GI-*Resolve*™

Nutritional Support for Gastrointestinal Health



- Promotes optimal function of the GI lining
- Rejuvenates health of intestinal mucosa
- Supports healthy inflammatory response
- Builds immune support
- No added flavors, colors, sweeteners or gums
- Does not contain shellfish

The GI tract consist of a single contiguous layer of cells that separates the inside of the body from the external environment. The integrity of this living mucosal membrane, and the general health of the gut, is critical to overall health and well-being. Not only is its vitality necessary for the proper absorption of nutrients, the epithelial lining helps create a necessary barrier so environmental agents such as harmful toxins, allergens and microbes cannot cross the lumen of the bowel, causing inflammation. Dysfunction of the mucosal barrier may be associated with increased gut permeability and a number of gastrointestinal complications. Patients with compromised gut integrity may be prone to malabsorption of nutrients, a higher incidence of food sensitivities and other digestive issues.

GI-*Resolve*™ combines effective clinical levels of well-researched nutrients and botanicals specifically formulated to support optimal gastrointestinal health and function *without any added flavors, colors, sweeteners, gums or common allergens.* Carefully sourced for premium quality, the ingredients in this clean and great-tasting powder include L-Glutamine, Zinc Carnosine, N-Acetyl Glucosamine, MSM, *Aloe vera* Leaf, Okra and DGL.

L-Glutamine

GI-*Resolve*™ contains 4 grams of the amino acid, glutamine, an important energy source for the gastrointestinal tract and precursor for growth to the intestinal lining cells. It helps maintain the integrity of the intestinal tract and enhances the protective mucosal lining. Glutamine is particularly important during times of stress, regulating intestinal barrier function in times of stress and other catabolic conditions. Furthermore, glutamine has been shown

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to stimulate the growth of the small intestinal mucosa and also enhances ion transport by the gut. A functional amino acid with multiple physiological roles, glutamine helps protect the gut from atrophy and impairment.[1]

Elderly patients are susceptible to damaged intestinal gut lining and, therefore, malnutrition due to malabsorption. In one study, subjects with signs of intestinal atrophy were given glutamine supplementation. When the intestinal villus height and crypt depth were measured, the difference between villus and crypt was significantly improved in those subjects receiving glutamine supplementation versus the control. Therefore, glutamine may increase intestinal mass thereby improving overall function.[2] In another study where oxidative damage to fish intestines was induced by lipid peroxidation, glutamine repaired the activity in the fish enterocytes and restored healthy glutathione production.[3]

In addition to its roles in promoting the growth of intestinal mucosa and repairing oxidative damage, oral supplementation with glutamine has also been found to positively alter the composition of the gut microbiota. A 2015 study showed the ratio *Firmucutes to Bacteroidetes* (a good biomarker for obesity) decreased in the group receiving glutamine.[4]

Zinc Carnosine

GI-*Resolve*™ features PepZinGI® zinc carnosine, a nutrient known for its mucosal-protective properties and its ability to support the body's restorative effect on gastrointestinal dysfunction, such as ulcers.[5] This trademarked ingredient has a strong record of safety, efficacy and scientific merit. Capturing the synergy of L-carnosine and zinc, PepZinGI® is associated with antioxidant properties, membrane stabilization and tissue repair, and ushers in a new era of evidence-based dietary supplements for clinical gastroenterology. In addition to its mucosal-protective properties and restorative effects, zinc carnosine has been shown to activate the Nrf2 signaling pathway, supporting a healthy inflammatory response.[6] Heavy exercise may induce gut permeability, which then increases exposure to luminal toxins. One study showed that supplementation with zinc carnosine lessened the exercise-induced gut permeability, increased epithelial resistance and enhanced tight junction formation and stabilization.[7]

N-Acetyl Glucosamine (NAG)

Glycosaminoglycans are normally attached to mucin and help form the protective barrier that separates bacteria from the intestinal epithelium. In certain digestive challenges, there is a widespread breakdown of glycosaminoglycans. N-actylglucosamine (NAG) is a naturally-occurring monosaccharide derivative of glucose and precursor for epithelial glycosaminoglycan synthesis. In one study, NAG was found to help improve signs of discomfort in patients with inflammatory bowel disease (IBD).[8] Additionally, NAG may support the growth of beneficial gut bacteria such as *Bifidobacterium bifidum*.

