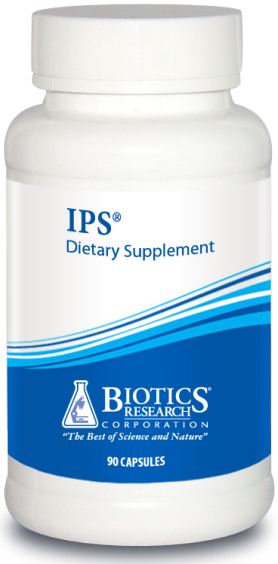
IPS®

Intestinal Permeability Support



Multiple Roles for the Intestine

With a total surface area the size of a tennis court, the intestine represents the major interface between the body and the environment. This huge area is designed to assure efficient uptake of nutrients; paradoxically, it must simultaneously exclude many substances to maintain health. Microorganisms, toxins, food allergens and endotoxins are routinely excluded by active and passive mechanisms: peristalsis and secretion of gastric acid and digestive enzymes move digested food through the GI tract, sterilize the luminal contents and break down antigens. Tight junctions maintain tissue integrity of the gut epithelium in order to limit uptake of substances between cells (paracellular uptake).[1]

Immune Exclusion is a Key Barrier Function of the Intestine

The intestine is the largest immune organ with a full complement of immune cells (T cells, B cells, mast cells and macrophages). It secretes large amounts of a specific antibodics, secretory IgA (sIgA). sIgA binds specifically to antigens and microorganisms and prevents their attachment and uptake by the gut mucosa. Imbalanced immune function can alter intestinal permeability due to inflammation and decreased sIgA. Thus, stress (physical or mental) and nutritional status play key roles in GI health. For example, stress decreases sIgA production, while physical injury leads to inflammation and the overproduction of reactive oxygen species (ROS).[2]

Altered Intestinal Permeability in a Model for Chronic Disease

When the intestinal epithelium becomes injured, the resulting downward spiral of events can lead to chronic disease:

1. An initial event evokes mucosal damage; typical causes of altered gut permeability include alcohol, NSAIDS, infections, maldigestion, gut dysbiosis (imbalanced gut flora) and immunosuppression
2. Penetration by xenobiotics and antigens due to increased permeability (leaky gut syndrome)
3. Reaction with host antibodies and circulating immune complexes
4. Autoimmune reactions
5. Compromised liver detoxification, and toxin overload
6. Ultimately production of systemic conditions leading to degenerative disease

This model emphasizes the importance of root causes of altered intestinal permeability, especially oxidative stress. Oxidative stress generates reactive oxygen species which attack enzymes and DNA, polyunsaturated fatty acids and membranes, damage repair systems, and deplete antioxidant defenses. The intestinal epithelium does not develop tolerance to oxidative stress, unlike the liver. Levels of antioxidant enzymes range from 4% to 40% of those found in the liver.[3]

Nutritional Factors for the Intestine

L-Glutamine. L-Glutamine represents a major fuel for enterocytes.[4] It possesses tropic effects for both the proximal and distal colon and its normalized intestinal electrolyte transport. In addition, glutamine supports tissues that turnover rapidly, such as the intestinalepithelium and components of the immune system. Oral glutamine supplementation has been shown to be effective in supporting the immune system. Furthermore, glutamine promotes sIgA production; sIgA levels drop dramatically in animals fed a glutamine free diet.[5]

D-Glucosamine sulfate. Glucosamine is an amino sugar that is the progenitor of all hexosamines, key building blocks of the oligosaccharide chains of secreted glycoproteins and glycosaminoglycans. In turn glycosaminoglycans are key elements of connective tissue and the basement membrane to which the intestinal mucosa is anchored. Glycosaminoglycans also form the glycocalyx of the intestinal brush border. The glycocalyx, a viscous coating on the luminal surface, protects the underlying epithelium from friction and exposure to digestive enzymes and microorganisms. Alteration of sulfated glycosaminoglycans occurs in the lamina propria and submucosal basement membrane in patients with Crohn's disease.[6] Numerous studies have documented the uptake and efficacy of glucosamine sulfate.[7] Glucosamine synthetase, the enzyme responsible for synthesizing glucosamine, is the first enzyme and rate limiting steps in the biosynthesis of N-acetyl-galactosamine and Salic acid.[8]

