

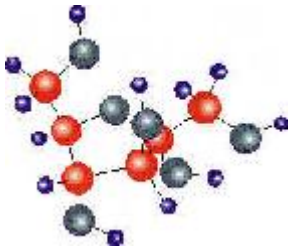
Book of Alpha Nutrition

Medical Foods, Nutrient Formulas

Nutrient Considerations
Alpha Nutrition Formulas
Theory and Applications

Alpha ENF
Alpha PMX
Alpha OMX
Alpha DMX
Alpha BMX
Alpha AAX
Alpha VMX
Alpha RF





Alpha Nutrition Medical Foods

Alpha Nutrition specializes in elemental nutrient formulas, the pure expression of nutrient biochemistry. We use the concept of nutrient modules to create nutrient formulas. We provide a choice of nutrient modules so that food can be replaced, nutrient intake can be supplemented and balanced in a variety of ways. These precise nutrient sets are formulated by assembling nutrients into modules that supply energy, electrolytes, antioxidants, phosphate, vitamins, minerals, neurotransmitter substrates and amino acids as the protein building blocks. The formulas are all packaged as dry powders to be mixed with water or juices and taken orally.

You can obtain further information and email support at our web sites, found at <http://www.alphanutrition.com> <http://www.nutramed.com>

Formula Information is available online

<http://alphanutrition.com/modularnutrition/index.htm>

Formula orders are place online

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Alpha Modular Nutrition

Nutrient Modules

A definition of modules is a unit that is combined with others to form a larger structure or system, and is self-contained enough to be easily rearranged, replaced, or interchanged to form different structures or systems.

One way to think about nutrient modules is to assemble ingredients according to their classification - vitamins, minerals, sugars, fats, amino acids etc. This is an obvious way to measure and mix ingredients in the laboratory to make a formula. Alpha ENF contains all these nutrient modules.

Another way to think about nutrition is in terms of functional modules - the energy components, electrolytes, antioxidants, vitamins, minerals, neurotransmitter substrates and amino acids as the protein building blocks.

Energy

The first nutritional is energy. If you are designing a diet or a meal-replacement formula, you have to decide what fuels you are going to add to supply energy. Living cells are glucose-burning machines. Animals take advantage of the ability of plants to manufacture sugar and other nutrients. Energy is locked into the molecular bonds of a few basic fuel molecules: glucose, fructose, fatty acids, and amino acids. Different carbohydrates provide the structure of plants and the energy we derive from plant foods arrives as sugars. Digestion reduces the complex carbohydrates to simple sugars. Similarly, fats and proteins are complex structures in foods that are digested into fatty acids and amino acids. Fat is the second most important source of energy.

Human action is the expression of complex and vigorous interactions of all body systems. During exertion, loses water and electrolytes through sweat and the lungs must be replaced. Neurotransmitters are consumed at a prodigious rate and must be re-synthesized out of nutrient substrates that are rapidly consumed. Several nutritional theories of performance enhancement have been advocated in the past several years. The best ideas have gone into the design of the Alpha ENF and Alpha PMX formulas. Bypassing digestion, both the Alpha ENF and the PMX formula allow the absorption of critical nutrients even during exertion. A serving of Alpha PMX 30 to 40 minutes pre-performance or workout is referred to as "nutrient prep". Further intake every 30 to 60 minutes during prolonged exertions replaces consumed nutrients. Post-exertion muscle growth and tissue repair can be supported with the same nutrient mix, taken 1 and 2 hours following a training or competition event.

Electrolytes

The next functional module of great importance is electrolytes - the salts dissolved in water that form the basis of blood and cellular function. Sodium, potassium, magnesium, calcium and chloride are the essential electrolytes that should arrive in proportion to each other and in the right amounts for proper body function. Water is essential and intake determines the concentration of electrolytes in the blood and tissue fluids. The right amount of water is important - more is almost always better than less. Alpha ENF and Alpha PMX provide a balanced set of electrolytes including phosphate, which is essential to energy transfer in our body. The formulas can therefore replace food completely and will generally provide normal electrolyte balance over weeks to months of continuous use.

Antioxidants

The antioxidants are provided in generous quantities in Alpha ENF & PMX because of their many potential health benefits. Vitamin C, beta carotene, vitamin E and selenium scavenge free oxygen radicals. Cellular combustion can be compared to a wood stove, which needs adequate protection to do its job without burning the house down. As we burn fuel in our cells, some oxygen atoms are given an extra electron and become the radical, O₂⁻. If O₂⁻ floats free of the energy engines, it may interact with and damage other molecules.

Amino Acids

Amino acids are the alphabet characters of body proteins. Proteins are chains of amino acids linked together like beads on a necklace. The individual amino acids fall into two groups: the essential AA's, which must be ingested, and the non-essential AA's, which can be synthesized in the body and need not appear in the food. A total of 9 amino acids are considered essential, while another 11 or so can be synthesized from the essential amino acids.

There are other amino acids that appear in nature that are not included in protein structure. These odd amino acids appear especially in plants, where they may have roles as insect deterrents. An occasional non-nutrient amino acid may be useful in the food supply, as an accessory nutrient - taurine is a prime candidate.

Life is an exercise in molecular synthesis and control. The programs, which determine what we are and how we function, are coded in DNA molecules, housed in the nucleus of every cell. The DNA code consists of strings of 64 alphabet characters that specify amino acids in-groups of three characters (codons). A single character is a base pair that is visualized as the rung on a ladder, twisted into a helix. The entire range of cellular procedures of life consists of stringing amino acids together to form proteins. Enzymes are proteins that orchestrate and control the synthesis of all molecules (construction procedures). This is an elegant, simple plan that permits the evolution of great

complexity.

The amino acid sequence is read from the DNA molecule and transferred by RNA to ribosomes, the protein synthesis machinery in a cell. Ribosomes develop protein assembly structures incorporating RNA templates to assemble free amino acids from the cellular pool. The assembled amino acids are then linked by enzymatic action to form proteins. The link between amino acids is a peptide bond. The "Amino" of amino acids is a nitrogen-hydrogen group, NH₂. Every amino acid has -NH₂ at one end and C-OOH, the acid, at the other end. The peptide bond links the -NH₂ with the -COOH like this: -CO-NH-OC-

When the peptide bond is made, a surplus of two hydrogen and one oxygen atom is removed - H₂O, or water. We use a 3-letter abbreviation of the amino acid name to write an amino acid sequence which is the primary structure of a peptide or protein: Gly-Leu-Gly-Try- for example, is a 4 amino acid sequence.

Short chains of amino acids are peptides; longer chains are polypeptides. Even longer chains are proteins. Peptides assume information characteristics at 3 or more AA lengths. As the AA chain elongates, its shape becomes more complex and more meaningful. A typical globular protein has about 350 amino acids.

The long amino acid chains of proteins are folded into a shaped object. The shape is known as the tertiary structure of the protein. Protein shape is information. The shape may determine where the protein can go in a cell or which biological membrane will let it pass. The shape determines its structural role. The shape of a protein is also its identity. Shape ID is recognized and remembered by the immune system and is the basis of the body's immune defense.

Instead of proteins, free amino acids are provided in Alpha ENF, PMX, DMX and AAX. A complete set of the nine essential amino acids is complemented by 10 of the non-essential amino acids. Both Alpha ENF and Alpha PMX contain branch-chain amino acids; higher concentration in Alpha PMX is designed to enhance muscle action and growth. Leucine in particular seems to promote muscle growth, acting in concert with insulin. The other two branch-chain amino acids, isoleucine and valine, may also supply muscle fuel if impairment of glucose utilization occurs. Arginine has been effective in improving tissue repair and can be considered growth-promoting. The technique of amino acid proportioning is a frontier in nutritional programming for athletic performance.

Some of these amino acids are not destined to be included in body proteins but will be used as neurotransmitters. Tyrosine and phenylalanine, for example, are converted to dopamine, noradrenalin and adrenalin. Tryptophan is converted into serotonin. Glycine itself is a major neurotransmitter in the spinal cord. Glutamate is another important amino acid-neurotransmitter.

Sources: amino acids are individually added to an AAX and are certified as 100% pure, l-form amino acids - i.e. no source or production contaminants. The amino acids in Alpha Nutrition Formulas are manufactured by a pharmaceutical process in high tech production faculties in Europe. The preparation of each amino acid is chosen for solubility in water - this provides quick mixing and maximum nutrient absorption.

The formulas are hypoallergenic and have been tolerated by people with sensitivity to many if not most foods. Cheaper formulas that contain proteins powders are common in the market place. Partially hydrolysed proteins are also common and these are manufactured from food proteins such as cow's milk and soy. Acid hydrolysis is the usual process - skim milk powder or soy flours are heated with acids under pressure to break down the proteins. Partially hydrolysed and intact protein powders are sometimes labeled deceptively as "amino acids" and amino acid values are listed. You have to read the fine print or contact the manufacturer to realize that these are hydrolysed proteins with an uncontrolled mixture of ingredients and not pure amino acids.

Amino Acid Requirements & Intolerance

The need for specific amino acids is difficult to determine. There is a range of needs and tolerances among different individuals. Protein-deficiency anxiety is not well founded in affluent countries. Amino acids appear to be relatively easy to obtain in adequate amounts, even on simple vegetarian diets with no meat, fish, eggs, or milk, if different vegetables are combined. Mixing a legume with a grain or with a tuber can provide a complete amino acid mixture, although the proportioning of amino acids may be less than desirable.

Some non-essential AA's may become essential if their synthesis is blocked by enzyme deficiencies. In order for protein synthesis to proceed, all the amino acids must be supplied at the same time. Since we are mammals, mammalian proteins tend to have the same set of AAs as our own. Plant proteins may be deficient in lysine, threonine, and tryptophan. Vegetables should be combined to achieve a complete the AA set. Corn or maize, for example, is deficient in lysine, although many years of corn-breeding research have produced hybrid corn with increased lysine content. The substitution of the newer corn hybrids may eliminate protein malnutrition where corn is a staple.

Some patients on very limited diets (rice and a few vegetables alone, for example) remain well, at least for several months although their food may appear to be deficient in essential AAs. A minimal diet presents minimal problems to one's metabolism. A protein deficient diet may be better tolerated than a protein excess diet. The missing amino acids are supplied from internal reserves as protein is recycled every day.

If you look at RDA values for food protein, you get the wrong idea that amino acid intake level has to be the same as protein intake but we believe that a daily intake of 25 grams of free form amino acids will be adequate unless new tissue construction is required. RDA protein values are approximations based on eating food. The proteins in foods have to be digested into dipeptides and free amino acids before nutrients are available and protein digestion is incomplete. A percentage of food protein is wasted in the digestive tract.

The trick is that if amino acids arrive in high concentrations, the liver is obligated to destroy most of them. High protein intake is wasteful if you want the amino acids to be utilized as protein building blocks and as neurotransmitter substrates. Using amino acids as fuel is wasteful and has no known benefits.

You have to know that the body recycles amino acids and becomes very efficient when food protein intake is low; the net loss of amino acids can drop to about 2 grams per day. You have to know that amino acid proportioning is relevant to how amino acids are admitted to cells and how they are utilized. The concept of protein quality is used to express the idea that all the 9 essential amino acids have to be present before any of them can be used to make proteins. In addition the relative amounts of each amino acid is relevant. An ideal nutritional program would specify amino acid proportions, but little information is available to determine a proportioning algorithm.

We believe that a precisely engineered amino acid set will be used more efficiently reducing the daily "protein" requirement as specified for food protein intake. If all food protein intake stops, we recommend calculating the RDA food protein requirement in grams and supplying 30 % to 50% of that value as a properly formulated blend of amino acids (available separately in Alpha AAX or combined with other nutrients in Alpha ENF, Alpha PMX, Alpha BMX and Alpha DMX.)

The Importance of No Proteins

One of the therapeutic secrets of Alpha ENF, PMX and DMX is the avoidance of proteins or pieces of proteins known as peptides. Proteins are the most reactive molecules in food allergic disease. Staple foods such as milk, eggs, wheat, and meat contain proteins that frequently cause immune responses and are the basic problem in delayed patterns of food allergy. Protein powders sold as "body-building" supplements can be a source of trouble.

We believe that concentrated forms of animal and plant proteins are potentially hazardous to eat and should not be injected into or ingested by humans. Protein powders are often made from milk protein (casein, whey), egg white (albumin), soya proteins, or hydrolyzed vegetable proteins. These proteins have been demonstrated to be good antigens and will excite immune responses in a significant number of patients. Infant reactions to milk proteins have been well documented and are responsible for causing a wide range of disease. If you want to sensitize rats in the laboratory you repeatedly inject albumin and produce both immediate and delayed kinds of hypersensitivity reactions – anaphylaxis and serum sickness. Delayed hypersensitivity to casein or albumin is a module of chronic immune-mediated disease.

Alpha elemental formulas avoid all the protein problems by providing a balanced set of l-amino acids, the real nutrients derived from proteins by digestion of food. Amino acids do not trigger immune responses. Free amino acids are much more expensive than protein powders, but freeing the immune system from protein challenge is worth the extra cost.

Glucose

Carbohydrates (CHO) are sugar-base molecules. Complex carbohydrates are chains of sugar molecules and are found in plant foods everywhere. Starch is a polymer or long string of glucose molecules, just as a protein is a long string of amino acids. Starch-containing plants are universal staple foods. Human action is an expression of biological energy derived from food. Living cells are glucose-burning machines. Animals take advantage of the ability of plants to manufacture sugar and other nutrients. The energy, which supports us, is locked into the molecular bonds of a few basic fuel molecules: glucose, fructose, fatty acids, and amino acids. The energy is released as the energy-supplying molecules are dismantled by oxidation. Food-derived energy allows us to move, to do work by muscle contraction, and to keep warm. Body heat is generated by the metabolic activity of every cell. Carbohydrates and fats are the principle sources of energy, although amino acids may be utilized as energy when glucose intake is limited or glucose utilization is impaired as in diabetes.

Sugar has been blamed for all manner of health problems, often without justification. Many people who contact us with sugar concerns are misinformed and confused about the role of sugar in the body. They cannot differentiate among different kinds of sugar. They have not learned that glucose runs every cell alive on planet earth. Glucose, like oxygen and water is essential to life, but too much in the wrong place, at the wrong time can be harmful. The basic principle of life is that the right molecules have to be delivered to the right place at the right time. This principle is used to formulate elemental nutrient formulas such as Alpha ENF and PMX.

In an ideal diet, glucose is combined with all other nutrients following a correct proportioning plan. If glucose utilization is impaired as in diabetes, then the rate of glucose absorption becomes critical. Small frequent doses will often be better utilized and high blood sugar peaks are avoided. Some tissues such as muscle require insulin to absorb sugar. Other organs, such as the brain, do not require insulin and are prime sugar consumers. The liver tries to maintain blood sugar levels within a narrow normal range by either absorbing or releasing sugar. The liver stores sugar as glycogen and can also produce sugar from amino acids if food does not supply adequate sugar. Slow absorption of sugars is better tolerated than the rapid absorption of larger amount.

Nutrient Intake Considerations

In the scientific literature, there have been hundreds of studies that reveal indications for There are roles for each of the B vitamins, for example, in therapeutic applications and since they are safe to take at 3 or 4 times the RDA doses. There are reasonable arguments to include the B-complex in routine supplementation. High doses (about 10 times RDA) of vitamin C and E can be supported by scientific studies; however, there is little convincing evidence that routine doses of vitamin C above 1 gram per day are beneficial, although brief intakes of higher doses to treat tissue inflammation and injury may prove to be a good idea. Some Vitamins are toxic in high dose; Vitamins A, D and B₆ are the leading offenders.

In spite of the persisting popularity of supplements and increasing scientific evidence of benefits, some dietitians and MDs still declare that vitamin-mineral supplements are unnecessary if you have a "well-balanced diet". Other scientific evidence reveals that the "well-balanced" diet may be an idealized and uncommon version of life anywhere in the world and fiction when talking about poor people both in affluent countries and in the third world. There is ample evidence that many groups of people have nutrient deficiencies. In the USA, for example, an ambitious one-day survey of 12,000 people (Second National Health and Nutrition examination) showed that 41% ate no fruit and only 25% reported eating a fruit of vegetable that contained vitamin C or A.

