the intestine. A leaky gut allows undigested food particles and toxins to get into the bloodstream causing reactions throughout the system.

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Omega-3 Fatty Acids	600 mg	*
EPA (eicosapentaenoic Acid)	450 mg*	
DHA (Docosahexaenoic Acid)	100 mg*	
Other Omega-3	50 mg*	

* Daily Value Not Established

Ingredients: Purified deep sea fish oil, capsule (gelatin, water, glycerine, lemon oil) mixed tocopherols, lecithin, ascorbyl palmitate, lemon oil, rosemary oil.

Packaging & Price:

Item #	Description	Package Size	Price
816/60	ProEPA Soft Gel Capsules	60 Capsules	\$21.50



PRO-DHA OMEGA-3 Supplement Capsules

Kirkman Laboratories is now an official distributor for ProDHA, an Omega-3 Dietary supplement manufactured by Nordic Naturals™. ProDHA is a revolutionary product in that it uses only the highest quality fish oil available in the world. This oil is produced using flash distillation and molecular distillation ensuring the highest quality Omega 3 oils while eliminating all PCBs and heavy metal contaminants. The oil is then deodorized which also improves the taste dramatically.

For decades, fish oil has been recognized as a great way of supplementing Omega-3 fatty acids to the diet. Unfortunately, fish oil has been difficult to administer to children who can't swallow large capsules. Also, fishy burps made it unpleasant. ProDHA is a much smaller capsule than most fish oil supplements. It should be much easier for children to swallow. The product also contains a natural strawberry essence which covers up the smell and helps avoid the fishy burps.

ProDHA is an advanced essential fatty acid formula that delivers 400 mg. of Omega-3's including 250 mg. DHA and 100 mg. EPA. Being high in DHA makes it the ideal Omega 3 supplement for eye development and brain and nervous system support. DHA has been shown clinically to be necessary for proper eye development and for brain development. Infant formulas are now supplemented with DHA for that reason.

Essential fatty acid supplementation is critical in autism. Growth, healing, muscle reflexes, mediating immune response, response to pain, swelling and inflammation, and eye pressure regulation are all affected by a lack on EFA's. These are all of obvious importance in autism. Essential fatty acid supplementation is also well documented to improve cardiovascular health.

Since essential fatty acids are a key ingredient of the membranes in all body tissues, a deficiency of EFA's could be an important factor in the development of a leaky gut in autistic children. Such a deficiency could lead to an increase in the permeability of the mucosal membrane in the intestine. A leaky gut allows undigested food particles and toxins to get into the bloodstream causing reactions throughout the system.

Product Ingredients:

Supplement Facts

Serving Size: 1Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Omega-3 Fatty Acids	400 mg	*
DHA (Docosahexaenoic Acid)	250 mg*	
EPA (eicosapentaenoic Acid)	100 mg*	
Other Omega-3	50 mg*	

* Daily Value Not Established

Ingredients: Purified deep sea fish oil, soft gel capsule (gelatin, water, glycerine, natural strawberry essence), natural strawberry essence, mixed tocopherols, antioxidant blend (lecithin, ascorbyl palmitate).

Packaging & Price:

Item #	Description	Package Size	Price
815/90	ProDHA Soft Gel Capsules	90 Capsules	\$19.50





BALANCED OMEGA COMBINATION

from Nordic Naturals

Some practitioners prefer a balanced ratio of Omega-3's from fish liver oil to Omega-6's from evening primrose oil. That often means taking two products or difficulty in getting the right ratios. Nordic Naturals has overcome those issues with their new "Balanced Omega Combination". This product is consistent in quality with all others from Nordic Naturals in that is:

- Molecularly distilled for purity
- Third party tested for heavy metals, PCB's and pesticides
- Freshness tested (Peroxide value 0.2 meq/kg)
- Flavored with a natural lemon oil in both shell and oil
- Capsule may be swallowed or chewed

Each TWO capsules provide:

EPA	36 mg.
DHA	24 mg.
Other EFA's	5 mg.
Evening Primrose Oil	800 mg.
GLA	82 mg.
Vitamin E (mixed toc)	30 IU

Ingredients: Evening Primrose Oil, purified Arctic deep-water fish oil, mixed tocopherols, lemon oil, lecithin, ascorbyl palmitate, gelatin, water.

Recommended Usage:

Dosage: Two to four capsules daily or as directed.

Packaging & Price:

Item #	Description	Package Size	Price
823/180	Balanced Omega Combination Soft GelCaps	180 GelCaps	\$23.00

LOTIONS & CREAMS

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



MAGNESIUM SULFATE CREAM

Topical Epsom Salt Preparation

Magnesium sulfate, otherwise known as Epsom Salts, has been valued by the medical community for many years because of its diverse therapeutic benefits. Rich in both magnesium and sulfur compounds, Epsom salt baths have been used to stimulate detoxification, reduce inflammation, promote healthy circulation, and normalize sleep patterns.

Recently, a number of studies, as well as close observation by parents, have indicated that there may be potential value in the use of magnesium sulfate for the management of autism. Parents of autistic children have reported improvements in areas such as language, behavior, mood, cooperation, sleep, and motor skills after starting their children on daily Epsom salt baths. Since Epsom salt baths may cause some children to develop dry, irritated skin, several physicians specializing in the treatment of autism are now prescribing magnesium sulfate cream to achieve these same therapeutic effects.

The benefits of magnesium sulfate appear to be linked to an enzyme system known as phenol sulfotransferase (PST), which was shown to be functioning at sub-optimal levels in more than half of the autistic children tested by Dr. Rosemary Waring in England¹. Normally, PST is involved in a process called sulfoconjugation, whereby a group of potentially harmful chemicals known as phenols are attached to sulfate and thereby eliminated from the body. When there is a deficiency of sulfate in the bloodstream, as was shown to be the case in the majority of autistic individuals evaluated in another study², phenolic compounds may build up in the brain and nervous system, and this in turn can interfere with neurotransmitter function. Sulfate deficiency and the resulting impairment of PST activity may explain why many children with autism are sensitive to a variety of phenol-containing foods, such as apples, grapes, chocolate, food colorings, and some herbs and spices.

Besides its adverse effects on neurotransmitter function, impaired sulfation can have a variety of other harmful consequences, including decreased production of peptides, bile acids, CCK, and possibly secretin³. Since all of these are involved in digestive function, there may be a resulting decrease in the absorption of certain nutrients from the intestinal tract. It is well known that maldigestion and malabsorption are significant problems in many children with autism.

Perhaps the most damaging consequence of impaired sulfation is on the health of the intestinal lining. Normally, the intestinal tract is coated with a layer of mucoproteins that contain important immune cells (specifically IgA) and provide protection for the integrity of the gut wall. Since these mucoproteins are actually sulfated glycoproteins, a deficit in the sulfation process can leave portions of the gut wall exposed, resulting in increased intestinal permeability (or "leaky gut" problems), inflammation, and other types of gut dysfunction.

While some individuals with documented sulfation problems have found some benefit from taking the sulfur-containing enzyme MSM, it appears that sulfate ions are not as well absorbed from the intestinal tract as they are through the skin. This may be why parents and physicians are seeing more significant benefits from transdermal administration through epsom salt baths or magnesium sulfate cream.

Description of Kirkman's Magnesium Sulfate Cream: A soft, creamy and very quickly absorbed emulsion containing 100 mg. of Magnesium Sulfate USP per one gram of cream. It is in a non-irritating base which quickly delivers the magnesium sulfate to the transdermal level.

Magnesium Sulfate Cream (continued)

Product Ingredients:

Distilled water, magnesium sulfate USP, glycerine, glyceryl dilaurate, glyceryl stearate, PEG 100 stearate, cetearyl alcohol, cetareth-20, isopropyl myristate, imidurea NF, methyl paraben, and propyl paraben.

Recommended Usage:

One gram of cream per application usually to the back, or shoulders, though any extensive body area is satisfactory.

Cream may be applied three to four times daily or as recommended by your physician.

¹ Waring, RH et al. Biochemical parameters in autistic children. Dev Brain Dysfunction, 10:40-43, 1997.

² Waring, RH and Klovza, LV. Sulphur metabolism in autism. J Nutr Env Med 10:25-32, 2000.

³ Shattock, P and Whiteley, P. Dietary Interventions for the Treatment of Autism and Related Syndromes.

Packaging & Price:

Item #	Description	Package Size	Price
225/4	Magnesium Sulfate cream	4 oz	\$17.00



REDUCED L-GLUTATHIONE LOTION

Glutathione is a biologically active sulfur tripeptide containing three amino acids: cysteine, glutamic acid and glycine. The largest concentration of glutathione is found in the liver, where it is used to detoxify and remove harmful compounds from the body, including heavy metals. Glutathione is also an important component of several other organs and tissues, such as the brain, kidneys, lungs, intestinal tract, and blood cells.

Glutathione has a number of important functions in the body:

- **Antioxidant:** The primary role of glutathione is to function as a powerful antioxidant by neutralizing the free radicals that normally damage a cell's DNA and RNA. By increasing the ability of cells to cope with oxidative stress, glutathione can block free radical damage to all types of tissues in the body, thereby diminishing the degenerative disease processes usually associated with these free radicals. Glutathione also acts as a modulator for other antioxidants by enhancing the activity of Vitamin C and facilitating the recycling of Vitamins E and C.
- **Immune Modulation:** Glutathione plays a crucial role in assuring that the immune system's T-cells and B-cells are functioning properly.¹ Additionally, adequate levels of glutathione support a healthy body by stimulating the production of other important immune cells known as phagocytes.
- **Detoxification:** Glutathione is a vital component of the liver's detoxification systems. Both glutathione and its precursor, N-acetylcysteine (NAC), contain sulfhydryl groups that directly bind to and eliminate many types of toxins from the body, including heavy metals such as mercury and lead.^{2, 3}
- **Other Functions:** Glutathione also helps facilitate the transport of amino acids and is involved in the production of several other important enzymes and coenzymes in the human body.

Glutathione and Heavy Metals

In addition to supporting the liver's normal pathways of detoxification, glutathione has also been shown to be an important chelator of heavy metals including mercury, lead and cadmium. One study revealed that glutathione itself, without the presence of other chelating agents, was effective at removing toxic mercury from the kidneys.⁴ This chelation activity is accomplished by the sulfhydryl groups present on the glutathione molecule, which have a high binding affinity for heavy metals.

When mercury binds to glutathione in the detoxification process, each atom of mercury can cause the irreversible excretion of up to two glutathione molecules.⁵ While this process is beneficial in that it stimulates the removal of the toxic metal, it can also result in the gradual depletion of glutathione from the cell and thereby decrease the body's antioxidant capacity. Research has shown that mercury exposure causes a decrease in the glutathione levels of T-cells (immune cells) and other types of cells, as well as an overall increase in oxidative stress.^{6, 7} Through a similar mechanism, lead has also been shown to deplete intracellular glutathione.⁸ This can place an added burden on a system that is already compromised by other immune insults, such as food allergy, autoimmunity, and environmental toxicity.

Glutathione and Autism

Glutathione deficiency is a common finding in individuals with autism. Since the majority of these patients do have some degree of heavy metal toxicity, and because glutathione plays such an important role in the chelation process, it is essential that this nutrient be supplemented.

Kirkman has developed a transdermal glutathione lotion as part of its line of supplements for heavy metal

Reduced L-Glutathione (continued)

chelation. It has been shown that oral or dietary administration of glutathione is not effective at raising levels of circulating glutathione to a degree that is clinically beneficial, due to its hydrolysis in the intestinal tract.⁹ Transdermal or intravenous administration of glutathione is superior to oral supplementation and has been found to yield the most clinically beneficial results by physicians specializing in the treatment of autism.

Description of Kirkman's Transdermal Glutathione Lotion: To be stable and resistant to oxidation, glutathione should be in a water free base. By being resistant to oxidation, Kirkman's water free Glutathione lotion has no odor until applied to the skin and even then the odor is very minimal compared to other glutathione preparations which typically smell of sulfur. Because of the water free base, this product is oily in nature and the time necessary to rub the preparation into the skin is longer than with most creams and lotions.

Each gram (one level scoop) of Kirkman Glutathione Lotion delivers 180 mg. of reduced L-Glutathione.

Product Ingredients:

Isopropyl myristate, mineral oil, caprylic/capric triglyceride, vitamin E acetate (soy free), L-glutathione.

Recommended Usage:

Apply one gram (One level scoop using the enclosed measure) one to three times daily or as directed by your physician.
SHAKE WELL BEFORE USING TO ENSURE COMPLETE UNIFORMITY

¹ Wu, J et al. Mercaptoethanol and N-acetylcysteine enhance T-cell colony formation in AIDS and ARC. Clin Exp Immunol 77:7-10, 1989.

² Lund, ME et al. Treatment of acute methylmercury ingestion by hemodialysis with N-acetylcysteine. Toxicol Clin Toxicol 22:31-49, 1984.

³ Henderson, P et al. N-Acetylcysteine therapy of acute heavy metal poisoning in mice. Vet Hum Toxicol 27:522-5, 1985.

⁴ Keith RL, et al. Utilization of renal slices to evaluate the efficacy of chelating agents for removing mercury from the kidney. Toxicology 1997 Jan 15;116(1-3):67-75.

⁵ Zalups RK, et al. Interactions between glutathione and mercury in the kidney, liver and blood. In: Chang, LW, ed. Toxicology of Metals. Boca Raton: CRC Press, 1996; 145-63.

⁶ Shenker BJ, et al. Mercury-induced apoptosis in human lymphoid cells: evidence that the apoptotic pathway is mercurial species dependent. Environ Res 2000 Oct;84(2):89-99.

⁷ Thompson SA, et al. Modulation of glutathione and glutamate-L-cysteine ligase by methylmercury during mouse development. Toxicol Sci 2000 Sep;57(1):141-6.

⁸ Gong Z, et al. Effect of chelation with meso-dimercaptosuccinic acid (DMSA) before and after the appearance of lead-induced neurotoxicity in the rat. Toxicol Appl Pharmacol 1997;144:205-214.

⁹ Witschi Z, et al. The systemic availability of oral glutathione. Eur J Clin Pharmacol 1992;43(6):667-669.

Packaging & Price:

Item #	Description	Package Size	Price
226/2	Reduced L-Glutathione Lotion	2 oz	\$38.00





NOTES

MINERALS

A number of studies have shown that children with autism have significant deficiencies in essential minerals, including zinc, calcium, magnesium, and selenium. Minerals are among the most important nutrients required for proper functioning of the enzyme complexes, immune system, nervous system, and detoxification pathways in the human body. Some of the reasons for mineral depletion in autistic individuals include dietary insufficiency, malabsorption syndromes, and heavy metal toxicity. Correction of these deficits with mineral supplementation is essential.

Kirkman Laboratories manufactures a range of mineral formulas designed specifically for the autistic child. In addition to the well-balanced Multiple Mineral Complex Pro-Support, which is part of the Chelation Products line, Kirkman also offers several individual mineral supplements to address specific areas of deficiency. All Kirkman products are gluten and casein free, and they are available in a variety of forms for ease of administration.

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



CALCIUM WITH VITAMIN D FLAVORED POWDER

Many individuals with autism do not get enough calcium in their diet. This is especially true if they are on a dairy free diet. This shortage of calcium is a problem because calcium is essential for good health.

Apart from being a major constituent of bones and teeth, calcium is crucial for nerve conduction, muscle contraction, heartbeat, blood coagulation, and the production of energy and maintenance of immune function.

Calcium deficiency in children can cause rickets, bone deformities and growth retardation. Low calcium intake also contributes to high blood pressure, osteoporosis and colon cancer.

Kirkman's Calcium with vitamin D is available in a pleasant tasting powder that is partially absorbed in the mouth (the mouth contains many small blood vessels close to the surface and calcium is absorbed directly into the blood stream) as well as in the small intestine. The great taste of *Kirkman's Calcium Powder with vitamin D* is a result of using the calcium carbonate form of calcium. No other form of calcium is as good tasting and easy for children to accept.

Kirkman's Calcium with vitamin D can also be used in cooking and baking. It has been successfully incorporated into cookies, pancakes, muffins and other baked goods.

Product Ingredients:

Supplement Facts		
Serving Size: 1/4 teaspoon		
Each Serving Contains	Amount per Serving	% Daily Value
Calcium	333 mg	33%
Vitamin D	58 IU	15%

Other Ingredients: sorbitol, sucralose, natural chocolate flavoring.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

1/4 teaspoon 3 times per day

Packaging & Price:

Item #	Description	Package Size	Price
005/8	Calcium (Flavored) Powder	8 oz	\$12.00
005/16	Calcium (Flavored) Powder	16 oz	\$20.00



CALCIUM WITH VITAMIN D HYPOALLERGENIC POWDER

Many individuals with autism do not get enough calcium in their diet. This is especially true if they are on a dairy free diet. This shortage of calcium is a problem because calcium is essential for good health.

Apart from being a major constituent of bones and teeth, calcium is crucial for nerve conduction, muscle contraction, heartbeat, blood coagulation, and the production of energy and maintenance of immune function.