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Glutathione. Glutathione is a tripeptide composed of cysteine, glycine and glutamate. It occurs in millimolar concentrations in the cytoplasm of most cells, where it exists mainly in the reduced form. Glutathione helps maintain the internal redox environment to inhibit the production of proinflammatory cytokines and to maintain protein sulfhydryl groups in the reduced state for maximal biological function. Reduced glutathione is a powerful antioxidant, able to quench free radicals and reactive oxygen species directly. Glutathione is a cofactor for glutathione peroxidases, which decompose cytoplasmic hydrogen peroxide and membrane lipid peroxides as a preventive measure. Lowered glutathione is linked to aging, decreased indices of health and increased susceptibility to oxidative stress.[9,10] Orally administered glutathione can help support normal sperm mobility in cases of male infertility.[11]

Gamma oryzanol. Originally obtained from rice oil, gamma oryzanol is made up of ferulic acid (a potent antioxidant) and phytosterol. Gamma oryzanol helps to maintain the integrity of the GI tract, to balance proinflammatory stimuli and to support normal glandular activity of the stomach and intestine. The beneficial effects of gamma oryzanol have been reported.[12,13]

Tillandsia. Tillandsia occurs as fibrous masses on bushes and trees (oak, pine, cypress) in coastal regions of the Southern U.S. and the Gulf Coast. Tillandsia contains fiber, iron, phosphorus, calcium, magnesium, manganese, chlorophyll, beta carotene, and B vitamins. It also contains coumarin and resins believed to possess anti-microbial properties.[14,15]

Jerusalem artichoke. Fructooligosaccharides occur naturally in a number of foods. These fructose polymers resist digestive enzymes and serve as a ready source of fermentable fiber for colonic bacteria. The fermentation process releases short chain fatty acids, including butyrate, which are primary energy sources for the colon. Fructooligosaccharides have been found to promote the growth of beneficial intestinal bacteria, especially bifidobacteria.[16,17]

Cellulase. The microbial enzyme is effective in breaking down insoluble fiber to simple sugars that can be fermented to short chain fatty acids which nurture the colon.

Glandular support. Lamb intestine is processed under mild conditions by Biotics Research to preserve peptides, proteins and growth factors normally produced by the intestine. Recent research suggests the presence of novel growth stimulators of intestinal epithelial cells located in the small Intestine.[18]

To place your order for **IPS®** or for additional information please contact us below.

References:

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IPS® is available in 90-count bottles (#6415).

Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving
Proprietary Blend	600 mg
Jerusalem Artichoke (Helianthus tuberosus) (tuber)	*
L-Glutamine	*
Spanish Moss (Tillandsia usneoides) (whole)	*
Lamb Intestine Concentrate	*
Glucosamine Sulfate (from shrimp & crab shell)	*
Gamma Oryzanol (from rice)	*
L-Glutathione (reduced)	*
Cellulase	*

*** Daily Value not established**

Other ingredients: Capsule shell (gelatin and water) and magnesium stearate (vegetable source).

Contains ingredients derived from shrimp and crab shell.

Substance with hair-like appearance is actually Spanish moss fibers.

This product is gluten, dairy and GMO free.

RECOMMENDATION: One (1) capsule three (3) times each day as a dietary supplement or as otherwise directed by a healthcare professional.

KEEP OUT OF REACH OF CHILDREN
Store in a cool, dry area.
Sealed with an imprinted safety seal for your protection.

Product # 6415 Rev. 09/16

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