

# Intestamine®

## Nutritional Support for the Gastrointestinal Tract

### DESCRIPTION

Intestamine® powder, supplied by Douglas Laboratories®, is a unique and convenient dietary supplement formula for gastrointestinal support. Intestamine provides significant amounts of L-glutamine, an amino acid that is important in maintaining normal structure and function of the gastrointestinal tract; NutraFlora® FOS, which selectively provides nourishment for beneficial intestinal bacteria; acacia fiber, which is fermented into short chain fatty acids for the lower intestine; and N-Acetyl-D-Glucosamine, which is used as a structural component of intestinal mucous secretions. Intestamine is a taste-neutral powder that mixes easily with juices and other beverages.

### FUNCTIONS

**Glutamine.** The amino acid glutamine plays a key role in the metabolism, structure, and function of the entire gastrointestinal (GI) tract, and its extensive immune system. Glutamine is perhaps the major energy source for intestinal cells, and under conditions of physiological stress the GI tract benefits greatly from extra dietary glutamine. Glutamine is the most abundant amino acid found in blood, and is a vehicle for nitrogen transport. Glutamine-consuming tissues, such as the GI tract, the liver, and the immune system, use glutamine for the synthesis of nucleotides, proteins, and amino sugars. Glutamine carries potentially toxic ammonia to the kidneys for excretion, and participates in maintaining normal acid-base balance. The human intestinal tract removes as much as 12-13% of the circulating blood glutamine in addition to the glutamine absorbed from dietary origin. Intestinal mucosal cells need glutamine as a nitrogen donor for the biosynthesis of a number of important compounds, including nucleotides needed for cell division, amino sugars for building the glycosaminoglycans of intestinal mucous, amino acids that are crucial for protein synthesis as well as for an energy source. During physiological stress, such as starvation, physical trauma, surgery, or inflammatory bowel disease, the intestinal tract uses very large amounts of glutamine and very little glucose for energy. This often results in a fall of blood glutamine, and skeletal muscle is broken down to

supply more glutamine.

The immune cells of mucosa, mesentery and liver depend on glutamine as a key nitrogen donor and energy source. During infections of intestinal origin, immune cells need more glutamine, and the liver's glutamine consumption can rise about ten-fold. Intestinal infections, trauma or surgery can result in lower blood glutamine levels and muscle wasting.

In summary, many clinical studies support the fact that dietary glutamine is crucial in maintaining normal function of the entire gastrointestinal tract, including the liver and pancreas. Glutamine helps maintain normal intestinal permeability, mucosal cell regeneration, and structure. At the same time, glutamine supports normal immune function of the gastrointestinal tract and the liver.

Most people who are concerned about their GI health will benefit significantly from about 5 to 20 grams of supplemental L-glutamine per day. Intestamine provides 5 grams of pure L-glutamine per serving.

**NutraFlora® FOS.** Each serving of Intestamine provides 250 mg of NutraFlora® brand of fructooligosaccharides (FOS), a class of natural carbohydrates. FOS are non-digestible, short-chain fructose oligomers that are utilized almost exclusively by the beneficial bacteria in the intestinal tract.

NutraFlora® FOS is a carbohydrate that passes through the small intestine into the colon without being digested or absorbed. Once in the colon, FOS selectively feeds the beneficial symbiotic bacteria, such as *Lactobacillus acidophilus*, *Bifidobacteria*, and other acid-producing bacteria. Regular consumption of FOS has been shown to support healthy levels of these beneficial bacteria in the colon. This in turn creates a slightly acidic environment in the colon that is inhospitable to potentially harmful bacteria and other microorganisms, such as *E. coli* and *Clostridium* species.

**Acacia Fiber.** Intestamine supplies 500 mg of soluble, fermentable dietary fiber from acacia fiber. Like FOS, acacia fiber is not digested in the upper intestine, but extensively fermented by the beneficial colonic microflora. The fermentation products are short chain fatty acids, such as acetic, propionic and butyric acid.

These short chain fatty acids have several functions in the

healthy colon. First, they provide an acid environment that favors the growth of the acid-loving beneficial *Lactobacilli* and *Bifidobacteria*. Second, short chain fatty acids are important for colonic water absorption and a normal stool consistency. And third, they are utilized as an energy source by the cells of the colonic mucosa. Adequate amounts of fermentable dietary fiber appear to be necessary to maintain normal structure and function of the colonic mucosa.

**N-Acetyl-D-Glucosamine.** Intestinal mucosal cells produce large amounts of mucous that are constantly secreted into the intestinal lumen. This mucous protects the mucosal cells, and helps propel digested food throughout the GI tract. Just like glucosamine (sold separately by Douglas Laboratories as Glucosamine Sulfate), N-Acetyl-D-Glucosamine (NAG) is a naturally occurring amino sugar. NAG is found in glycosaminoglycans which are major structural components in intestinal mucous secretions as well as connective tissues.

Supplementation with these amino sugars often helps maintain normal glycosaminoglycan synthesis and intestinal mucous production. Healthy individuals can easily convert glucosamine into NAG. However, in patients with inflammatory intestinal diseases, this conversion appears to be less effective. That's why for the GI tract, NAG supplementation is usually preferred over glucosamine sulfate.

Intestamine provides 250 mg of NAG per serving to support normal mucous production for intestinal health.

## INDICATIONS

Intestamine may be a useful dietary supplement for those who wish to provide dietary support for a healthy GI tract. Intestamine can be taken regularly, and can be combined with probiotic dietary supplements, such as Douglas Laboratories' Bio-dophilus™ or similar products delivering beneficial living bacteria.

## FORMULA (INT)

### Each scoop provides:

L-Glutamine ..... 5,000 mg  
NutraFlora®\*FOS (Fructooligosaccharides) 250 mg  
Acacia Fiber (soluble dietary fiber) ..... 500 mg  
N-Acetyl-D-Glucosamine ..... 250 mg

\* NutraFlora is a registered trademark of Golden Technologies Company, Inc.

## SUGGESTED USE

Intestamine can be taken on a regular basis to maintain proper GI function. For this purpose, one to two servings a day are usually appropriate. This level will provide 5 to 10 grams of L-glutamine. Individuals with GI and catabolic diseases should consult a health care professional for appropriate use of Intestamine for their nutritional support. Intestamine is unflavored and contains no additives. It disperses easily in juices and other beverages with little impact on taste. For best results, take with cold or room-temperature foods or liquids. Do not take with foods or liquids that are hot or highly acidic.

## SIDE EFFECTS

No adverse effects have been reported.

## STORAGE

Store in a cool, dry place, away from direct light. Keep out of reach of children.

## REFERENCES

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**These statements have not been evaluated by the Food and Drug Administration.  
This product is not intended to diagnose, treat, cure, or prevent any disease.**

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