Calcium deficiency in children can cause rickets, bone deformities and growth retardation. Low calcium intake also contributes to high blood pressure, osteoporosis and colon cancer.

Kirkman's Calcium with vitamin D is now available in a hypoallergenic powder that is partially absorbed in the mouth (the mouth contains many small blood vessels close to the surface and calcium is absorbed directly into the blood stream) as well as in the small intestine. Kirkman's Calcium Powder with vitamin D is a blend of calcium carbonate and calcium citrate and contains no other ingredients. No allergens are present as only the calcium and vitamin D are present. This powder can be sprinkled on various foods or can be used in cooking and baking. Parents have successfully incorporated the calcium into cookies, pancakes, muffins and other baked goods.

Product Ingredients:

Supplement Facts		
Serving Size: 1/2 teaspoon		
Each Serving Contains	Amount per Serving	% Daily Value
Calcium (Calcium Carbonate & Calcium Citrate)	1000 mg	100%
Vitamin D	175 IU	44%

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, and artificial colorings and flavorings.

Recommended Usage:

1/2 teaspoon per day.

Packaging & Price:

Item #	Description	Package Size	Price
036/8	Calcium Hypoallergenic Powder	8 oz	\$12.00
036/16	Calcium Hypoallergenic Powder	16 oz	\$20.00



MAGNESIUM

HYPOALLERGENIC CAPSULES

Magnesium is an essential mineral that is involved in many body functions as well as being a constituent of bones and teeth. It is an essential element of cellular metabolism and is an enzyme activator. Magnesium is extremely important in autism and other developmental disorders for the following reasons:

- Magnesium counteracts the side effects of high B-6 therapy
- Magnesium helps curb hyperactivity
- Magnesium relaxes nerve impulses and muscle contractions
- Magnesium helps prevent muscle spasms such as tremors or twitching

Dr. Bernard Rimland is the leader of Vitamin B-6 therapy in treating autism. Dr. Rimland has concluded that supplementation with Magnesium along with the B-6 administration gave improved results. Side effects from the B-6 such as irritability, sound sensitivity, hyperactivity and bed wetting stopped when Magnesium was included.

Dimethylglycine and/or Trimethylglycine are often used in helping to treat autism. These compounds can cause hyperactivity in some individuals. Magnesium can be helpful in this situation along with folic acid.

Signs and symptoms of magnesium deficiency include fatigue, mental confusion, heart disturbances, irritability, weakness, muscle spasms, loss of appetite, insomnia and a feeling of weakness. Cardiovascular disease can be triggered by inadequate magnesium. Cardiac arrhythmias are often benefited by this mineral.

Kirkman's Super Nu-Thera™ products contain Magnesium in the correct ratio to Vitamin B-6 for most individuals. Some users have found that additional magnesium is necessary to curb hyperactivity and help in normal sleep patterns.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Magnesium (oxide)	180 mg	50%

Other Ingredients: Plant cellulose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

Children: One capsule daily

Adults: Two capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
035/100	Magnesium Hypoallergenic Capsules	100 Capsules	\$5.00
035/250	Magnesium Hypoallergenic Capsules	250 Capsules	\$10.00



MAGNESIUM CITRATE SOLUBLE HYPOALLERGENIC POWDER

The use and effectiveness of magnesium supplementation is well documented. Magnesium is an essential mineral that is involved in many body functions as well as being a constituent of bones and teeth. It is essential for element of cellular metabolism and is an enzyme activator. Magnesium is extremely important in autism and other developmental disorders for the following reasons:

- Magnesium counteracts the side effects of high B-6 therapy
- Magnesium helps curb hyperactivity
- Magnesium relaxes nerve impulses and muscle contractions
- Magnesium helps prevent muscle spasms such as tremors or twitching
- Magnesium promotes relaxation and restful sleep

Dr. Bernard Rimland is the leader of Vitamin B-6 therapy in treating autism. Dr. Rimland has concluded that supplementation with Magnesium along with the B-6 administration gave improved results. Side effects from the B-6 such as irritability, sound sensitivity, hyperactivity and bed wetting stopped when magnesium was included.

Kirkman's B-6/Magnesium nutritional supplements (Super Nu-Thera products) contain magnesium in the proper ration for most individuals, but sometimes more is required to counteract the side effects mentioned above and to promote restful sleep.

Dimethylglycine and trimethylglycine are often used in helping to treat autism. These compounds can cause hyperactivity in some individuals. Magnesium can be helpful in this situation along with folic acid.

Signs and symptoms of magnesium deficiency include fatigue, mental confusion, heart disturbances, irritability, weakness, muscle spasms, loss of appetite, insomnia and a feeling of weakness. Cardiovascular disease can be triggered by inadequate magnesium. Cardiac arrhythmias are often benefited by this mineral.

Kirkman's Magnesium Citrate soluble powder is the easiest magnesium supplement to use, and because it is soluble in liquids, it will be the best absorbed form as well. It dissolves in water, juice, lemonade, or any other liquid which your child likes. It is non-gritty and has a very pleasant citrus taste which comes from the citric acid present. There are no flavorings or sweeteners added. This product can also be added to hot water to make a very pleasant tea or can be added to your favorite commercial tea resulting in a nice citrus note. Adults will also find this product a great way to supplement magnesium.

**As with all magnesium supplements, stools can become looser with use.
If this occurs, cut back on the dosage.**

(continued on next page)



MAGNESIUM CITRATE

SOLUBLE HYPOALLERGENIC POWDER (continued)

Product Ingredients:

Supplement Facts

Serving Size: 1 heaping teaspoon (5 gm)

Each Serving Contains	Amount per Serving	% Daily Value
Magnesium (elemental)	400 mg	100%

Other Ingredients: Citric Acid.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings and flavorings.

Recommended Usage:

Children: One half to one heaping teaspoon daily

Adults: One to two heaping teaspoons daily

NOTE: The amount given to autistic children should be adjusted depending on the amount of magnesium the child is getting from other dietary supplements or from chelation aids such as magnesium glycinate.

Packaging & Price:

Item #	Description	Package Size	Price
239/8	Magnesium Citrate Hypoallergenic Powder	8 ounces	\$16.00



MAGNESIUM GLYCINATE HYPOALLERGENIC CAPSULES

DMSA does not chelate aluminum. In order to remove aluminum during the chelation process, most physicians are using Magnesium Glycinate or intravenous vitamin C.

Magnesium Glycinate is not a good tasting chemical so compliance has been difficult for most parents. Kirkman has solved that problem. Our Magnesium Glycinate Hypoallergenic capsules are dosed at 100 mg. of elemental magnesium from 552 mg. of magnesium glycinate. The glycinate portion of this chemical is the chelating portion of this molecule. Kirkman uses only Albion brand magnesium glycinate because this is the only company with clinical studies which guarantee proper utilization. Magnesium glycinate is also an excellent source of magnesium which is gentle on the digestive system and does not cause diarrhea as many magnesium supplements do.

Product Ingredients:

Supplement Facts		
Serving Size: 1 capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Magnesium (as Glycinate)	100 mg	25%
From:		
Magnesium Glycinate®	552 mg	*
* Percent Daily Value Not Established		

Other Ingredients: Plant cellulose.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

® Magnesium Glycinate is a registered trademark of Albion.

Recommended Usage:

One capsule daily or as directed by your physician.

Packaging & Price:

Item #	Description	Package Size	Price
096/100	Magnesium Glycinate Hypoallergenic Capsules	100 Capsules	\$11.50



MAGNESIUM GLYCINATE

"SWEET POWDER"

DMSA does not chelate aluminum. In order to remove aluminum during the chelation process, most physicians are using Magnesium Glycinate or intravenous vitamin C.

Magnesium Glycinate is not a good tasting chemical so compliance has been difficult for most parents. Kirkman has solved that problem. Our Magnesium Glycinate "Sweet" Powder is a naturally sweetened product which can be dissolved in juice with a resulting sweet palatable liquid. No bad taste is evident so compliance is easy. It can even be dissolved in water with only a slight aftertaste. Each 1/4 teaspoon (one gram) supplies 997 mg. of magnesium glycinate (in buffered form) containing 182 mg. of elemental magnesium. The glycinate portion of this chemical is the chelating portion of this molecule. Kirkman uses only Albion brand magnesium glycinate because this is the only company with clinical studies which guarantee proper utilization. Magnesium glycinate is also an excellent source of magnesium which is gentle on the digestive system and does not cause diarrhea as many magnesium supplements do.

Product Ingredients:

Recommended Usage:

Supplement Facts		
Serving Size: 1/4 teaspoon (1 gram)		
Each Serving Contains	Amount per Serving	% Daily Value
Magnesium	182 mg	45%
From		
Magnesium Glycinate	997 mg	*

* Daily Value Not Established

1/4 teaspoon daily or as directed by your physician.

Other Ingredients: Magnesium Glycinate and sucralose.
DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Packaging & Price:

Item #	Description	Package Size	Price
092/4	Magnesium Glycinate Powder	4 oz	\$15.00



MOLYBDENUM

100 mcg. Capsules

Molybdenum is considered a trace mineral. Doctors are finding that trace minerals can be important in helping to treat autism spectrum disorders. Molybdenum is one of the most important of these compounds.

Molybdenum is a component of several enzymes and also plays an important role in sulfur metabolism and as a result, high sulfur intake may lower molybdenum levels. Low molybdenum can then cause allergic reactions to sulfites.

A dietary increase in molybdenum increases copper excretion. This could be important in those children with high copper levels which is prevalent in autism. Molybdenum supplementation should be administered upon the advice of a physician or health care practitioner.

Kirkman's Molybdenum capsules are part of the hypoallergenic line as they contain no known allergens. The molybdenum is in the form of an amino acid chelate.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Molybdenum (elemental)	100 mcg	133%

Other Ingredients: Plant cellulose and leucine.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Packaging & Price:

Item #	Description	Package Size	Price
244/100	Molybdenum Capsules	100 Capsules	\$12.00



SELENIUM 100 MCG. HYPOALLERGENIC CAPSULES

Selenium is an essential trace mineral which functions primarily as an anti-oxidant in the body. It works with vitamin E in preventing free radical damage to cell membranes. Low levels of selenium are associated with a higher risk of cancer, cardiovascular disease, immune deficiencies and premature aging.

Selenium deficiency results in depressed immune function due to decreased levels of white blood cells and natural killer cells. Increased susceptibility to infections results. With the yeast and bacterial infections usually present in autism, selenium is an important supplement.

Selenium is antagonistic to heavy metals including lead, mercury, aluminum and cadmium. Selenium actually aids in their removal from the body. As a result doctors doing DMSA and Lipoic Acid chelation therapy supplement with high levels of selenium, 100 to 200 mcg.

Kirkman's selenium capsules utilize L-Selenomethionine as the selenium source. This is a biologically active form which is very effectively absorbed in clinical studies. This product is hypoallergenic in that it contains no casein, gluten, wheat, corn, dairy products, artificial flavors/colors or soy.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Selenium	100 mcg	142%

Other Ingredients: Plant cellulose, L-selenomethionine, and L-Leucine.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings and flavorings.

Recommended Usage:

One to two capsules daily or as directed.

Packaging & Price:

Item #	Description	Package Size	Price
071/100	Selenium Hypoallergenic Capsules	100 Capsules	\$10.00



ZINC

HYPOALLERGENIC CAPSULES

Zinc is present in over 200 body enzymes. It is essential for normal skin, vision, smell, taste, protein synthesis and wound healing. Zinc is involved in just about every aspect of immunity. Zinc deficiency prevents having a normal, healthy immune system making supplementation with zinc extremely important in autism. One of the leading causes of zinc depletion in the body is excessive diarrhea which is often a problem in autistic children.

Symptoms of zinc deficiency include:

- Reduced appetite
- Slow wound healing
- Skin or tissue disorders
- Bowel inflammation
- Sleep disturbances
- Behavioral abnormalities
- Frequent infections or viral conditions

Kirkman's Hypoallergenic Zinc capsules contain 20 mg. elemental zinc from a rice chelate. They are encapsulated in a plant cellulose shell and contain only vegetable grade magnesium stearate as a lubricant. No other fillers or potential allergens are present.

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Zinc (Elemental) as amino acid chelate	20 mg	133%

Other Ingredients: Plant cellulose, and magnesium stearate.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

As a dietary supplement, take the following dosages daily at bedtime.

Small children to 6 years old One capsule at bedtime
 Older children and adults Two capsules at bedtime

Packaging & Price:

Item #	Description	Package Size	Price
023/100	Zinc Hypoallergenic Capsules	100 Capsules	\$7.00
023/250	Zinc Hypoallergenic Capsules	250 Capsules	\$14.00





ZINC FLAVORED LIQUID

Zinc is present in over 200 body enzymes. It is essential for normal skin, vision, smell, taste, protein synthesis and wound healing. Zinc is involved in just about every aspect of immunity. Zinc deficiency prevents having a normal, healthy immune system making supplementation with zinc extremely important in autism. One of the leading causes of zinc depletion in the body is excessive diarrhea which is often a problem in autistic children.

Symptoms of zinc deficiency include:

- Reduced appetite
- Slow wound healing
- Skin or tissue disorders
- Bowel inflammation
- Sleep disturbances
- Behavioral abnormalities
- Frequent infections or viral conditions

Kirkman's Liquid Zinc Supplement is pleasant tasting syrup naturally flavored with a natural raspberry flavor. Each 1 teaspoon contains 20 mg. of elemental zinc from zinc alpha-ketoglutarate and is in a sugar free medium.

Product Ingredients:

Supplement Facts

Serving Size: 1 teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Zinc (from Zinc Alpha Keto Glutarate)	20 mg	133%

Other Ingredients: Purified water, Sorbitol, Glycerine, Propylene Glycol, Polysorbate 80, Natural Raspberry Flavoring, Citric Acid, Potassium Sorbate, Sucralose, and Sodium Benzoate.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

As a dietary supplement, take the following dosages at bedtime.

Small children to 6 years old	1/2 to 1 teaspoon at bedtime
Older children and adults	1-2 teaspoons at bedtime

Packaging & Price:

Item #	Description	Package Size	Price
049/8	Zinc Liquid	8 oz.	\$12.00

MULTI-VITAMINS

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



SUPER NU-THERA™ POWDER

Dr. Bernard Rimland, Director of the Autism Research Institute, has been a leader in the field of autism research for almost 40 years. Early in his research into autism Dr. Rimland found that well documented studies showed a beneficial relationship between high doses of vitamin B6 and improved autistic behavior. The benefits of B6 and magnesium for people with autism vary considerably but may include:

- Increased Communicative Skills
- Reduced Restlessness
- Less Irritability
- Reduced Repetitive Self Stimulation
- Better Eye Contact.

Working with Dr. Rimland, Kirkman Sales Company formulated *Super Nu-Thera™* vitamins to include a megadose of Vitamin B6 along with his recommended amounts of magnesium and other important vitamins and minerals. There is no other product on the market today exactly like *Super Nu-Thera™*. The powder has a citrus flavoring and can be mixed into any food or beverage.

Product Ingredients:

Supplement Facts

Serving Size: 5 grams

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	5000 IU	100%
Vitamin D	200 IU	50%
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine Nitrate)	15 mg	1000%
Vitamin B-2 (Riboflavin)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	500 mg	25000%
Niacinamide	30 mg	150%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (Calcium Pantothenate)	20 mg	200%
Vitamin E	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	100 mcg	33%
Magnesium (citrate, glycinate, oxide)	250 mg	62%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate)	50 mcg	71%

Other Ingredients: Fructose, Natural Flavors, Sucralose, Natural Orange Flavor, and Silicon Dioxide.

Recommended Usage:

As a dietary supplement use 1 teaspoon of powder per day.

For individuals with autism or related conditions use:

Weight in pounds	Powder
30 pounds	1 teaspoon
60 pounds	2 teaspoons
90 pounds	3 teaspoons
120 pounds or more	4 teaspoons

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide the daily dosage into portions, preferably 3 portions, given throughout the day.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial color, preservatives, corn, wheat, or yeast.

Packaging & Price:

Item #	Description	Package Size	Price
210/450	Super Nu-Thera® Powder	450 Grams	\$49.00

Also available without vitamins A&D -

Item #	Description	Package Size	Price
247/450	Super Nu-Thera® Powder without Vits. A & D	450 Grams	\$49.00



SUPER NU-THERA™ LIQUID

Kirkman is very pleased to announce that the liquid concentrate has been completely revised to improve it's flavor and to make it much more pleasant for your child to use. It is now available in two popular, pleasant tasting flavors - tropical fruit or natural raspberry. *Super Nu-Thera™* does not contain any yeast, sucrose, starch or artificial colors and is casein and gluten free.

The benefits of B6 and magnesium for people with autism vary considerably but may include:

- Increased Communicative Skills
- Reduced Restlessness
- Less Irritability
- Reduced Repetitive Self Stimulation
- Better Eye Contact.

Working with Dr. Rimland, Kirkman Sales Company formulated *Super Nu-Thera™* vitamins to include a megadose of Vitamin B6 along with his recommended amounts of magnesium and other important vitamins and minerals.

