GENESTRA BRANDS®

HMF® Multi Strain

16-strain probiotic combination

- Provides 15 billion CFU per dose
- 16 probiotic strains providing comprehensive support for intestinal health
- Long-term maintenance probiotic for the temporary modification of gut flora
- Potency guaranteed through expiration
- Available shelf-stable and refrigerated

HMF® Multi Strain is a comprehensive combination of 16 probiotic strains to support a healthy digestive flora. Each capsule provides a variety of lactic acid bacteria (LAB) strains to support a favourable gut microflora in both the small and large intestines.[1] HN019, a probiotic strain included in this formula, was shown in a placebo-controlled trial to promote a healthy gut flora.[2] It significantly increased *Bifidobacteria* and *Lactobacilli* counts, while reducing the population of *Enterobacteria* (a genus that includes many pathogenic bacteria).[2] Similarly, Genestra's HMF probiotic consortium, *Lactobacillus acidophilus* (CUL-60 and CUL-21), *Bifidobacterium bifidum* (CUL-20) and *Bifidobacterium animalis* subsp. *lactis* (CUL-34), contained in HMF® Multi Strain has been demonstrated in clinical trials to support intestinal comfort and promote a healthy microflora balance in the gastrointestinal tract.[3-5] This convenient format has guaranteed potency at expiry and may improve patient compliance.

EACH CAPSULE CONTAINS:

Probiotic Consortium	15 billion CFU
Lactobacillus acidophilus (CUL-60 & CUL-21)	10 billion CFU
Bifidobacterium animalis subsp. *lactis* (CUL-34) & *Bifidobacterium bifidum* (CUL-20)	2.5 billion CFU
Ligilactobacillus salivarius (CUL-61)	0.3 billion CFU
Limosilactobacillus fermentum (CUL-67)	0.2 billion CFU
Lactobacillus gasseri (CUL-09)	0.2 billion CFU
Lactobacillus acidophilus (NCFM®)	0.2 billion CFU
Lacticaseibacillus casei (CUL-06)	0.2 billion CFU
Lacticaseibacillus paracasei (CUL-08)	0.2 billion CFU
Bifidobacterium animalis subsp. *lactis* (CUL-62)	0.2 billion CFU
Bifidobacterium breve (Bb-18)	0.2 billion CFU
Bifidobacterium animalis subsp. *lactis* (HN019)	0.2 billion CFU
Lactiplantibacillus plantarum (CUL-66)	0.2 billion CFU
Streptococcus salivarius subsp. *thermophilus* (CUL-68)	0.2 billion CFU
Lacticaseibacillus rhamnosus (HN001)	0.2 billion CFU

Non-Medicinal Ingredients: Cellulose, hypromellose, sunflower lecithin, silica. Ingredients used to maintain viability of probiotics (dipotassium phosphate, monopotassium phosphate, trehalose, sucrose, sodium chloride, sodium ascorbate, maltodextin).

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Recommended Dose
Adults, Adolescents and Children (6 years and older): Take 1 capsule daily, at least 2 to 3 hours before or after taking antibiotics, or as recommended by your healthcare practitioner.

Size	Product Code	UPC
Refrigerated: 60 Vegetarian Capsules	10487	883196140107
Shelf-stable: 50 Vegetarian Capsules	10662-50C	883196155996

NPN 80045939

Non GMO Tested · Gluten Free · Soy Free · Dairy Free · No FOS · Vegan

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487-662PDS1123C

HMF® Multi Strain

Scientific Rationale:

The human intestinal tract contains more than 400 bacterial species.[1] The distribution of these microorganisms throughout the gut is not uniform, with the concentration and diversity of species increasing towards the distal end of the GI tract.[2] In addition, certain species preferentially colonize specific areas of the digestive system.[3] Compared to other strains, *Lactobacilli* survive better in acidic environments, and are one of few species present in the stomach and duodenum.[3] In contrast, *Bifidobacteria* are found in larger numbers in the colon, where they play a role in fermentation and complex carbohydrate digestion.[3]

The composition of the gut microflora can be altered by a number of factors, including diet, stress, antibiotic use, digestive disorders, aging and travel.[1] These factors may cause an imbalance in the intestines, wiping out the beneficial bacteria and allowing pathogenic bacteria to multiply.[1] This can lead to common gastrointestinal complaints, including bloating and gas.[4] In particular, antibiotic treatment disrupts the normal microflora composition, and can result in bacterial overgrowth, diarrhoea and antibiotic resistance.[1]

