

# Digestive Defense



INTEGRATIVE  
NATURAL HEALTH

## Clinical Applications

- Provides Immunoglobulins and Immunoregulating Factors That Promote Intestinal and Systemic Health\*
- Supports Passive Immunity in the Intestine\*
- Promotes Balanced Cytokine Production\*
- Supports Muscle Performance and Recovery\*

*Digestive Defense Plus DF are self-affirmed GRAS supplements that provide IgY immunoglobulins and immunoregulating molecules from hyperimmune chicken egg. Research suggests that this dairy-free source of immunoglobulins and immune cofactors helps support immune function in the intestine and a healthy intestinal environment. These benefits positively impact extraintestinal health. For added support of gut microflora, the prebiotic arabinogalactan is provided in Digestive Defense Plus DF. Preliminary research also suggests the immunoregulating molecules in these formulas help modulate cytokines and enhance sports recovery.\**

All Integrative Natural Health Formulas Meet or Exceed cGMP Quality Standards

## Discussion

Decades ago, immunology researchers began investigating the possible health benefits to humans that could be achieved by the consumption of products from hyperimmunized lactating cows and laying hens.<sup>[1]</sup> Agricultural scientists soon discovered that they could simultaneously immunize a single laying hen against multiple human germs. The resulting avian immunoglobulins, known as IgY, are transferred to the egg yolk, paralleling the way human immunoglobulins (IgG) are passed to the placenta. From this discovery, a new functional food was born: the “hyperimmune egg.” Digestive Defense is the result of special hyperimmune egg harvesting and processing techniques that result in a polyvalent, immunoglobulin-rich, dried hyperimmune egg food product that can be consumed as a dietary supplement. Second generation Digestive Defense Plus DF is vanilla-flavored and has arabinogalactan added.

### IgY Immunoglobulins and Passive Immunity

Hyperimmune egg provides a concentrated source of environmentally specific IgY antibodies and immune-supporting cofactors that can confer passive immunity to the human being who consumes it.<sup>[1-6]</sup> There are over 100 patents associated with the production of hyperimmune egg and its use in animals and humans, and it is a self-affirmed GRAS (generally recognized as safe) product—a designation that affirms safe consumption. Furthermore, hyperimmune egg and IgY have been studied extensively.\*

**Oral Health** In a study of healthy volunteers, the use of an oral rinse containing an aqueous IgY solution increased the presence of active antibodies in saliva.<sup>[7]</sup> Moreover, in vitro, animal, and human research support the benefits of custom IgY solutions, IgY-supplemented diets, and IgY-containing pastes that are designed for use in the dental plaque environment and to promote gingival health.<sup>\*[8,9]</sup>

**Intestinal Health** IgY stability through the orogastrointestinal tract and its safety profile are well-documented.<sup>[5]</sup> In vitro, animal, and human studies provide evidence that supplemental IgY from hyperimmune egg imparts passive immunity in the intestinal tract.<sup>[1,2,4,10-13]</sup> Providing the body with an increased supply of immunoglobulins also helps maintain a healthy balance of bacteria in the intestine. Supporting passive immunity and promoting microbiome balance lead to better overall health due to the link between gut health and systemic health. Furthermore, researchers postulate that by supporting passive immunity in the gut, immune overactivation might be reduced.<sup>\*[1]</sup>

### Immunoregulatory Factors

Hyperimmune egg not only provides IgY immunoglobulins, but it also contains bioactive immunoregulatory factors. These immunoregulatory factors act directly on gastrointestinal surfaces where they may influence effector cells and also circulate systemically where they act as intercellular communicators. As intercellular communicators, they are responsible for the regulation of a variety of immune, hormonal, and metabolic pathways that have widespread systemic effects.<sup>[1]</sup> Preliminary studies suggest that these immunoregulatory factors in Digestive Defense benefit cytokine modulation, joint health, blood lipid metabolism, exercise performance, and overall wellness.<sup>\*[1,5]</sup>

**Arabinogalactan** Digestive Defense Plus DF features FiberAid™, an arabinogalactan-based, soluble fiber prebiotic derived from US-grown larch trees. The fiber is self-affirmed GRAS by the US Food and Drug Administration and other authorities. It remains pure and structurally unaltered following a multi-patented process (US 5756098, EP 866808, and other patents) that does not require harsh chemicals to free the polysaccharide from the plant matrix.