A US study showed that: "adolescents consumed diets that were low in several essential vitamins and minerals and high in some nutrients related to increased incidence of chronic disease. There were groups of teens who had dietary patterns that placed them at especially high risk, in particular the black and Southern females. Vitamin A, vitamin E, calcium, magnesium, and zinc were the nutrients most often consumed below recommended levels. In addition, the females consumed low levels of phosphorus and iron. Percent calories from total fat and saturated fat and mean sodium intakes were above recommended levels for the majority of the sample.

Another US report concluded: that 5% of Americans over age 65, or 1.5 million individuals, currently reside in the nation's 20,000 nursing homes; that nutritional deficiencies are common, frequently not recognized and that opportunities for preventing or correcting under nutrition exist. Another study concluded: "The majority of nursing home residents (EDR) have inadequate intakes of numerous essential macro- and micronutrients. The deficient micronutrient intakes could be normalized by administration of a multivitamin/trace mineral supplement daily. Nevertheless, a minority of patients in nursing homes currently receive proper nutrient supplements. "

In the care of critically injured or ill patients improved nutrition through the use of supplements and enteral nutrient formulas is seen to be important. "Micronutrients play a key role in many of the metabolic processes that promote survival from critical illness. For vitamins, these processes include oxidative phosphorylation, which is altered in the patient with systemic inflammation, and protection against mediators, in particular oxidants. Trace elements are essential for direct antioxidant activity as well as functioning as cofactors for a variety of antioxidant enzymes.

Wound healing and immune function also depend on adequate levels of vitamins and trace elements. Of extreme importance is the ease with which a deficiency state can develop in the critically ill because of decreased nutrient intakes and increased requirements. Daily intakes up to or exceeding many times the RDA usually are required. Attention to micronutrients is paramount both in optimizing the nutritional management of the critically ill and in the overall management of these patients."

A paradox has emerged. Many health professionals take vitamin-mineral supplements themselves but do not recommend them to their patients. Their better-informed and more affluent patients take the supplements anyway. The patients who miss out are the most likely to be malnourished. Various studies have polled different populations to define the prevalence of supplement use. In the USA, the FDA Vitamin and Mineral supplement use survey in 1980 found that 42% of adults use some supplement. A repeat of this survey on 1896 showed that 38% were users. Subsequent studies show supplement use hovering at about the same incidence; infrequent or occasional users always out-number regular users.

Alpha Nutrient Formulas

Alpha Nutrition formulas provide a choice of nutrient modules so that nutrient intake can be supplemented and balanced in a variety of ways. While foods in the diet can sometimes supply complete and balanced nutrition, there are many circumstances when adding nutrients is desirable or necessary. There are many circumstances when increasing the daily intake above recommended daily intake values is desirable.

The Alpha series of Elemental Nutrient Formulas represent the ultimate reduction of food, replacing food intake with a chemically defined set of nutrients. Alpha ENF provides a complete set of nutrients whenever it is used. Alpha ENF and Alpha PMX are hypoallergenic, meal-replacement formulas that supply nutrients in their elemental form. The high nutrient density of Alpha ENF and PMX can be used strategically to support nutrition whenever nutrient or caloric deficiency is a concern. The other Alpha Nutrition formulas are nutrient subsets or nutrient modules based on Alpha ENF. All the formulas share the best-choice nutrient ingredients and reflect the best ideas in nutritional chemistry. Alpha ENF Formulas are gluten free and do not contain gluten, cow's milk, soya, or egg ingredients. They are suitable for vegetarians.

We designed Alpha ENF to supply complete nutrition and it remains the formula of choice for meal replacement. Alpha ENF is the complete nutrient set formulated by assembling nutrients into modules that supply energy, electrolytes, antioxidants, phosphate, vitamins, minerals, neurotransmitter substrates and amino acids as the protein building blocks. Alpha PMX is a modified version and fat free version of Alpha ENF. PMX becomes a complete meal replacement if fat is added in the form of vegetable oil.

To answer the specific needs of diabetics we formulated Alpha DMX by removing the energy modules in Alpha ENF and reducing the sodium concentration. A diabetic can use DMX in place of Alpha ENF. Anyone who wants to boost total nutrient intake without adding calories can use Alpha DMX.

If the goal is to reduce or eliminate protein intake, or to supplement protein intake, amino acids can be added to the diet as Alpha AAX in a dose range of 10 to 50 Grams per day.

To increase intake of nutrients responsible for bone growth and maintenance, Alpha OMX can be added in the dose range of 5 to 15 grams per day.

One of the therapeutic secrets of ENFs is the avoidance of proteins or peptides. Proteins are the most reactive molecules in food. Staple foods such as milk, eggs, wheat and meat contain proteins that frequently cause immune responses and are the basic problem in delayed patterns of food allergy and in diseases such as celiac disease. Instead of proteins, free l-form amino acids are provided in the Alpha Nutrition series. A complete set of the nine essential amino acids is complemented by 10 of the non-essential amino acids. Alpha ENF, Alpha PMX and Alpha DMX contain branch-chain amino acids; higher concentration in Alpha PMX. All proteins, hydrolyzed proteins and peptides are avoided.

Alpha Nutrient Formula Series

Alpha ENF is the complete nutrient set for meal replacement.

Alpha PMX is the complete nutrient set minus the safflower oil with increased amino acids.

Alpha DMX is a subset of all vitamins, amino acids and minerals except sodium. The formula contains no energy in the form of carbohydrates or fats.

Alpha BMX, Brain Food, provides a complete set of nutrients except fat with reduced carbohydrate and increased levels of amino acids and other key brain nutrients.

Alpha OMX is a mixture of bone minerals plus Vitamin D - the nutrient set most important to bone growth and maintenance

Alpha VMX is a subset of the nutrient mix - the vitamin & mineral modules.

Alpha AAX is the complete amino acid module.



Formula Classification in Canada & USA

The only ingredients that are included in Alpha Nutrition formulas are considered by worldwide scientific consensus to be nutrients. The only exception is that vanillin is added to the vanilla flavored version of Alpha ENF. Our first complete meal replacement formula was Alpha ENF. The formulation was based on scientific evidence and on previous nutrient formulas that had been used in research and marketed for human consumption.

In Canada Alpha ENF is classified as a “complete meal-replacement” formula and meets all the requirements. The formula is exempt from both federal and provincial sales tax because it is a food replacement and may be essential for patients who cannot eat or whose nutrition is compromised by disease. The formula is sold by direct sales to customers and through health care professionals.

In the USA, Alpha ENF is classified as a “Medical Food” by the FDA. A medical food by definition answers specific health needs, but that does not preclude its use by normal, healthy individuals. The USFDA stipulates that medical foods are to be used under the supervision of a physician. In Canada and most other countries there is no similar stipulation. The formula is only sold in the USA by direct sales to the customers who order online. Customers do not pay tax or duty on the formulas.

Alpha PMX is a modification of the Alpha ENF formula and is a considered complete meal replacement if vegetable oil is added at the time of use.

Alpha DMX is a partial meal replacement formula with the energy modules deleted and sodium chloride removed. If Alpha DMX is eaten, for example, with a small amount of rice, cooked vegetable and 3 ounces of poultry and fish, complete nutrition is achieved.

Alpha OMX, Alpha AAX and Alpha VMX are modular nutrient formula and can be combined with Alpha ENF or PMX to create a complete meal replacement program.

Selection of Ingredients

The design of the Alpha Nutrition formulas has been careful and conservative, following the scientific literature closely. Chemically defined diets have been used in animal and human research for many decades. The choice of ingredients was based on solubility, tolerance, safety, efficacy, availability, palatability and cost. For example, here are some ingredient issues:

Solubility

In the formulation of elemental nutrient formulas, high solubility of each ingredient in water was a priority. Calcium carbonate and calcium citrate are not proper ingredients, for example, because of low solubility in water. Alpha formula vitamins are supplied by the world's leading manufacture of vitamins. They solve solubility problems of the fat-soluble vitamins in a variety of ways, supplying special water-soluble "vitamin preparations" for use in the food industry. Preparations include other ingredients that serve to stabilize and disperse the vitamin.

Effect on Gastrointestinal Tract

The second priority for ingredient selection is the effect of the ingredient on the gastrointestinal tract. Magnesium sulphate, for example, is a soluble and inexpensive form of magnesium. Magnesium sulphate, however irritates and stimulates the gastrointestinal tract so that is used in the formula would cause cramps and diarrhea – obviously unacceptable. The best magnesium is the gluconate form that is soluble and non-irritating.

Cation/Anion Balance

Electrolyte balance is an important consideration in meal replacement formulas. Mineral nutrients are usually considered to be cations. The chloride anion, for example, is usually not considered a nutrient but must be supplied with nutrient cations in proper portions to maintain acid-base balance. Phosphate, another anion, is an essential nutrient and also must be supplied. There are several forms of phosphate that can be added to an elemental nutrient formula but most phosphate compounds are not soluble or irritate the GI tract. Our solution is to deliver calcium and phosphate together in a safe, well-tolerated, soluble compound, calcium glycerophosphate.

Hypoallergenicity

Each ingredient is also selected to reduce the possibility of an immune response to an ingredient. All molecules that are known to be potential antigens are excluded. All proteins and peptides are excluded for this reason. Hydrolyzed proteins are also excluded because it is impossible to exclude all peptide antigens. We decided not to add flavors, colors, emulsifiers, stabilizers and other unnecessary ingredients. The only exception is vanillin is added to Alpha ENF Vanilla – we found no evidence that vanillin can act as an antigen.

History and Theory of Elemental Nutrient Formulas

Allergists were among the first physicians to be interested in completely controlling the food supply, and some used a chemically defined set of nutrients to replace food. The nutrient set seemed the most definitive of all diet revision experiments. Nutrient formulas that could replace food completely had first been used in research and hospital applications.

These formulas were known as chemically defined diets, elemental diets or elemental nutrient formulas - ENFs. Several studies have demonstrated normal functioning with health benefits for volunteers living on ENFs for weeks at a time.

NASA sponsored ENF development to define the minimum weight and volume requirement for human food. Elemental mixtures represent the ultimate reduction of food and have been referred to as "Space Diets". The traffic of non-nutrient chemicals through the body can be thought of as the "overburden" or cost of food processing. Reducing food-processing cost is a form of metabolic rest that has therapeutic applications in many diseases.

Young et al investigated the change in serum and urinary metabolites on a chemically defined diet (Vivonex). They stated that urine "contains a vast number of chemical constituents...many are exogenous." Serum cholesterol concentrations decreased on Vivonex, as did BUN; phosphate, uric acid. The excretion of carbohydrates, purines and aromatic acids was decreased.

Early formulas were often administered by tube feeding. Taste and texture were not important. Applications included pre- and post-operative nutrition, the treatment of diarrhea, malabsorption, malnutrition, Crohn's disease, ulcerative colitis, pancreatic disease, and short gut syndrome. An ENF could also provide an inexpensive, safe alternative to home TPN for selected patients.

The ENF Approach to Medical Therapy

Elemental Nutrient Formulas (ENFs) are used to manage digestive diseases and to provide adequate nourishment when eating food is undesirable or impossible. The question I asked in 1985 was how to apply ENFs to solving other common health problems? The logic was compelling. If food problems were even remotely suspected in causing an illness, a food holiday using an ENF to supply nutrition would confirm or deny food involvement, usually within 10-14 days. If the food holiday proved successful, the Alpha Nutrition style of food reintroduction could become a standard method of redefining a new, healthier diet.

An important theory is that the digestive tract GIT responds to food antigens and increases absorption of antigenic macromolecules. This was an essential idea in the development of Alpha ENF. Since the "leaky gut" could be involved in the pathogenesis of many diseases, Alpha ENF could be a useful tool in diagnosing and treating these food-related illnesses. By eliminating antigenic macromolecules, especially proteins, Alpha ENF should by-pass all the immune defense procedures.

The list of recognized food allergic disorders included chronic rhinitis, allergic

gastroenteropathy, asthma, eczema, urticaria, angioedema, migraine headaches and some kinds of inflammatory arthritis. Evidence linked food (protein) antigens and immunomodulating substances in food to inflammatory bowel disease and to the autoimmune diseases: Crohn's disease, rheumatoid arthritis, lupus erythematosus, and possibly multiple sclerosis. A common non-specific syndrome of delayed pattern food allergy presented in many patients as chronic fatigue, rhinitis, pharyngitis, myalgias, arthralgias, and irritable bowel syndrome often with cognitive and emotional dysfunction. In children a similar syndrome with behavior and learning difficulties proved to be common.

Eczema or atopic dermatitis is often caused by food allergy. In severe eczema, complete remission of the disease had been achieved on an ENF. Asthma may be caused by food allergy, especially when the disease is severe, chronic, and without seasonal variation. A trial of clearing on ENF could demonstrate the food allergic basis of asthma. Migraine and other forms of headache may be caused by food allergy and other forms of food intolerance. A trial of Alpha ENF clearing will often induce headache remission, but not before withdrawal headaches have subsided.

The most common gastrointestinal tract problem is irritable bowel syndrome (IBS). Many IBS patients do not get better with standard medical management and, over the years go through repeated investigations and treatments. A food holiday on Alpha ENF will often resolve IBS and demonstrate to the patient that their problem is food related. If they then follow Alpha Nutrition, a new diet, free of the old symptoms is created.

The use of Alpha ENF is desirable in the management of the more serious inflammatory bowel diseases. The use of elemental nutrient formulas has been established in several studies. Saverymuttu et al demonstrated in a controlled trial that patients placed on an elemental diet plus non-absorbable antibiotics (framycetin, colistin, nystatin) rapidly improved and were indistinguishable from a control group who improved on oral prednisolone.

Teahon et al reported on 10 years experience with an elemental diet (Vivonex) in Crohn's patients. They treated 113 patients with Vivonex and achieved successful diet remission in 85%. Remission of abdominal pain, diarrhea, and other manifestations of the illness can be achieved by replacing food with an ENF with or without prednisone. Once the inflammation is controlled, slow, careful refeeding, following the Alpha Nutrition Program should maintain control of the disease. Patients in remission may show increased tolerance to foods after a few months. Some take advantage of this, eat carelessly and have another acute episode of inflammatory disease. All relapses are treated the same way. Malabsorption is characteristic of inflammatory gastrointestinal disease and requires adequate nutrient supplementation and careful monitoring of the diet. Seriously ill patients often require prolonged treatment with an elemental nutrient formula and a carefully selected, safe-food list.

Alpha ENF Design

A variety of ENFs had been designed and tested by various research and commercial groups over the past 4 decades. The nutrient content of the various formulas varied a great deal. One prototypic formula, Vivonex, had been introduced commercially in 1957 by Eaton laboratories. The formula was especially useful to induce remission of symptoms and to supply a complete nutrient set as a tool in supporting nutrition when food intake was limited. Clinical studies were done with Vivonex and its composition can be used as a normative prototype. Norwich-Eaton had, for a time, promoted the use of Vivonex for food allergy and had (in the early 80's) produced useful patient aids - an audiotape describing the remission of symptoms with the use of the formula and a daily symptom journal for patients in notebook form. The limitations were apparent to physicians prescribing Vivonex (Tolerex), however.

The four main limitations with Vivonex were: unpalatability, low nutrient density, high cost and limited availability. The nutritive properties of Vivonex were limited and often in practice, improvised modifications to the formula were necessary to meet the individual needs of patients- the most common modifications were the addition of vitamin-mineral supplements, the addition of vegetable oils to increase caloric intake and to supply essential fatty acids. Alpha ENF development started in 1987 to create a new, improved formula. Our goals for the new formula included:

- better taste
- better tolerated with minimal digestive tract problems
- cost-less and more generally available

The names ENFood and Alpha ENF were derived from the acronym ENF (Elemental Nutrient Formula). Alpha ENF was designed conservatively. Statistical analysis of all the formulas reported in the literature provided a range of nutrient values - 20 grams of free l-form amino acids per 1000 Kcal were common, for example. The oil content of Alpha ENF was increased to 13.4 grams per 1000 Kcal and as in all elemental formulas; carbohydrate supplied the main energy source with a blend of glucose, fructose and maltodextrin.

