



Digestive

This product was specially formulated to provide digestive support throughout a broad range of conditions. It is composed of a comprehensive, proprietary blend of microbial enzymes, probiotics (friendly flora), prebiotics, minerals and select botanicals that act as nutritive sources. The enzymes are specifically formulated to digest all food groups, and to provide support for the intestinal tract by creating an environment that is conducive to the colonization of the probiotics contained in this formulation. The wide array of probiotics in this formula is designed to aid digestion, strengthen the immune system and promote a healthy gastrointestinal tract. Digestive contains the best prebiotic on the market: Frutafit® Inulin IQ, fructooligosaccharides (FOS). This prebiotic serves as food for the friendly bacteria, helping them grow and multiply.

Carbohydrolytic Enzymes:

Carbohydrate digesting activity is accomplished by several of the included enzymes. Amylase hydrolyzes the interior alpha-1,4-glucosidic bonds of starch. This enzyme has a dextrinizing action that reduces the viscosity of gelatinous starch, amylose, and amylopectin solutions yielding soluble dextrans. Its saccharifying action liberates glucose and maltose. Amylase does not appear to disrupt the ability of bifidobacteria to produce active biotocin (the antibiotic used by probiotics to kill pathogens).



Supplement Facts

Serving Size: 1 Capsule
Servings Per Container: 90

Amount Per Serving		% DV
Calcium (as calcium amino acid chelate)	0.75 mg	<2%
Magnesium (as magnesium amino acid chelate)	0.15 mg	<2%
Zinc (as zinc amino acid chelate)	0.5 mg	3%
Manganese (as manganese amino acid chelate)	0.2 mg	10%
Chromium (as chromium amino acid chelate)	10 mcg	8%
Proprietary enzyme blend	136 mg	*
Amylase (5,000 DU), protease (20,000 HUT), glucoamylase (20 AGU), protease 3.0 (15 SAPU), lipase (438 FIP), malt diastase (from barley) (650 DP ^o), peptidase (2,000 HUT), protease 6.0 (3,000 HUT), invertase (500 SU), lactase (400 ALU), alpha-galactosidase (35 GalU), cellulase (100 CU)		
Fructo-oligosaccharides	65 mg	-
Proprietary probiotic blend	35 mg	*
Bifidobacterium longum (100 mil c.f.u.), Bifidobacterium bifidum (grown on soy)(50 mil c.f.u.), Lactobacillus bulgaricus (50 mil c.f.u.), Lactobacillus plantarum (50 mil c.f.u.), Lactobacillus salivarius (50 mil c.f.u.), Lactobacillus casei (50 mil c.f.u.), Lactobacillus acidophilus (100 mil c.f.u.), Lactobacillus rhamnosus (50 mil c.f.u.)		
Beet root juice powder	40 mg	-
Kelp algae (Ascophyllum nodosum)	20 mg	*

* Daily value not established

Other ingredients: Vegetable cellulose, rice bran, and water





Additionally, substrate adhesion of bifidobacteria can be inhibited by alpha-1,4-linked glucose sugars (amylose, maltose, maltodextrin and soluble starch), so enzymes that hydrolyze these sugars (amylase, maltase, etc.) may improve bacterial adhesion. Malt Diastase augments the breakdown of starch by removing successive maltose units from the non-reducing ends of polysaccharides. Finally, to complete the hydrolysis of starch, Glucoamylase is added to assure the breakdown of maltose into glucose molecules. Like amylase, the action of glucoamylase terminates in the release of glucose from the hydrolysis of starch. However, glucoamylase hydrolyzes terminal linkages whereas amylase breaks interior bonds.

Lactase digests lactose (milk sugar) into glucose and galactose. Lactase deficiency is the most common and well-known form of carbohydrate intolerance. Most mammals, including humans, have high intestinal lactase activity at birth. But, in some cases, this activity declines to low levels during childhood and remains low in adulthood. The low lactase levels cause maldigestion of milk and other foods containing lactose. It is estimated that approximately 70% of the world's population are deficient in intestinal lactase with more than one-third of the U.S. population presumed to be unable to digest dairy products. Supplemental lactase has been found to decrease the symptoms of lactose intolerance associated with the consumption of dairy foods.

Invertase is a disaccharidase that works to break down sucrose (refined table sugar) into glucose and fructose. The prevalence of processed and highly refined foods in the American diet means that we consume a great amount of this sugar which can contribute to undue digestive stress. It is theorized that unrecognized sucrose intolerance is a

contributing factor in many allergies. Supplemental Invertase can increase the assimilation and utilization of this sugar.