FiberAid, in doses of 4.5 g and higher, has been demonstrated to increase gut anaerobes such as lactobacilli and bifidobacteria, increase short-chain fatty acids, reduce ammonia levels in the large intestine, and support immunomodulatory activity.<sup>\*[14-17]</sup>

**Cytokine Modulation** Hyperimmune egg contains heightened levels of cytokine inhibitory factor (CIF) and cytokine activating factor (CAF).<sup>[18,19]</sup> These bioactive molecules help balance the production of cytokines such as TNF-alpha and are believed to help the immune system recognize when to turn on and when to turn off.<sup>\*[18,19]</sup>

**Muscle Performance and Recovery** In clinical studies comparing the benefits of hyperimmune egg to an egg-protein placebo group, oral supplementation of hyperimmune egg (4.5 g to 13.5 g) for 10 days resulted in a significantly lower submaximal heart rate and higher peak power.<sup>[20]</sup> In a double-blind, balanced, matched-pairs study, oral supplementation of hyperimmune egg (4.5 g to 13.5 g) improved strength performance and enhanced muscle recovery. The supplemented group also experienced significantly less muscle soreness.<sup>[21]</sup> Other studies suggested that hyperimmune egg significantly increased levels of growth factors and overall bioavailability of IGF-1.<sup>\*[22-24]</sup>

**Quality of Life** HIV/AIDS patients (n=31) with varying levels of sickness were administered hyperimmune egg (4.5 g) for four to eight weeks. Research showed that supplementation appeared to improve multiple parameters of physical and mental well-being.<sup>\*[25]</sup>

**Cardiovascular and Joint Health** Studies have indicated that the consumption of hyperimmune egg may also support cardiovascular and joint health.<sup>\*[26,27]</sup>

**\*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.**

# Supplement Facts

Serving Size: 1 Scoop (about 6.1 g)  
Servings Per Container: About 30

|  | Amount Per Serving | %Daily Value |
|--|--------------------|--------------|
| Calories   | 30                 |              |
| Total Fat  | 2 g                | 3%†          |
| Saturated Fat  | 0.5 g              | 3%†          |
| Cholesterol  | 75 mg              | 25%          |
| Total Carbohydrate                                       | 1 g                | <1%†         |
| Dietary Fiber  | 1 g                | 4%           |
| Protein  | 2 g                |              |
| IgY Max™ Hyperimmunized Egg Powder                       | 4.5 g              | **           |
| Arabinogalactan (from <i>Larix laricina</i> )(heartwood) | 1 g                | **           |

†Percent Daily Values are based on a 2,000 calorie diet.  
\*\*Daily Value not established.

**Other Ingredients:** Natural flavor (no MSG), monk fruit extract, and silica.

**Contains:** Egg

## IgY Max™

IgY Max is a trademark of IgY Nutrition, LLC and is used under license.

## Directions

Blend or shake one scoop (about 6.1 g) in cold liquid or sprinkle on cold food, such as salad, or use as directed by your healthcare practitioner. Do not heat, cook, or add to hot food or liquid.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner, and individuals with egg allergies should not consume this product. Do not use if tamper seal is damaged.

## Does Not Contain

Wheat, gluten, yeast, soy, dairy products, fish, shellfish, peanuts, tree nuts, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