Vitamins were supplied generously in Alpha ENF so that RDA values for vitamins and minerals were met at and intake of 1000 Kcal or 300 Grams per day.

Minerals were supplied close to the RDA levels at 1000 Kcal and ratios were balanced according to values obtained from the medical literature, theoretical optimums and the values for human breast milk. The amino acid profile was carefully adjusted by both theory and trials with volunteers. Alpha ENF emerged as a complete meal-replacement formula.

Alpha ENF and PMX - The Applications

Alpha ENF and Alpha PMX are complete nutrient formulas and can replace food and provide nutrient supplementation in variety of ways. The formulas can be used whenever eating is difficult, food intake is reduced or eating food causes symptoms.

- Meal Replacement
- Nutritional Supplement
- Food Holiday
- Traveling Food
- Fitness Booster
- Digestive Disorders
- Weight Management
- Fasting and Detoxification
- Irritable Bowel Syndrome
- Crohn's Disease
- Ulcerative Colitis
- Celiac Disease
- Bowel Surgery
- Food Allergy
- Eczema
- Hives
- Asthma
- Arthritis
- Fibromyalgia
- Chronic Fatigue
- Migraine Headaches
- Alcohol Addiction
- Eating Disorders
- Loss of Appetite
- Malnutrition
- Weight Problems

Alpha ENF

Alpha ENF is a Meal Replacement Formula

Alpha ENF is a nutritionally complete formula that contains pure nutrients in powder form to be mixed with juices or water. Alpha ENF can be used alone to supply all your nutritional needs or combined with foods to supply part of the day's nutrition. Pleasant drinks can be made by mixing Alpha ENF with fruits or juices in the blender. A blender quickly mixes the powder with any liquid, hot or cold. Alpha ENF will turn any fruit or vegetable juice into a complete meal. You can also mix Alpha ENF by shaking the formula with water or juice in a closed container.

The amount of Alpha ENF used per day depends on nutritional needs. Alpha ENF can be used alone to supply all your nutritional needs or combined with foods to supply part of the day's nutrition.

The serving size of Alpha ENF can vary from 30 to 100 grams; the average serving size is 50 grams or about 1/3 cup of formula - mix in one or more cups (220 ml) of water. One 50-gram serving is worth about 180 Calories. Because Alpha ENF is a concentrated mix of nutrients, extra water is recommended between servings of the formula.

Instructions: Start with Alpha ENF 50 grams in juice as a quick breakfast or snack. After a few days, increase the dose to 50 grams three times a day for a total of 540 Calories per day. You would also have two meals to supply, for example, another 500 to 1000 Calories per day, depending on your nutritional needs and goals.

Since the nutrients in Alpha ENF are quickly absorbed and are utilized quickly, it is a good idea to have frequent, smaller servings of Alpha ENF. For example, instead of having 100 grams three times a day, it is better to have 50 grams, six times a day, every two hours. It is not a good idea to go more than three hours between servings of Alpha ENF, since you may experience a "power-down" as you run out of nutrients. If you alternate between Alpha ENF servings and meals, the timing is not so critical because you will have slower, sustained release of nutrients as you digest the food.

ENF Food Holiday Complete Nutrition

When you are using Alpha ENF for complete nutrition, you should have at least one 50 gram serving 6 times a day. You can increase the serving size until your caloric needs are met. Six 50-gram servings or 300 grams provides 1180 Calories, a recommended daily minimum intake.

Increase the amount of formula until your caloric intake is adequate to meet your need in the range of 300 to 600 grams per day. If you use 50 grams 6 times per day, one 1000 gram (gross weight) bottle will last 3 days.

You need about 4 kilograms of Alpha ENF to complete a 10-day food holiday.

Nutrient Values of Alpha ENF

- The nutrient values of Alpha ENF are listed per 100 grams of formula designed to supply all vitamins above recommended daily allowances and mineral levels at RDA (except for lower sodium and potassium)
- 300 grams of the formula supplies approx. 1100 calories of energy.
- Carbohydrate supplies 80% of the calories; fat is 12%; and amino acids (replacing protein) is 8%.

Nutrient Values Alpha ENF Per 100 Gram Serving

Calories	360.00	
Carbohydrate	75.00	gm
Protein*	8.00	gm
Fat	4.50	gm
Cholesterol	0.00	
Sugars	12.00	gm
Minerals		
Calcium	270.00	mg
Chloride	600.00	mg
Chromium	0.04	mg
Copper	0.70	mg
Iodine	43.00	ug
Iron	3.30	mg
Magnesium	125.00	mg
Manganese	1.20	mg
Molybdenum	50.00	ug
Potassium	480.00	mg
Phosphate	270.00	mg
Sodium	480.00	mg
Selenium	0.02	mg
Zinc	5.00	mg

Alpha Nutrition Formulas

Alpha ENF 100 Grams		
Vitamins		
Vitamin A	800.00	IU
beta-Carotene	7.50	mg
Vitamin D	100.00	IU
Vitamin C	150.00	mg
Vitamin E	100.00	IU
Riboflavin	4.00	mg
Niacinamide	16.00	mg
Pyridoxine	10.00	mg
Thiamine	10.00	mg
Biotin	0.20	mg
Pantothenate	25.00	mg
Folic acid	120.00	ug
Vitamin B12	20.00	ug
Choline	50.00	mg
AminoAcids		
I-alanine	319	mg
I-arginine	598	mg
I-aspartic acid	598	mg
I-cystine	120	mg
I-glutamic acid	199	mg
I-glutamine	478	mg
I-glycine	996	mg
I-histidine	212	mg
I-isoleucine	478	mg
I-leucine	638	mg
I-lysine HCl	598	mg
I-methionine	359	mg
I-phenylalanine	598	mg
I-proline	359	mg
I-serine	239	mg
I-threonine	319	mg
I-tryptophan	120	mg
I-tyrosine	399	mg
I-valine	399	mg

Alpha PMX

Alpha PMX is a complete nutritional formula except for fat. Alpha PMX was designed for managing illness, injury and for tube feeding when food intake was impossible. The formula is hypoallergenic and can be used as meal replacement and nutritional supplement when eating is difficult or appetite is impaired. Think of PMX as a bottle full of nutrients, useful whenever you want fast, portable and balanced nutrition. The formula reduces nutrition to the least volume and least weight and has a shelf life of two or more years, depending on how you store it. PMX has a complete set of essential and non-essential free-form amino acids and a complete set of vitamins and minerals with extra amounts of antioxidants.

Users have found many applications for PMX. For example, PMX is used as to boost performance in fitness and athletic training. PMX can be used as emergency rations at home, in a survival kit or as back-up nutrition and survival rations for hiking, trekking, mountaineering and ocean cruising.

Alpha ENF and PMX: Differences

The Alpha PMX formula was developed by modifying the Alpha ENF formula. The four main differences between Alpha ENF and PMX are:

1. Alpha PMX is fat free.
2. Alpha PMX has higher levels of Amino Acids and Vitamin C.
3. Alpha PMX is not flavored
4. Alpha PMX is a dry powder with a longer shelf life than Alpha ENF

Because it is fat free, the Alpha PMX formula has a longer shelf life and can be used as emergency rations at home, for example, in an earthquake survival kit or as back-up nutrition and survival rations on an ocean-cruiser. Fatty acids can be supplied separately in the form of fresh vegetable oil added to the formula at the time of mixing with or water. Form complete emergency rations, you store Alpha PMX, water and vegetable oil.

Sports and Fitness Applications

Alpha PMX can be useful for physical training and athletics. Alpha PMX can be used before, during and after workouts and athletic events. PMX contains fast energy, a complete set of amino acids, a complete set of vitamins, mineral and electrolytes. The main ideas behind nutritional support of fitness workouts and athletic performance are:

1. Supply rapidly absorbed forms of energy
2. Replenish electrolytes
3. Replenish neurotransmitters
4. Supply antioxidants
5. Avoid filling the digestive tract with food or other bulk.

How to Use Alpha PMX:

The nutrient values of Alpha PMX are listed on the label as nutrients available per 1000 Kcal or 300 grams of the formula. Carbohydrate supplies 88 % of the calories and amino acids (protein) 12%. There is a complete set of essential and non-essential free-form amino acids and a complete set of vitamins and minerals with extra amounts of antioxidants. The formula is fat-free. For complete food replacement, vegetable oil is mixed with the formula before serving to provide the fat component.

Alpha PMX for Tube Feeding

The nutrient values of Alpha PMX are listed on the label per 100 grams of formula; 300 grams of the formula supplies approx. 1140 calories of energy, a minimum daily intake to supply all nutrients. A 1000 gram (net weight) bottle contains 935 Grams of ENF or about 19 * 50 gram servings. A one kilogram bottle can supply about 1100 calories per day for 3 days. Alpha PMX is fat free. Add vegetable oil at the rate of one to two tablespoons per 100 grams of the formula. The addition of fat is required to supply essential fatty acids and to increase caloric intake. Fat will not stay in suspension when the formula is mixed in water; add oil after the formula has been mixed with warm water in the blender and then blend another 30-40 seconds at high speed.

If you mix the formula and let it sit, the oil will separate and a small amount of the less soluble nutrients will settle- a quick remix in the blender may be required. If you are adding the formula slowly to the tube funnel, stop every 15 minutes or so and shake briefly to remix the nutrients. Most problems with tube feeding can be solved by

1. adding extra water
2. increasing the time taken to administer the formula
3. reducing the dose per serving
4. increasing the frequency of servings.

Store Survival Rations

If you want to store PMX as nutrient rations; one 1000 Gram jar of Alpha PMX can supply basic nutrition for one adult for 3 or 4 days. The formula can be stored in a cool dark place for two years or longer. Avoid exposing the formula to direct sunlight and temperatures above 70 degrees F. The formula can be placed in cold storage or in a freezer to extend its shelf life to several years. Water requirement: store a minimum of 4 liters of distilled or sterilized water per person per day. After mixing in water or juice, a PMX mix will ferment quickly if warm. Keep refrigerated.

Note: The PMX formula settles progressively in its container. The formula settles over time and when fully compacted, the formula occupies about two thirds of the jar volume.

PMX Nutrient Values per 100 grams

Serving Size	100.00	gm
Calories	360.00	
Carbohydrate	75.00	gm
Protein*	10.40	gm
Fat	0.00	gm
Cholesterol	0.00	
Sugars	12.00	gm
Minerals		
Calcium	270.00	mg
Chloride	600.00	mg
Chromium	0.04	mg
Copper	0.70	mg
Iodine	43.00	ug
Iron	3.30	mg
Magnesium	125.00	mg
Manganese	1.20	mg
Molybdenum	50.00	ug
Potassium	480.00	mg
Phosphate	270.00	mg
Sodium	480.00	mg
Selenium	0.02	mg
Zinc	5.00	mg

Alpha Nutrition Formulas

Vitamins PMX 100 G		
Vitamin A	800.00	IU
beta-Carotene	7.50	mg
Vitamin D	100.00	IU
Vitamin C	150.00	mg
Vitamin E	100.00	IU
Riboflavin	4.00	mg
Niacinamide	16.00	mg
Pyridoxine	10.00	mg
Thiamine	10.00	mg
Biotin	0.20	mg
Pantothenate	25.00	mg
Folic acid	120.00	ug
Vitamin B12	20.00	ug
Choline	50.00	mg
Amino Acids		
l-alanine	399	mg
l-arginine	747	mg
l-aspartic acid	747	mg
l-cystine	120	mg
l-glutamic acid	249	mg
l-glutamine	598	mg
l-glycine	1246	mg
l-histidine	265	mg
l-isoleucine	598	mg
l-leucine	797	mg
l-lysine HCl	747	mg
l-methionine	448	mg
l-phenylalanine	747	mg
l-proline	448	mg
l-serine	299	mg
l-threonine	399	mg
l-tryptophan	149	mg
l-tyrosine	498	mg
l-valine	498	mg

Alpha BMX, Brain Food

A Nutrient Mix for the Prevention and Management of Brain Disorders

Alpha BMX provides therapeutic levels of key nutrients needed to improve brain nutrition. BMX replaces protein with a complete set of amino acids. All vitamins and minerals except sodium are provided at or above the recommended daily intake. Alpha BMX is an elemental nutrient formula designed for partial meal replacement. BMX is a dry powder that can be mixed with water and juices. By dissolving the powder in water and juices, the nutrients are quickly and easily absorbed by the digestive tract. No digestion is required and complete absorption is likely even with digestive tract disease.

High Nutrient Density

There are specific nutrients that contribute to the resolution of some brain disorders. For example, deficiencies of folic acid, pyridoxine and Vitamin B₁₂ are associated with increased risk of strokes, heart attacks and Alzheimer's dementia; these vitamins must be supplemented at a generous level well above RDAs. All these nutrients have been included in Alpha BMX at therapeutic levels. Alpha BMX is formulated to boost the intake of all nutrients that have a demonstrated benefit in preventing and/or reducing brain disease. The key strategies are

1. To increase beneficial mineral intake: calcium, magnesium, potassium, and zinc
2. To increase folic acid intake to 800 micrograms per day.
3. To increase intake of thiamine, niacinamide, Vitamin B₁₂ and pyridoxine.
4. To supply all other vitamin and mineral nutrients at the RDA level or higher.
5. To reduce or replace problematic proteins by supplying free-form l-amino acids that have in addition to nutrient function, physiological roles such as stimulating growth hormone secretion, increased neurotransmitter synthesis and protection of the digestive tract lining.

Protein Free

Food proteins have metabolic costs that can be avoided by replacing protein with precisely selected amino acids. For example, patients with reduced kidney or liver function are required to restrict protein, since their ability to handle the nitrogen waste of oxidized amino acids is limited. In liver disease, reduced ability to synthesize urea leads to ammonia accumulation when amino acids are used as fuel. Ammonia is neurotoxic and contributes to the syndrome of brain dysfunction in liver failure (hepatic encephalopathy). Patients with reduced kidney or liver function are required to restrict protein, since their ability to handle the nitrogen waste of oxidized amino acids is limited. Fluctuating levels of ammonia influences brain cell function; they should be considered whenever brain function is abnormal.

Some children are born with metabolic abnormalities in the handling of amino acids and ammonia. They often present with malfunctioning brains. The use of elemental nutrient formulas such as Alpha BMX is useful in reducing or eliminating proteins from the diet. The formulas provide a precise intake of amino acids in a well balanced mixture – impossible to achieve with food. We have increased the folic acid content of PMX from 120 micrograms per 30 gram serving to 800 micrograms. The increased intake of folic acid has significant benefit in reducing heart attacks, preventing strokes and protecting against the development of dementia.

The chief advantages of Alpha BMX

1. complete nutrient intake of vitamins, minerals and amino acids
2. automatically fixes any nutrient deficiencies in existing diet
3. provides therapeutic level of key nutrients to improve brain nutrition.
4. purified ingredients to minimize problems associated with food allergy
5. high solubility nutrient preparation to increase nutrient absorption
6. no digestion required, ideal for digestive tract diseases

Alpha BMX daily dose 30 Grams as 3 servings of approximately 10 grams at intervals through the day. Sold in 500-Gram jars that supply 16 or more days of complete nutritional support.