Product Ingredients:

Supplement Facts

Serving Size: 10 ml (approximately 2 teaspoons)

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Emulsified)	5000 IU	100%
Vitamin D (Vitamin D-3)	200 IU	50%
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine HCL)	15 mg	1000%
Vitamin B-2 (Riboflavin 5' Phosphate Sodium)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	450 mg	22500%
Niacinamide	25 mg	125%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (d-Panthenol)	20 mg	200%
Vitamin E (dl-Alpha tocopheryl acetate)	5 IU	16%
Folic Acid (Calcium Folate)	400 mcg	100%
Biotin	50 mcg	16%
Magnesium (Mag. Sulfate & Mag. Chloride)	150 mg	37%
Zinc (Zinc Sulfate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate & Selenate)	50 mcg	71%

Other Ingredients: Glycerine, Sorbitol, Propylene Glycol, Sucralose, Polysorbate 80, Natural Tropical Fruits Flavors (Lemon, Pineapple, Banana, and Coconut) and Purified Water. Note: Raspberry Flavored product contains Natural Raspberry Flavor in place of Natural Tropical Fruit Flavors.

DOES NOT CONTAIN: Sucrose, starch, yeast, casein, gluten, corn, wheat, milk, artificial colors or flavors.

Packaging & Price:

Item #	Description	Package Size	Price
017/29	Super Nu-Thera® Liquid (Tropical Fruit Flavor)	29 oz. (870 ml)	\$49.00
055/29	Super Nu-Thera® Liquid (Raspberry Flavor)	29 oz. (870 ml)	\$49.00

Recommended Usage:

As a dietary supplement use 1 teaspoon of liquid.

For individuals with autism or related conditions use:

Weight in pounds	Liquid
30 pounds	1 teaspoon
60 pounds	2 teaspoons
90 pounds	3 teaspoons
120 pounds or more	4 teaspoons

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide the daily dosage into portions, preferably 3 portions given throughout the day.

For best flavor, we recommend diluting the liquid in water or juice.





SUPER NU-THERA™ CAPLETS

Super Nu-Thera™ caplets do not contain any flavorings or sweeteners and are designed to be swallowed, not chewed. They are recommended for older children and adults. *Super Nu-Thera™* does not contain any wheat, yeast, sucrose, artificial colors and are gluten and casein free.

The benefits of B6 and magnesium for people with autism vary considerably but may include:

- Increased Communicative Skills
- Reduced Restlessness
- Less Irritability
- Reduced Repetitive Self Stimulation
- Better Eye Contact.

Working with Dr. Rimland, Kirkman Sales Company formulated *Super Nu-Thera™* vitamins to include a megadose of Vitamin B6 along with his recommended amounts of magnesium and other important vitamins and minerals.

Product Ingredients:

Supplement Facts

Serving Size: 6 Caplets

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	5000 IU	100%
Vitamin D (Vitamin D-3)	200 IU	50%
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine Nitrate)	15 mg	1000%
Vitamin B-2 (Riboflavin)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	500 mg	25000%
Niacinamide	30 mg	150%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (Calcium Pantothenate)	50 mg	500%
Vitamin E	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	100 mcg	33%
Calcium (Elemental)	250 mg	25%
Magnesium (citrate, glycinate, oxide)	250 mg	62%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate)	50 mcg	71%
PABA (p-Aminobenzoic Acid)	30 mg	*
Choline Bitartrate	100 mg	*
Inositol	100 mg	*

* Daily Value not established.

Recommended Usage:

As a dietary supplement use 6 caplets per day.

For individuals with autism or related conditions use:

Weight in pounds	Caplets
30 pounds	Not recommended
60 pounds	6 caplets
90 pounds	9 caplets
120 pounds or more	12 caplets

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide the daily dosage into portions, preferably 3 portions, given throughout the day.

Other Ingredients: Sodium Starch Glycolate, Plant Cellulose, Calcium Citrate, Calcium Sulfate, Calcium Carbonate, DiCalcium Phosphate, Stearic Acid, Magnesium Stearate, Pharmaceutical Glaze.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial color, preservatives, wheat, or yeast.

Packaging & Price:

Item #	Description	Package Size	Price
212/540	Super Nu-Thera® Caplets	540 Caplets	\$49.00



SUPER NU-THERA™ LIQUID WITHOUT VITAMINS A&D

Kirkman offers *Super Nu-Thera™* without Vitamins A and D for those individuals using another A and D supplement such as Cod Liver Oil. Those children on Dr. Mary Megson's program would use this version of *Super Nu-Thera™*. It must be cautioned that Vitamins A and D are required nutrients and it is essential to good health that the body is not deficient in these nutrients. Therefore it is imperative that a Vitamin A and D supplement be used with this product.

Kirkman is very pleased to announce that the liquid concentrate has been completely revised to improve it's flavor and to make it much more pleasant for your child to use. It is now available in two popular, pleasant tasting flavors - tropical fruit or natural wild cherry. *Super Nu-Thera™* does not contain any yeast, sucrose, starch or artificial colors and is casein and gluten free.

Product Ingredients:

Supplement Facts		
Serving Size: 10 ml (approximately 2 teaspoons)		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine HCL)	15 mg	1000%
Vitamin B-2 (Riboflavin 5' Phosphate Sodium)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	450 mg	22500%
Niacinamide	25 mg	125%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (d-Panthenol)	20 mg	200%
Vitamin E (dl-Alpha tocopheryl acetate)	5 IU	16%
Folic Acid (Calcium Folate)	400 mcg	100%
Biotin	50 mcg	16%
Magnesium (Mag. Sulfate & Mag. Chloride)	150 mg	37%
Zinc (Zinc Sulfate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate & Selenate)	50 mcg	71%

Other Ingredients: Glycerine, Sorbitol, Propylene Glycol, Sucralose, Polysorbate 80, Natural Tropical Fruits Flavors (Lemon, Pineapple, Banana, and Coconut) and Purified Water.

DOES NOT CONTAIN: Sucrose, starch, yeast, casein, gluten, corn, wheat, milk, artificial colors or flavors.

Recommended Usage:

As a dietary supplement use 1 teaspoon of liquid.

For individuals with autism or related conditions use:

Weight in pounds	Liquid
30 pounds	1 teaspoon
60 pounds	2 teaspoons
90 pounds	3 teaspoons
120 pounds or more	4 teaspoons

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide the daily dosage into portions, preferably 3 portions, given throughout the day.

Packaging & Price:

Item #	Description	Package Size	Price
019/29	Super Nu-Thera® Liquid (Tropical Fruit Flavor) w/o Vitamins A & D	29 oz. (870 ml)	\$49.00
056/29	Super Nu-Thera® Liquid (Wild Cherry Flavor) w/o Vitamins A & D	29 oz. (870 ml)	\$49.00





SUPER NU-THERA™

HYPOALLERGENIC CAPSULES

Kirkman has had tremendous response and support of our Nu-Thera Hypoallergenic condensed formula. By popular demand, we are now introducing Super Nu-Thera Hypoallergenic. This formula has the same potencies as other Super Nu-Thera products and is hypoallergenic in all respects just as the condensed version, containing no fillers, sweeteners, flavorings or known allergens. This product is formulated for those individuals who are sensitive or have allergies to ingredients commonly used in the dietary supplement industry. Individuals who are unable to use other Super Nu-Thera products due to sensitivities or reactions to certain ingredients will now have a suitable product to use to get the nutritional benefits without the fear of a reaction to ingredients. Super Nu-Thera Hypoallergenic capsules have the following features:

- Capsule shell is made from plant cellulose, not animal gelatin like other products
- No fillers are used
- No flavorings are used
- No sweeteners are used
- No preservatives are added
- No colorings are present
- Only vegetable grade magnesium stearate is used as a lubricant

This product contains 50 mg. of Pyridoxal 5 Phosphate (P5P) and 50 mg. of B-6 from pyridoxine hydrochloride. In addition, it contains 240 mg. of magnesium from a citrate-glycinate-oxide blend and 350 mg. of calcium from a carbonate-chelate-citrate complex. All of the B-Complex vitamins, vitamin C, vitamin E plus all of the other minerals are present in the same potencies as other Super Nu-Thera products.

Because of the high potency of this product, the small capsules used in the condensed version of Nu-Thera Hypoallergenic were not suitable. Super Nu-Thera Hypoallergenic is in number "0" plant cellulose capsules. Because it contains a much higher concentration of vitamins and minerals, the taste will also be a lot stronger and hard to mask in juice or foods. Swallowing the capsules will be the best way to administer.

(continued on next page)



SUPER NU-THERA™

HYPOALLERGENIC CAPSULES (continued)

Product Ingredients:

Supplement Facts

Serving Size: 4 capsules

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	5000 IU	100%
Vitamin D	200 IU	50%
Vitamin C	500 mg	833%
Vitamin B-1 (Thiamine Nitrate)	15 mg	1000%
Vitamin B-2 (Riboflavin)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	50 mg	2500%
Niacinamide	20 mg	100%
Vitamin B-12 (Cyanocobalamin)	10 mcg	116%
Pantothenic Acid	10 mg	100%
Vitamin E (Acetate)	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	200 mcg	66%
Calcium (Carbonate, Citrate, Chelate)	350 mg	35%
Magnesium (Citrate, Glycinate, Oxide)	240 mg	60%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate)	50 mcg	71%
P-5-P (B-6 Coenzyme)	50 mg	*

* Daily Value not established.

Other Ingredients: Plant Cellulose, Vegetable Grade Magnesium Stearate, Sodium Ascorbate.

DOES NOT CONTAIN: Wheat, casein, gluten, sweeteners, corn, yeast, starch, artificial colors or flavors, or gelatin.

Recommended Usage:

As a dietary supplement, take the following dosages daily.

30-45 pounds	two capsules daily
46-60 pounds	four capsules daily (AM & PM)
61-120 pounds	six capsules daily (AM & PM)
over 120 pounds	six to eight capsules daily (AM & PM)

Packaging & Price:

Item #	Description	Package Size	Price
237/360	Super Nu-Thera® Hypoallergenic Capsules	360 Capsules	\$49.00



SUPER NU-THERA™ WITH P5P POWDER

This product has been specially formulated for those who do not benefit from the original formulation of *Super Nu-Thera™*. *Super Nu-Thera™ with P5P* contains Pyridoxal-5-Phosphate an alternative form of vitamin B6 which in many cases can be more easily absorbed and therefore more beneficial. As with the original formulation of *Super Nu-Thera™* the benefits often include:

- Increased Communicative Skills
- Reduced Restlessness
- Less Irritability
- Reduced Repetitive Self Stimulation
- Better Eye Contact.

Super Nu-Thera™ with P5P powder has a pleasant lemon-lime flavor and can be mixed in many beverages for ease of use. *Super Nu-Thera™ with P5P* does not contain any wheat, corn, yeast, sucrose, starch or artificial colors and is casein and gluten free.

Product Ingredients:

Supplement Facts		
Serving Size: 5 grams		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	5000 IU	100%
Vitamin D	200 IU	50%
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine Nitrate)	15 mg	1000%
Vitamin B-2 (Riboflavin)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	100 mg	5000%
Niacinamide	30 mg	150%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (Calcium Pantothenate)	20 mg	200%
Vitamin E	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	100 mcg	33%
Magnesium (citrate, glycinate, oxide)	250 mg	62%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate)	50 mcg	71%
P5P (Pyridoxal 5 Phosphate)	50 mg	*

* Percent Daily Value not established.

Other Ingredients: Fructose, Natural Lime Flavor, Lemon Flavor, Sucralose, and Silicon Dioxide.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial color, preservatives, corn, wheat, or yeast.

Packaging & Price:

Item #	Description	Package Size	Price
211/450	Super Nu-Thera® with P5P Powder	450 Grams	\$49.00

Recommended Usage:

As a dietary supplement use 1 teaspoon of powder per day.

For individuals with autism or related conditions use:

Weight in pounds	Powder
30 pounds	1 teaspoon
60 pounds	2 teaspoons
90 pounds	3 teaspoons
120 pounds or more	4 teaspoons

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide each days dosage into portions, preferably 3 portions, and given throughout the day.



SUPER NU-THERA™ LIQUID WITH P5P

Kirkman is very pleased to announce that the liquid concentrate which has been so widely accepted because of its ease of administration and its flavor, is now available with P5P for those individuals where this active form of vitamin B-6 is more effective. We have also incorporated a hypoallergenic green apple flavor to make this product suitable for very sensitive people who may not be able to tolerate the tropical fruit flavor used in regular Nu-Thera™ liquid. *Super Nu-Thera™* does not contain any yeast, sucrose, starch or artificial colors and is casein and gluten free.

Product Ingredients:

Supplement Facts		
Serving Size: 10 ml (approximately 2 teaspoons)		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Emulsified)	5000 IU	100%
Vitamin D (Vitamin D-3)	200 IU	50%
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine HCL)	15 mg	1000%
Vitamin B-2 (Riboflavin 5' Phosphate Sodium)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	200 mg	10000%
Niacinamide	25 mg	125%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (d-Panthenol)	20 mg	200%
Vitamin E (dl-Alpha tocopheryl acetate)	5 IU	16%
Folic Acid (Calcium Folate)	400 mcg	100%
Biotin	50 mcg	16%
Magnesium (Mag. Sulfate & Mag. Chloride)	150 mg	37%
Zinc (Zinc Sulfate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate & Selenate)	50 mcg	71%
P5P (Pyridoxal 5 Phosphate)	25 mg	*

* Percent Daily Value not established.

Other Ingredients: Glycerine, Sorbitol, Propylene Glycol, Sucralose, Polysorbate 80, Natural Green Apple Flavor and Purified Water.

DOES NOT CONTAIN: Sucrose, starch, yeast, casein, gluten, corn, wheat, milk, artificial colors or flavors.

Packaging & Price:

Item #	Description	Package Size	Price
074/29	Super Nu-Thera® with P5P Liquid (Green Apple Flavor)	29 oz. (870 ml)	\$49.00

Also available without vitamins A&D -

Item #	Description	Package Size	Price
232/29	Super Nu-Thera® with P5P Liquid without Vits. A & D (Wild Cherry Flavor)	29 oz. (870 ml)	\$49.00

Recommended Usage:

As a dietary supplement use 1 teaspoon of liquid.

For individuals with autism or related conditions use:

Weight in pounds	Liquid
30 pounds	1 teaspoon
60 pounds	2 teaspoons
90 pounds	3 teaspoons
120 pounds or more	4 teaspoons

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide the daily dosage into portions, preferably 3 portions, given throughout the day.

For best flavor, we recommend diluting the liquid in water or juice.



SUPER NU-THERA™ CAPLETS WITH P5P

This product has been specially formulated for those who do not benefit from the original formulation of *Super Nu-Thera™*. *Super Nu-Thera™ with P5P* contains Pyridoxal-5-Phosphate an advanced form of vitamin B6 which in many cases can be more easily absorbed and therefore more beneficial. As with the original formulation of *Super Nu-Thera™* the benefits often include:

- Increased Communicative Skills
- Reduced Restlessness
- Less Irritability
- Reduced Repetitive Self Stimulation
- Better Eye Contact.

Super Nu-Thera™ with P5P caplets are designed to be swallowed not chewed and would be recommended for older children and adults. *Super Nu-Thera™ with P5P* does not contain any wheat, corn, yeast, sucrose, starch or artificial colors and is gluten and casein free.

Product Ingredients:

Supplement Facts

Serving Size: 6 Caplets

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	5000 IU	100%
Vitamin D	200 IU	50%
Vitamin C (Ascorbic Acid & Sodium Ascorbate)	500 mg	833%
Vitamin B-1 (Thiamine Nitrate)	15 mg	1000%
Vitamin B-2 (Riboflavin)	15 mg	882%
Vitamin B-6 (Pyridoxine HCL)	100 mg	5000%
Niacinamide	30 mg	150%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (Calcium Pantothenate)	50 mg	500%
Vitamin E	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	100 mcg	33%
Calcium (Elemental)	500 mg	25%
Magnesium (citrate, glycinate, oxide)	250 mg	62%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	43%
Selenium (Chelate)	50 mcg	71%
P5P (Pyridoxal 5 Phosphate)	50 mg	*
PABA (p-Aminobenzoic Acid)	30 mg	*
Choline Bitartrate	100 mg	*
Inositol	100 mg	*

* Daily Value not established.

Recommended Usage:

As a dietary supplement use 6 caplets per day.

For individuals with autism or related conditions use:

Weight in pounds	Caplets
30 pounds	Not recommended
60 pounds	6 caplets
90 pounds	9 caplets
120 pounds or more	12 caplets

It is recommended that you begin with 1/4th of the recommended dosage and gradually increase to the full dosage level over a 7 to 10 day period.

You will also want to divide each days dosage into portions, preferably 3 portions, and given throughout the day.

Other Ingredients: Calcium Carbonate, Calcium Citrate, Sodium Starch Glycolate, Microcrystalline Cellulose, Stearic Acid, Magnesium Stearate, Pharmaceutical Glaze.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial color, preservatives, wheat, or yeast.