Probiotics are defined by the World Health Organization as "live microorganisms which when administered in adequate amounts confer a health benefit on the host".[5] Probiotics have been found to support gastrointestinal health and contribute to a healthy microflora composition.[1] Studies have shown that they support the growth of beneficial bacteria in the intestines, while limiting the proliferation of pathogenic bactria.[1] In addition to decreasing pathogenic bacterial survival, probiotics strengthen the epithelial barrier.[6] They mediate the integrity of tight junctions and increase mucin release, which in turn regulates permeability and prevents pathogens from adhering to cells.[6,7] These effects may be especially useful to restore the normal flora after antibiotic use.[8,9] Similarly, probiotics may benefit individuals with IBS by decreasing gas formation in the colon, mediating colonic transit, and conjugating bile acids, which reduces both the secretion of water in the colon and changes in mucosal permeability.[10]

HMF® Multi Strain is formulated using probiotic strains that have been used in a wide body of clinical research, including HN019, NCFM®, HN001, and Genestra Brands® HMF proprietary *Lactobacillus* and *Bifidobacterium* probiotic consortium.[8-14] Studies demonstrate that these strains effectively contribute to a healthy gut flora and support gastrointestinal health.[8-14]

In one randomized, double-blind, placebo-controlled trial, supplementation with HN019 significantly contributed to a favourable gut flora in aging adults.[11] Elderly participants (over 60 years of age) consumed a placebo or one of three probiotic supplements daily for four weeks [low ($6.5x10^7$ CFU), medium ($1.0x10^9$ CFU) or high ($5.0x10^9$ CFU)].[11] Probiotic supplementation significantly increased the mean number of fecal *Bifidobacteria* when compared to baseline levels.[11] As the levels of *Bifidobacteria* naturally decrease with age, supplementation with HN019 may represent an easy way to promote its proliferation in the intestines.[11]

In addition, HN019 intake significantly increased *Lactobacilli* and *Enterococci* counts in the high and medium groups after four weeks.[11] As *Bifidobacteria* produce acetate and lactate, they may also support the growth of *Lactobacilli*.[11] In contrast, high-dose probiotic supplementation decreased the level of fecal *Enterobacteria* (potentially pathogenic bacteria whose levels naturally increase with age).[11] Therefore, daily supplementation with HN019 can contribute to a healthy gut flora composition in older adults.[11]

The HMF Probiotic consortium was found to modulate the intestinal microflora composition in a double-blind, placebo-controlled trial.[9] Participants were divided into two groups, receiving either a probiotic or placebo supplement for 21 days.[9] Fecal samples were collected at baseline (day one) and on days 7 and 35 to determine the average bacterial composition.[9] Each probiotic capsule was taken once daily and contained $2.5x10^{10}$ CFU from a combination of two strains of *Lactobacillus acidophilus* (CUL-60 and CUL-21), *Bifidobacterium animalis* subsp. *lactis* (CUL-34), and *Bifidobacterium bifidum* (CUL-20).[9] HMF probiotic supplementation helped to support the growth of beneficial strains and maintain a healthy bacterial balance.[9]

Additionally, in one randomized, double-blind, placebo-controlled trial, HMF probiotics were found to modulate the microflora response to antibiotics.[8] Participants were randomly divided into three groups, with everyone receiving antibiotic therapy for seven days.[8] In addition, participants received placebo from days 1-15 (group one), placebo from days 1-7 and probiotics from days 8-15 (group two), or probiotics from days 1-15 (group three).[8] Each probiotic capsule was taken daily with food and contained $2.5x10^{10}$ CFU from a combination of two strains of *Lactobacillus acidophilus* (CUL-60 and CUL-21), *Bifidobacterium animalis* subsp. *lactis* (CUL34), and *Bifidobacterium bifidum* (CUL-20).[8] Participants provided fecal samples on days 1 (baseline), 7, 12, 17 and 27, which were analyzed for bacterial counts.[8] Antibiotic therapy significantly altered the gut flora of participants (as demonstrated by an increase in total facultative anaerobes).[8] In contrast, HMF probiotic supplementation helped to decrease the overgrowth of these populations.[8] The study authors concluded that probiotic supplementation may be especially beneficial in mediating the regrowth of bacteria when consumed in conjunction with antibiotic therapy, rather than simply postantibiotics.[8] Similarly, a second double-blind, placebo-controlled trial found that daily supplementation with an HMF probiotic containing $2.5x10^{10}$ CFU from a combination of two strains of *Lactobacillus acidophilus* (CUL-60 and CUL-21), *Bifidobacterium animalis* subsp. *lactis* (CUL34), and *Bifidobacterium bifidum* (CUL- 20) for 21 days helped to decrease the degree of microflora disruption as well as the incidence and number of antibiotic-resistant bacterial strains after the regrowth period.[9]

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