Alpha BMX		
Nutrient Values	Per 30 g	
Vitamin A	800	iu
Beta Carotene	7.5	mg
Vitamin D3	800	iu
Ascorbic Acid	400	mg
Vitamin E	400	mg
Thiamine	50	mg
Riboflavin	4	mg
Niacinamide	150	mg
Pyridoxine HCl	50	mg
Biotin	5	mg
Pantothenate	150	mg
Folic Acid	800	ug
Vitamin B ₁₂	180	iu
Minerals		
Potassium	800	mg
Calcium	270	mg
Copper	0.7	mg
Magnesium	125	mg
Zinc	5	mg
Iodide	43	ug
Iron	4	mg
Selenium	0.02	mg
Manganese	1.2	mg
Molybdenum	50	ug
Chromium	0.04	mg

Alpha BMX Amino acids	Mg per 30 gram
I-alanine	557.7
I-arginine	1046.5
I-aspartic acid	1046.5
I-cystine	166.8
I-glutamic acid	348.8
I-glutamine	836.5
I-glycine	1744.2
I-histidine	371.0
I-isoleucine	836.5
I-leucine	1116.5
I-lysine HCl	1046.5
I-methionine	627.7
I-phenylalanine	1046.5
I-proline	627.7
I-serine	418.8
I-threonine	557.7
I-tryptophan	208.8
I-tyrosine	697.7
I-valine	697.7

Alpha AAX

Alpha AAX is a blend of nineteen, 100% pure, l-form amino acids - i.e. no source or production contaminants. The preparation of each amino acid is chosen for the optimal solubility in water - this provides quick mixing and maximum nutrient absorption.

Alpha AAX is hypoallergenic and is tolerated by people with extreme sensitivity to food proteins. AAX is easily absorbed by patients with digestive diseases and malabsorption. AAX can be used whenever increased intake of amino acids is desirable.

AAX can be used to replace protein and can be added to Alpha ENF and or Alpha PMX to increase amino acid intake.

Alpha AAX Basic Concepts

Instead of proteins, free l-form amino acids are provided in the Alpha Nutrition series. A complete set of the nine essential amino acids is complemented by 10 of the non-essential amino acids. Alpha AAX, Alpha ENF and Alpha PMX contain branch-chain amino acids.

One of the therapeutic secrets of AAX is the avoidance of proteins or pieces of proteins known as peptides. Proteins are the most reactive molecules in food. Staple foods such as milk, eggs, wheat and meat contain proteins that frequently cause immune responses and are the basic problem in delayed patterns of food allergy. Amino acids are the real nutrients derived from proteins by digestion of food. Amino acids do not trigger immune responses. Free amino acids are much more expensive than protein powders and partially hydrolyzed proteins, but freeing the immune system from protein challenge is worth the cost.

Some of these amino acids are not destined to be included in body proteins but will be used as neurotransmitters. Tyrosine and phenylalanine, for example, are converted to dopamine, noradrenalin and adrenalin. Tryptophan is converted into serotonin. Glycine itself is a major neurotransmitter in the spinal cord. Glutamate is another important amino acid - neurotransmitter.

Sources: amino acids are individually added to an AAX and are certified as 100% pure, l-form amino acids - i.e. no source or production contaminants. The preparation of each amino acid is chosen for the optimal solubility in water - this provides quick mixing and maximum nutrient absorption. No hydrolyzed proteins are used in Alpha Nutrition formulations. AAX hypoallergenic and have been tolerated by people with extreme sensitivity to many if not most foods. AAX can be used whenever increased intake of amino acids is desirable.

The dose range is 10 to 50 Grams per day in divided doses. The best time to take AAX is between meals, before and after workouts and body building exercises. AAX can be used to replace dietary protein when eating is reduced or digestion is impaired. AAX can be added to Alpha ENF and or Alpha PMX to boost amino acid intake.

Alpha AAX Ingredient List: L-leucine, L-lysine HCl, L-phenylalanine, L-arginine, L-aspartic acid, L-glycine, L-isoleucine, L-glutamine, L-methionine, L-proline, L-threonine, L-alanine, L-tyrosine, L-valine, L-serine, L-histidine, L-glutamic acid, L-tryptophan, L-cystine

Milligrams of each amino acid per 10 grams of AAX.

L-alanine	399
L-arginine	747
L-aspartic acid	747
L-cystine	120
L-glutamic acid	249
L-glutamine	598
L-glycine	1246
L-histidine	265
L-isoleucine	598
L-leucine	797
L-lysine HCl	747
L-methionine	448
L-phenylalanine	747
L-proline	448
L-serine	299
L-threonine	399
L-tryptophan	149
L-tyrosine	498
L-valine	498

Alpha OMX, Osteo-Anabolic Nutrient Mix

Calcium, Magnesium, Vitamin D and other mineral salts

Alpha OMX is a carefully formulated blend of nutrients essential for bone growth and maintenance. Bone nutrients work together to strengthen bone as it grows and to maintain bone strength as we age. The key nutrients for bone health are calcium, magnesium, phosphate, Vitamin D, zinc, copper and manganese.

This formula was designed with women in mind because bone thinning has become a major health problem for aging women. Some research suggest that bone nutrient intake in teenage girls is an important determinant of bone health in later life. Women of all ages can benefit from nutrient supplementation. Bone nutrients will also help men to achieve optimal bone health. The formula can be used to supplement the diets of children who are at risk of mineral or vitamin D deficiency and will prevent rickets. OMX can also be used to prevent or to treat calcium and magnesium deficiency states.

Most calcium supplements on the market are insoluble in water- they do not dissolve. If calcium is not dissolved, it cannot be absorbed. Soluble calcium compounds are the best to use and are best delivered in a powder form dissolved in juice or added to food. Calcium glycerophosphate is the most soluble compound available in and is used in Alpha OMX. This form of calcium is soluble, safe and is well tolerated in the gastrointestinal tract. Its high solubility mean better absorption and the daily dose required is less than calcium carbonate. Phosphate is also a key component of bone and is linked to calcium in this compound.

15 Gram serving	Nutrient Value
Calcium	800 mg
Copper	0.7 mg
Magnesium	250 mg
Zinc	10 mg
Manganese	1.2 mg
Vitamin D	400 IU

How to Use Alpha OMX

The Daily Dose of Alpha OMX 15 Grams per day, divided into two doses of about 1 teaspoon twice a day. The formula is a dry powder that is mixed with fruit juices or added to food.

Mix Alpha OMX with fruits or juices in the blender. A blender quickly mixes the powder with any liquid, hot or cold. You can also mix Alpha OMX by shaking the formula with water or juice in a closed container.

You can mix Alpha OMX with a spoon in glass of water. When you add the powder to cold water or other cold liquids, clumps will tend to form. Nutrients suspend and dissolve more quickly if mixed with hot water. Put the powder in a glass or cup first then add some hot water to make a paste; then add more water, stirring as you go. Once the formula is mixed in hot water, you can transform it into a cold drink by adding ice and juice.

You can add Alpha OMX to any prepared foods, such as soups, vegetable and fruit purees and puddings to increase nutritive value. This is sometimes a valuable technique for adding nutrients to the diet of children who are not eating well or adults who have taste-smell aversion to the Alpha OMX in water. Avoid cooking Alpha OMX - add it to foods after they have been cooked.

Intake Amounts and Schedules:

The recommended amount of Alpha OMX per day is 15 grams but the dose can be adjusted depending on your nutritional needs.

The serving size of Alpha OMX can vary from 5 to 10 grams; the average serving size is about 8 grams or about 1 teaspoon of the formula - mix in one or more cups (220 ml) of juice. Alpha OMX is supplied in 500-Gram jars. One jar will last 33 days at the full daily dose.

Ingredients: Avicel, Maltodextrin, Calcium Glycerophosphate, Magnesium Gluconate, Zinc Gluconate, Copper Gluconate, Manganese Gluconate, Vitamin D3

Daily Dose: 15 Grams per day, divided into two doses (1 teaspoon twice a day).

Alpha OMX Nutrient Information

Calcium

Blood Calcium concentration is closely regulated by intake control at the bowel wall, active deposits and withdrawals from bone, and adjusting the amount the kidney excretes. Bone stores 99% of body calcium, and calcium salts, laid down in a soft protein matrix, are responsible for the hardness of bones. Long-term calcium deficiency leads to bone thinning or osteomalacia. The problem of demineralization of bone is confused with loss of whole bone tissue. The term "Osteoporosis" refers to a loss of total bone mass and not just bone thinning due to calcium deficiency. Copper and manganese are essential for normal bone matrix formation, and must be considered in the overall nutrient equation.

Magnesium

Magnesium is a critical ion, regulating nerve and muscle cell function. It also is a co-factor for many enzymes of the energy extraction system, and protein synthesis pathways. The adult RDA is 300-350 mg/day. It is actively and passively absorbed. If active transport fails, dietary requirements rise sharply, analogous to calcium absorption problems. Deficiency symptoms begin with nausea, loss of appetite, edema, fatigue, and progress to major neurological symptoms- tremors, disordered movement, convulsions, and coma. Magnesium and calcium deficiency may predispose to sudden death from cardiac arrhythmias and is most likely to occur with diuretic therapies for hypertension and heart disease.. Magnesium supplements in the range of 250 - 300 mg/day are desirable.

Zinc

Zinc is a co-factor for at least 70 critical enzyme pathways. Deficiency can therefore result in diverse, profound problems; impaired synthesis of DNA, RNA, and protein underlie the clinical manifestations. Zinc deficiency may be more common than is diagnosed. The RDA for zinc is 5 mg/day for infants, 10 mg for children and 15 mg for adults. Zinc requirements increase in pregnant women to 20 mg/day. Any child with growth retardation, poor hair growth, impaired immunity or skin problems should be as zinc deficient, particularly if there are digestive tract absorption problems. Zinc absorption is impaired by phytates in cereal grains, and by the concurrent ingestion of other minerals, especially calcium, iron, cadmium and copper. Zinc deficiency also causes impaired senses of taste and smell, slow wound healing, white spots in the fingernails, night blindness, low sperm count, hair loss, behavior or sleep problems; mental lethargy, impaired immune function, cyclic feeding and loss of appetite, and dermatitis. Zinc is often promoted to "enhance immunity". It is an essential mineral for immune function. The following drugs deplete zinc: penicillamine, steroids, ethanol, diuretics, and oral contraceptives. A low tissue concentration of copper may result from zinc supplements so that copper is added to Alpha OMX to prevent deficiency. Zinc supplements in the range of 5-15 mg per day are desirable.

Copper

Copper intake of 2-3 mg / day is usually suggested for adults. Copper is actively transported through the intestinal wall, carried in a special protein, ceruloplasmin, in the blood, and stored in the liver. Increased vitamin C intake interferes with copper availability. Copper deficiency produces an anemia, indistinguishable from iron deficiency. Copper plays a role in iron absorption and mobilization. Copper deficiency impairs the formation of connective tissue proteins, collagen and elastin. Weak bone (osteoporosis) and defective arterial walls are the more obvious manifestations. In animals, copper deficiency may result in dramatic death from rupture of a major blood vessel, or the heart itself. It is not clear that these events in human pathology are related to copper deficiency, but suggests that copper intake should be carefully evaluated in patients with cardiovascular disease. Copper deficiency also contributes to increased blood cholesterol. Deficiency also results in growth disturbances of the brain. Infants with blocked copper utilization develop severe brain dysfunction due to defective myelination of nerve fibers (Menke's disease). Conversely, copper accumulates in the brains of children with Wilson's disease and produces mental retardation. Copper may be supplied in drinking water from leaching of copper water pipes, especially if the drinking water is acidic.

Manganese

Manganese is an essential cofactor for several important enzymes in mitochondria. One version of superoxide dismutase is manganese-dependent, and therefore the mineral is a co-antioxidant. Manganese requirements are not well defined, and are estimated as 2.5 - 5.0 mg/ day. Plants supply most dietary manganese. In growing animals, deficiency results in bone growth abnormalities with skeletal disproportion, abnormal development of the knee joint and spinal curvature. Children with abnormalities of skeletal growth should be evaluated for manganese deficient. Adult deficiency results in weight loss, nausea and vomiting, and reduced hair growth with decreased hair pigmentation. Manganese supplements in the range of 2-3 mg/day may be desirable.

Osteomalacia, Osteoporosis

Osteomalacia refers to the reduction of the mineralization of bone. The problem of demineralization of bone is often confused with loss of whole bone tissue (osteoporosis). Bone stores 99% of body calcium and calcium salts, laid down in a soft protein matrix, are responsible for the hardness of bones. Long-term calcium deficiency and/or vitamin D deficiency leads to bone thinning or osteomalacia. Magnesium, copper and manganese are also essential for normal bone matrix formation, and must be considered in the overall nutrient equation. The term osteoporosis now refers generally to loss of bone density and increased risk of fractures, especially of the spine and hips. Originally, the term referred only to the loss of the bone matrix - a soft tissue and did not refer to the state of mineralization of the bone. With loss of bone matrix, there is less to mineralize and bone density decreases regardless of mineral status.

A high calcium and magnesium intake and adequate Vitamin D will promote optimal bone mineralization in youth and decrease the rate of bone-mineral loss in the later postmenopausal period. Lack of Vitamin D in children leads to Rickets -soft, poorly mineralized bone that bends easily. In older women, a high plasma level of vitamin D enhances calcium absorption, whereas high sodium, protein, alcohol and caffeine intakes will cause increased urinary losses and negative calcium balance. Other regulatory changes and/or vitamin D deficiency may alter the balance between calcium absorption from the bowel and excretion from the kidney.

Osteoporosis is in part a problem of disuse atrophy, with age-related reduction of bone growth factors. Daily, weight-bearing exercise is the best method of maintaining bone-growth at any age. Women over 50 years of age show the most bone thinning because of deficiency of anabolic sex hormone production, especially estrogen and declining physical activity. Postmenopausal women given calcium alone show progressive bone de-mineralization. Vitamin D intake is increased to 800 iu per day in postmenopausal women with established osteoporosis.

Calcium Supplements

Types of calcium supplement vary a great deal. The cheapest, common supplement is Calcium Carbonate ("Tums"), made from limestone, or oyster shells. Calcium carbonate is not soluble in water and is poorly absorbed. There are other problems with this calcium supplement in large amounts over a long period of time. Calcium carbonate is an antacid that reduces stomach acidity and may interfere with the digestion of food. It causes "rebound" hyperacidity after it leaves the stomach. It blocks its own absorption. It may be poorly absorbed, and bind other minerals and vitamins. Calcium citrate is also not soluble in water and may not be absorbed easily. Calcium intake recommendations, to be realistic and effective have to take into account the type of calcium chosen and the variables of absorption in each individual. Calcium absorption from GI tract is regulated by vitamin D and parathyroid hormones. Without parathormone you cannot actively transport calcium through GI tract. Each mineral works best in proportion to other minerals.

Vitamin D and calcium intake recommendations must therefore take into account the kind of calcium, the amount of vitamin D in the diet, the amount of sun exposure, the activity of parathormone, the dietary intake of binding substances such as phytic acid, and competition of calcium with phosphorus, magnesium and other minerals. Deciding calcium intake recommendations is not simple. There is a wide margin of error in any general "recommended supplement dose". More soluble calcium compounds are the best to use but are more expensive and are best delivered in a powder form dissolved in juice or added to food. Calcium glycerophosphate is the most soluble compound available in and is used in Alpha OMX. This form of calcium is used because it is soluble, safe and is well tolerated in the gastrointestinal tract. Its high solubility mean better absorption and the daily dose required is less than other calcium preparations such as calcium carbonate.

Vitamin D, Calciferols

Deficiency Disease- Rickets, Osteomalacia: RDA 200 - 400 IU: Supplement Recommendation 400-800 IU Overdose: >50,000 IU

Vitamin D is also a family of related compounds with similar hormone-like activity. They are sterols, mostly of animal origin. Vitamin D is really a hormone we can get from animal foods if internal production is insufficient. Vitamin D is produced by the skin exposed to sunlight and daily sun exposure will supply our requirement for D. Food sources are required by people with little or no sun exposure. The most common food source of Vitamin D is fish liver oils – cod and halibut liver oil has been the most available source of Vitamin D. Plant foods are deficient in Vitamin D. Vitamin D-activity promotes the absorption and deposition of calcium in bones. Rickets is a well known Vitamin D deficiency disease in children, characterized by under-mineralized, soft bone, which bends and breaks easily. In adults, under-mineralized bone is known as osteomalacia. The incidence of rickets has been reduced in the past 2 or 3 decades by the addition of Vitamin D to milk and infant formulas. Rickets continues to plague undernourished, sun-deprived children. Vitamin D is the most commonly supplemented vitamin, added routinely to foods-milk, bread, fruit juices, in their manufacture or processing. Sun or ultraviolet light exposure (wavelengths 290-320 nm) of skin excites skin cells to produce Vitamin D. Dietary source is required when sun and skin are dissociated by clouds, buildings, and clothes.