Alpha-Galactosidase is included to hydrolyze the fibrous structure of cell walls of a particular family of complex sugars (oligosaccharides) found in some vegetables, whole grains and legumes. These particular sugars (raffinose, stachyose, and verbascose) are indigestible because humans do not produce alpha-galactosidase, required to break them down. Therefore, they pass through the upper digestive tract and proceed to the colon where the colonic bacteria begin a fermentation process. This process can cause bloating, gas and abdominal distress. Alpha-galactosidase diminishes intestinal gas production by enhancing the breakdown of these carbohydrates before they reach the lower intestine.

Several fiber-hydrolyzing enzymes have been added to this product to facilitate the partial breakdown of these food components; not only do we include Alpha-Galactosidase, but we also include Cellulase.

Cellulase is actually a complex consisting of three distinct enzymes that together convert cellulose (one of the basic components of cell walls) to glucose. Cellulase contributes to the effective breakdown of some of the specific fibrous cell walls present in grains, fruits and vegetables. Cellulase does not appear to disrupt the ability of bifidobacteria to produce active biotocin (the antibiotic used by probiotics to kill pathogens).





Proteolytic Enzymes:

The proteolytic enzymes in this formula enhance the complete breakdown of protein under many different digestive conditions. Protease, Protease 3.0 and Protease 6.0 have predominantly endo-peptidase activity. They hydrolyze interior peptide bonds of protein. These proteases are optimally active at a variety of pH levels. This enables protein digestion to begin farther up in the digestive tract where the pH is lower, and to continue to augment the endogenous proteases that are active in the higher pH environment of the small intestine. Peptidase is an exo-peptidase that selectively hydrolyzes the protein molecules at the terminus of the peptide chain, liberating an amino acid.

Lipolytic Enzymes:

This formula also contains lipase, the enzyme that specifically digests fats (triglycerides) into free fatty acids and glycerol, enabling easier absorption of fat-soluble nutrients through the intestinal mucosa. Considerable digestive distress and even malabsorption of nutrients such as vitamins A and E can result from improper fat digestion. Lipase does not appear to disrupt the ability of bifidobacteria to produce active biotocin.

Botanicals:

Beet (*beta vulgaris*). Beet is a blood-building herb which detoxifies blood and renews it with minerals and natural sugars. The root juice is the part used for this formulation. Betaine in beet juice has many health benefits, including: stimulating the function of liver cells and protecting the liver and bile ducts, as well as aiding in building red corpuscles and adding tone to blood. Beets also contain phosphorus,

sodium, magnesium, calcium, iron and potassium, as well as vitamins A and C, niacin, folic acid and biotin.

The Kelp algae (*Ascophyllum nodosum*) included in this formula is known for its nutrient dense nature, as it is a rich source of vitamins, minerals, and many trace elements, particularly iodine and selenium. Iodine has long been known to stimulate thyroid metabolism in deficient individuals, increasing energy and aiding weight loss. Not only does kelp help with obesity, but it can also help with constipation, indigestion, ulcers, colitis, gallstones, bronchitis, emphysema, asthma and disorders of the genitourinary and reproductive systems. In addition to supporting a healthy intestinal environment, kelp is also reported to be useful to brain tissue, sensory nerves, and blood-vessel cleansing in the treatment of atherosclerosis.

Rice Bran (*oryza sativa*) is a source of insoluble fibers (lignin and hemicellulose) and is a high quality source of nutrients, including magnesium, niacin, thiamin, and vitamin B6. Shown to lower cholesterol levels, its insoluble fibers increase fecal bulk and can improve general bowel health.

Probiotics:

Probiotics contribute to gastrointestinal health. They produce lactic acid which keeps the colonic environment slightly acidic to reduce the growth of harmful organisms. Some of the benefits of the individual probiotics are outlined below.

The Lactobacilli (*casei*, *acidophilus*, *rhamnosus*, and *plantarum*) produce lactic acid, which creates an acidic environment that is unfriendly to some harmful bacteria. Other by-products,





called bacteriocins, manifest antimicrobial properties which inhibit the growth of some pathogens.

Lactobacillus acidophilus is specifically known to thwart the growth of pathogenic microorganisms, including *Candida Albicans*, by producing both lactic acid and the antibiotic compounds.

Lactobacillus casei can decrease the duration of diarrhea.

Lactic bacteria produced by *L. acidophilus* and *L. rhamnosus* act to block the receptors or adhesion sites of pathogens, creating a barrier against infectious organisms. They also prevent production of toxic amines by putrefactive bacteria, which helps prevent and treat hepatic encephalopathy. *L. rhamnosus* has also been shown to accelerate the evacuation of excrement.

Lactobacillus salivarius has been shown to produce alpha-galactosidase, which can help reduce flatulence. In addition, *L. salivarius* has been shown to be highly resistant to tetracycline and chloramphenicol antibiotics.