MSM

Methylsulfonylmethane is an oxidized form of dimethyl sulfoxide, an organic sulfur compound

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known for its support of healthy inflammation pathways and the healing of the gastric mucosa. *In vitro* studies indicate that MSM inhibits transcriptional activity of nuclear factor kappa-light-chain enhancer of activated B cells (NF-kappaB).[9,10] MSM's inhibitory effect on NF-kappaB results in the downregulation of mRNA for interleukin (IL)-1, IL-6, and tumor necrosis factor-α (TNF-α) *in vitro*.[11,12] Case studies of patients with joint impairment showed improvement in comfort and flexibility following supplementation with MSM.[13] Also, MSM increased levels of glutathione and reduced colonic inflammatory markers such as malondialdehyde (MDA), myeloperoxidase (MPO) and cytokine IL-1β in animals impaired with induced ulcerative colitis.[14] Oxidative stress in the gut may exacerbate conditions such as inflammatory bowel disease. MSM has been shown to provide strong antioxidant benefits.[15]

Aloe vera Leaf

GI-*Resolve*™ includes *Aloe vera* leaf extract to support a healthy intestinal lining. It was shown to reduce oxidative stress and support a healthy inflammatory response in rats with gastropathy.[16] Also, by inhibiting colonic myeloperoxidase (MPO) activity, which is a marker for inflammation, *Aloe vera* was shown to have both strong antioxidant properties and spasmolytic effects.[17]

Okra

A mucilaginous herb, okra demonstrates potent antioxidant properties,[18] and was found to exhibit strong gastroprotective effects.[19]

Deglycyrrhizinated Licorice (DGL)

With antioxidant potency, along with the ability to coat and soothe the intestinal lining, licorice has a long traditional use in gastrointestinal health. Its antioxidant activity results in cytoprotective mechanisms that supports the healing of tissues damaged by inflammation, providing comfort to patients.[20] A randomized double-blind, placebo-controlled clinical trial revealed a significant improvement in symptom scores compared to the placebo group in the support of esophageal and gastric health.[21] The licorice in **GI-*Resolve*™** has been processed to remove glycyrrhizin, which has been associated with sodium and water retention.

GI-*Resolve*™ is available in a 6.7 ounce bottle (#6417)

Supplement Facts

Serving Size: 6.3 g (approx. 2 teaspoons)
Servings Per Container: 30

	Amount Per Serving	% Daily Value
Zinc (from 50mg of PepZinGI® zinc carnosine)†	11 mg	73%
L-Glutamine	4 g	*
N-Acetyl D-Glucosamine	1 g	*
MSM (methylsulfonylmethane)	500 mg	*
Licorice (Glycyrrhiza glabra) (root) (extract) (deglycyrrhized)	400 mg	*
Okra (Abelmoschus esculentus) (fruit)	300 mg	*
Aloe Vera (Aloe barbadensis) (aerial part) (200:1 extract)	50 mg	*

*** Daily Value not established**

† PepZinGI® is a registered trademark of Hamari Chemicals USA, Inc.

This product is gluten dairy and shellfish free.

RECOMMENDATION: Two (2) teaspoons 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.
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References