Alpha DMX

Alpha DMX is an elemental nutrient formula designed for partial meal replacement. DMX is designed to achieve high nutrient density with no caloric intake. All vitamins and minerals except sodium are provided at or above the recommended daily intake. Daily dose 30 Grams as 3 servings of approximately 10 grams (one heaping teaspoon) each at intervals through the day. Available in 500-Gram jars that supply 16 or more days of nutritional support.

The Main features of Alpha DMX

- complete nutrient intake of vitamins, minerals and amino acids
- purified ingredients to minimize problems associated with food allergy
- high solubility nutrient preparation to increase nutrient absorption
- no digestion required, ideal for digestive tract diseases
- reduced cravings because of increased nutrient intake

Alpha DMX is carbohydrate and fat free. The conundrum that all diabetics face is that if you eat enough food to get all the nutrients you need, problems arise. If you eat too much carbohydrate, the blood sugar rises. If you eat too much fat, you gain weight and your arteries get plugged with fat. If you eat too much protein, you may get food allergic effects, your blood ammonia rises and your kidneys may fail. A high protein intake contributes to kidney disease. People with diabetes 2 should eat a low carbohydrate, low fat, low protein diet. The only way you can achieve all three goals is to eat less food -a low calorie diet. With 30 grams of Alpha DMX per day, the user can eat less food and do better. It is possible to eat less than 1000 calories per day, be well nourished and avoid strong food cravings. By adding Alpha DMX to a low calorie diet, nutrient intake is boosted to recommended daily intakes goals for all vitamins and minerals. When kidneys are damaged by diabetes, food proteins can become toxic, but small doses of pure amino acids can supply nutrient needs safely. The best strategy is to eat less protein and spare the kidneys.

Alpha DMX is formulated to boost the intake of nutrients that have a demonstrated benefit in preventing and/or reducing the negative consequences of diabetes 2 and arterial disease. The key strategies are

1. To increase beneficial mineral intake: calcium, magnesium, potassium, zinc, chromium
2. To increase folic acid intake to 400 micrograms per day.
3. To increase intake of Biotin, Vitamin B12 and Pyridoxine.
4. To supply all other vitamin and mineral nutrients at the RDA level or higher.
5. To supply free form amino acids that have in addition to nutrient function, physiological roles such as stimulating growth hormone secretion, increased neurotransmitter synthesis and protection of the digestive tract lining.

We have increased the folic acid content of DMX to 600 micrograms per 30 gram. Several benefits are proposed for increased intake of folic acid: reducing heart attacks, preventing strokes and protecting against the development of dementia.

There are specific nutrients that contribute to the resolution of arterial disease and diabetes 2. Deficiencies of chromium, biotin and zinc have been associated with glucose intolerance and need to be supplemented. Deficiencies of folic acids, pyridoxine and Vitamin B12 are associated with increased risk of strokes, heart attacks and Alzheimer's dementia; these vitamins must be supplemented at a generous level well above RDAs. All these nutrients have been included in the Alpha Nutrition series of elemental formulas.

Trobia et al found zinc to be beneficial in diabetes prone rats. They stated: "Data indicate that dietary treatment of diabetes-prone BB Wistar rats with zinc appears to be an effective approach for delaying or preventing the onset of diabetes in genetically predisposed rodents. This finding may suggest further experimental studies regarding dietary means for preservation of pancreatic function. "

Mixing Alpha DMX

Alpha DMX is an elemental nutrient formula that contains pure nutrients in powder form to be mixed with juices or water. The formula is easy to use and once you are used to its special properties, the formula can be a life-long ally in maintaining health. Pure nutrients have distinctive odors and not everyone likes the smell the first time; experienced users "love the formula". The overall taste is salty.

DMX Intake Amounts

The recommended amount of Alpha DMX per day is 30 grams but the dose can be adjusted depending on nutritional needs. Alpha DMX is combined with foods to supply part of the day's nutrition. The serving size of Alpha DMX can vary from 5 to 10 grams; the average serving size is 10 grams or about 2 teaspoons of formula - mix in one or more cups (220 ml) of juice. Because Alpha DMX is a concentrated mix of nutrients, be sure to drink extra water between servings of the formula. Start with Alpha DMX 10 grams in juice as a quick breakfast or snack. After a few days, increase the dose to 10 grams three times a day. Since the nutrients in Alpha DMX are quickly absorbed and utilized, it is a good idea to have frequent, smaller servings of Alpha DMX. For example, instead of having 30 grams in one serving, it is better to have 10 grams, three times a day.

Arterial Disease

The Alpha Nutrition Program is designed to reduce cholesterol, total fat, saturated fats, and food allergy while increasing vegetable fiber-all desirable measures in the effort to prevent blood vessel diseases, heart attacks and strokes.

Increased intake of potassium, magnesium and calcium is advocated with a reduction in sodium salt intake. Increased intake of six vitamins: folic acid, pyridoxine, B₁₂, beta-carotene, ascorbic acid (vitamin C) and vitamin E-are recommended. The program can be recommended, along with exercise and relaxation, as the most important defenses against cardiovascular disease.

Alpha Nutrition is highly desirable for people who are struggling with chronic symptoms that suggest they have food-related disease and are also at risk factors for arterial disease. Clues to the pervasive effects of the wrong food supply include recurrent symptoms such as headaches, fatigue, digestive symptoms, arthritic symptoms, food cravings and compulsive eating or drinking. The presence of recurrent or persistent symptoms means the complete comprehensive diet revision is required - not just salt and fat reduction.

High cholesterol theories of vascular disease are too simple. No single dietary factor, such as an elevated cholesterol level, will be solely responsible for calamitous events. Before a comprehensive model of diet-disease relationships will develop, we must consider the total impact of the food supply. For example we should ask: "What about the sugar and the protein content of foods?"

Other arterial pathogens:

- Glucose, fructose and sorbitol
- Proteins acting as antigens > immune events
- Homocysteine
- Vitamin Deficiencies
- Prostaglandins and other Cytokines

Proteins as Antigens

Other food-related problems, especially immune responses to food proteins (food allergies) may important contributors. Delayed Pattern Food Allergy may occur within blood vessels, damaging blood cells, vessel walls and triggering the clotting mechanism.

The Pritikin diet and other low fat diets may not work because of the high content of allergenic proteins in cereal grains, skim milk, and egg white. Skim milk is as allergenic as whole milk. Egg white is the allergenic protein avoided on hypoallergenic diets, but it may be permitted on low cholesterol diets.

Protein antigens, arriving in the blood through GIT, may trigger an immune response that inflames and damages the arterial wall. Many people with delayed pattern food allergy develop migraine, angina, heart rhythm abnormalities and may be more likely to develop inflammation of blood vessel walls and blood clots, all features of the life-threatening complex of vascular disease.

Dr. William Hollander of Boston University suggested that atherosclerosis was an autoimmune disorder with immune complexes injuring blood vessel walls. We think that circulating immune complexes often contain food antigens and this mechanism is important in causing a wide spectrum of food allergic disease. If there is any possibility that attacks of migraine, heart-symptoms, or brain dysfunction are linked to food ingestion, would it not be prudent to investigate food -causes, using diet revision?

Proteins, Vitamins and Homocysteine

The role of Homocysteine in causing arterial disease was originally suggested by Dr. Kilmer McCully in the late 60's. McCully was a pathologist at the Massachusetts General Hospital. Apparently, his theory was not well received by his colleagues and he was eventually asked to leave Mass. General. It has taken 30 years for his hypothesis to be well supported by research evidence. McCully observed that high cysteine levels were associated with early deaths from arterial disease in patients with homocysteinuria. Homocystinuria is a rare autosomal recessive disease complicated by early and aggressive occlusive arterial disease associated with high levels of blood homocysteine.

Milder hyperhomocysteinemia appears to be common and may be a risk factor for coronary artery disease. Homocysteine undergoes metabolism either by remethylation or transsulfuration, and deficiency or dysfunction of any of the substances that regulate these reactions may lead to hyperhomocysteinemia.

Homocysteine may have adverse effects on platelets, clotting factors and endothelial cells. Studies have demonstrated significantly higher plasma homocysteine levels in patients with occlusive arterial disease than in controls. Homocysteine (HCY) is derived from the intracellular metabolism of the amino acid, methionine and is exported into the blood where it circulates mostly in oxidized forms, bound to proteins. Concentrations of HCY are increased in 15-40% of patients with coronary, cerebral and peripheral arterial diseases. The increased concentrations of HCY are corrected by supplementation of the diet with folic acid, pyridoxine, vitamin B12 and choline. There is uncertainty about the exact role of homocysteine in arterial disease and high levels may prove to be an effect rather than a cause. The evidence does suggest however that increased intake folic acid and pyridoxine is protective and safe.

Arterial Disease Recommendations

- Complete diet revision should be undertaken and all active symptoms resolved. High vegetable intake with low fat is the main shift in food choices. No smoking is allowed.
- New food selection with new meal plans at home and new habits eating out.
- Increased exercise and weight loss are required.
- Alpha DMX is recommended at 30 Grams per day in divided doses such as 10 Grams three times a day. Alpha DMX combines all the nutrient recommendations for arterial disease: increased intake of potassium, magnesium and calcium is advocated with a reduction in sodium salt intake. Increased intake of at least six vitamins: folic acid, pyridoxine, B12, beta-carotene, ascorbic acid (vitamin C) and vitamin E-are recommended. Beta carotene is supplied in DMX and other carotenoids are supplied as colored vegetables and fruits, abundant in the foods recommended by the Alpha Nutrition Program.
- ASA (Aspirin) 80 mg per day is an effective anti-clotting agent. Use plain ASA, not enteric coated.

These recommendations apply equally to the prevention of heart attacks and strokes.

Alpha DMX Nutrient Values per 30 Grams

Vitamin A	800	iu	Amino Acids	Milligrams
Beta Carotene	7.5	mg	I-alanine	478
Vitamin D3	200	iu	I-arginine	897
Ascorbic Acid	200	mg	I-aspartic acid	897
Vitamin E	200	mg	I-cystine	143
Thiamine	20	mg	I-glutamic acid	299
Riboflavin	4	mg	I-glutamine	717
Niacinamide	50	mg	I-glycine	1495
Pyridoxine HCl	50	mg	I-histidine	318
Biotin	2	mg	I-isoleucine	717
Pantothenate	50	mg	I-leucine	957
Folic Acid	300	ug	I-lysine HCl	897
Vitamin B ₁₂	40	iu	I-methionine	538
Minerals			I-phenylalanine	897
Potassium	800	mg	I-proline	538
Calcium	270	mg	I-serine	359
Copper	0.7	mg	I-threonine	478
Magnesium	125	mg	I-tryptophan	179
Zinc	5	mg	I-tyrosine	598
Iodide	43	ug	I-valine	598
Iron	4	mg		
Selenium	0.02	mg		
Manganese	1.2	mg		
Molybdenum	50	ug		
Chromium	0.04	mg		
Amino acids	12	Gm		
Fiber	11	Gm		

Alpha VMX

Alpha VMX is a subset of the complete nutrient mix. VMX contains the electrolyte, vitamin and mineral modules.

Sources The vitamin and mineral nutrients are presented with US Pharmaceutical certified purity and are chosen for the optimal solubility in water - this provides quick mixing and maximum nutrient absorption.

Antioxidants are provided in generous quantities in Alpha ENF, PMX & VMX because of their many potential health benefits. Vitamin C, beta-carotene, vitamin E and selenium scavenge free oxygen radicals.

The electrolyte module consists of salts dissolved in water that form the basis of blood and cellular function. Sodium, potassium, chloride, calcium, magnesium, phosphate and chloride are the essential electrolytes that should arrive in proportion to each other and in the right amounts for proper body function. The Alpha formulations provide a balanced set of electrolytes. Phosphate is essential to energy storage and transfer.

The special features of Alpha VMX are

1. High solubility in water.
2. High bioavailability, quick absorption.
3. Low gastrointestinal irritation
4. Easily mixed in juices.

With 25 grams of Alpha VMX per day, your nutrient intake is boosted to the recommended daily intakes goals for adults even if you eat no food. The formula supplies all vitamin and mineral with physiologically balanced electrolytes. This formula can be used to supply essential nutrients when food intake is reduced, bowel disease interferes with absorption and when vomiting and diarrhea increases loss of nutrients, especially electrolytes

Formula Ingredient Lists

Alpha ENF

Ingredients: Maltodextrin, Microcellulose, Glucose, Fructose, Canola Oil, Magnesium gluconate, Potassium gluconate, Calcium glycerophosphate, L-glycine, Sodium chloride, L-leucine, L-lysine HCl, L-phenylalanine, L-arginine, L-aspartic acid, Potassium chloride, L-isoleucine, L-glutamine, L-tyrosine, L-valine, Ascorbic acid, L-methionine, L-proline, L-threonine, L-alanine, Calcium pathothenate, L-serine, L-histidine, L-glutamic acid, Choline bitartrate, Alpha Tocopheryl, Beta carotene L-tryptophan, L-cystine, Niacinamide, Thiamine, Zinc Gluconate, Pyridoxine HCl, Biotin, Ferrous Gluconate, Vitamin A palmitate, Manganese gluconate, Riboflavin, Vitamin B12, Potassium Iodide, Copper Gluconate, Vitamin D, Folic acid, Sodium Molybdate, Chromium Chloride.

Alpha PMX

Ingredients: Maltodextrin, Microcellulose, Glucose, Fructose, Magnesium gluconate, Potassium gluconate, Calcium glycerophosphate, L-glycine, Sodium chloride, L-leucine, L-lysine HCl, L-phenylalanine, L-arginine, L-aspartic acid, Potassium chloride, L-isoleucine, L-glutamine, L-tyrosine, L-valine, Ascorbic acid, L-methionine, L-proline, L-threonine, L-alanine, Calcium pathothenate, L-serine, L-histidine, L-glutamic acid, Choline bitartrate, Alpha Tocopheryl, Beta carotene L-tryptophan, L-cystine, Niacinamide, Thiamine, Zinc Gluconate, Pyridoxine HCl, Biotin, Ferrous Gluconate, Vitamin A palmitate, Manganese gluconate, Riboflavin, Vitamin B12, Potassium Iodide, Copper Gluconate, Vitamin D, Folic acid, Sodium Molybdate, Chromium Chloride.

Alpha DMX

Ingredients: Avicel, Magnesium gluconate, Potassium gluconate, Calcium glycerophosphate, L-glycine, L-leucine, L-lysine HCl, L-phenylalanine, L-arginine, L-aspartic acid, Potassium chloride, L-isoleucine, L-glutamine, L-tyrosine, L-valine, Ascorbic acid, L-methionine, L-proline, L-threonine, L-alanine, Calcium pathothenate, L-serine, L-histidine, L-glutamic acid, Choline bitartrate, Alpha Tocopheryl, Beta carotene L-tryptophan, L-cystine, Niacinamide, Thiamine, Zinc Gluconate, Pyridoxine HCl, Biotin, Ferrous Gluconate, Vitamin A palmitate, Manganese gluconate, Riboflavin, Vitamin B12, Potassium Iodide, Copper Gluconate, Vitamin D, Folic acid, Sodium Molybdate, Chromium Chloride.

Alpha VMX Ingredients

Minerals and Electrolytes: Magnesium gluconate, Potassium gluconate, Calcium glycerophosphate, Sodium chloride, Potassium chloride, Potassium gluconate, Zinc Gluconate, Ferrous Gluconate, Manganese gluconate, Potassium Iodide, Copper Gluconate, Sodium Selenite, Sodium Molybdate, Chromium Chloride.