## References

- Dean KL. Hyperimmune eggs capture natural immune support. *Altern Complemen Ther*. June 2000;6(3):118-24. [http://www.ah-gene.com.tw/pic/digi/71014101140\\_hug1.pdf](http://www.ah-gene.com.tw/pic/digi/71014101140_hug1.pdf). Accessed December 29, 2014.
- Sarker SA, Casswall TH, Juneja LR, et al. Randomized, placebo-controlled, clinical trial of hyperimmunized chicken egg yolk immunoglobulin in children with rotavirus diarrhea. *J Pediatr Gastroenterol Nutr*. 2001 Jan;32(1):19-25. [PMID: 11176319]
- Mine Y, Kovacs-Nolan J. Chicken egg yolk antibodies as therapeutics in enteric infectious disease: a review. *J Med Food*. 2002 Fall;5(3):159-69. [PMID: 12495588]
- Xie YM, Gao S, Wang LY, et al. Therapeutic effect of probiotics and oral IgY as supplementary drugs in the treatment of pediatric rotavirus enteritis: a comparative study [in Chinese]. *Zhongguo Dang Dai Er Ke Za Zhi*. 2013 Nov;15(11):1000-05. [PMID: 24229598]
- Rahman S, Van Nguyen S, Icatlo FC Jr, et al. Oral passive IgY-based immunotherapeutics: a novel solution for prevention and treatment of alimentary tract diseases. *Hum Vaccin Immunother*. 2013 May;9(5):1039-48. [PMID: 23319156]
- Rahman S, Higo-Moriguchi K, Htun KW, et al. Randomized placebo-controlled clinical trial of immunoglobulin Y as adjunct to standard supportive therapy for rotavirus-associated diarrhea among pediatric patients. *Vaccine*. 2012 Jun 29;30(31):4661-69. [PMID: 22575165]
- Carlander D, Kollberg H, Larsson A. Retention of specific yolk IgY in the human oral cavity. *BioDrugs*. 2002;16(6):433-37. [PMID: 12463766]
- Hatta H, Tsuda K, Ozeki M, et al. Passive immunization against dental plaque formation in humans: effect of a mouth rinse containing egg yolk antibodies (IgY) specific to *Streptococcus mutans*. *Caries Res*. 1997;31(4):268-74. [PMID: 9197932]
- Otake S, Nishihara Y, Makimura M, et al. Protection of rats against dental caries by passive immunization with hen-egg-yolk antibody (IgY). *J Dent Res*. 1991 Mar;70(3):162-66. [PMID: 1825668]
- Fujibayashi T, Nakamura M, Tominaga A, et al. Effects of IgY against *Candida albicans* and *Candida* spp. Adherence and biofilm formation. *Jpn J Infect Dis*. 2009 Sep;62(5):337-42. [PMID: 19762981]
- Ikemori Y, Ohta M, Umeda K, et al. Passive protection of neonatal calves against bovine coronavirus-induced diarrhea by administration of egg yolk or colostrum antibody powder. *Vet Microbiol*. 1997 Nov;58(2-4):105-11. [PMID: 9453122]
- Jüngling A, Wiedemann V, Kühlmann R, et al. Chicken egg antibodies for prophylaxis and therapy of infectious intestinal diseases. IV. In vitro studies on protective effects against adhesion of enterotoxigenic *Escherichia coli* to isolated enterocytes. *Zentralbl Veterinarmed B*. 1991 Jul;38(5):373-81. [PMID: 1681635]
- Buragohain M, Dhale G, Ghalsasi G, et al. Evaluation of hyperimmune hen egg yolk derived anti-human rotavirus antibodies (anti-hrvig) against rotavirus infection. *World Journal of Vaccines*. 2012;2:73-84. <http://dx.doi.org/10.4236/wjv.2012.22010>. Accessed December 23, 2014.
- Robinson RR, Feirtag J, Slavin JL. Effects of dietary arabinogalactan on gastrointestinal and blood parameters in healthy human subjects. *J Am Coll Nutr*. 2001 Aug;20(4):279-85. [PMID: 11506055]
- Englyst HN, Hay S, Macfarlane GT. Polysaccharide breakdown by mixed populations of human faecal bacteria. *FEMS Microbiol Lett*. 1987 June;45(3):163-171. doi: 10.1016/0378-1097(87)90013-9.
- Vince AJ, McNeil NI, Wager JD, et al. The effect of lactulose, pectin, arabinogalactan, and cellulose on the production of organic acids and metabolism of ammonia by intestinal bacteria in a faecal incubation system. *Br J Nutr*. 1990 Jan;63(1):17-26. [PMID: 2317475]