Packaging & Price:

Item #	Description	Package Size	Price
213/540	Super Nu-Thera® with P5P Caplets	540 Caplets	\$49.00



NU-THERA™ HYPOALLERGENIC CAPSULES

Nu-Thera™ Hypoallergenic Formula is a condensed version of *Super Nu-Thera™* which contains no fillers, sweeteners, flavorings or allergens. This product is formulated for those individuals who are sensitive or have allergies to ingredients commonly used in the dietary supplement industry. Individuals who are unable to use other *Super Nu-Thera™* products due to sensitivities or reactions to certain ingredients will now have a suitable product to use to get the nutritional benefits without the fear of a reaction to ingredients. Nu-Thera™ Hypoallergenic capsules have the following features:

- Capsule shell is made from plant cellulose, not animal gelatin like other products
- No fillers are used
- No flavorings are used
- No sweeteners are used
- No preservatives are added
- No colorings are present
- Only vegetable grade magnesium stearate is used as a lubricant

This product contains 50 mg. of Pyridoxal 5 Phosphate (P5P) and 100 mg. of Magnesium from a glycinate-oxide blend. In addition it contains condensed potencies of all of the other nutrients present in other Nu-Thera™ products. The condensing of some of the potencies was required so as to fit all the nutrients in the small easy to swallow capsule.

Product Ingredients:

Supplement Facts		
Serving Size: 2 capsules		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	2500 IU	50%
Vitamin D	200 IU	50%
Vitamin C (Ascorbic Acid)	60 mg	100%
Vitamin B-1 (Mononitrate)	7.5 mg	500%
Vitamin B-2 (Riboflavin)	7.5 mg	441%
Niacinamide	20 mg	100%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (Calcium Pantothenate)	10 mg	100%
Vitamin E (Acetate)	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	200 mcg	66%
Magnesium (Glycinate, Oxide)	100 mg	25%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	42%
Selenium (Chelate)	25 mcg	35%
P5P (Pyridoxal 5 Phosphate)	50 mg	*

* Daily Value not established.

Other Ingredients: Plant cellulose, magnesium stearate, and silica.
DOES NOT CONTAIN: Casein, gluten, sucrose, artificial colors, flavorings, preservatives, yeast, soy, corn, wheat, or milk.

Recommended Usage:

As a dietary supplement, take the following dosages daily.

30-45 pounds	one capsule daily
46-60 pounds	two capsules daily (AM & PM)
61-90 pounds	three capsules daily (two AM-one PM)
over 90 pounds	four capsules daily (AM & PM)

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NU-THERA™ HYPOALLERGENIC CAPSULES

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The Vitamin C and calcium content of the Nu-Thera™ Hypoallergenic formula is less than recommended levels for autistic children, and it is therefore advised that additional supplementation be given. A perfect way to ensure complete supplementation when using the Nu-Thera™ Hypoallergenic formula is to use concurrently the Nu-Thera™/Everyday™ Companion which contains the correct amounts of vitamin C, calcium, magnesium, and trace minerals which are not present in optimum levels in the Nu-Thera™ Hypoallergenic. Kirkman also offers Vitamin C 250 mg. in the hypoallergenic line, plus a chewable Vitamin C product if you wish to supplement vitamin C individually. Other nutrients which have been reduced can also be supplemented separately such as Magnesium or Vitamin E. When hyperactivity is a concern extra Magnesium supplementation could be necessary and when immune weakness is apparent, extra Vitamin E supplementation would be warranted. Kirkman has both of these products in the hypoallergenic line as well.

Packaging & Price:

Item #	Description	Package Size	Price
022/300	Nu-Thera® with P5P Capsules	300 Capsules	\$49.00



NU-THERA™ HYPOALLERGENIC CAPSULES WITHOUT VITAMINS A&D

Kirkman offers this version of Nu-Thera™ Hypoallergenic Capsules Without Vitamins A or D for those individuals using another A and D supplement such as Cod Liver Oil. Those children on Dr. Mary Megson's program would use this version of *Super Nu-Thera™*. It must be cautioned that Vitamins A and D are essential nutrients and are required for good health. It is imperative that the body not be deficient in these nutrients. Therefore another Vitamin A and D supplement must be used with this product.

Nu-Thera™ Hypoallergenic Formula is a condensed version of *Super Nu-Thera™* which contains no fillers, sweeteners, flavorings or allergens. This product is formulated for those individuals who are sensitive or have allergies to ingredients commonly used in the dietary supplement industry. Individuals who are unable to use other *Super Nu-Thera™* products due to sensitivities or reactions to certain ingredients will now have a suitable product to use to get the nutritional benefits without the fear of a reaction to ingredients. Nu-Thera™ Hypoallergenic capsules have the following features:

- Capsule shell is made from plant cellulose, not animal gelatin like other products
- No fillers are used
- No flavorings are used
- No sweeteners are used
- No preservatives are added
- No colorings are present
- Only vegetable grade magnesium stearate is used as a lubricant

This product contains 50 mg. of Pyridoxal 5 Phosphate (P5P) and 100 mg. of Magnesium from a glycinate-oxide blend. In addition it contains condensed potencies of all of the other nutrients present in other Nu-Thera™ products. The condensing of some of the potencies was required so as to fit all the nutrients in the small easy to swallow capsule.

The Vitamin C and calcium content of the Nu-Thera™ Hypoallergenic formula is less than recommended levels for autistic children, and it is therefore advised that additional supplementation be given. A perfect way to ensure complete supplementation when using the Nu-Thera™ Hypoallergenic formula is to use concurrently the Nu-Thera™/Everyday™ Companion which contains the correct amounts of vitamin C, calcium, magnesium, and trace minerals which are not present in optimum levels in the Nu-Thera™ Hypoallergenic. Kirkman also offers Vitamin C 250 mg. in the hypoallergenic line, plus a chewable Vitamin C product if you wish to supplement vitamin C individually. Other nutrients which have been reduced can also be supplemented separately such as Magnesium or Vitamin E. When hyperactivity is a concern extra Magnesium supplementation could be necessary and when immune weakness is apparent, extra Vitamin E supplementation would be warranted. Kirkman has both of these products in the hypoallergenic line as well.

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NU-THERA™ HYPOALLERGENIC CAPSULES WITHOUT VITAMINS A&D

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Product Ingredients:

Supplement Facts

Serving Size: 2 capsules

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C (Ascorbic Acid)	60 mg	100%
Vitamin B-1 (Mononitrate)	7.5 mg	500%
Vitamin B-2 (Riboflavin)	7.5 mg	441%
Niacinamide	20 mg	100%
Vitamin B-12 (Cyanocobalamin)	10 mcg	166%
Pantothenic Acid (Calcium Pantothenate)	10 mg	100%
Vitamin E (Acetate)	30 IU	100%
Folic Acid	400 mcg	100%
Biotin (d-Biotin)	200 mcg	66%
Magnesium (Glycinate, Oxide)	100 mg	25%
Zinc (Zinc Citrate)	10 mg	66%
Manganese (Sulfate)	1500 mcg	42%
Selenium (Chelate)	25 mcg	35%
P5P (Pyridoxal 5 Phosphate)	50 mg	*

* Daily Value not established.

Other Ingredients: Plant cellulose, magnesium stearate, and silica.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial colors, flavorings, preservatives, yeast, soy, corn, wheat, or milk.

Recommended Usage:

As a dietary supplement, take the following dosages daily.

30-45 pounds	one capsule daily
46-60 pounds	two capsules daily (AM & PM)
61-90 pounds	three capsules daily (two AM-one PM)
over 90 pounds	four capsules daily (AM & PM)

Packaging & Price:

Item #	Description	Package Size	Price
048/300	Nu-Thera® with P5P Capsules w/o Vitamins A & D	300 Capsules	\$49.00



SUPER NU-THERA™ FACT SHEET

NUTRIENTS

WHY PRESENT

Vitamin B-6

Behavioral and speech improvement, and a healthy nervous system.

Magnesium

Counteracts B-6 side effects, curbs hyperactivity, and is a vital enzyme catalyst.

Vitamin A (soluble)

Promotes good vision, healthy skin, tissue healing, and immune response

Vitamin D

Necessary for growth, required for calcium utilization.

Vitamin E

Powerful antioxidant, prevents cell damage, promotes heart health and improves immunity.

Thiamine (Vit. B-1)

Promotes healthy digestion, aids in brain function and proper growth.

Riboflavin (Vit. B-2)

Important for vision health, cell growth and proper metabolism.

Niacinamide (Vit. B-3)

Promotes good circulation, healthy skin, and aids in the functioning of the nervous system.

Pantothenic Acid

Promotes normal functioning of the digestive tract and aids metabolic functions.

Vitamin B-12

Prevents anemia, aids digestion and assists in memory and the learning process.

Folic Acid

Regulates nerve function, reduces hyperactivity and depression.

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SUPER NU-THERA™ FACT SHEET

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NUTRIENTS

WHY PRESENT

Biotin

Helps prevent yeast invasion of tissues, aids in cell growth and is required for healthy hair and skin.

Vitamin C

Immune enhancer, protects against toxins, and is a powerful antioxidant.

Manganese

Required for healthy nervous system and proper metabolism. Deficiency can produce muscle contractions and teeth grinding.

Selenium

Protects the immune system, helps rid the body of toxic free radicals and neutralizes toxic effects of mercury.

Zinc

One of the most important factors for a healthy immune system and for proper tissue healing.

P5P(Pyridoxal-5-Phosphate)

The active coenzyme of vitamin B-6. B-6 must be converted enzymatically in the body to P5P for proper utilization. Some individuals lack this pathway and may find the P5P forms of Nu-Thera™ more effective.



EVERYDAY™ HYPOALLERGENIC SUPPLEMENT

Kirkman Laboratories in working with leading doctors and nutritionists in the field of autism, has recognized the need for a daily multiple vitamin and mineral supplement for children with autism who do not use dietary supplements or are not helped by a high B6-Magnesium type product such as *Super Nu-Thera™*. These children undoubtedly need a daily dietary supplement to prevent nutrient deficiencies. Most daily multiple vitamin products which are commercially available at the retail level contain additives such as artificial flavors and colors, corn derivatives, casein derivatives, soy or other known allergens. Kirkman's *EveryDay* Supplement is a hypoallergenic product with no additives or allergens. It is in a #3 plant cellulose capsule shell and contains no corn, wheat, casein, gluten, soy, starch, added preservatives or artificial colors or flavors.

This special supplement contains optimum levels of essential vitamins and certain minerals along with maintenance levels of calcium and magnesium for which additional supplementation is recommended especially for those children on a dairy-free diet. Kirkman uses multiple sources of calcium (citrate, chelate and carbonate) and magnesium (glycinate, citrate and oxide) to get maximum absorption.

In addition, Kirkman's *EveryDay* Supplement contains Taurine and L-Glutamine which are extremely important amino acids in autism. Taurine is an amino acid deficient in almost all autistic children. Taurine has been labeled the "brain amino acid" as it nourishes brain cells and stabilizes brain cell membranes. Taurine also aids the neurotransmitters which promote thinking. Choline is also present in this Daily Supplement as it is essential in the manufacture of the neurotransmitter "acetylcholine".

L-Glutamine is added to aid in two conditions prevalent in autism. First, glutamine is an integral part of the immune system. Immune cells can not grow without glutamine. When glutamine levels are low, "phagocytes," the cells which engulf and destroy foreign material in the body, become less efficient. L-Glutamine is also important in intestinal repair. The lining of the intestine can become thin from bacterial or yeast overgrowth which can lead to the "leaky gut," common in many autistic children.

Kirkman's *EveryDay* Supplement contains vitamin B-6 in two different forms, pyridoxine hydrochloride and pyridoxal 5-phosphate (P5P). When B-6 is ingested in the body, it must be first converted to P5P before it can be utilized. Some individual's enzyme systems can not make that conversion easily. By using P5P as a part of the B-6 source, there is insurance that no deficiency of this important nutrient will occur. This Kirkman product is the first allergen-free hypoallergenic nutritional supplement formulated exclusively for autism and related developmental disorders.

The following components make it unique, unlike other daily supplements:

- Contains P5P in addition the Vitamin B-6 HCL
- Contains Taurine
- Contains L-Glutamine
- Contains 300 mcg. of Biotin which helps prevent yeast invasion of tissues
- Contains Zinc for a healthy immune system
- Contains Selenium to protect the immune system and help neutralize the toxic effects of mercury

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EVERYDAY™ HYPOALLERGENIC SUPPLEMENT

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Product Ingredients:

Supplement Facts

Serving Size: 2 capsules

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A (Acetate)	2500 IU	50%
Vitamin D	200 IU	50%
Vitamin E (Acetate)	30 IU	100%
Vitamin C (Ascorbic Acid)	60 mg	100%
Vitamin B-1 (Mononitrate)	3 mg	200%
Vitamin B-2 (Riboflavin)	3.4 mg	200%
Niacinamide	20 mg	100%
Vitamin B-6 (Pyridoxine HCL)	2 mg	100%
Folic Acid	400 mcg	100%
Vitamin B-12 (Cyanocobalamin)	12 mcg	200%
Biotin (d-Biotin)	300 mcg	100%
Pantothenic Acid (Calcium Pantothenate)	10 mg	100%
Calcium (Citrate/Carbonate/Chelate)	40 mg	4%
Magnesium (Glycinate, Oxide)	20 mg	5%
Selenium (Chelate)	70 mcg	100%
Manganese (Sulfate)	1500 mcg	42%
Zinc (Zinc Citrate)	15 mg	100%
P5P (Pyridoxal 5 Phosphate)	2 mg	*
Taurine	40 mg	*
L-Glutamine	40 mg	*
Choline Bitartrate	14 mg	*

* Daily Value not established.

Other Ingredients: Plant cellulose, magnesium stearate, and silica.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial colors, flavorings, preservatives, yeast, soy, corn, wheat, or milk.

Recommended Usage:

Two Capsules Daily.

Packaging & Price:

Item #	Description	Package Size	Price
054/125	EveryDay Multi-Vitamin Capsules	125 Capsules	\$15.00
054/250	EveryDay Multi-Vitamin Capsules	250 Capsules	\$25.00



EVERYDAY™ WITHOUT VITAMINS A & D HYPOALLERGENIC SUPPLEMENT

Kirkman Laboratories in working with leading doctors and nutritionists in the field of autism, has recognized the need for a daily multiple vitamin and mineral supplement for children with autism who do not use dietary supplements or are not helped by a high B6-Magnesium type product such as *Super Nu-Thera™*. These children undoubtedly need a daily dietary supplement to prevent nutrient deficiencies. Most daily multiple vitamin products which are commercially available at the retail level contain additives such as artificial flavors and colors, corn derivatives, casein derivatives, soy or other known allergens. Kirkman's *EveryDay* Supplement is a hypoallergenic product with no additives or allergens. It is in a #3 plant cellulose capsule shell and contains no corn, wheat, casein, gluten, soy, starch, added preservatives or artificial colors or flavors.

This version of our *EveryDay™* supplement contains no vitamins A or D and is intended for use with a Cod Liver Oil supplement per Dr. Mary Megson's protocol using the natural *cis* form of vitamin A. Vitamins A and D are imperative for good health, so it is critical for those using this supplement to take a vitamin A and D product along with it.

This special supplement contains optimum levels of essential vitamins and certain minerals along with maintenance levels of calcium and magnesium for which additional supplementation is recommended especially for those children on a dairy-free diet. Kirkman uses multiple sources of calcium (citrate, chelate and carbonate) and magnesium (glycinate, citrate and oxide) to get maximum absorption.

In addition, Kirkman's *EveryDay* Supplement contains Taurine and L-Glutamine which are extremely important amino acids in autism. Taurine is an amino acid deficient in almost all autistic children. Taurine has been labeled the "brain amino acid" as it nourishes brain cells and stabilizes brain cell membranes. Taurine also aids the neurotransmitters which promote thinking. Choline is also present in this Daily Supplement as it is essential in the manufacture of the neurotransmitter "acetylcholine".

L-Glutamine is added to aid in two conditions prevalent in autism. First, glutamine is an integral part of the immune system. Immune cells can not grow without glutamine. When glutamine levels are low, "phagocytes," the cells which engulf and destroy foreign material in the body, become less efficient. L-Glutamine is also important in intestinal repair. The lining of the intestine can become thin from bacterial or yeast overgrowth which can lead to the "leaky gut," common in many autistic children.

Kirkman's *EveryDay* Supplement contains vitamin B-6 in two different forms, pyridoxine hydrochloride and pyridoxal 5-phosphate (P5P). When B-6 is ingested in the body, it must be first converted to P5P before it can be utilized. Some individual's enzyme systems can not make that conversion easily. By using P5P as a part of the B-6 source, there is insurance that no deficiency of this important nutrient will occur. This Kirkman product is the first allergen-free hypoallergenic nutritional supplement formulated exclusively for autism and related developmental disorders.

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EVERYDAY™ WITHOUT VITAMINS A & D

HYPOALLERGENIC SUPPLEMENT

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The following components make it unique, unlike other daily supplements:

- Contains P5P in addition the Vitamin B-6 HCL
- Contains Taurine
- Contains L-Glutamine
- Contains 300 mcg. of Biotin which helps prevent yeast invasion of tissues
- Contains Zinc for a healthy immune system
- Contains Selenium to protect the immune system and help neutralize the toxic effects of mercury

Product Ingredients:

Recommended Usage:

Two Capsules Daily.