Vitamins: Ascorbic acid, Alpha Tocopheryl, Beta carotene , Niacinamide, Thiamine, Pyridoxine HCl, Biotin, Riboflavin, Vitamin B12, Vitamin A palmitate, Calcium Pathothenate, Vitamin D 3, Folic acid

Alpha AAX Ingredient List

Amino Acids: L-leucine, L-lysine HCl, L-phenylalanine, L-arginine, L-aspartic acid, L-glycine, L-isoleucine, L-glutamine, L-methionine, L-proline, L-threonine, L-alanine, L-tyrosine, L-valine, L-serine, L-histidine, L-glutamic acid, L-tryptophan, L-cystine

Alpha OMX

Ingredients: Avicel, Maltodextrin, Calcium Glycerophosphate, Magnesium Gluconate, Zinc Gluconate, Copper Gluconate, Manganese Gluconate, Vitamin D3

Brief References

- Winitz M., et al Evaluation of chemical diets as nutrition for man-in-space. *Nature* 1965, 4973; 741-743.
- Young DS, Epley JA, Goldman P. Influence of a chemically defined diet on the composition of serum and urine. *Clin Chem* 1971;17-8:765-773
- Perrault J . et al Effects of an elemental diet in healthy volunteers. *Gastroenterology* 64:569-576 1973
- Winitz W. At al Studies in metabolic nutrition employing chemically defined diets *Am Jour Clin Nutr* 23;5, 1970 525-545 and Effects on Gut Microflora *ibid* 546-559
- Voigt AJ, Echave V, Feller JH, et al. Experience with elemental diet in the treatment of inflammatory bowel disease. Is this primary therapy? *Arch Surg* 1973;107:329-33
- Russell R.I Progress Report Elemental Diets. *Gut* 1975,16; 68-79
- Morin CI et al Continuous elemental enteral alimentation in the treatment of children and adolescents with Chron's disease. *J Parent Nutr* 1982;6:194-199
- Russell Robin I Elemental Diets. CRC Press Inc. Boca Raton Florida 1981
- Rocchio M.A., Cha C.M., Haas K.F., Randall H.T. Use of chemically defined diets in the management of patients with acute inflammatory bowel disease. *Am. Jour. Surgery* 1974,127:471-475.
- O'Morain C, Segal AW, Levi AJ et al Elemental diet as a primary treatment of acute Crohn's Disease; a controlled trial. *Br. Med J* 1984;288:1859-62
- Frieri et al. Preliminary investigation on humoral and cellular immune responses to selected food proteins in patients with Crohn's disease. *Ann Allergy* 1990;64:345-351
- Jones VA, Workman E, Freeman AH et al. Chron's Disease: Maintenance of Remission by Diet
- Villaveces J.W., Heiner D.C. Experience with an Elemental Diet. *Annals of Allergy Dec.* 1985, 55: 783-787.
- Hill D.J., Lynch B. Elemental diet in the management of severe eczema in childhood. *Clin. Allergy* 1982;12: 312-315.
- Lucio A. et al Food hypersensitivity and Atopic dermatitis. *Allergy* 1989; 44 (suppl.9) 140-146.
- Osterballe H.O, Bundgaard B., Weeke B., Weiss, M. Double-blind controlled trial of Elemental Diet in severe, perennial asthma. *Allergy* 1981,36:257-262
- Hughes E.C., Gott P.S., Weinstein R.C. Binggeli R. Migraine: a diagnostic test for etiology of food sensitivity *Annals of Allergy*, 1985, 55; 28-32.
- Saverymattu S., Hodgson H.J. F., Chadwick V.S. Controlled Trial comparing prednisolone with an elemental diet plus non-absorbable antibiotics in active Crohn's disease. *Gut*,1985, 26; 994-998

Belli DC, Seidman A, Bouthillier L, et al. Chronic intermittent elemental diet improves growth failure in children with Crohn's disease. *Gastroenterology* 1988; 94:A37

O'Morain C, Segal AW, Levi AJ et al Elemental diet as a primary treatment of acute Chron's Disease; a controlled trial. *Br. Med J* 1984;288:1859-62

Workman EM, Jones AJ, Hunter JG. Diet in the Managment of Crohn's Disease. *Human Nutr.*1984:38A:469-473

Teahon K., Bjarnason I., Pearson A.J., Levi A.J. Ten years experience with an elemental diet in the management of Crohn's disease. *Gut*,1990,31;1133-1137

Knicker W. Non-IgE Mediated and Delayed Adverse reactions to Food or Additives. *Handbook on Food Allergies*, Ed Breneman J.C.; Marcel Dekker Inc. N.Y. 1985.

Brostoff J. *Mechanisms: Food Allergy and Intolerance*; Balliere Tinbdal; 1987

Gardner MLG. Evidence for, and Implications of, Passage of Intact Peptides Across the Intestinal Mucosa. 1983 *Biochem. Soc Trans* 11; 813

Reinhardt M.C. Macromolecular Absorption of Food Antigens in Health and Disease. 1984 *Ann Allergy*.53.597-601

McNeish, A.S.Enzymatic Maturation of the Gastrointestinal Tract and its Relevance to Food Allergy and Intolerance in Infancy. 1984 *Ann Allergy* 53: 643

Lucio A. et al Food hypersensitivity and Atopic dermatitis. *Allergy* 1989; 44 (suppl.9) 140-146.

Nsouli TM et al Role Of Food Allergy In Serous Otits Media. *Ann Allergy* 1994;73:215-219

Wraith D.G. Asthma in Food Allergy and Intolerance. Brostoff and Challicombe ed. 486-497; 1987.

Osterballe H.O, Bundgaard B., Weeke B., Weiss, M. Double-blind controlled trial of Elemental Diet in severe, perennial asthma. *Allergy* 1981,36:257-262

Vincent J. Avoidance therapy: time-tested methods to treat asthma. *Fam. Prac. Recert.* 1990; 12(11): 71-87.

Hughes E.C., Gott P.S., Weinstein R.C. Binggeli R. Migraine: a diagnostic test for etiology of food sensitivity *Annals of Allergy*, 1985, 55; 28-32.

Selected Abstracts

Use of a chemically defined diet in the diagnosis of food sensitivities

Author Hughes EC

Source Ann Allergy, 1978 Jun, 40:6, 393-8

Abstract A chemically defined diet of low allergenicity was used to provide complete nutritional support for a week in a referred group of 27 patients. Food-sensitive patients remitted 70% of their allergy symptoms, supporting a diagnosis of dominant food etiology. For those the diet was continued while selected foods were orally challenged. Safe diets were thus established in about three weeks of largely patient-executed effort. Patients without remission were given concentrated attention toward establishing other etiologies. Remission was thus achieved in 85% of the cases.

Home enteral nutrition with elemental nutrient formula diets.

Author Russell RI

Source Z Gastroenterol, 23 Suppl:1985 Aug, 94-7

Home enteral nutrition can be successfully used on a long-term basis to maintain nutrition and a reasonably normal lifestyle in patients with chronic intestinal dysfunction. Patients can be easily taught the methods involved, a nocturnal regime allowing a more normal lifestyle. Side-effects are few, generally transient and not severe. Home enteral nutrition has advantages over home intravenous feeding with respect to ease of administration and organization, fewer and less severe complications, and cost.

Elemental diets in the prophylaxis and therapy for intestinal lesions

Author Bounous G

Source Surgery, 105: 5, 1989 May, 571-5

The recognition of potentially noxious physiologic substances in the intestinal milieu prompted the use of an "elemental" semihydrolyzed formula diet in the prophylaxis of experimental acute ischemic enteropathy. Elemental diets have been used in the management of a variety of digestive diseases. An elemental diet protects the intestinal mucosa of rodents from radiation injury and facilitates mucosal healing. Clinical trials have shown the benefits of this form of treatment in the prevention of acute radiation enteropathy and in the therapy for delayed radiation enteropathy and Crohn's disease.

Elemental diet as primary treatment of acute Crohn's disease

Author O'Moráin C; Segal AW; Levi AJ

Source Br Med J (Clin Res Ed), 288: 6434, 1984 Jun 23, 1859-62

Abstract Acute exacerbations of Crohn's disease are usually treated with prednisolone or potentially more toxic immunosuppressive drugs or by surgery. In pilot studies replacing the normal diet by a protein free elemental diet also induced remission. A controlled trial was therefore conducted in which 21 patients acutely ill with exacerbations of Crohn's disease were randomised to receive either prednisolone 0.75 mg/kg/day or an elemental diet (Vivonex) for four weeks. Assessment at four and 12 weeks showed that the patients treated with the elemental diet had improved as much as and by some criteria more than the steroid treated group. Elemental diet is a safe and effective treatment for acute Crohn's disease.

The effect of an elemental diet on dermatitis herpetiformis.

Author Kadunce DP; McMurry MP; Avots-Avotins A; Chandler JP; Meyer LJ; Zone JJ

Source J Invest Dermatol, 1991 Aug, 97:2, 175-82

Abstract Elemental diets are reported to decrease activity of patients with dermatitis herpetiformis. We tested the hypothesis that gluten, given in addition to an elemental diet, is responsible for the intestinal abnormalities, cutaneous immunoreactant deposition, and skin disease activity in dermatitis herpetiformis. At entry eight patients with dermatitis herpetiformis, who were consuming unrestricted diets, were stabilized on their suppressive medications at dosage levels that allowed individual lesions to erupt. Six patients were then given an elemental diet plus 30 of gluten for 2 weeks, followed by the elemental diet alone for 2 weeks. Conversely, two patients received an elemental diet alone for 2 weeks followed by an elemental diet plus gluten during the final 2 weeks. Small bowel biopsies, skin biopsies, and clinical assessments were done at 0, 2, and 4 weeks. Suppressive medication dose requirement decreased over the 4 weeks by a mean of 66%. Six of eight subjects significantly improved clinically during the gluten-challenge phase of the elemental diet and all were improved at the end of the study. The amount of IgA in perilesional skin did not change significantly, but the amount of C3 increased in five of seven evaluable subjects after gluten challenge. Circulating anti-gluten and anti-endomysial antibodies were not significantly affected by the diets. All subjects completing evaluable small bowel biopsies (seven of seven) demonstrated worsening of their villus architecture (by scanning electron microscopy and intraepithelial lymphocyte counts) during gluten challenge and improvement (six of six subjects) after 2 weeks of elemental dietary intake. We conclude that 1) there is a significant improvement in clinical disease activity on an elemental diet, independent of gluten administration, 2) small bowel morphology improves rapidly on an elemental diet, and 3) complement deposition but neither IgA deposition nor circulating antibody levels correlate with gluten intake. It seems likely that dietary factors other than gluten are important in the pathogenesis of the skin lesions in dermatitis herpetiformis.

Ten years' experience with an elemental diet in Crohn's disease.

Author Teahon K; Bjarnason I; Pearson M; Levi AJ

Source Gut, 31: 10, 1990 Oct, 1133-7

Abstract The immediate and long-term outcome of treating patients with acute Crohn's disease with an elemental diet was studied retrospectively. Successful diet induced remission was achieved in 96 of 113 patients (85%) regardless of age, sex, site or severity of disease, or associated complications of strictures, fistula, or perianal disease. Treatment was unsuccessful in 17 patients (15%), but there were no features at the outset of treatment that distinguished these patients from those who had successful remission. The longterm outcome of treatment was assessed over a five year period by analysis of life tables and survival curves. Twenty two per cent of the patients relapsed within six months of treatment and thereafter the annual relapse rate was 8-10%. Patients with disease complicated by fistula or perianal involvement had early relapse, approaching 100% for the latter. A further retrospective comparison of longterm outcome of diet vs steroid induced remissions showed no significant difference in the relapse rates between the two groups at one, three, and five years.

Dermatitis herpetiformis: consequences of elemental diet.

Author Zeedijk N; van der Meer JB; Poen H; van der Putte SC

Source Acta Derm Venereol, 1986, 66:4, 316-20

Abstract The administration of an Elemental Diet to 5 patients with dermatitis herpetiformis, requiring high doses of Dapsone (diaminodiphenylsulfone, DDS), showed a rapid and beneficial effect on the skin lesions within two weeks. This effect was not influenced by simultaneous gluten challenge in one patient. A possible explanation is a reduction in the amount of harmful immune complexes due to the elimination of proteins from the diet. Subsequent introduction of a more comprehensive diet led to an increase of the minimal effective dose of Dapsone. These results underline the importance of dietary influences on the skin activity in dermatitis herpetiformis, other than gluten alone.

Elemental diet in the management of Crohn's disease during pregnancy.

Author Teahon K; Pearson M; Levi AJ; Bjarnason I

Address Section of Gastroenterology, MRC Clinical Research Centre, Middlesex.

Source Gut, 32: 9, 1991 Sep, 1079-81

Abstract Four patients with Crohn's disease were treated with an elemental diet during pregnancy. Two had active disease and two also had symptoms of small intestinal obstruction. All went into a clinical remission within a few days of starting treatment. Treatment periods varied from two to four weeks, and were followed by elemental diet as a supplement to normal food in two patients. At term, all delivered a healthy infant. These patients indicate that elemental diet is a safe form of treatment for Crohn's disease during pregnancy and may be considered as an alternative to conventional drug treatments which carry a theoretical risk of teratogenesis.

A diagnostic method food allergy- an elemental diet.

Author Galant SP; Franz ML; Walker P; Wells ID; Lundak RL

Source Am J Clin Nutr, 1977 Apr, 30:4, 512-6

Abstract The use of a simple, hypoallergenic elemental diet would appear well suited for diagnosing food allergy. Vivonex* was used in 21 patients (5 to 40 years old) suspected of food allergy or those who had failed to respond to the usual management of inhalant allergy. To study immunogenicity, five New Zealand rabbits were immunized with Vivonex, milk, and egg and were evaluated for the production of precipitin and passive cutaneous anaphylactic antibodies, the latter was evaluated in three Hartley guinea pigs. The clinical study was conducted over a 2- to 3-week period with evaluation of symptom and medication scores, physical examination, and hematological and biochemical measurements made before and after the Vivonex trial, which was a minimum of 1 week. No consistent, significant improvement of allergic manifestations were seen while patients received Vivonex.

On the other hand, there were no serious side effects noted either clinically or by laboratory measurements, although four patients discontinued the study because of Vivonex * palatability. Vivonex was not immunogenic by either the precipitin reaction or passive cutaneous anaphylactic response. Although Vivonex did not prove helpful in these severe, refractory allergic individuals, we were encouraged by its safety and acceptance in the outpatient setting. Further studies in young allergic children who are more likely to have clear-cut food sensitivity are being planned. * Alpha ENF is a replacement for Vivonex with improved nutrient values and improved palatability.

Low-antigen-content diet in IgA nephropathy.

Ferri C; Puccini R; Longombardo G; Paleologo G; Migliorini P; Moriconi L; Pasero G; Cioni L. *Nephrol Dial Transplant*, 1993, 8:11, 1193-8

Abstract Since dietary macromolecular antigens can be involved in the pathogenesis of IgA nephropathy (IgAN), the effect of a low-antigen-content diet was evaluated in 21 patients (10 women, 11 men, mean age 27.7 +/- 10 years) with immunohistochemical findings of active IgAN. The diet was followed for a 14-24-week period (mean 18.8 +/- 6); in all cases the effects of the treatment were evaluated by clinical and serological parameters, and in 11 patients also by repeat renal biopsy. After dietetic therapy a significant reduction of urinary proteins was recorded present in 12 cases during the 6 months preceding the treatment, was markedly reduced or disappeared in 11. At post-treatment control biopsy mesangial and parietal deposits of immunoglobulins, complement C5 fraction and fibrinogen were significantly reduced. The improvement of the objective parameters such as heavy proteinuria, a strong predictor of a poor prognosis, and of immunohistochemical alterations indicate that a low-antigen diet can positively affect patients with IgAN. These results could be ascribed to a reduction of nephritogenic food antigen input and to a putative functional restoration of the mononuclear phagocytic system.

amino acid-based formula in children with food hypersensitivities

J Pediatr 2001 May;138(5):688-93

Sicherer SH., Noone SA., Koerner CB., Christie L., Burks AW., Sampson HA
Division of Pediatric Allergy and Immunology, Department of Pediatrics, Mount Sinai School of Medicine, New York, New York 10029-6574, USA.