1. Wang B, Wu G, Zhou Z, Dai Z, Sun Y, Ji Y, Li W, Wang W, Liu C, Han F, Wu Z. Glutamine and intestinal barrier function. Amino Acids. 2015 Oct;47(10):2143-54. doi: 10.1007/s00726-014-1773—4.
2. Beaufrère AM1, Neveux N, Patureau Mirand P, Buffière C, Marceau G, Sapin V, Cynober L, Meydinal-Denis D. Long-term intermittent glutamine supplementation repairs intestinal damage (structure and functional mass) with advanced age: assessment with plasma citrulline in a rodent model. J Nutr Health Aging. 2014 Nov;18(9):814-9. doi: 10.1007/s12603-014-0468-6.
3. Hu K, Feng L, Jiang W, Liu Y, Jiang J, Li S, Zhou X. Oxidative damage repair by glutamine in fish enterocytes. Fish Physiol Biochem. 2014 Oct;40(5):1437-45. doi: 10.1007/s10695-014-9938-3.
4. de Souza AZ, Zambom AZ, Abboud KY, Reis SK, Tannihão F, Guadagnini D, Saad MJ, Prada PO. Oral supplementation with L-glutamine alters gut microbiota of obese and overweight adults: A pilot study. Nutrition. 2015 Jun;31(6):884-9. doi: 10.1016/j.nut.2015.01.004. Epub 2015 Jan 29.
5. Higashimura Y, Takagi T, Naito Y. Zinc and gastrointestinal disorders. Nihon Rinsho. 2016 Jul;74(7):1121-5.
6. Ooi TC, Chan KM, Sharif R. Zinc L-carnosine suppresses inflammatory responses in lipopolysaccharide-induced RAW 264.7 murine macrophages cell line via activation of Nrf2/HO-1 signaling pathway. Immunopharmacol Immunotoxicol. 2017 Oct;39(5):259-267. doi: 10.1080/08923973.2017.1344987. Epub 2017 Jul 11.
7. Davison G, Marchbank T, March DS, Thatcher R, Playford RJ. Zinc carnosine works with bovine colostrum in truncating heavy exercise-induced increase in gut permeability in healthy volunteers. Am J Clin Nutr. 2016 Aug;104(2):526-36. doi: 10.3945/ajcn.116.134403.
8. Andy Z. X. Zhu, PhD, Ishita Patel, PharmD, RPh, Melinda P. Hidalgo, BSc, and Veeral Gandhi, RPh. N-Acetylglucosamine for Treatment of Inflammatory Bowel Disease. Natural Medicine Journal. April 2015 Vol. 7 Issue 4.
9. Joung, Y.H.; Darvin, P.; Kang, D.Y.; Nipin, S.; Byun, H.J.; Lee, C.-H.; Lee, H.K.; Yang, Y.M. Methylsulfonylmethane inhibits RANKL-induced osteoclastogenesis in BMMs by suppressing NF-κB and STAT3 activities. PLoS ONE 2016, 11, e0159891.
10. Kim, Y.; Kim, D.; Lim, H.; Baek, D.; Shin, H.; Kim, J. The anti-inflammatory effects of methylsulfonylmethane on lipopolysaccharide-induced inflammatory responses in murine macrophages. Biol. Pharm. Bull. 2009, 32, 651–656.
11. Ahn, H.; Kim, J.; Lee, M.-J.; Kim, Y.J.; Cho, Y.-W.; Lee, G.-S. Methylsulfonylmethane inhibits NLRP3 inflammasome activation. Cytokine 2015, 71, 223–231.
12. Oshima, Y.; Amiel, D.; Theodosakis, J. The effect of distilled methylsulfonylmethane (msm) on human chondrocytes in vitro. Osteoarthr. Cartil. 2007, 15, C123.
13. Jacob, S.W.; Appleton, J. Msm-the Definitive Guide: A Comprehensive Review of the Science and Therapeutics of Methylsulfonylmethane; The use of methylsulfonylmethane (MSM) in the treatment of osteoarthritis. Freedom Press: Topanga, CA, USA, 2003.
14. Amirshahrokhi, K. et al. The effect of methylsulfonylmethane on the experimental colitis in the rat. Tox and App Pharm 2011.
15. Fabiana Andréa Moura, Kívia Queiroz de Andrade, Juliana Célia Farias dos Santos, Orlando Roberto Pimentel Araújo, Marília Oliveira Fonseca Goulart. Antioxidant therapy for treatment of inflammatory bowel disease. Does it work? Redox Biology 6 (2015) 617-639.
16. Werawatganon D1, Rakananurak N1, Sallapant S1, Prueksapanich P1, Somanawat K1, Klaikeaw N1, Rerknimitr R1. Aloe vera attenuated gastric injury on indomethacin-induced gastropathy in rats. World J Gastroenterol. 2014 Dec 28;20(48):18330-7. doi: 10.3748/wjg.v20.i48.18330.
17. Asadi-Shahmirzadi A1, Mozaffari S, Sanei Y, Baeeri M, Hajiaghaee R, Monsef-Esfahani HR, Abdollahi M. Benefit of Aloe vera and Matricaria recutita mixture in rat irritable bowel syndrome: Combination of antioxidant and spasmolytic effects. Chin J Integr Med. 2012 Dec 21.
18. Gemede HF, Haki GD, Beyene F, Rakshit SK, Woldegiorgis AZ. Indigenous Ethiopian okra (Abelmoschus esculentus) mucilage: A novel ingredient with functional and antioxidant properties. Food Sci Nutr. 2018 Feb 2;6(3):563-571.
19. Ortaç D, Cemek M, Karaca T, Büyükokuroğlu ME, Özdemir ZÖ, Kocaman AT, Göneş S. In vivo anti-ulcerogenic effect of okra (Abelmoschus esculentus) on ethanol-induced acute gastric mucosal lesions. Pharm Biol. 2018 Dec;56(1):165-175.
20. Mukherjee M1, Bhaskaran N, Srinath R, Shivaprasad HN, Allan JJ, Shekhar D, Agarwal A. Anti-ulcer and antioxidant activity of GutGard. Indian J Exp Biol. 2010 Mar;48(3):269-74.
21. Kadur Ramamurthy Raveendra, Jayachandra, Venkatappa Srinivasa, Kadur Raveendra Sushma, Joseph Joshua Allan, ,*Krishnagouda Shankargouda Goudar, Hebbani Nagarajappa Shivaprasad, Kudiganti Venkateshwarlu, Periasamy Geetharani, Gopalakrishna Sushma, and Amit Agarwal. An Extract of Glycyrrhiza glabra Alleviates Symptoms of Functional Dyspepsia: A Randomized, Double-Blind Placebo-Controlled Study. Evid Based Complement Alternat Med. 2012;2012:216970.

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