Supplement Facts

Serving Size: 2 capsules

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin E (Acetate)	30 IU	100%
Vitamin C (Ascorbic Acid)	60 mg	100%
Vitamin B-1 (Mononitrate)	3 mg	200%
Vitamin B-2 (Riboflavin)	3.4 mg	200%
Niacinamide	20 mg	100%
Vitamin B-6 (Pyridoxine HCL)	2 mg	100%
Folic Acid	400 mcg	100%
Vitamin B-12 (Cyanocobalamin)	12 mcg	200%
Biotin (d-Biotin)	300 mcg	100%
Pantothenic Acid (Calcium Pantothenate)	10 mg	100%
Calcium (Citrate/Carbonate/Chelate)	40 mg	4%
Magnesium (Glycinate, Oxide)	20 mg	5%
Selenium (Chelate)	70 mcg	100%
Manganese (Sulfate)	1500 mcg	42%
Zinc (Zinc Citrate)	15 mg	100%
P5P (Pyridoxal 5 Phosphate)	2 mg	*
Taurine	40 mg	*
L-Glutamine	40 mg	*
Choline Bitartrate	14 mg	*

* Daily Value not established.

Other Ingredients: Plant cellulose, magnesium stearate, and silica.

DOES NOT CONTAIN: Casein, gluten, sucrose, artificial colors, flavorings, preservatives, yeast, soy, corn, wheat, or milk.

Packaging & Price:

Item #	Description	Package Size	Price
227/125	EveryDay™ Multi-Vitamin w/o Vits. A & D Capsules	125 Capsules	\$15.00

NU-THERA™/EVERYDAY™ COMPANION SUPPLEMENT

Kirkman's Nu-Thera™ Hypoallergenic Capsules and our EveryDay™ Supplement contain the essential nutrients usually required by children with autism. The Nu-Thera is the high B-6/magnesium supplement while the EveryDay is the one-a-day preparation without high B-6/magnesium geared to autism and other developmental disorders. Since both of these products are formulated into small number three capsules for ease of swallowing, some of the bulky nutrients which take up a lot of space inside the capsule can not be put in these products in the optimum potencies needed by the children. Additional supplementation is therefore recommended for these nutrients including calcium, magnesium, vitamin C and vitamin E. In order to make it easy for the parents to supplement these additional amounts using only one product, Kirkman has formulated a Nu-Thera™/EveryDay™ Companion which includes the correct additional potencies of these nutrients. In addition, this companion product contains the trace minerals which most traditional vitamin and mineral supplements do not include. These trace minerals are proving to be important for the autistic child and are gaining the support of leading physicians in the field. Nu-Thera™/EveryDay™ Companion can also be used by individuals on Super Nu-Thera™ products as many doctors recommend higher potencies of these nutrients. The components of the Nu-Thera™/EveryDay™ Companion Supplement and the rationale for their inclusion are as follows:

- Calcium 750 mg. (Carbonate-Citrate-Chelate complex)
Children need at least 750 mg. of calcium daily. Those on a dairy free diet have a very difficult time getting this amount of this important nutrient which is necessary for proper growth. Kirkman uses a complex to ensure proper absorption.
- Magnesium 50 mg. (Glycinate)
This important nutrient helps hyperactivity and relaxes nerve impulses as well as supporting high B-6 therapy.
- Vitamin C 500 mg. (Ascorbic Acid and Sodium Ascorbate)
Vitamin C is essential for a healthy immune system and for the removal of toxins from the body. Most doctors support high doses for the kids (1 gram or more).
- Vitamin E 100 IU (dl-alpha Tocopheryl Acetate)
Essential for proper tissue healing and for strong immune function
- Zinc 5 mg. (Citrate)
The most important immune system component which nearly all autistic children are deficient in. Since many parents supplement zinc also in the evening, we kept the potency low in the companion product.
- Selenium 50 mcg. (Amino Acid Chelate)
Another immune booster plus a strong detoxifying nutrient and antioxidant.
- Molybdenum 50 mcg. (Amino Acid Chelate)
Molybdenum is important in copper excretion and most autistic children have high copper levels which is undesirable. This mineral also has roles in detoxification and in enzymatic processes.

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NU-THERA™/EVERYDAY™ COMPANION SUPPLEMENT

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- Chromium 50 mcg. (Amino Acid Chelate)
Controls blood sugar and insulin levels

- Vanadium 5 mcg. (Amino Acid Chelate)
Good dietary sources of vanadium are grains and seeds which most children with autism can't eat because of gluten and soy avoidance. Vanadium is important in carbohydrate metabolism and blood sugar metabolism. Insurance against a deficiency is warranted.

Nu-Thera™/EveryDay™ Companion Supplement is a bland tasting powder and the dosage is 3/4 teaspoon (approximately 3.6 grams) per day. Silicon dioxide is added as an anti-caking agent. The powder can be mixed with juice, lemonade, Kool Aid™ or other suitable liquid. It mixes in very well and imparts no bad taste. It can even be mixed in carbonated beverages like colas or 7-Up™ but be careful — it makes them fizz a lot. Add it slowly.

This product is packaged in 324 gram containers which is 90 doses.

Packaging & Price:

Item #	Description	Package Size	Price
218/324	Nu-Thera™ EveryDay Companion Powder	324 grams	\$15.00



NOTES



NOTES

PROBIOTICS

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



PRO-CULTURE GOLD™ INTENSIVE CARE FORMULATION

Kirkman Laboratories Pro-Culture Gold™ formulation offers a unique probiotic strain, called Lactobacillus rhamnosus, which is recognized to have significant benefit in gastrointestinal health. This friendly bacteria is closely related to L. acidophilus and they both share some of the same health promoting qualities.

The L. rhamnosus has undergone extensive research and clinical documentation and is recognized to possess many important qualities, which include:

- Documented ability to adhere to the GI mucosa
- High tolerance to survive stomach acids and bile salts
- Ability to colonize the intestinal tract
- Assists with controlling overgrowth of harmful bacteria
- Enhances/stimulates the body's natural defenses
- Production of anti-microbial substances, which are active against pathogens
- Clinical usefulness in lactose intolerance, yeast overgrowth, viral gastroenteritis, diarrhea/constipation/intestinal health, antibiotic associated diarrhea.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus rhamnosus	20 billion	*
Live microorganisms		
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and Silicon Dioxide. In an Inulin base derived from chicory root.

Packaging & Price:

Item #	Description	Package Size	Price
041/60	Pro-Culture Gold™ Capsules	60 Capsules	\$20.00
041/120	Pro-Culture Gold™ Capsules	120 Capsules	\$36.00

PRO-CULTURE GOLD™ (continued)
INTENSIVE CARE FORMULATION

Recommended Usage:

As a dietary supplement take 1 (one) capsule daily and/or as directed by a medical practitioner.

For **intensive use** take 2 (two) capsules daily, in divided doses, for a minimum of two weeks or as recommended by a physician. This dose can then be decreased to one capsule daily until the gastrointestinal functioning is balanced.

For best results infants/children, less than 30 pounds, should use one half the suggested dose. The capsule may be opened, divided and taken at separate times during the day. Higher amounts may be safely utilized, as directed by a health care practitioner.

It is recommended to take the capsule **with food** and/or beverages. Capsules may be pulled apart and the contents mixed with or sprinkled on food, as desired.

Product Does Not Contain:

Milk, casein, wheat, gluten, corn, soy, yeast, sugar, starch, egg, MSG, maltodextrin, stearates, artificial sweeteners, colors, or flavors, preservatives, salicylates and other common allergens. Exclusively designed for the sensitive individual.

Independent laboratory testing is undertaken, on an ongoing basis, to certify that this product is free of casein and gluten.

Pro-Culture Gold™ offers one of the most researched and beneficial, single strain probiotics available today. This high dose formulation can be utilized alone or in combination with other friendly bacteria.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



PRO - BIO GOLD™

High Potency Combination of Six Microorganism Strains

The human gastrointestinal tract plays a crucial role in an individual's overall health and well-being. The GI tract performs an array of essential metabolic functions that provide support for digestion of foods as well as absorption and transport of important nutrients.

A healthy gastrointestinal tract contains a balance of both friendly as well as pathogenic strains of bacteria. To help control the overgrowth of harmful bacteria it is important to maintain correct conditions in the colon as well as replenish the good bacterial strains. There are numerous factors that contribute to the friendly bacteria like lactobacillus, bifidobacteria and thermophilus from being destroyed or depleted, which includes:

- Use of antibiotics or other medications
- Overgrowth of yeasts, bacteria, viruses, etc.
- Improper diet or nutrient deficiencies
- Food allergies/sensitivities
- Environmental toxins/chemicals
- Excessive stress
- Abnormal permeability of the intestine

Kirkman Laboratories **Pro-Bio Gold™** formulation offers a unique combination of six important probiotic strains. This extraordinary supplement provides a combination of the most important "resident" as well as "transient" microorganisms, to help contribute to maintaining and promoting gastrointestinal health.

This formulation offers a "Gold Standard" utilizing some of the most extensively researched and clinically proven strains from the Chr. Hansen, ProBio♦Tec™ line of microorganisms. These six strains are superior because they are unequalled in the ongoing verification of each strain, the use of patented manufacturing and stabilization technologies as well as the extensive clinical documentation regarding the following qualities:

- Ability to adhere to the GI mucosal membrane
- High tolerance to survive stomach acids and bile salts
- Ability to colonize the intestinal tract
- Assists with controlling the overgrowth of harmful pathogenic bacteria, yeasts, viruses, etc.
- Enhances/stimulates the body's natural defenses
- Production of anti-microbial substances, which are active against pathogens
- Clinical effectiveness documented against Candida overgrowth, lactose intolerance, immunity, diarrhea/constipation/intestinal health, antibiotic associated diarrhea, etc.

PRO-BIO GOLD™(continued)

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus rhamnosus	7.5 billion	*
Lactobacillus acidophilus LA5	5 billion	*
Bifidobacterium bifidium (lactis)	5 billion	*
Lactobacillus casei	1 billion	*
Lactobacillus bulgaricus	750 million	*
Streptococcus Thermophilus	750 million	*
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

Recommended Usage:

As a dietary supplement: take one (1) capsule daily and/or as directed by a medical practitioner. For intensive use take two (2) capsules, in divided doses, for a minimum of two weeks or as directed by a physician. This dose can then be decreased to one capsule daily until the gastrointestinal functioning is more balanced.

For infants/children, less than 30 pounds, use one half of the suggested dose or 10 billion cfu's. The capsule may be opened, divided and taken at separate times during the day. Higher amounts may be safely utilized as directed by a health care practitioner.

For best results it is recommended that the capsule(s) be taken with meals. Capsules may be pulled apart and the contents mixed or sprinkled on food or mixed with beverages.

Product Does Not Contain:

Milk, casein, wheat, gluten, corn, soy, yeast, sugar, starch, MSG, stearates, artificial sweeteners, colors or flavors, preservatives, salicylates, and other common allergens. Exclusively designed for the sensitive individual.

Independent laboratory testing is undertaken, on an ongoing basis, to certify that this product is free of casein and gluten.

Packaging & Price:

Item #	Description	Package Size	Price
042/60	Pro-Bio Gold™ Capsules	60 Capsules	\$29.00
042/120	Pro-Bio Gold™ Capsules	120 Capsules	\$49.00



MULTI-FLORA SPECTRUM™

Intensive Care Formulation of Pro-Bio Gold™

Multi-Flora Spectrum™ is Kirkman Labs Professional probiotic supplement providing one of the most broad spectrum and potent probiotics formulations available to the practitioner. Extensive clinical studies have documented the ability of these strains to adhere and colonize the gastrointestinal tract, resist gastric acid and bile salts, improve lactose digestion, enhance the immune response, assist with controlling the overgrowth of harmful pathogenic bacteria, yeasts and viruses, as well as serving many other important functions.

This supplement provides a scientifically formulated and nutritionally beneficial combination of six crucial microorganisms for “total coverage” of the small and large intestinal tract. These strains work synergistically and in a complementary role to help support and provide a beneficial effect in the gastrointestinal tract.

This formulation offers the clinician the ability to utilize higher, more therapeutic amounts of these health-promoting bacteria, not offered in a standard maintenance formulation. Multi-Flora Spectrum™ is the Physician’s choice in probiotic therapy, to be used when a high potency, multi-spectrum probiotic combination is desired. **It is 50% stronger than Pro-Bio Gold™!**

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus rhamnosus	11.25 billion	*
Lactobacillus acidophilus LA5	7.5 billion	*
Bifidobacterium bifidium (lactis)	7.5 billion	*
Lactobacillus casei	1.5 billion	*
Lactobacillus bulgaricus	1.125 billion	*
Streptococcus Thermophilus	1.125 billion	*
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

Packaging & Price:

Item #	Description	Package Size	Price
085/60	Multi-Flora Spectrum™ Capsules	60 Capsules	\$39.00



PRO - BIO BALANCE™

Balanced Probiotic Formulation

Pro-Bio Balance™ is a dairy free probiotic supplement offering a 50/50 combination of Lactobacillus acidophilus and Bifidobacterium bifidum (lactis). This formulation is designed to provide coverage of both the small and large intestine when replacement of only these two primary bacteria is desired.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus acidophilus	3.75 billion	*
Bifidobacterium bifidum (lactis)	3.75 billion	*
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

DOES NOT CONTAIN: wheat, gluten, milk, casein, soy, yeast, starch, eggs, maltodextrine, stearates.

Packaging & Price:

Item #	Description	Package Size	Price
083/100	Pro-Bio Balance™ Capsules	100 Capsules	\$20.00



BIFIDO COMPLEX™

Bifidobacterium Combination

Bifido Complex™ combines the best of the Bifidobacterium family of microorganisms that primarily reside in the mucosal lining of the large intestine (colon) and in the vaginal tract. These bifidobacterium perform several important functions including inhibiting colonization of invading pathogenic bacteria (clostridium, salmonella, etc.) and yeast (Candida albicans, etc.). Bifido Complex combines three predominant and extensively researched Bifidobacterium strains. Children or adults requiring primary replacement of these important friendly floras can utilize this formulation.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Bifidobacterium bifidum (lactis)	3.75 billion	*
B. infantis	2.25 billion	*
B. longum	1.50 billion	*

Probio•Tec™ Certified Strains

* Daily Value Not Established

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

DOES NOT CONTAIN: wheat, gluten, milk, casein, soy, yeast, starch, eggs, maltodextrine, stearates.

Packaging & Price:

Item #	Description	Package Size	Price
081/60	Bifido Complex™ Capsules	60 Capsules	\$19.50



FLORA MAINTENANCE™

Probiotic Intestinal Support

Supplementation with Flora Maintenance™ is designed to offer a lower dose combination of primary resident bacteria that help in supporting a healthy balance of intestinal flora. This formulation provides a full spectrum of friendly bacteria known to play a role in maintaining a healthy intestinal environment.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus rhamnosus	1.5 billion	*
Lactobacillus acidophilus LA5	1.5 billion	*
Bifidobacterium bifidium (lactis)	0.75 billion	*
Lactobacillus casei	0.45 billion	*
Bifidobacterium longum	0.15 billion	*
Bifidobacterium infantis	0.15 billion	*
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

DOES NOT CONTAIN: wheat, gluten, milk, casein, soy, yeast, starch, eggs, maltodextrine, stearates.

Packaging & Price:

Item #	Description	Package Size	Price
087/60	Flora Maintenance™ Capsules	60 Capsules	\$10.00



ACIDOPHILUS PLUS™

POWDER

Kirkman's Acidophilus Plus is specially formulated for children with serious digestive problems, Kirkman's Acidophilus Plus powder contains six potent strains of "friendly" bacteria with more than 5 billion active cells per gram! It is a totally non dairy product.

Benefits include an improved digestive system and reduced yeast. Acidophilus Plus is a "MUST" for lactose intolerant individuals.

- Casein and gluten free
- Shipped in a cooled container to maintain maximum potency
- Improves the digestive system and reduces yeast formation

Product Ingredients:

Supplement Facts		
Serving Size: 1/2 teaspoon (2.5 grams)		
Amount Per serving		Cells*
12.5 billion cells composed of:		
Lactobacilli Group - 60%		
L. acidophilus	37.50%	4,687,500,000
L. casei, subsp. Rhamnosus	22.50%	2,812,500,000
Bifidobacteria Group - 35%		
B. Bifidum	12.50%	1,562,500,000
B. longum	11.25%	1,406,250,000
B. infantis	11.25%	1,406,250,000
Streptococcus Group - 5%		
S. thermophilus	5.00%	625,000,000

Other Ingredients: Sorbitol

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

1/2 to 1 teaspoon twice a day. Each dose should be taken 1/2 hour before meals.