- Dion C, Chappuis E, Ripoll C. Does larch arabinogalactan enhance immune function? A review of mechanistic and clinical trials. *Nutr Metab (Lond)*. 2016 Apr 12;13:28. [PMID: 27073407]
- Iyer S, Johnson WL, Nguyen L, Ross SC, Xing R, inventors; Arkion Life Sciences, LLC, assignee. Purified cytokine inhibitory factor. US patent 7,083,809 B2. Aug 1, 2006.
- Iyer S, Nguyen TN, Wu DR, Xing R, inventors; Arkion Life Sciences, LLC, assignee. Protein isolated from egg whites and yolks of hyperimmunized animals; amino acid sequence seq id no:1 and 6; upregulation of tumor necrosis factor and interleukins-6 and -1beta; downregulation of transforming growth factor-beta. US patent 6,420,337 B1. July 16, 2002.
- Scheett TP, Martin T, Carr B, et al. Hyperimmune egg protein decreases submaximal heart rate and increases peak power. Poster presented at: American College of Sports Medicine Conference; May 30-June 2, 2007; New Orleans, LA. [http://igyhperimmuneegg.org/studies/Scheett\\_ACSM\\_SubmaximalHRPeakPower.pdf](http://igyhperimmuneegg.org/studies/Scheett_ACSM_SubmaximalHRPeakPower.pdf). Accessed January 4, 2015.
- Scheett TP, Martin T, Carr B, et al. Increased muscular strength and enhanced muscle repair with hyperimmune egg protein supplementation. Poster presented at: National Strength and Conditioning Association Conference; July 12-15, 2007; Atlanta, GA. [http://www.igyhperimmuneegg.org/studies/Scheett\\_MSCA\\_MuscularStrengthMuscleRepair.pdf](http://www.igyhperimmuneegg.org/studies/Scheett_MSCA_MuscularStrengthMuscleRepair.pdf). Accessed January 4, 2015.
- Rivera LE, Boland CG, Scheett TP. Effect of the hyperimmune egg supplement on regulation of insulin-like growth factor 1. Paper presented at: Southeast American College of Sports Medicine Conference; February 14-16, 2008; Birmingham, AL. [http://www.seacsm.org/SEACSM\\_2008\\_program.pdf](http://www.seacsm.org/SEACSM_2008_program.pdf). Accessed January 2, 2015.
- Scheett TP, Boland CG, Rivera LE, et al. Hyperimmune egg protein supplementation stimulates the GH->IGF-1 axis. Poster presented at: National Strength and Conditioning Association Conference; July 10, 2008; Las Vegas, NV. [http://www.igyhperimmuneegg.org/studies/Scheett\\_Boland\\_Rivera\\_GHtoIGF-1\\_Axis.pdf](http://www.igyhperimmuneegg.org/studies/Scheett_Boland_Rivera_GHtoIGF-1_Axis.pdf). Accessed January 2, 2015.
- Boland CG, Rivera LE, Scheett TP. Effect of the hyperimmune egg supplement on anabolic mediators of muscle repair. Paper presented at: Southeast American College of Sports Medicine Conference; February 14-16, 2008; Birmingham, AL. [http://www.seacsm.org/SEACSM\\_2008\\_program.pdf](http://www.seacsm.org/SEACSM_2008_program.pdf). Accessed January 2, 2015.
- Kizito FB. Improvements in quality of life for HIV/AIDS patients using hyperimmune egg (Immune 26™) – The TASO Study. Paper presented at: 3rd International AIDS Society Conference on HIV Pathogenesis and Treatment; July 24-27, 2005; Rio de Janeiro. <http://www.iasociety.org/Abstracts/A2177717.aspx>. Accessed December 29, 2014.
- Karge WH, Deluca JP, Marchitelli LJ, et al. Pilot study on the effect of hyperimmune egg protein on elevated cholesterol levels and cardiovascular risk factors. *J Med Food*. 1999;2(2):51-63. [PMID: 19281349]
- Greenblatt H, Adalsteinnsson O, Kagen L. Administration to arthritis patients of a dietary supplement containing immune egg: an open-label pilot study. *J Med Food*. 1998;1(3):171-79. [on file]

## Formulated To Exclude

Wheat, gluten, yeast, corn, soy, dairy products, fish, shellfish, peanuts, tree nuts, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, and artificial preservatives.

**\*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.**