AB - OBJECTIVE: To determine the hypoallergenicity and efficacy of a pediatric amino acid-based formula (AAF), EleCare, for children with cow's milk allergy (CMA) and multiple food allergies (MFA). **STUDY DESIGN:** Hypoallergenicity was determined by performing blinded oral food challenges in 31 consecutive children with documented CMA. Growth, tolerance, and biochemical response were evaluated during a nonrandomized feeding study with each child serving as his or her own control. **RESULTS:** Thirty-one children (median age, 23.3 months; range, 6 months to 17.5 years) were recruited; 29 had MFA, 17 had acute reactions and cow's milk-specific IgE antibody, and 14 had allergic eosinophilic gastroenteritis. At study entry, 23 were receiving another AAF; 13 had not tolerated extensively hydrolyzed formula. Eighteen subjects with allergic eosinophilic gastroenteritis and/or MFA were followed up while receiving AAF for a median of 21 months (range, 7 to 40 months), with biochemical analysis performed at 4 months. No statistically significant differences were observed in the change in weight or height National Center for Health Statistics z scores from entry; the percent of expected growth exceeded 90%. There was a small decline in percent eosinophils and increase in hemoglobin, hematocrit, and serum ferritin level ($P < .05$). Except for small increases in plasma leucine and valine levels ($P < \text{or} = .006$), the remaining biochemical markers were unchanged. **CONCLUSIONS:** The AAF was hypoallergenic and effective in maintaining normal growth for children with CMA and MFA.

Oro-facial granulomatosis. Response to elemental diet

Author Sweatman MC; Tasker R; Warner JO; Ferguson MM; Mitchell DN

Source Clin Allergy, 16: 4, 1986 Jul, 331-8

Abstract We report the case of an 8.5-year-old girl with oro-facial granulomatosis associated with clinical atopy, in whom relapse of her granulomatous disorder was shown to be related to exposure to specific food additives, viz. carmoisine, sunset yellow and monosodium glutamate. Treatment with a restricted diet resulted in considerable regression in the facial swelling which has been maintained for 6 months. A brief account of the histological features, both under light and electron microscopy, is given, together with a description of the use of nuclear magnetic resonance scanning in the assessment of this disease. The patient had no evidence to support a diagnosis of sarcoidosis or Crohn's disease.

nutrient intakes of adolescents

Author Johnson RK; Johnson DG; Wang MQ; Smiciklas-Wright H; Guthrie HA

Source J Adolesc Health, 15: 2, 1994 Mar, 149-54

Abstract **PURPOSE:** The purpose of this study was to provide a description of the current dietary intake of a large sample of U.S. adolescents and to identify sociodemographic risk factors for nutrient intakes that did not meet recommended levels. **METHODS:** The 1987-88 USDA Nationwide Food Consumption Survey was used to assess the nutrient intake of 933 adolescents aged 11 to 18 years. Analysis of covariance was used to determine the effect of the following on the nutrient intakes of males and females: household income and size, race, geographic region, degree of urbanization, and head of household status. Subject age was entered as a control variable. **RESULTS:** Vitamin A, vitamin E, calcium, magnesium, and zinc were the nutrients most often consumed below recommended levels. In addition the females consumed low levels of phosphorus and iron. Percent calories from total fat and saturated fat and mean sodium intakes were above recommended levels for the majority of the sample. Females were more likely to meet cholesterol recommendations than males. Race and region affected the most nutrient intake variables. For the females, living in the south was a significant predictor for low intakes of several essential vitamins and minerals. **CONCLUSIONS:** On average, the adolescents consumed diets that were low in several essential vitamins and minerals and high in some nutrients related to increased incidence of chronic disease. There were groups of teens who had dietary patterns that placed them at especially high risk, in particular the black and Southern females.

Gut permeability

Gut permeability to human alpha-lactalbumin, beta-lactoglobulin, mannitol, and lactulose in celiac disease. Kuitunen M; Savilahti E. Source J Pediatr Gastroenterol Nutr, 1996 Feb, 22:2, 197-204

Abstract Our objective was to examine the permeability of the gut to protein macromolecules and sugar probes and their possible association in celiac disease patients. We studied the permeability to human alpha-lactalbumin, beta-lactoglobulin, mannitol, and lactulose on 46 occasions in 33 celiac disease patients in various phases of the disease; in addition, mannitol and lactulose permeability was studied in 18 healthy controls. Lactalbumin absorption was detected in 19 of 42 patients tested, more often in celiac disease patients with villous atrophy than in those with normal jejunal biopsy ($p = 0.01$). Higher absorption of lactalbumin was found in patients with subtotal villous atrophy than in those with normal biopsy ($p = 0.02$). beta-lactoglobulin was found in four of 42 patients tested. Less mannitol was absorbed by patients with either subtotal or partial villous atrophy than by those with normal histology ($p = 0.001$ and 0.006 , respectively). Lactulose recovery was higher in newly diagnosed patients and patients with subtotal villous atrophy than in controls. The lactulose/mannitol ratio was higher in newly diagnosed patients and patients with villous atrophy than in controls. The correlation between permeability to lactalbumin and mannitol and lactulose was poor. We conclude that permeability to proteins and sugar molecules is abnormal in celiac disease patients with mucosal damage and that they probably reflect different mechanisms of penetration.

Oligoantigenic diet treatment of children with epilepsy and migraine

Author Egger J; Carter CM; Soothill JF; Wilson J Address Department of Neurology, Hospital for Sick Children, London. Source J Pediatr, 1989 Jan, 114:1, 51-8

Abstract We studied the role of oligoantigenic diets in 63 children with epilepsy; 45 children had epilepsy with migraine, hyperkinetic behavior, or both, and 18 had epilepsy alone. Of the 45 children who had epilepsy with recurrent headaches, abdominal symptoms, or hyperkinetic behavior, 25 ceased to have seizures and 11 had fewer seizures during diet therapy. Headaches, abdominal pains, and hyperkinetic behavior ceased in all those whose seizures ceased, and in some of those whose seizures did not cease. Foods provoking symptoms were identified by systematic reintroduction of foods, one by one; symptoms recurred with 42 foods, and seizures recurred with 31; most children reacted to several foods. Of 24 children with generalized epilepsy, 18 recovered or improved (including 4 of 7 with myoclonic seizures and all with petit mal), as did 18 of 21 children with partial epilepsy. In double-blind, placebo-controlled provocation studies, symptoms recurred in 15 of 16 children, including seizures in eight; none recurred when placebo was given. Eighteen other children, who had epilepsy alone, were similarly treated with an oligoantigenic diet; none improved.

diet treatment in children with migraine or hyperkinetic behavior.

Author Egger J; Carter CH; Soothill JF; Wilson J Address Hospital for Sick Children, London, England. Source Clin Pediatr (Phila), 1992 May, 31:5, 302-7

Abstract Twenty-one children with migraine and/or hyperkinetic behavior disorder which was successfully treated with an oligoantigenic (few-foods) diet also suffered from nocturnal and/or diurnal enuresis. On diet, the enuresis stopped in 12 of these children and improved in an additional four. Identification of provoking foods was by sequential reintroduction of the foods that were avoided on the oligoantigenic diet. In eight of the 12 children who recovered on the oligoantigenic diet and in the four who improved, reintroduction of one or more foods provoked a reproducible relapse of the enuresis. Nine children were subjected to a placebo-controlled, double-blind reintroduction of provoking foods. Six children relapsed during testing with incriminated foods; none reacted to placebo. Enuresis in food-induced migraine and/or behavior disorder seems to respond, in some patients, to avoidance of provoking foods.

Nutrition, infection, and immunocompetence.

Author Santos JI

Source Infect Dis Clin North Am, 8: 1, 1994 Mar, 243-67

Abstract The nutritional status of an individual has a profound effect on both host susceptibility to specific infectious diseases and on their outcome. Available data suggest that specific and aggregate nutritional deficiencies can alter a host's immune response and increase susceptibility to infection. From a nutritional point of view, the process of nutrient loss and redistribution has the potential for being exploited to the benefit of the infected malnourished host. The proposal to use nutritional support to bolster the host response to infection in severely ill malnourished patients gains support from the fact that this reiterative cycle of malnutrition and infection is the main cause of morbidity and mortality in children in underdeveloped countries.

Undernutrition in the nursing home:

Author Abbasi AA; Rudman D

Source Nutr Rev, 52: 4, 1994 Apr, 113-22

Abstract Approximately 5% of Americans over age 65, or 1.5 million individuals, currently reside in the nation's 20,000 nursing homes. The authors present material that lead to three conclusions about this population. First, nutritional deficiencies are common underlying causes of adverse clinical outcomes. Second, nutritional deficiencies are frequently not recognized. Third, opportunities for preventing or correcting undernutrition exist, provided that the significant and reversible nature of the nutrient deficiencies are identified.

Thiamine deficiency in hospitalized elderly patients.

Author O'Keeffe ST; Tormey WP; Glasgow R; Lavan JN

Source Gerontology, 40: 1, 1994, 18-24

Abstract Necropsy studies suggest that thiamine deficiency is underdiagnosed in life, in part because the classical clinical presentations are uncommon. Anecdotal reports suggest that thiamine deficiency may contribute to the development of delirium, heart failure and peripheral neuropathy in elderly patients, but little systematic research has been reported. We examined thiamine levels in 36 consecutive non-demented, community-dwelling patients admitted to an acute geriatric unit. Marginal thiamine deficiency [thiamine pyrophosphate effect (TPPE) 15-24%] was present in 11 (31%) and definite thiamine deficiency (TPPE > 25%) in 6 (17%) patients. Delirium occurred in 6/19 (32%) patients with normal thiamine status and 13/17 (76%) thiamine-deficient patients ($p < 0.025$, chi 2 test). One or more other possible causes for delirium were present in all cases. One patient had ocular signs and a dramatic clinical response to vitamin B complex therapy. Absent ankle jerks were noted in 2/19 (10%) patients with normal thiamine status and 7/17 (41%) patients with thiamine deficiency ($p = 0.06$). There was no difference in anthropometric indices or in the prevalence of other nutrient deficiencies between the two groups. Thiamine deficiency is common in elderly patients admitted to hospital and may contribute to the development of delirium.

Hypovitaminosis A: contemporary scientific issues.

Author Olson JA

Source J Nutr, 124: 8 Suppl, 1994 Aug, 1461S-1466S

Abstract Contemporary scientific issues relating to vitamin A can be divided into three groups dealing with metabolism, physiology, and public health and policy. Current metabolic issues include intestinal interactions with other nutrients and food components, the pathways and control of carotenoid metabolism, the mechanisms underlying transport homeostasis, the functions of binding proteins, the actions of nuclear receptors in gene expression, and the pathways, mechanisms and control of isomerization reactions. Contemporary physiologic issues include the role of retinoids in embryogenesis, mechanisms involved in vision, the role of vitamin A in the immune response, therapeutic applications of retinoids, and mechanisms underlying the toxicity of retinoids. Public health and policy issues include the effects of vitamin A on mortality and morbidity among children in various societies, appropriate means for the assessment of vitamin A status, and suitable criteria for setting recommended dietary intakes.

Future directions for establishing mineral/trace element requirements.

Author Turnlund JR

Source J Nutr, 124: 9 Suppl, 1994 Sep, 1765S-1770S

Abstract The amount of an element needed to prevent frank deficiency may not be sufficient to support optimal nutrition, but amounts to support optimal nutrition have not been established. Minerals and trace elements are toxic in excess and the interval between the required and toxic amount of some elements is narrow. Thus, lower and upper limits of an optimal range must be established. Before establishing dietary recommendations to support optimal nutrition for minerals, we need (1) sensitive and reliable methods for assessing status of most elements and (2) a better understanding of the influence of nutrient and non-nutrient components of diets upon requirements. Functions such as immune function, anti-oxidant status, muscle strength, glucose metabolism, and blood clotting can be affected by inadequate or excessive amounts of an element and may be more sensitive than specific status indices. Since such functions are not specific, studies must be designed so that a cause and effect relationship between the mineral and the functional index can be established. Two approaches to mineral status assessment may be both sensitive and specific: (1) tests of metalloenzyme function and (2) tracer studies using stable isotopes of minerals. Not only can stable isotopes be used to follow the metabolic fate of a mineral without exposure to radioactivity, they can be used in conjunction with compartmental modeling to predict kinetics and pool sizes in tissues not accessible in humans.

Malnutrition and behavioral development

Author Schürch B

Source J Nutr, 125: 8 Suppl, 1995 Aug, 2255S-2262S

Abstract During the last 50 years, the perception of nutrition variables that affect behavioral development has shifted, as have the scientific hypotheses that were addressed, the design of the studies that were conducted, the nature and composition of the dietary supplements that were given and compared and the interpretation of outcomes. Methods of diagnosing malnutrition and identifying the populations at risk of becoming malnourished are reviewed in relation to nutrition interventions. Even in dietary supplementation studies it can be difficult to isolate specific nutrient effects because of associations and interactions among dietary components. These and other problems associated with the study of possible effects of dietary energy, protein and micronutrients, and of breast vs. formula feeding on human development are examined. Where dietary intake data, biochemical indicators or clinical symptoms strongly suggest that presence of a single nutrient deficiency, the appropriate action may continue to be food supplementation or fortification, until the corresponding nutrient deficiency has been rectified in the habitual diet; where the nature of the deficiency is less clear, supplementation trials and programs aimed at improving dietary diversity and quality in general are more likely to show effects on indicators of behavioral development.

Biochemical folate, B12, and iron status of pregnant adolescents

Author Gadowsky SL; Gale K; Wolfe SA; Jory J; Gibson R; O'Connor DL

Source J Adolesc Health, 16: 6, 1995 Jun, 465-74

Abstract PURPOSE: This study was designed to estimate the prevalence of biochemical iron, folate, and vitamin B12 depletion among a group of Canadian pregnant adolescents accessed through the Public Health system. Further, the impact of prenatal supplement use, chronologic age, gynecologic age, living arrangement, main source of income, postpartum custody plan, time of entry into prenatal care, and cigarette smoking on laboratory indices of the three nutrients were determined. **METHODS:** Fifty-eight adolescents (14.5-19.0 years) were interviewed and blood samples were collected at 36 +/- 2 wk gestation. **RESULTS:** Thirteen (22%) of the pregnant adolescents had anemia (hemoglobin < 110 g/L) and forty-five (78%) had depleted iron stores (plasma ferritin < 26.6 pmol/L or 12.0 micrograms/L). Twenty-five subjects had plasma B12 values in the sub-optimal range (< 148 pmol/L). Five of the 16 adolescents who infrequently or never consumed a folate-containing supplement had suboptimal erythrocyte folate values. Twenty-four percent of the subjects had hypersegmented neutrophils and of these, all and 71% of subjects had plasma ferritin and B12 concentrations in the suboptimal range, respectively. Self-reported folic acid and B12 supplement intakes were correlated with the corresponding blood values for these nutrients. In contrast, supplement iron use was only weakly, or not at all associated with biochemical indices of iron status. **CONCLUSIONS:** Data from the present study indicate that plasma B12 and ferritin levels are low in a group of pregnant adolescents. These low values appear to be associated with a high prevalence of hypersegmented neutrophils. Prenatal supplement use appears to reduce the risk of low folate and B12 blood values but not biochemical iron status.

Micronutrients in critical illness.

Author Demling RH; DeBiasse MA

Source Crit Care Clin, 11: 3, 1995 Jul, 651-73

Abstract Micronutrients play a key role in many of the metabolic processes that promote survival from critical illness. For vitamins, these processes include oxidative phosphorylation, which is altered in the patient with systemic inflammation, and protection against mediators, in particular oxidants. Trace elements are essential for direct antioxidant activity as well as functioning as cofactors for a variety of antioxidant enzymes. Wound healing and immune function also depend on adequate levels of vitamins and trace elements. Of extreme importance is the ease with which a deficiency state can develop in the critically ill because of decreased nutrient intakes and increased requirements. Daily intakes up to or exceeding many times the RDA usually are required. The enteral route is preferred, although, if not available, most of these agents can be given by the parenteral route. In that case, however, dose recommendations are less clear. Attention to micronutrients is paramount both in optimizing the nutritional management of the critically ill and in the overall management of these patients. It also is essential in promoting positive outcomes and decreasing complications.

