GENESTRA BRANDS®

HMF™ Immune (shelf-stable)

Immune support formula in a great-tasting, shelf-stable chewable tablet‡

- Offers 30 billion CFU per dose from a combination of five proprietary human strain probiotics, plus vitamins C and D
- Supports upper respiratory tract health in children and physically active adults‡
- Once-daily chewable tablet available in a delicious natural black currant flavor
- No refrigeration necessary
- Potency guaranteed through expiration

HMF™ Immune combines proprietary human strain probiotics with vitamins C and D to provide targeted support for the immune system. Each convenient, once-daily chewable tablet provides a blend of five research-driven probiotic strains from both the *Lactobacillus* and *Bifidobacterium* genera. As nearly 80% of the body's immunologically active cells are located in gut-associated lymphoid tissue, an important connection has been demonstrated between the intestines and the immune system. In addition to supporting gastrointestinal health, HMF™ Immune includes *Bifidobacterium animalis* subsp. *lactis* (BI-04), a strain that has been shown in a clinical trial to support upper respiratory tract health in physically active adults. Similarly, it offers *Lactobacillus acidophilus* (CUL-60 & CUL-21), *Bifidobacterium animalis* subsp. *lactis* (CUL-34) and *Bifidobacterium bifidum* (CUL-20), which were demonstrated in a clinical trial to support upper respiratory tract health in children when combined with vitamin C. To further help maintain immune function, HMF™ Immune contains vitamins C and D. Vitamin C supports the immune system by regulating lymphocyte proliferation, natural killer cell activity and immunoglobulin production, while vitamin D helps control T cell activation, cytokine release and phagocytosis in macrophages. Research demonstrates that vitamins C and D may be especially effective in maintaining immune function in the respiratory tract. This convenient shelf-stable format has guaranteed potency through expiration and may improve patient compliance.‡

Supplement Facts
Serving Size 1 Tablet
Servings per Container 25

	Amount Per Serving	% DV
Calories	5	
Total Carbohydrate	1 g	<1%^
Vitamin C (as ascorbic acid)	100 mg	111%
Vitamin D_3 (as cholecalciferol)	25 mcg (1,000 IU)	125%
Probiotic Consortium	30 billion CFU	*
Lactobacillus acidophilus (CUL-60 & CUL-21)		
Bifidobacterium animalis subsp. *lactis* (CUL-34) & *Bifidobacterium bifidum* (CUL-20)		
Bifidobacterium animalis subsp. *lactis* (BI-04)		

* Daily value (DV) not established
^ Percent Daily Values are based on a 2,000 calorie diet

Other Ingredients: Xylitol, black currant fruit extract, sorbitol, natural black currant flavor, silica, magnesium stearate

Recommended Dose
Chew 1 tablet daily with a meal, or as recommended by your health professional.

Size
25 Chewable Tablets

Product Code
10663-25U

Non GMO · Gluten Free · Soy Free · Dairy Free · No FOS · Vegetarian

Tried, tested and true.

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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.

663PDS0521U

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Scientific Rationale:

The human intestinal tract contains more than 400 bacterial species.[1] This microflora composition can be altered by a number of factors, including diet, occasional stress, certain medications, aging and travel.[1] When the microflora balance is affected in the intestines, common gastrointestinal complaints can occur, including mild bloating and gas.[2‡]

Probiotics are defined by the World Health Organization as "live microorganisms which when administered in adequate amounts confer a health benefit on the host".[3] Probiotics have been found to support gastrointestinal health and contribute to a healthy microflora composition.[1] Studies have shown that they mediate microbial colonization and support the growth of beneficial bacteria in the intestines.[1] Probiotics accomplish this by mediating intestinal pH and strengthening the epithelial barrier.[3] They mediate the integrity of tight junctions and increase mucin release, which in turn regulates permeability and reduces microbial adherence to cells.[4,5‡]

Additionally, approximately 80% of the body's immunologically active cells are located in gut-associated lymphoid tissue, demonstrating an important interaction between the intestines and the immune system.[6] Preclinical research suggests that probiotics may directly mediate the activation of immune cells, the release of cytokines, and IgA antibody-mediated responses in the mucosa.[7‡]

Bifidobacterium animalis subsp. *lactis* (BI-04) is a probiotic strain that was investigated in a randomized, double-blind, placebo-controlled trial for its effects on immune health.[8] Physically active adults were randomized to consume a placebo or probiotic supplement (containing $2.0x10^9$ CFU of BI-04) daily for 150 days.[8] Participants recorded their physical activity and respiratory health throughout the study via a web-based questionnaire.[8] When compared to the placebo, daily supplementation with BI-04 significantly promoted upper respiratory immune health.[8‡]

A combination of HMF™ probiotics and vitamin C was also reported to support schoolchildren's respiratory immune health in a six-month, randomized, double-blind, placebo-controlled study.[9] Children were randomized to either a placebo or probiotic and vitamin C tablet group (12.5 billion CFU of *Lactobacillus acidophilus* CUL-60 and CUL-21, *Bifidobacterium animalis* subsp. *lactis* CUL-34, *Bifidobacterium bifidum* CUL-20 and 50 mg of vitamin C).[9] Participants consumed one tablet daily for six months and their respiratory health was evaluated by a pediatrician every two months.[9] Compared with the placebo group, upper respiratory tract health and immune function was significantly better supported in children that received the probiotic and vitamin C supplement.[9] An additional clinical trial also reported that daily supplementation with 25 billion CFU of these probiotic strains (plus 2 g of fructooligosaccharides) significantly regulated the production of cytokines, including IL-6 and IL-1β.[10] This further demonstrates the potential of these probiotics to beneficially modulate the immune response.[10‡]

Vitamin C is a water-soluble antioxidant in the plasma and cellular fluid.[11] It directly scavenges reactive oxygen and nitrogen species, which can damage cells and disrupt normal cellular function.[12] Vitamin C further protects cells by regenerating other antioxidants, such as glutathione and vitamin E.[12] It supports the immune system by regulating lymphocyte proliferation, natural killer cell activity, and immunoglobulin production.[12] In addition, neutrophils contain vitamin C to protect against reactive oxygen species produced during phagocytosis.[12‡]

The vitamin D receptor is found on most immune cells, including T cells, B cells, and macrophages, demonstrating an important interaction between vitamin D and the immune system.[13] Vitamin D levels also vary depending on the season, with highest levels present during summer and lowest levels present during winter; this pattern also resembles the seasonal variation in immune system health.[13] Low vitamin D status has also been associated with decreased upper respiratory immune function, while vitamin D supplementation has been shown to have beneficial effects on the function of a variety of immune cells - including dendritic cells, macrophages, and T cells.[14-16] Research demonstrates that vitamin D mediates the proliferation of T and B cells, increases the phagocytic activity of macrophages, and promotes a healthy cytokine balance to promote normal immune function.[17] One controlled clinical trial reported that daily supplementation with 25 mcg (1,000 IU) of vitamin D for 3 months significantly increased plasma vitamin D levels and regulated the production of IL-2, IL-4, IL-6, and IFN-γ.[18‡]

HMF™ Immune was specifically formulated to support the immune system. Each convenient, once-daily chewable tablet provides a blend of five proprietary probiotic strains from both the *Lactobacillus* and *Bifidobacterium* genera. Clinical trials have demonstrated the beneficial effects of these strains in supporting upper respiratory tract health.[9,10] To further help maintain immune function, HMF™ Immune also provides vitamins C and D.[12,18‡]

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