Packaging & Price:

Item #	Description	Package Size	Price
808/4	Acidophilus Plus Powder	4 oz	\$20.00
808/8	Acidophilus Plus Powder	8 oz	\$36.00



ACIDOPHILUS COMPLEX™

Ultimate Lactobacillus Formulation

Acidophilus Complex™ provides a combination of the most prominent lactobacillus family members recognized as setting up residence in the small intestine and exerting a profound influence in gastrointestinal health. Additionally they are known to implant in the lining of the genitourinary tract inhibiting pathogenic organisms from multiplying and colonizing. This complete formulation provides a combination of the primary lactic acid bacteria that support a healthy intestinal environment.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus acidophilus	3.75 billion	*
Lactobacillus rhamnosus	2.25 billion	*
Lactobacillus casei	1.50 billion	*
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

DOES NOT CONTAIN: wheat, gluten, milk, casein, soy, yeast, starch, eggs, maltodextrine, stearates.

Packaging & Price:

Item #	Description	Package Size	Price
079/100	Acidophilus Complex™ Capsules	100 Capsules	\$19.00





CULTURELLE™ CAPSULES

Kirkman Laboratories is pleased to add the well-researched and documented probiotic supplement, Culturelle™ with LGG, as part of our expanded line of probiotics. The initial research on this *Lactobacillus rhamnosus* (subspecies of *L. casei*) strain was undertaken by two Boston scientists, Dr.'s Sherwood Gorbach and Barry Golden. They isolated this strain that they called *Lactobacillus GG* (LGG after their surnames) in 1985 and it received a patent in the US in 1987.

A number of conditions can upset the delicate balance of the health promoting probiotic bacteria in the gastrointestinal tract. These friendly flora can be destroyed or adversely affected by use of antibiotics or other medications, improper nutrition, stress, contact with a foreign bacteria during travel or the presence of chronic disease states. These environmental factors adversely affect the intestinal floras delicate balance, resulting in significantly decreased numbers of these bacteria leading to gastrointestinal disorders/distress, increased allergies/sensitivities, infections of the gastrointestinal or genitourinary tracts, etc.

Description of Product

Each Culturelle™ with LGG capsule contains a guaranteed 20 billion colony-forming units (CFUs). Culturelle™ is manufactured in a size #1 gelatin capsule and contains the active LGG culture in a chicory root (called "Inulin") base.

Capsules are individually wrapped in a double foil blister pack and sealed with nitrogen to provide stability. Culturelle™ is available in a cardboard box with six foil wrapped strips each containing 5 capsules. The capsules can be easily dispensed by gently pressing the capsule through the underside of the foil strip and taking as directed.

Although the product may be maintained at room temperature, storing it under refrigeration can extend the stability and potency of the product. Culturelle™ is considered a lactose-free probiotic supplement and is formulated without sugar, yeast, sodium, dairy or preservatives.

Recommended Usage:

Adults: Take 1 or 2 capsules daily and /or as recommended by a medical practitioner.
Children: Take 1/2 to 1 capsule or as recommended by a medical practitioner and for young children less than 30 pounds take 1/2 capsule. Like all of Kirkman Labs probiotic supplements, the single-strain Culturelle™ with LGG may be taken throughout the course of antibiotic therapy to maintain healthy bacteria in the GI tract.

The capsule may be swallowed whole or opened and the contents mixed with food or beverages. For best results probiotics should be taken with meals and/or the contents of the capsules mixed in and taken with cool or tepid liquids. Avoid taking with hot beverages.

CULTURELLE™ (continued)

Research and Documentation

Culturelle™ with LGG has been widely studied and documented to provide many health promoting benefits in the intestinal tract including:

- Adheres and colonizes the gastrointestinal tract
- Helps control the overgrowth of harmful bacteria
- Assists intestinal functioning
- Enhances the body's natural defenses and resistance
- Helpful with diarrhea caused by antibiotics, rotavirus and Clostridia defficile.
- High tolerance to survive stomach acids
- Assists with lactose intolerance

Culturelle™ with LGG offers another alternative choice in probiotic supplementation. It can be used alone or in combination with the Pro-Bio Gold™ (a high dose multi-flora probiotic supplement) for comprehensive replacement of a full spectrum of friendly flora for the entire intestinal tract. There is documentation in the medical literature that different probiotic strains work together in a complementary role to restore and maintain a healthy bacterial balance in the intestinal tract.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus GG	40 mg	*
Delivers a minimum of 20 billion live/active bacteria at the time of manufacture.		
* Daily Value Not Established		

Other Ingredients: Gelatin and Inulin.

DOES NOT CONTAIN: Sugar, yeast, sodium, dairy or preservatives.

Packaging & Price:

Item #	Description	Package Size	Price
813/5	Culturelle™ Capsules	30 Capsules	\$18.65



LACTOBACILLUS COMPANION™ CAPSULES

Lactobacillus Salivarius and Lactobacillus Helveticus Probiotic Formulation

Containing Analogs of the Dipeptidyl Peptidase IV (DPP-IV) Enzyme

Kirkman Laboratories introduces Lactobacillus Companion™ offering a combination of two health promoting friendly bacteria to support and enhance gastrointestinal health. This formulation combines two unique strains of lactic acid bacteria; Lactobacillus salivarius and Lactobacillus helveticus, each with their own impressive qualifications. These probiotic strains possess the remarkable ability to beneficially affect the delicate balance of the intestinal flora as they set up residence (implant themselves) in the mucous membrane of the small intestine.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Lactobacillus salivarius	3.75 billion	*
Lactobacillus helveticus	3.75 billion	*

Probio•Tec™ Certified Strains

* Daily Value Not Established

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

DOES NOT CONTAIN: wheat, gluten, milk, casein, soy, yeast, starch, eggs, maltodextrine, stearates.

Packaging & Price:

Item #	Description	Package Size	Price
242/60	Lactobacillus Companion™ Capsules	60 Capsules	\$20.00



PRO-IMMUNE SUPPORT™

Beta 1,3/1,6 Glucan with Lactobacillus Plantarum

Pro-Immune Support™ is a state of the art nutritional formulation offering one of the most unique and safe means of providing immune support and enhanced probiotic supplementation. This formulation contains the stellar immune-stimulating properties of beta 1,3/1,6 glucan in combination with the well researched and impressive probiotic strain of L. plantarum. Beta 1,3/1,6 glucan is recognized to have a powerful impact in stimulating the immune response and helping the body defend itself against foreign substances. The friendly flora, Lactobacillus plantarum, provides a well researched and clinically documented probiotic strain that is gaining greater recognition for its impressive role in gastrointestinal health.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Beta 1,3/1,6 Glucan	100 mg.	*
Lactobacillus plantarum	7.5 billion CFUs	*
Probio•Tec™ Certified Strains		
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and L-Leucine. In an Inulin base derived from chicory root.

DOES NOT CONTAIN: wheat, gluten, milk, casein, soy, yeast, starch, eggs, maltodextrine, stearates.

Packaging & Price:

Item #	Description	Package Size	Price
241/60	Pro-Immune Support™ Capsules	60 Capsules	\$29.00



NOTES

SPECIALTY PRODUCTS

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



ALPHA-KETOGLUTARIC ACID

Hypoallergenic Capsules

Recently, Dr. Jeffrey Bradstreet from Palm Bay, Florida presented blood ammonia data on a population of autistic children taken from his medical practice. As presented at a "DAN! Think Tank" session in San Diego in conjunction with the October 2001 DAN! conference, Dr. Bradstreet reported mild-to-moderate ammonia elevations in over half of the tested children.

Elevated ammonia levels in children with autism are usually associated with dysbiotic gut flora in the bowel. If a stool analysis is performed and the pH of the stool is abnormally alkaline (pH greater than 7), this usually is a sign that gut flora have generated excessive levels of ammonia. Being a small molecule, usually in its ionic form NH_4^+ , ammonia can diffuse across membranes, can enter the blood from the intestines, and can cause extreme harm to cells and tissues. In the brain, ammonia swells the ventricles, causing a headache. It damages the protective myelin sheath on nerves, damages the fatty acids in membranes, and continued exposure may cause lessened cognitive abilities and lowered IQ. Ammonia is an intoxicating chemical, and relatively low excesses result in foggy thinking, may affect hearing and cause indistinct speech.

Ammonia comes from dietary protein which contains nitrogen in its amino acids. Fats, sugars, and starches (carbohydrates) contain essentially no nitrogen. When malabsorption of the dietary protein occurs, undigested/unabsorbed proteins, peptides and amino acids provide an abnormal food supply to gut flora, often encouraging growth of unusual or pathogenic flora. These flora feed on this nitrogen source and produce ammonia as a byproduct of their metabolism. Their byproducts readily enter our bloodstream and can be harmful to us.

How does the body cope with ammonia? There are several processes. In the liver, ammonium ion and ammonia from catabolized amino acids are combined with carbon dioxide to produce a stable, nontoxic and excretable form called urea. However, this detoxifying process functions only in the liver where all the component parts of the urea cycle exist. In the central nervous system (CNS), a different process handles the ammonia. In the CNS, alpha-ketoglutaric acid adds ammonia to become glutamic acid. Then, the glutamic acid adds more (as an "amide") to become glutamine, and the glutamine then carries the nitrogen out of the CNS (across the brain-blood barrier).

Chemists would call this an ammonia buffering process. When ammonia increases, alpha-keto comes to the rescue by grabbing the excess and tying it up in amino acid form. Adding alpha-ketoglutaric acid extends the buffering capacity of the CNS and allows it to withstand the increases in ammonia.

Actually, we don't have any choice about how ammonia and alpha-ketoglutaric acid combine. This process may occur in all tissues of the body wherever the citric acid cycle operates. The citric acid cycle produces alpha-ketoglutaric acid with the intention of generating energy and providing for cellular respiration. However, if an ammonium ion comes along, it can steal the alpha-ketoglutaric acid out of the citric acid cycle because cell and mitochondrial membranes do not stop ammonia's travels. Those interested in this potentially detrimental chemistry are referred to Albert Lehninger's famous text: *Biochemistry: The Molecular Basis of Cell Structure and Function*, Worth Publishers, 2nd Ed (1975) Chapter 21.

(continued on next page)



ALPHA-KETOGLUTARIC ACID

Hypoallergenic Capsules (continued)

It is important to note that use of alpha-ketoglutaric acid can be beneficial and is virtually without instances of side effects even when ammonia levels are normal. Alpha-ketoglutaric acid helps citric acid cycle function, helps cellular energy and respiration, directly assists the metabolism of the amino acid lysine, and is used by the body to synthesize carnitine and many organic acids that start out as amino acids.

KIRKMAN'S FORMULATION

Alpha-ketoglutarate is the salt-form of alpha-ketoglutaric acid. For example, calcium alpha-ketoglutarate is alpha-ketoglutaric acid bound to calcium. By itself, alpha-ketoglutaric acid is a strong organic acid, and taking it by mouth can upset the stomach. Kirkman Laboratories has solved this problem by blending alpha-ketoglutaric acid with its calcium and magnesium salts to produce a "bi-element buffered alpha-ketoglutaric acid". This nutrient can be taken with meals or away from meals. The hypoallergenic capsule can be swallowed or opened and the powder mixed with fruit juices or food. It has a pleasant, citrus-like taste. For those concerned about possible ammonia from gut dysbiosis, appropriate daily amounts are tabulated below (for capsules containing 300 mg of AKG).

Age	Capsules/Day
2-4	1 or 2
5-9	3
10 and older	4

Note that if elevated blood ammonia is measured in a clinical laboratory test, follow your doctor's advice on protein intake, clearing the gut of dysbiotic flora, and adequate water intake. Furthermore, the amounts tabulated above can be significantly increased under medical supervision.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Alpha-Ketoglutaric Acid (alpha-ketoglutaric acid, calcium ketoglutarate, and magnesium ketoglutarate)	300 mg	*

* Daily Value not established

Other Ingredients: Plant cellulose, tapioca flour, silicon dioxide, and L-leucine.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings and flavorings.

Recommended Usage:

See section above.

Packaging & Price:

Item #	Description	Package Size	Price
235/100	Alpha-Ketoglutaric Acid Capsules	100 Capsules	\$18.00





KIRKMAN TOOTHPASTE GEL

By popular demand, Kirkman is pleased to offer a fluoride-free toothpaste gel to the autistic community. Our dentifrice is casein and gluten free and also sugar free. It is flavored with natural raspberry flavoring and contains glycerine, sorbitol and sucralose as sweeteners. The taste is pleasant and child friendly and rinses out easily without residue.

The primary whitening agent is sodium methyl cocoyl taurate, a vegetable grade salt of the amino acid taurine, well known in autistic circles. This whitening agent replaces the sodium lauryl sulfate, which is present in most commercial toothpastes. Sodium lauryl sulfate is known to cause gastric distress in many individuals.

Kirkman's toothpaste gel also contains vitamin E and pine bark extract as antioxidants which help prevent discoloration while also promoting tissue healing.

Kirkman believes that this product will bridge the gap between commercial toothpastes containing fluoride and the natural toothpastes that often taste so bad to the kids.

The Kirkman Toothpaste Gel comes in easy to use three ounce tubes.

Packaging & Price:

Item #	Description	Package Size	Price
825/3	Kirkman Toothpaste Gel	3 oz Tube	\$6.00



GABA PLUS

Hypoallergenic Capsules

GABA is the short name for Gamma-Aminobutyric Acid, an amino acid which is classified as a neurotransmitter. Neurotransmitters are substances which are deposited at the end of nerve cells which are then picked up by other nerve cells in order to send nerve impulses throughout the brain and nervous system. GABA has the following effect on the body:

- Has a tranquillizing effect
- Calms the body in much the same way as prescription tranquillizers such as Valium
- Stimulates the secretion of Human Growth Hormone
- Improves restful sleep

GABA is known as an inhibitory amino acid in that it fills brain receptor sites so that other messages can not be transmitted. For example, in working with the B-Vitamins Niacinamide and Inositol, anxiety messages are prevented from reaching the motor centers of the brain.

GABA is essential for brain metabolism and has been used in the treatment of epilepsy and hypertension. It is effective also in treating Attention Deficit Disorder. Dr. Jeff Bradstreet treats autistic and PDD patients in his clinic in Palm Bay, Florida and has used GABA in anxiety filled individuals. GABA should be given on an empty stomach.

Because GABA works in conjunction with Niacinamide and Inositol in preventing anxiety and stress related messages from reaching the brain, Kirkman has added these nutrients to this hypoallergenic formula.

Product Ingredients:

Supplement Facts		
Serving Size: 1capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Niacinamide	10 mg	50%
Inositol	10 mg	*
GABA	150 mg	*
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and Silicon Dioxide.

DOES NOT CONTAIN: casein, gluten, soy, wheat, corn, milk, sucrose, artificial colors or flavorings, preservatives, or yeast.

Recommended Usage:

Children and Adults: Three to eight capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
034/100	GABA Capsules	100 Capsules	\$10.00
034/250	GABA Capsules	250 Capsules	\$20.00





GINKGO BILOBA

Hypoallergenic Capsules

Ginkgo Biloba is one of the world's oldest living tree species, believed to have survived for 200 years. Ginkgo is considered a sacred tree by the Chinese and has been used in Oriental Medicine for centuries. Hundreds of studies have been performed with Ginkgo Biloba extracts which confirm many of the ancient uses.

The main active compounds in Ginkgo leaves are the flavoglycosides and terpene lactones. These compounds are the marker compounds which must be present in Ginkgo preparations in order for the product to be effective. Kirkman uses a standardized extract of Ginkgo Biloba which has been assayed and is guaranteed to contain 24% flavoglycosides and 6% terpene lactones.

Ginkgo Biloba's primary action on the body is to increase blood flow to the brain, heart, and muscles. In doing so certain benefits are realized including:

- Improved alertness
- Improved concentration
- Improved memory
- Mood elevation
- Relief of muscle pain

Other historical uses for Ginkgo have been with allergies, inflammation, asthma and migraines. Currently there is considerable interest in the medical community for its use in treating dementia and Alzheimer's disease.

Kirkman's Ginkgo Biloba capsules are part of the hypoallergenic line which uses capsules made of plant cellulose. No fillers or allergens are used.

Product Ingredients:

Supplement Facts		
Serving Size: 1 capsule		
Each Serving Contains	Amount per Serving	% Daily Value
Ginkgo Biloba (leaves) Extract	75 mg	*
* Daily Value not established		

Other Ingredients: Plant cellulose.
DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings and flavorings.

Recommended Usage:

Children 3 to 10 years of age	One capsule daily
Children over 10 and adults	One to two capsules daily (AM and PM)

Packaging & Price:

Item #	Description	Package Size	Price
031/100	Ginkgo Biloba Hypoallergenic Capsules	100 Capsules	\$7.00
031/250	Ginkgo Biloba Hypoallergenic Capsules	250 Capsules	\$14.00



MELATONIN PLUS

Hypoallergenic Capsules

Melatonin is a hormone secreted in the human body by the pineal gland. It is manufactured in that gland from serotonin. It is believed that manufacturing and secreting melatonin is the sole function of the pineal gland.

Melatonin supplementation is used principally for:

- Inducing sleep by curbing insomnia
- Reducing jet-lag
- As a powerful antioxidant

Several double blind studies have shown that melatonin supplementation is effective in promoting sleep when melatonin levels are low. If one takes melatonin when levels are not reduced, then it has no effect. The reason for this is that the body normally secretes melatonin just before bedtime. Darkness stimulates melatonin secretion while light suppresses it. This process is all controlled by an internal body clock governing hormonal secretions and is called "natural circadian rhythm". Low melatonin levels are a very common cause of insomnia and restlessness.