Nutrient intakes of nursing home residents

Author Rudman D; Abbasi AA; Isaacson K; Karpiuk E

Source J Am Coll Nutr, 14: 6, 1995 Dec, 604-13

Abstract OBJECTIVE: To estimate the intakes of essential nutrients by eating-dependent nursing home residents (EDR). METHODS: This study was done in a 190 bed VA nursing home. Thirty-four EDR were selected for the study. Clinical data base which included age, sex, primary diagnosis, body mass index, albumin, hematocrit, activities of daily living status, decubitus ulcer medications and use of multivitamin/trace mineral supplement were recorded from the medical records. Caloric and essential nutrient intakes were determined over a 3-day period by a registered dietitian. RESULTS: Seventy percent (24/34) residents in the study group were underweight (body mass index < 23 kg/m²), 26% were hypoalbuminemic (serum level < 3.5 g/dl), 50% were anemic (hematocrit < 37%); and 38% had pressure ulcers. In 88% EDR, the dietary intakes of three or more essential nutrients were below 50% of the RDA. Most frequent and severely deficient were zinc, copper, and vitamin B6. Despite the inadequate essential micronutrient intakes in the majority of EDR, only 35% received a multivitamin supplement and only 3% received a trace mineral supplement. A survey of 30 other VA nursing homes indicated generally similar findings to those in the Milwaukee facility with regard to the high frequency for eating-dependence, and the low frequency for administration of multivitamin and trace mineral supplements. CONCLUSIONS: Despite eating supervision and assistance, the majority of EDR have inadequate intakes of numerous essential macro- and micronutrients. The deficient micronutrient intakes could be normalized by administration of a multivitamin/trace mineral supplement daily. Nevertheless, only a minority of EDR in VA nursing homes currently receive such a supplement.

Dietary intakes...vitamins...aging.

Author van der Wielen RP; de Wild GM; de Groot LC; Hoefnagels WH; van Staveren WA

Address Department of Human Nutrition, Wageningen Agricultural University, The Netherlands.

Source J Gerontol A Biol Sci Med Sci, 51: 1, 1996 Jan, B100-7

Abstract The dietary intakes of energy and the vitamins thiamin, riboflavin, B6, and C were assessed in four groups of elderly people, using the same modified dietary history method. The groups consisted of female nursing home residents (n = 40), people at admission to a nursing home (n = 21), free-living elderly people with a sedentary life style (n = 120), and physically active free-living elderly people (n = 66). Mean energy intake varied from 6.5 +/- 1.2 Megajoule (MJ)/day (nursing home residents) to 8.8 +/- 2.2 MJ/day (physically very active persons) in females and from 8.8 +/- 2.5 MJ/day (admission to nursing home) to 10.1 +/- 2.3 MJ/day (physically very active persons) in males. Dietary intakes of the selected vitamins were below the minimum requirements in almost half of the nursing home residents. However, the relative contribution of the various food groups to the dietary intake of these vitamins was similar in the four groups of elderly people. Stimulation of physical activity to increase energy requirements and use of foods with a high nutrient density may result in an improvement of dietary adequacy.

Problems meeting RDA Allowances

Author Dollahite J; Franklin D; McNew R

Address School of Human Environmental Sciences, University of Arkansas, Fayetteville 72701.

Source J Am Diet Assoc, 95: 3, 1995 Mar, 341-4, 347; quiz 345-6

Abstract Forty-three menus that were to be used in a diet manual were designed to meet the requirements of a specific diet; provide 2,200 to 2,400 kcal, unless energy-restricted; meet the 1990 Dietary Guidelines for Americans; meet current recommendations for sodium (2g to 3 g/day), cholesterol (< or = 300 mg/day), and fiber (20g to 30 g/day); and meet or exceed the highest level for adults in the 1989 Recommended Dietary Allowances (RDAs). In addition, regular and low-fat, low-cholesterol menus for 1 week were collected from 11 hospitals throughout Arkansas. Menus were analyzed for energy, cholesterol, and 18 nutrients. Only 11% of the menus met the RDA for zinc. Half of the menus did not meet the RDA for vitamin B-6 and one third did not meet the RDA for iron. Zinc content of the menus was positively correlated (P < .001) with protein (r = .73) and with beef (r = .45). Vitamin B-6 was positively correlated with protein (r = .44, P < .001) and with all meat (r = .38, P < .01). Regular and low-fat, low-cholesterol hospital menus had the same nutrient inadequacies because they did not differ in total servings from any food group. These data indicate that the public may have difficulty choosing a diet that meets both the Dietary Guidelines and the RDAs.

Magnesium Deficiency In Alcoholism

Alcoholism, Clinical & Experimental Research 1994; 18(5):1076-82.

Summary: Magnesium (Mg) deficiency occurs frequently in chronic alcoholism and may contribute to the increased incidence of osteoporosis and cardiovascular disease seen in this population. Mg deficiency is primarily due to renal Mg-wasting and is exacerbated by dietary Mg deprivation, gastrointestinal losses with diarrhea or vomiting, as well as concomitant use of drugs such as diuretics and aminoglycosides. Osteoporosis is prevalent in the alcoholic population. Mg deficiency may contribute to increased bone loss by its effects on mineral homeostasis. In Mg depletion, there is often hypocalcemia due to impaired parathyroid hormone (PTH) secretion, as well as renal and skeletal resistance to PTH action. Serum concentrations of 1,25-vitamin D are also low. These changes are seen with even mild degrees of Mg deficiency and may contribute to the metabolic bone disease seen in chronic alcoholics.

Hypomagnesemia in alcoholics may also contribute to increased cardiovascular disease by altering platelet function. Mg deficiency has been demonstrated to enhance platelet reactivity. In these studies, Mg was shown to inhibit platelet aggregation against various aggregation agents. Patients with Mg deficiency were shown to have increased platelet aggregation that was normalized with Mg therapy. The antiplatelet effect of Mg may be related to the finding that Mg inhibits the synthesis of thromboxane A₂ and 12-hydroxyeicosatetraenoic acid, eicosanoids thought to be involved in platelet aggregation. Mg also inhibits the thrombin-induced Ca²⁺ influx in platelets, as well as stimulates synthesis of prostaglandin I₂, the potent antiaggregatory eicosanoid. Therefore, Mg deficiency may increase platelet aggregation and cause increased hypertension and atherosclerotic cardiovascular disease in alcoholics.

More folic acid for everyone, now.

Author Oakley GP Jr; Adams MJ; Dickinson CM

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Source J Nutr, 126: 3, 1996 Mar, 751S-755S

Abstract Research during the last 5 years has made it clear that people who do not take folic acid supplements are at increased risk for functional folate deficiency, which has been proven to cause spina bifida and anencephaly and also has been associated with an increased risk for occlusive cardiovascular disease. The overriding folate policy issue is how to increase dramatically the folate consumption of 75% of the population who are now consuming 0.4 mg of folic acid in a supplement. The most expeditious way to increase consumption is through fortification of a food staple. Public health programs are also needed to educate people about the vital importance of increased consumption of folic acid vitamin supplements and of food rich in natural folates. It is urgent that fortification of cereal-grain products be implemented now. The level proposed by FDA would accomplish some prevention, but much more prevention would occur if the fortification were 2.5 times that level. Fortification at the higher level would prevent about 1000 spina bifida and anencephaly birth defects each year and perhaps as many as 50,000 premature deaths each year from coronary disease. Available data have not demonstrated that increasing consumption of folic acid by 0.1 to 0.25 mg of folic acid a day is harmful. If a policy needs to be established on the assumption that people who take vitamin supplements could be harmed, a good policy option is available; require that all folic acid vitamin supplements also contain 0.4 mg of vitamin B-12.

Dietary and serum folate...outcome of pregnancy.

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Source Am J Clin Nutr, 63: 4, 1996 Apr, 520-5

Abstract We examined the influence of folate intake from diet and supplements by 28 wk of gestation and third trimester circulating concentrations of serum folate on the outcome of pregnancy in women from Camden, NJ. Mean daily folate intake by week 28 included both dietary and supplemental folate obtained prospectively in 832 women. Circulating concentrations of serum folate as well as serum vitamin B-12 were assayed at 28 wk of gestation (+/- 2 wk) by radioimmunoassay. The outcomes of interest included preterm delivery (<37 wk) and infants with low birth weight (<2500 g). Mean folate intake was significantly correlated with circulating concentrations of serum folate ($r=0.17$, $P<0.001$). Women with a low mean daily folate intake (<240 microgram/d) had an approximately twofold greater risk of preterm delivery and infant low birth weight after maternal characteristics, energy intake, and other correlated nutrients were controlled for. Lower concentrations of serum folate at week 28 were also associated with a greater risk of preterm delivery and low birth weight.

Folic acid supplementation as a social intervention.

Author Rose NC; Mennuti MT

Source Semin Perinatol, 19: 4, 1995 Aug, 243-54

Abstract Periconceptional folic acid supplementation has been shown to decrease the first occurrence of isolated neural tube defects (NTDs) by as much as 50%, and to decrease the recurrence risk for NTDs by more than 70%. The possible mechanisms of vitamin supplementation in the prevention of NTDs are discussed, as are the current recommendations for reproductive-age women. Further, the limitations of dietary and pharmacological recommendations with regard to patient compliance as well as the possibility of grain fortification are reviewed.

Prevention of myocardial infarction by vitamin B6.

Author Ellis JM; McCully KS

Address Titus County Memorial Hospital, Mt. Pleasant, Texas 75455, USA.

Source Res Commun Mol Pathol Pharmacol, 89: 2, 1995 Aug, 208-20

Abstract Vitamin B6 is effective in the treatment of carpal tunnel syndrome and related disorders in patients with vitamin B6 deficiency. Hyperhomocysteinemia, a risk factor for atherosclerosis, is associated with deficiencies of vitamin B6, folate, and cobalamin. Patients who were given vitamin B6 for carpal tunnel syndrome and other degenerative diseases were found to have 27% of the risk of developing acute cardiac chest pain or myocardial infarction, compared with patients who had not taken vitamin B6. Among elderly patients of the author (JE) expiring at home, the average age at death from myocardial infarction was 8 years later in those who had taken vitamin B6, compared with those who had not taken vitamin B6. The preventive effect of vitamin B6 on progression of coronary heart disease may be related to increased formation of pyridoxal phosphate, the coenzyme that is required for catabolism of the atherogenic amino acid, homocysteine.

Malabsorption of food cobalamin.

Author Carmel R

Address University of Southern California School of Medicine, Los Angeles 90033, USA.

Source Baillieres Clin Haematol, 8: 3, 1995 Sep, 639-55

Abstract Food-cobalamin malabsorption is marked by the inability to release cobalamin from food, which therefore cannot be taken up by intrinsic factor for absorption. The defect is not detectable by classical clinical tests like the Schilling test which are all based on the absorption of free, crystalline cobalamin. Tests of food-cobalamin absorption have been devised, the most popular ones using cobalamin bound to eggs or to chicken serum. The disparity between the abnormal results of these tests and the normal results with the Schilling test defines the disorder of food-cobalamin malabsorption. Release of cobalamin from food requires acid and pepsin, and most food-cobalamin malabsorptive states can be traced to gastric defects. However, other mechanisms may also play a role. The malabsorption is limited to food cobalamin and any free cobalamin, presumably including recycled biliary cobalamin, will be absorbed normally, which may explain its frequently insidious nature. The effect on cobalamin status covers a broad spectrum. At one extreme, some individuals, perhaps in the earliest stages, have normal cobalamin status, while at the other extreme may be found deficiency every bit as severe as in the most florid case of pernicious anaemia. Most often, however, the deficiency is mild, frequently marked by only a low serum cobalamin level, mild evidence of metabolic insufficiency and, sometimes, minimal clinical sequelae. Moreover, in some cases the gastric defect progresses and intrinsic factor secretion is affected, thus transforming into classical pernicious anaemia; this is not inevitable, however, and probably occurs in only a minority of patients. The course of food-cobalamin malabsorption is therefore a varied one. Nevertheless, it may be the most common cause of subtle or mild cobalamin deficiency and it is also sometimes associated with severe deficiency. Its identification and treatment need to be considered more widely in the clinical setting.

Cobalamin and folate deficiency in the elderly.

Author Matthews JH

Address Department of Medicine, Queens University, Kingston, Ontario, Canada.

Source Baillieres Clin Haematol, 8: 3, 1995 Sep, 679-97

Abstract Elderly persons are more likely to have low values for serum and erythrocyte folate, and for serum cobalamin. Many of those with low vitamin levels have biochemical abnormalities consistent with true deficiency, including increased formiminoglutamic acid excretion, abnormal marrow deoxyuridine suppression, and raised serum levels of methylmalonic acid and homocysteine. Therapy with the appropriate vitamin reverses the biochemical defect. Despite this, the clinical consequences for most elderly persons are remarkably few. True megaloblastic anaemia is rare, and the small number of therapeutic trials to date have not improved the levels of haemoglobin in the treated subjects, although the mean corpuscular volume has decreased significantly. There has been recent concern that these low blood vitamin levels might be important causes of nervous system damage, but studies specifically of the elderly have not demonstrated overall improvements in neurological function following therapy. Vascular damage from high blood homocysteine levels secondary to cobalamin or folate deficiency remains a potential hazard. Dietary insufficiency, malabsorption of protein-bound vitamin B12 secondary to atrophic gastritis, and defective absorption of folyl polyglutamates seem the likeliest possible causes. Pernicious anaemia, although a common cause of severe megaloblastic anaemia in the elderly, is an infrequent cause for the low cobalamin levels in population studies. Although the benefits are uncertain, the balance of the evidence suggests that one should treat elderly persons with low values of cobalamin or folate. Crystalline vitamin B12 and folic acid are absorbed normally and are therefore suitable for replacement therapy, provided that pernicious anaemia is excluded.

Vitamin supplementation to prevent neural tube defects:

Author Mills JL; Conley MR

Address Pediatric Epidemiology Section, NICHD, NIH, Bethesda, MD 20892, USA.

Source Eur J Obstet Gynecol Reprod Biol, 61: 1, 1995 Jul, 49-55

Abstract The discovery that folic acid can reduce neural tube defect rates offers a great opportunity for primary prevention. Unfortunately, women must receive the folic acid before or immediately after conception, before many know that they are pregnant. Thus, we are faced with a difficult choice: (1) ask all women at risk of getting pregnant to take supplements, or (2) fortify the food supply to ensure that all women at risk receive additional folic acid. Neither approach is ideal. Many women will not take vitamin supplements. Fortification at sufficiently high levels to provide all women with 400 micrograms of folic acid will expose other segments of the population to unacceptably high levels. Because many women of child-bearing age are unaware of the benefits of folic acid, a vigorous education campaign should begin immediately to encourage women at risk to take supplements. Adding 70 micrograms of folic acid per 100 g of grain could be justified easily because this amount is removed from grain in processing. If it is technically feasible, adding up to 140 micrograms is likely to be safe, and could prevent more NTDs. A major educational campaign and modest fortification of grain with folic acid may be the best practical solution.

Alpha Health Education Book List

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Alpha Nutrition Program

Dr. Stephen Gislason invented "diet revision therapy" in 1983 and has in subsequent years written a series of books on nutritional therapy. His method of diet revision evolved over the next 15 years as the "Core Program" and has been tested by thousands of people. In 1998, the venerable Core Program was incorporated into Alpha Nutrition and is now called the Alpha Nutrition Program.

The Alpha Nutrition Program is presented in three sections

Section 1 Getting Better with Nutrition Therapy

Section 2 Alpha Nutrition Program Instructions

Section 3 Kitchen Practice, Food Profiles & Meal-Planning

The Book of Cooking and Recipes expands the Alpha Nutrition Program instructions on meal preparation and recipe development. This text provides practical knowledge, helpful in understanding how to prepare foods and create recipes that are suitable for recovery from a variety of health problems. In a practical sense, your kitchen becomes your personal chemistry laboratory where your recipes for better health are carefully put together and records of your progress are kept. The recipes are gluten-free, milk-free, egg-free and follow a progressive path from Phase 1 foods (a strict hypoallergenic diet) to a more expanded food list in Phase 3.

Alpha Nutrition Online Four URLs point to our website

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