Lactobacillus bulgaricus is transient in the human intestine, yet important as it passes through because it creates an acidic environment helpful in inhibiting harmful bacteria (such as *e. coli*) and other microorganisms. *L. bulgaricus* works alongside the other lactic bacteria by producing lactic acid and small amounts of hydrogen peroxide, thereby creating a more acidic environment inhibitory to undesirable microorganisms.

The *Bifidobacterium (bifidum and longum)* inhibit the growth of pathogenic organisms. In particular, research shows that nitrite-producing

organisms are specifically inhibited by this probiotic.

Lactobacillus acidophilus, and *casei*, *bifidobacterium bifidum* and *longum*, and have also been shown in human clinical studies to reduce the levels of some colonic enzymes (such as β -glucuronidase) which are implicated in the conversion of procarcinogens to carcinogens.

The *Lactobacilli*, as well as *Bifidobacterium* also help minimize the symptoms of dairy intolerance.

Investigators who have studied anti-tumor activity and production of immunity have reported an increase in immunity by lactic bacteria. Another benefit of probiotics is their ability to regulate bowel movements and halt diarrhea. Probiotics contribute to gastrointestinal health by providing a toning and health-promoting activity. They have also been shown to prevent side effects associated with antibiotic treatment and eliminate bad breath due to intestinal imbalances.

Prebiotics:

Prebiotics consist of special nutritive factors, called fructooligosaccharides (FOS). FOS are not metabolized by the digestive system but instead provide nutritive support to the natural flora of the intestines. Frutafit® Inulin IQ is one of the best known prebiotics. It has been included as a fructooligosaccharide source to help support the growth of beneficial microorganisms. Due to the nature of the human digestive tract, the availability of food for microorganisms in the large intestine is quite limited. Therefore, the input of these fermentable carbohydrates into the colon is of great importance to colonic metabolism. Supplementing FOS, which is





fermentable by the Bifidobacteria, can greatly increase metabolic activity in the colon. Studies have shown that FOS supplementation can significantly increase the population of Bifidobacteria in the colon, help relieve constipation, improve blood lipids in hyperlipidemia and reduce production of intestinal putrefactive substances. In addition, FOS has been shown to strongly inhibit growth of the pathogenic bacteria *Clostridium perfringens*.

Minerals:

Minerals are nutrients that exist in the body and in food in organic and inorganic combinations. They act as catalysts for many biological reactions within the human body, including digestion.

Calcium is the most abundant mineral in the body, and has many important functions. Its primary purpose in this formula (as Calcium Chelazome®) is to help activate several enzymes, including lipase, and help regulate the passage of nutrients into and out of cell walls.

Magnesium (as Magnesium Chelazome®) activates enzymes necessary for the metabolism of carbohydrates and amino acids. It also promotes the absorption and metabolism of other minerals, such as calcium, phosphorus, sodium, and potassium. Supplementing the diet with magnesium helps prevent depression, dizziness, muscle weakness, twitching, heart disease and high blood pressure, and also aids in maintaining proper pH balance.

Zinc (as Zinc Chelazome®) is another essential trace mineral. Nutritionally, it serves many purposes. It is related to the normal absorption and action of vitamins, especially the B

complex vitamins. Zinc is a constituent of at least 25 enzymes involved in digestion and metabolism. It is a component of insulin and is part of the enzyme that is needed to break down alcohol. It also plays a part in carbohydrate digestion and phosphorus metabolism.

Manganese (as Manganese Chelazome®) plays a role in activating numerous enzymes. It aids in the utilization of choline and is an activator of enzymes that are necessary for the utilization of biotin, thiamine, and ascorbic acid. Manganese is a catalyst in the synthesis of fatty acids and cholesterol. It also plays a part in protein, carbohydrate, and fat assimilation.

Chromium (as Chromium Chelavite™) is essential for proper insulin activity. In studies worldwide, supplemental chromium has improved blood sugar levels and other symptoms in people with glucose intolerance, type 1 and type 2 diabetes, steroid-induced diabetes, and gestational diabetes. Typical Western diets barely supply the adequate intake for chromium. Several dietary and lifestyle factors can further deplete chromium levels. High sugar ingestion, trauma, stress and hard exercise increase its elimination: while age decreases its' absorption. One study involving over 40,000 people revealed that the chromium content of their hair, sweat and urine decreased with age. This may be why the elderly are more prone to adult onset diabetes, glucose intolerance, and impaired insulin sensitivity. Aging was found to have negative effects on glucose, blood lipids, insulin, insulin sensitivity, body weight, body fat and lean body mass. Chromium has positive effects on all of these variables.

Whole-istic Solutions Digestive is encapsulated in vegetarian capsules.





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