In jet-lag, the natural body clock may not allow for secretion of melatonin at the appropriate time, thereby making melatonin supplementation useful.

Melatonin possesses antioxidant qualities. Rats fed melatonin live 24% longer than non supplemented rats and it is believed that its antioxidant qualities are responsible for this phenomenon.

Kirkman's Melatonin Plus also contains magnesium. Magnesium deficiency can cause insomnia as well as hyperactivity responses such as irritability and sound sensitivity. Magnesium can also relax nerve impulses and muscle contractions. Melatonin Plus should improve the quality of sleep in autism and other developmental disorders.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Magnesium (Oxide)	100 mg	25%
Melatonin	1 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose, and Magnesium Stearate.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Recommended Usage:

Children or adults: One capsule one hour before bedtime

Packaging & Price:

Item #	Description	Package Size	Price
037/100	Melatonin Plus Hypoallergenic Capsules	100 Capsules	\$7.00
037/250	Melatonin Plus Hypoallergenic Capsules	250 Capsules	\$14.00





MSM (METHYLSULFONYLMETHANE)

Flavored Powder

MSM stands for methylsulfonylmethane, a natural substance present in food and in the human body. MSM is a source of sulfur which is a critical element in body structure and function. Low sulfates can lead to a leaky gut and a weakness in the phenolsulfotransferase (PST) system.

MSM has exhibited many significant positive effects when used as a nutritional supplement including:

- Pain relief
- Reduction of inflammation
- Increased blood flow
- Helping to restore normal bowel activity
- Reducing muscle spasms
- Normalizing effect on the immune system
- Reduction in sensitivity to food allergies

Kirkman's MSM powder is in a naturally flavored and naturally sweetened base.

Product Ingredients:

Supplement Facts

Serving Size: 1/4 teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Methylsulfone	875 mg	*

* Daily Value not established

Other Ingredients: Fructose, Citric Acid, Sodium Chloride, Natural Lemon, Pineapple and Banana Flavorings, Sucralose, and Silica.

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

As a dietary supplement, take the following dosages daily.

Children	1/4 teaspoon twice daily
Adults	1/2 teaspoon twice daily

Packaging & Price:

Item #	Description	Package Size	Price
006/8	MSM Powder	8 oz	\$18.00



MSM (METHYLSULFONYLMETHANE)

Hypoallergenic Powder

MSM stands for methylsulfonylmethane, a natural substance present in food and in the human body. MSM is a source of sulfur which is a critical element in body structure and function. Low sulfates can lead to a leaky gut and a weakness in the phenolsulfotransferase (PST) system.

MSM has exhibited many significant positive effects when used as a nutritional supplement including:

- Pain relief
- Reduction of inflammation
- Increased blood flow
- Helping to restore normal bowel activity
- Reducing muscle spasms
- Normalizing effect on the immune system
- Reduction in sensitivity to food allergies

Kirkman's hypoallergenic MSM powder is 100% pure MSM. No additives of any kind are present. It can be mixed in fruit juice, lemonade or other beverages to mask the naturally bitter taste.

Product Ingredients:

Supplement Facts		
Serving Size: 1/4 teaspoon		
Each Serving Contains	Amount per Serving	% Daily Value
Methylsulfone	1250 mg	*
* Daily Value not established		

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings or colorings.

Recommended Usage:

As a dietary supplement, take the following dosages daily.

Children	1/4 teaspoon twice daily
Adults	1/2 teaspoon twice daily

Packaging & Price:

Item #	Description	Package Size	Price
809/8	MSM Hypoallergenic Powder	8 oz	\$20.00



NOTES

VITAMINS

The majority of children with autism have significant deficiencies in essential vitamins. This is due not only to their diet, which is generally limited, but also results from intestinal problems that prevent these individuals from properly absorbing the nutrients in their food. For these reasons, supplementation with vitamins is essential.

In addition to the multivitamin formulas, Kirkman Laboratories also manufactures a range of individual vitamins designed specifically for the autistic child. These products are available in a variety of forms (including liquids, powders, capsules, and tablets) for ease of administration. All Kirkman products are gluten and casein free, and Kirkman also offers a line of hypoallergenic supplements for those individuals with special requirements.

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



COD LIVER OIL GELCAPS & LIQUID

Cod Liver Oil is very popular in the treatment of autism and ADHD based on the research of Dr. Mary Megson in Virginia. Dr. Megson has found that the natural Vitamin A in Cod Liver Oil is helping autistic and ADHD children by:

- Improving Vision
- Improving Awareness
- Improving Behavior
- Improving the Immune System

It is extremely important that purchasers of Cod Liver Oil scrutinize the supplier of the product. Many commercially available Cod Liver Oils are standardized with synthetic vitamin A palmitate. Kirkman's product is all natural.

High quality Cod Liver Oil must be free of contaminants and must be tested to guard against rancidity due to oxidation. Kirkman guarantees these quality standards through laboratory testing including:

- Heavy Metal Analysis
- Pesticide Analysis
- PCB Analysis
- Peroxide Value

Our liquid Cod Liver Oil contains Vitamin E as an antioxidant to guard against oxidation after the bottle is opened and exposed to the air.

Kirkman offers both Cod Liver Oil Gelcaps and Cod Liver Oil liquid.

Product Ingredients:

GEL CAPS

Supplement Facts		
Serving Size: 1 Soft Gel Cap		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A	1250 IU	25%
Vitamin D	135 IU	33%

Other Ingredients: Gelatin, Glycerin, and purified water.

DOES NOT CONTAIN: Synthetic vitamin A palmitate, sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

LIQUID

Supplement Facts		
Serving Size: 1/2 teaspoon		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin A	2500 IU	50%
Vitamin D	250 IU	62%
Vitamin E	1 IU	0.5%
EPA	250 mg	*
DHA	250 mg	*

* Daily Value Not Established

DOES NOT CONTAIN: Synthetic vitamin A palmitate, sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Note: The Flavored Liquid form contains Lemon Oil and Lime Oil as natural flavorings.

Recommended Usage:

As a dietary supplement, take the following daily. These dosages are as suggested by Dr. Mary Megson.

Under two years of age 1250 IU Vitamin A (One capsule or 1/4 teaspoon liquid)
2-5 years 2500 IU Vitamin A (Two capsules or 1/2 teaspoon liquid)
5-10 years 3750 IU Vitamin A (Three capsules or 3/4 teaspoon liquid)
Over 10 years 5000 IU Vitamin A (Four capsules or 1 teaspoon liquid)

Packaging & Price:

Item #	Description	Package Size	Price
802/150	Cod Liver Oil Soft Gelcaps	150 Gelcaps	\$12.00
802/300	Cod Liver Oil Soft Gelcaps	300 Gelcaps	\$18.00
026/8	Cod Liver Oil Liquid (Unflavored)	8 oz.	\$12.00
026/22	Cod Liver Oil Liquid (Unflavored)	22 oz.	\$22.00
228/8	Cod Liver Oil Liquid Lemon-Lime Flavor	8 oz.	\$15.00

***KIRKMAN'S COD LIVER OIL LIQUID IS NOW ALSO AVAILABLE
IN LEMON-LIME FLAVOR!***



VITAMIN C REQUIREMENTS AND AUTISM

Vitamin C is the most popular vitamin supplement in the United States. The human body can not manufacture its own vitamin C, therefore dietary sources and supplementation must be relied on to prevent deficiency. Throughout history, a vitamin deficiency known as scurvy has been prevalent. Scurvy is caused by vitamin C deficiency and its symptoms include:

1. Susceptibility to infection
2. Poor wound healing
3. Gum bleeding
4. Excessive bruising
5. Depression or hysteria
6. Extreme weakness

The list of health conditions where vitamin C has shown promise is very long and need not be summarized here. Its value in autism however is extremely important for the following reasons:

1. Vitamin C boosts the immune system
2. Vitamin C is a powerful antioxidant and defends against free radical damage
3. Vitamin C inhibits certain viral activity
4. Vitamin C inhibits Candida
5. Vitamin C protects against pollutants such as cigarette smoke, environmental toxins and allergens
6. Vitamin C promotes wound healing and gut healing
7. Collagen is the main protein substance in the human body. It literally holds our body together in the form of tissue, tendons, cartilage etc. Vitamin C is essential in the production of collagen.

Vitamin C's role in immune system enhancement is one of the key elements which make it very critical for autistic children. Vitamin C enhances white blood cell function, increasing antibody levels and responses and by increasing interferon levels. It is imperative that autism subjects not be deficient in this nutrient.

Recommended Usage:

Small children 30 pounds or less	250 mg. daily
Children over 30 pounds and adults	500 mg. daily



VITAMIN C

HYPOALLERGENIC CAPSULES

Vitamin C is the most popular vitamin supplement in the country. The list of health conditions where Vitamin C has shown to be of value is indeed very long. Vitamin C has some specific roles in autism, however, making it a necessary supplement in the nutritional treatment of autistic children. Some of its key roles include:

- Vitamin C boosts the immune system
- Vitamin C inhibits Candida growth
- Vitamin C promotes wound healing and gut healing
- Vitamin C protects against toxins and allergens
- Vitamin C inhibits certain viral activity

It is difficult to get sufficient Vitamin C levels from the diet, and the human body can not manufacture Vitamin C, therefore supplementation becomes extremely important. Kirkman's Super Nu-Thera™ products contain ample levels of this nutrient, however the Nu-Thera™ Hypoallergenic formula has reduced levels warranting supplementation. Those individuals not on a multiple vitamin with high levels of Vitamin C such as a Super Nu-Thera™ product should also consider supplementation.

Kirkman's Vitamin C Hypoallergenic Capsules have a plant cellulose shell with vegetable grade magnesium stearate as a lubricant. No fillers, flavors or other potential allergens are present.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	250 mg	416%

Other Ingredients: Plant cellulose, ascorbic acid, sodium ascorbate, and magnesium stearate (vegetable).

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, milk, yeast, casein, gliadin, gluten, or artificial flavors and colorings.

Recommended Usage:

Small Children 30 pounds or less	One capsule daily
Larger children and adults	Two capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
024/100	Vitamin C (Hypoallergenic) Capsules	100 Capsules	\$6.00
024/250	Vitamin C (Hypoallergenic) Capsules	250 Capsules	\$12.00



CHEWABLE VITAMIN C TABLETS

Kirkman's Chewable Vitamin C Tablets are sugar free and naturally flavored with a fruit flavor. They contain no artificial colors and are casein and gluten free.

Product Ingredients:

Recommended Usage:

Supplement Facts

Serving Size: 1 tablet

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	250 mg	416%

Other Ingredients: Ascorbic acid, sodium ascorbate, sorbitol, sucralose, natural passion fruit flavor, magnesium stearate, stearic acid, and corn starch

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, milk, yeast, casein, gliadin, gluten, or artificial flavors and colorings.

As a dietary supplement, take the following amounts daily.

Small children 50 pounds or less	One tablet daily
Larger children and adults	Two tablets daily

Packaging & Price:

Item #	Description	Package Size	Price
029/100	Vitamin C Chewable Tablets	100 Tablets	\$5.00
029/250	Vitamin C Chewable Tablets	250 Tablets	\$10.00



BUFFERED VITAMIN C POWDER

Many physicians are recommending very high doses of vitamin C for autistic patients especially those undergoing heavy metal detoxification. Up to now Kirkman has offered two forms of vitamin C, chewable tablets and Hypoallergenic capsules both of them dosed at 250 mg. With doctors now suggesting from one to three grams daily, the 250 mg. dosage forms may not be convenient or practical.

Kirkman has therefore developed a buffered vitamin C powder which is very easy to administer and is great tasting. Vitamin C is formulated with sodium, potassium and magnesium ascorbates to produce a buffered product which is very gentle on the stomach because the normal high acidity of ascorbic acid is counteracted by the ascorbates. A small amount of sucralose and natural passion fruit is added to make the product taste great when dissolved in water or juice. One quarter of a teaspoon supplies 1100 mg. of vitamin C.

Vitamin C is the most popular vitamin supplement in the country. The list of health conditions where Vitamin C has shown to be of value is indeed very long. Vitamin C has some specific roles in autism, however, making it a necessary supplement in the nutritional treatment of autistic children. Some of its key roles include:

- Vitamin C boosts the immune system
- Vitamin C inhibits Candida growth
- Vitamin C promotes wound healing and gut healing
- Vitamin C protects against toxins and allergens
- Vitamin C inhibits certain viral activity

Product Ingredients:

Recommended Usage:

Supplement Facts

Serving Size: 1/4 teaspoon

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	1100 mg	1833%

Other Ingredients: Ascorbic acid, sodium ascorbate, potassium ascorbate, magnesium ascorbate, sucralose, and natural passion fruit flavor.

DOES NOT CONTAIN: Sugar, soy, acacia, wheat, milk, yeast, casein, gliadin, gluten, or artificial flavors or colorings.

As a dietary supplement used in chelation take the 1/4 to 3/4 teaspoon full daily:

Packaging & Price:

Item #	Description	Package Size	Price
093/7	Buffered Vitamin C Powder (Flavored)	7 oz.	\$12.50

ALSO AVAILABLE UNFLAVORED:

Item #	Description	Package Size	Price
238/7	Buffered Vitamin C Powder (Unflavored)	7 oz.	\$12.50





VITAMIN E

HYPOALLERGENIC CAPSULES

Vitamin E is an essential antioxidant nutrient which is receiving considerable public attention. Interest in Vitamin E is high because new scientific data suggests that an optimal intake can help delay or prevent the onset of many major diseases. These diseases are the degenerative diseases which have been linked to free radical damage which originate in the body processes and can also result from environmental exposures. These free radicals can be held in check by antioxidants such as Vitamin C, E and beta carotene, all of which work together in the body.

Vitamin E is also extremely important in a healthy immune system. Vitamin E protects the immune system from damage during times of stress or illness. There have not been significant studies of Vitamin E and autism, however Vitamin E has been commonly used in the following health situations, many of which are of concern with autistic individuals:

- Wound and tissue healing
- Inflammation
- Infections
- Allergies
- Autoimmune disorders

Vitamin E supplementation has been shown to be important in reducing the risk of cardiovascular disease. It is thought that Vitamin E acts by preventing oxidation of low-density lipoprotein(LDL) cholesterol, which may initiate the events that lead to blocked arteries.

Product Ingredients:

Supplement Facts

Serving Size: 1 capsule

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin E	100 IU	333%

Other Ingredients: Plant cellulose, magnesium stearate, and silicon dioxide.

DOES NOT CONTAIN: Sugar, soy, acacia, wheat, milk, yeast, casein, gliadin, gluten, or artificial flavors or colorings.

Recommended Usage:

Children 2-5 years of age

Children 6-10

Children over 10 and adults

One capsule daily

One to two capsules daily

Two to four capsules daily

Packaging & Price:

Item #	Description	Package Size	Price
030/100	Vitamin E Capsules	100 Capsules	\$7.00
030/250	Vitamin E Capsules	250 Capsules	\$14.00



FOLIC ACID TABLETS

Folic acid is a vital nutrient for all individuals and has recently been recognized by the US government as a necessary supplement to be included in everyone's daily diet. For children with autism this can be especially important because of their very often limited diets. For those using DMG, folic acid is even more necessary because DMG can reduce the amount of folic acid in the body. To offset the reduced folic acid Kirkman Labs offers Folic Acid tablets. In most cases this will prevent hyperactivity which is one symptom of folic acid deficiency.

The tablets are pleasant tasting and can be chewed. Most children can either swallow or chew the tablet with ease. Each tablet contains a full 400 mcg. of folic acid. As with all Kirkman products, the tablets are casein and gluten free.

- A fundamental nutrient required for good health
- Casein & gluten free
- Can eliminate hyperactivity created by the use of DMG
- Pleasant tasting tablet can be chewed or swallowed

Product Ingredients:

Recommended Usage:

Supplement Facts

Serving Size: 1 Tablet

Each Serving Contains	Amount per Serving	% Daily Value
Folate (Folic Acid)	400 mcg	100%

Other Ingredients: Sorbitol, Stearic Acid, Magnesium Stearate, and Silica.

DOES NOT CONTAIN: Sugar, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavors or colorings.

One tablet daily, preferably with a meal.

Packaging & Price:

Item #	Description	Package Size	Price
016/400	Folic Acid Tablets	400 Tablets	\$10.00





FOLIC ACID LIQUID WITH VITAMIN B12

Folic acid is a vital nutrient for all individuals and has recently been recognized by the US government as a necessary supplement to be included in everyone's daily diet. For children with autism this can be especially important because of their very often limited diets. For those using DMG, Folic Acid is even more necessary because DMG can reduce the amount of folic acid in our body.

To offset the reduced folic acid Kirkman Labs has developed a pleasant tasting liquid combining Folic Acid and vitamin B12. In most cases this will prevent or eliminate hyperactivity which is one symptom of folic acid deficiency. Because added folic acid can sometimes mask a vitamin B12 deficiency, vitamin B12 has been added to the product as well.

- A fundamental nutrient required for good health
- Casein & gluten free
- Can eliminate hyperactivity created by the use of DMG
- Pleasant tasting liquid can be used alone or with other beverages.

Product Ingredients:

Recommended Usage:

Supplement Facts		
Serving Size: 1/4 teaspoon		
Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	400 mcg	100%
Vitamin B12	6 mcg	100%

1/4 teaspoon per day.

Other Ingredients: Sorbitol, Natural Raspberry Flavoring, Citric Acid, Potassium Sorbate, Editate Sodinate, and Purified Water.

DOES NOT CONTAIN: Sugar, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavors or colorings.

Packaging & Price:

Item #	Description	Package Size	Price
012/8	Folic Acid with Vitamin B12 Liquid	8 oz.	\$12.00



FOLIC ACID WITH VITAMIN B12 HYPOALLERGENIC CAPSULES

Folic acid is a vital nutrient for all individuals and has recently been recognized by the US government as a necessary supplement to be included in everyone’s daily diet. For children with autism this can be especially important because of their very often limited diets. For those using DMG, Folic Acid is even more necessary because DMG can reduce the amount of folic acid in our body.

To offset the reduced folic acid Kirkman Labs has developed a hypoallergenic capsule combining Folic Acid and vitamin B12. In most cases this will prevent or eliminate hyperactivity which is one symptom of folic acid deficiency. Because added folic acid can sometimes mask a vitamin B12 deficiency, vitamin B12 has been added to the product as well.

- A fundamental nutrient required for good health
- Casein & gluten free in a plant cellulose capsule
- Can eliminate hyperactivity created by the use of DMG
- Both nutrients necessary for a healthy nervous system

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Folic Acid	400 mcg	100%
Vitamin B12	6 mcg	100%

Other Ingredients: Plant cellulose.

DOES NOT CONTAIN: Sugar, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavors or colorings.

Recommended Usage:

One capsule daily or as directed.

Packaging & Price:

Item #	Description	Package Size	Price
040/200	Folic Acid with Vitamin B12 (Hypoallergenic) Capsules	200 Capsules	\$10.00



B-COMPLEX WITH COENZYMES PRO-SUPPORT

FLAVORED POWDER

Heavy metal detoxification puts additional oxidative stress on the body. It is well documented that during times of oxidative stress the body requires high amounts of the B-Complex vitamins. For those individuals not using a high potency vitamin such as Super Nu-Thera™ additional supplementation with B-Complex vitamins becomes important. For that reason many physicians are recommending a high potency B-complex product during the chelation process. For this Kirkman offers “B-Complex With Coenzymes Pro-Support”. The product contains mega doses of B vitamins including the active form of B-6, pyridoxal 5-phosphate plus the soluble form of B-2, riboflavin phosphate. Choline is also present for liver support.

This formulation is made with coated vitamins to mask the unpleasant tastes and is flavored at the request of parents.

Product Ingredients:

Recommended Usage:

Supplement Facts		
Serving Size: 1/2 level teaspoon (2 grams)		
Each Serving Contains	Amount per Serving	% Daily Value
Thiamine Mononitrate	30 mg	2000%
Riboflavin (Phosphate)	30 mg	1764%
Niacinamide	20 mg	100%
Vitamin B-12	125 mcg	2083%
Pantothenic Acid	10 mg	100%
Folic Acid	200 mcg	50%
Biotin	300 mcg	100%
P5P (Pyridoxal 5 Phosphate)	35 mg	*
Choline Bitartrate	150 mg	*

* Daily Value Not Established

As a dietary supplement take 2 grams (1/2 level teaspoon) daily or as directed.

Other Ingredients: Fructose, Citric Acid, Triglycerides, Silicon Dioxide, Natural Tropical Punch Flavor, DiCalcium Phosphate, and Sucralose.
DOES NOT CONTAIN: casein, gluten, soy, artificial colors or flavorings, milk, preservatives, or yeast.

Packaging & Price:

Item #	Description	Package Size	Price
099/7	B Complex with CoEnzymes Pro-Support Powder	200 grams	\$16.80

B-COMPLEX WITH COENZYMES PRO-SUPPORT

HYPOALLERGENIC CAPSULES

The same B-Complex with Coenzymes Pro-Support formulation is available in hypoallergenic capsules.

This formulation is HypoAllergenic and is in a #3 plant cellulose capsule at the request of parents.

Product Ingredients:

Supplement Facts

Serving Size: 2 Capsules

Each Serving Contains	Amount per Serving	% Daily Value
Thiamine Mononitrate	30 mg	2000%
Riboflavin (Phosphate)	30 mg	1764%
Niacinamide	20 mg	100%
Vitamin B-12	125 mcg	2083%
Pantothenic Acid	10 mg	100%
Folic Acid	200 mcg	50%
Biotin	300 mcg	100%
P5P (Pyridoxal 5 Phosphate)	35 mg	*
Choline Bitartrate	150 mg	*

* Daily Value Not Established

Other Ingredients: Plant cellulose, silicon dioxide, and leucine.

DOES NOT CONTAIN: casein, gluten, soy, artificial colors or flavorings, milk, preservatives, or yeast.

Recommended Usage:

As a dietary supplement take 2 capsules daily or as directed.

Packaging & Price:

Item #	Description	Package Size	Price
095/200	B Complex with CoEnzymes Pro-Support Capsules	200 Capsules	\$16.00



NOTES

Yeast Control

The information and dosage recommendations in this publication have been compiled from scientific studies and from input by physicians. Because each child has individual nutritional and medical needs, always follow the instructions of your physician or health care professional as their instructions may be different.



BETA - 1,3/1,6 GLUCAN HYPOALLERGENIC CAPSULES

Beta-1,3/1,6-Glucan is one of the most powerful immune-enhancing nutritional supplements. This unique compound stimulates the immune response to help the body defend itself against foreign invaders and foreign substances. Its mode of action is activating white blood cells known as macrophages, which then surround, trap and engulf the foreign substances rendering them inactive.

Beta-1, 3/1,6-Glucan has been shown in scientific studies to induce protection against:

- Bacterial pathogens including E. coli, Staphylococcus aureus, mycobacterium and V. salmonicida among others
- Fungal pathogens including Candida albicans
- Numerous influenza type viruses and certain hepatitis viral strains
- A variety of parasites

This exciting compound has also shown the ability to destroy mutated cells and to increase the effectiveness of antibiotics and anti-fungals. It may reduce the need for such drugs as well.

Beta Glucan is a plant based compound being derived from the cell wall of the Saccharomyces cerevisiae organism. It is recognized as a long chain polysaccharide molecule consisting of highly purified glucose. It is different than regular glucose in that it is made up of many glucose molecules linked together in a long branched chain with a specific chemical arrangement in the first and third glucose positions. The frequency and nature of the side chains have been shown to be very important for the biological activity of different beta glucans.

It is the above chemical structure that separates Kirkman's Beta-1,3/1,6-Glucan from other beta glucans. It is this form of glucan which possesses superior immune enhancing functions.

Beta Glucan should be taken at least 30 minutes (or more) before or after a meal. The bioavailability and absorption of this nutrient is enhanced when taken distanced from a meal. The capsules may be swallowed or opened and mixed with food or beverage.

Product Ingredients:

Supplement Facts

Serving Size: 1capsule

Each Serving Contains	Amount per Serving	% Daily Value
Beta Glucan	100 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose and diCalcium Phosphate.

Recommended Usage:

Children 1-2 capsules daily
Adults Up to 5 capsules daily

DOES NOT CONTAIN: Sugar, starch, soy, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavorings and colorings.

Packaging & Price:

Item #	Description	Package Size	Price
050/100	Beta Glucan Capsules	100 Capsules	\$20.00
050/250	Beta Glucan Capsules	250 Capsules	\$40.00



SUPER CRANBERRY EXTRACT™ TABLETS

Kirkman's Super Cranberry Extract™ is a new and patented form of cranberry extract that is 64 times more potent than any other cranberry extract on the market. Each tablet is equal to about 10 gallons of cranberry juice!

Kirkman's Super Cranberry Extract™ is an active nutraceutical concentrate prepared from cranberries by a proprietary resin-based process. This unique process yields a concentrated extract, which possesses far superior antibacterial properties, antioxidant properties and anthocyanin content than those usually associated with cranberry juice.

Kirkman's Super Cranberry Extract™ has been shown in vitro to completely inhibit the growth of the following bacteria:

- E. coli
- Staphylococcus aureus
- Staph epidennidis
- Bacillus subtilis
- Yersinia enterocolitica
- Serratia marcescens
- Salmonella typhimurium
- Pseudomonas aeruginosa
- Pseudomonas fluorescens
- Garderella vaginalis

Kirkman's Super Cranberry Extract™ has also been tested in vitro on Candida yeast strains and has exhibited the ability to kill or deactivate the yeast cells. Yet it does not affect acid based friendly bacteria! It is all natural and has no side effects. It is very safe; in fact, the joint Food and Agriculture Organization/World Health Organization Expert Committee on Food Additives established an allowable daily intact limited only by Good Manufacturing Practices.

Kirkman's Super Cranberry Extract™ is naturally casein and gluten free.

Product Ingredients:

Supplement Facts

Serving Size: 1 Tablet

Each Serving Contains	Amount per Serving	% Daily Value
Cranberry Extract	100 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Natural Raspberry Flavoring, Silica, Magnesium Stearate, Sucralose, and Stearic Acid.

Recommended Usage:

1 Tablet 3 times a day.

DOES NOT CONTAIN: Sugar, starch, soy, fish oil, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Packaging & Price:

Item #	Description	Package Size	Price
007/100	Super Cranberry Extract Tablets	100 Tablets	\$30.00





SUPER CRANBERRY EXTRACT™

HYPOALLERGENIC CAPSULES

Kirkman's Super Cranberry Extract™ is a new and patented form of cranberry extract that is 64 times more potent than any other cranberry extract on the market. Each capsule is equal to about 10 gallons of cranberry juice!

Kirkman's Super Cranberry Extract™ is an active nutraceutical concentrate prepared from cranberries by a proprietary resin-based process. This unique process yields a concentrated extract, which possesses far superior antibacterial properties, antioxidant properties and anthocyanin content than those usually associated with cranberry juice.

Kirkman's Super Cranberry Extract™ has been shown in vitro to completely inhibit the growth of the following bacteria:

- E. coli
- Staphylococcus aureus
- Staph epidennidis
- Bacillus subtilis
- Yersinia enterocolitica
- Serratia marcescens
- Salmonella typhimurium
- Pseudomonas aeruginosa
- Pseudomonas fluorescens
- Garderella vaginalis

Kirkman's Super Cranberry Extract™ has also been tested in vitro on Candida yeast strains and has exhibited the ability to kill or deactivate the yeast cells. Yet it does not affect acid based friendly bacteria! It is all natural and has no side effects. It is very safe; in fact, the joint Food and Agriculture Organization/World Health Organization Expert Committee on Food Additives established an allowable daily intact limited only by Good Manufacturing Practices.

Kirkman's Super Cranberry Extract™ is naturally casein and gluten free, and contains no colors, flavors or allergens. The capsule shell is made from natural plant cellulose.

Product Ingredients:

Supplement Facts

Serving Size: 1 Capsule

Each Serving Contains	Amount per Serving	% Daily Value
Cranberry Extract	100 mg	*

* Daily Value Not Established

Other Ingredients: Plant Cellulose and Magnesium Stearate (vegetable).

DOES NOT CONTAIN: Sugar, starch, soy, fish oil, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial colorings.

Recommended Usage:

1 Capsule 3 times a day.

Packaging & Price:

Item #	Description	Package Size	Price
039/100	Super Cranberry Extract Capsules	100 Capsules	\$36.00



YEAST CONTROL

HYPOALLERGENIC CAPSULES

Yeast and fungi byproducts are very frequently elevated in the urine samples of people with autism. This is a result of a yeast overgrowth, usually *Candida albicans*, which develops in the intestine due to abnormalities and deficiencies in the immune system of individuals with autism. Other strains of *Candida* can also be involved. Often, the diagnosis for the presence of *Candida* in autism is difficult. The organism often “hides” in small clusters in obscure parts of the intestine making traditional detection by endoscopy come out negative. This is why Dr. William Shaw of Great Plains Laboratory in Overland Park, Kansas, uses an organic test for yeast and bacterial byproducts for detection.

There is no one “cure all” treatment for *Candida* infections. Rather, a complete program must be set up and followed. The program must address all of the following areas to maximize yeast control:

- Begin killing off the *Candida*
- Boost the immune system
- Gradually begin to heal the gut
- Normalize the intestinal flora by introducing Probiotics
- Change the diet to discourage future overgrowth
- Ensure against the mutation of *Candida* into forms which resist treatment

After significant research and working closely with doctors specializing in autism, Kirkman has developed “Yeast Control”. It is intended that this product be used in conjunction with Nystatin (or other prescribed anti-fungal), as a natural alternative to Nystatin or cyclically with Nystatin.

Before beginning to use “Yeast Control,” please read the longer, more complete, product article on this product. It is on Kirkman’s website under product articles. Also discuss a complete yeast program with your physician.

Kirkman’s Yeast Control is offered in the hypoallergenic line as #1 plant cellulose capsules. The capsule should be swallowed whole, not emptied out as powder. The reason for this is that these anti-yeast ingredients have a very strong bitter taste and can not be masked without using sweeteners and flavors which are not acceptable for the hypoallergenic line. For those individuals who can not swallow the capsules whole, we recommend the flavored powder.

Recommended Usage:

Under 25 pounds	Not Recommended
26 to 45 pounds	One or Two Capsules Daily
Over 45 pounds	Three Capsules Daily (AM, Midday and PM or two in AM/one PM)

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YEAST CONTROL HYPOALLERGENIC CAPSULES (continued)

Product Ingredients:

Supplement Facts		
Serving Size: 4 Capsules		
Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	500 mg	833%
Biotin	900 mcg	300%
Selenium	70 mcg	100%
Olive Leaf Extract	200 mg	*
Pau d'Arco Extract (Bark)	200 mg	*
Goldenseal Extract (Rhizome & root)	100 mg	*
Caprylic Acid (Calcium Caprylate)	100 mg	*
Cranberry Extract	25 mg	*
Oregano	100 mg	*
* Daily Value Not Established		

Other Ingredients: Plant Cellulose and Silicon Dioxide.

DOES NOT CONTAIN: Sugar, starch, soy, fish oil, acacia, wheat, corn, milk, yeast, casein, gliadin, gluten, or artificial flavoring or colorings.

Packaging & Price:

Item #	Description	Package Size	Price
058/100	Yeast Control Capsules	100 Capsules	\$25.00
058/200	Yeast Control Capsules	200 Capsules	\$39.00



YEAST CONTROL FLAVORED POWDER

Yeast and fungi byproducts are very frequently elevated in the urine samples of people with autism. This is a result of a yeast overgrowth, usually *Candida albicans*, which develops in the intestine due to abnormalities and deficiencies in the immune system of individuals with autism. Other strains of *Candida* can also be involved. Often, the diagnosis for the presence of *Candida* in autism is difficult. The organism often “hides” in small clusters in obscure parts of the intestine making traditional detection by endoscopy come out negative. This is why Dr. William Shaw of Great Plains Laboratory in Overland Park, Kansas, uses an organic test for yeast and bacterial byproducts for detection.

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- Change the diet to discourage future overgrowth
- Ensure against the mutation of *Candida* into forms which resist treatment

After significant research and working closely with doctors specializing in autism, Kirkman has developed “Yeast Control”. It is intended that this product be used in conjunction with Nystatin, as a natural alternative to Nystatin or cyclically with Nystatin (or other anti-fungal).

Before beginning to use “Yeast Control,” please read the longer, more complete, product article on this product. It is on Kirkman’s website under product articles. Also discuss a complete yeast program with your physician.

Product Ingredients:

Supplement Facts

Serving Size: 1 Rounded Teaspoon (5 grams)

Each Serving Contains	Amount per Serving	% Daily Value
Vitamin C	500 mg	833%
Biotin	900 mcg	300%
Selenium	70 mcg	100%
Olive Leaf Extract	200 mg	*
Pau d’Arco Extract (Bark)	200 mg	*
Goldenseal Extract (Rhizome & root)	100 mg	*
Caprylic Acid (Calcium Caprylate)	100 mg	*
Cranberry Extract	25 mg	*
Oregano	100 mg	*

* Daily Value Not Established

Other Ingredients: Sorbitol, Citric Acid, Sodium Ascorbate, Natural Lemon, Pineapple, Banana, and Passion Fruit Flavorings, Sucralose, and

Recommended Usage:

Under 25 pounds	Not Recommended
25 to 45 pounds	1/2 teaspoon daily in red grape juice or other tart liquid
Over 45 pounds	1/2 teaspoon twice daily in red grape juice or other tart liquid

DOES NOT CONTAIN: Sucrose, starch, soy, wheat, milk, casein, gliadin, gluten, or artificial flavorings or colorings.

Packaging & Price:

Item #	Description	Package Size	Price
046/1	Yeast Control Powder	1lb (454 grams)	\$39.00





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