Scientific Evidence of Bellavie IMMUNO

The Bellavie IMMUNO Synbiotic is a broad-spectrum, high-CFU, multispecies probiotic supplement containing 8 probiotics microbial species, prebiotic, and supplement, each selected for well-documented supportive health benefits.

The formula has been developed with essential intestinal bacteria and yeast to support a more favorable balance of intestinal microbiota. The formula is completed with prebiotics which are working in synergy with probiotics and enhance their activity. Vitamin C and D3 are included in the IMMUNO caps as a supplement as these micronutrients play an important role supporting the immune system.

Background

Immunodeficiencies may occur in the body which prevent the immune system from operating at its maximum efficiency and this may lead to contamination by bacteria, viruses, parasites, and cancer cells which can cause many adverse symptoms for an individual.

In particular, immunodeficienceeis may lead to the development of gastrointestinal diseases such as inflammatory bowel disease, *Colostridium dificile*, irritable bowel syndrome, celiac disease and colon cancer. These gastrointestinal disorders can cause an individual to suffer with chronic pain and discomfort and can have some debilitating side effects.

Probiotics and the Gut

As up to 70% of a human's immune cells are located in the gut, having a diverse and healthy gut microflora is essential. Scientific evidence supports the fact that probiotics are a key tool in ensuring that the gut stays diverse and contains lots of beneficial microorganisms to prevent and alleviate the symptoms of associated diseases.

The gut microbiota interacts with both innate and adaptive immune system, playing a pivotal role in maintenance and disruption of gut immune quiescence.

A cross talk between the mucosal immune system and endogenous microflora favors mutual growth, survival, and inflammatory control of the intestinal ecosystem. Based on this evidence, probiotics can be used as an ecological therapy in the treatment of immune diseases.

Bellavie IMMUNO Capsule Composition

Each Bellavie capsule contains a symbiotic element (Probiotic and Prebiotic) along with a nutraceutical element to give the overall term 'synbioceutical'. Within the probiotic

element within the capsule, there are 8 specially selected microorganisms chosen based on scientific evidence outlining their many health benefits.

For the prebiotic element of the capsule, inulin from chicory is used based on its ability to stimulate growth and give a synergistic effect to the probiotics.

For the nutraceutical element of the capsule, vitamin D3 and vitamin C are used for their well-documented benefits to immune function.

Probiotics

Each probiotic contained within the Bellavie IMMUNO capsule is based on scientific research that demonstrates how each probiotic makes a positive impact on immune health. The following facts about each probiotic has been backed up by extensive research and clinical trials.

- **Bacillus Coagulans**

  -Probiotic *B. Coagulans* modulates immune related proteins in healthy children, decreasing several upper respiratory tract infections and gastrointestinal tract infections symptoms (1).

  -Probiotic *B. Coagulans* significantly decreases the symptoms of constipation indicating effectiveness of the strain in the treatment of constipation (2).

  -Probiotic *B. Coagulans* is efficacious in alleviating overall pathological symptoms of IBS and thereby improving inclusive quality of life evaluated (3).

  -Probiotic *B. Coagulans* demonstrates immunomodulating and anti-inflammatory effects and the ability to lessen the symptoms of arthritis in humans (4).

  -The patented *B. Coagulans* probiotic may be a safe and effective therapeutic option for enhancing T cell response to certain viral respiratory tract infections (5).

- **Lactobacilli**
  - *L. Acidophilis* and *L. Casei* are effective for reducing the risk of antibiotic associated diarrhea and *Clostridium difficile* associated diarrhea in hospitalized patients (6).

  - A 4-week treatment with *L. Plantarum* provided effective symptom relief, particularly of abdominal pain and bloating, in IBS patients. At week 4, **78.1%** of the patients scored the *L. Plantarum* symptomatic effects as excellent or good vs only **8.1 %** for placebo (7).

  - *Lactobacillus Reuteri* is effective as a therapeutic agent in acute rotavirus diarrhea in children (8).

  - Diarrhea lasts longer than 7 days in **10.7%** of patients who were given a placebo versus **2.7%** of patients who were treated with *Lactobacillus rhamnosus* GG to test its effect on acute diarrhea (9).

- *L. Casei* can modulate the systemic and airway immune responses post marathon (10).

- ***Bifidobacterium breve***
  -Probiotic intervention with *B. Breve* strains has shown a positive effect on decreasing the production of pro inflammatory cytokine TNF-A in children with celiac disease (11).

  - The prenatal and postnatal supplementation of *Bifidobacteria* is effective in preventing allergic diseases (12).

  - A *Bifidobacteria* mixture was able to significantly improve allergic rhinitis symptoms and quality of life in children with pollen induced allergic rhinitis and intermittent asthma (13).

- ***Saccharomyces boulardii***
  - The efficacy of *S. Boulardii* for the prevention of antibiotic associated diarrhea was 51% (14).

  - Patients treated with *S. Boulardii,* and standard antibiotics had a significantly lower relative risk of *Clostridium difficile* associated diarrhoea recurrence (15).

Prebiotic

Prebiotics are needed to provide nutrients to create an optimal environment and support the growth of the probiotics. Inulin was chosen as the prebiotic for this capsule as inulin increases the number of good bacteria in the gut, particularly *bifidobacterial* and *lactobacilli*.

The fibre in inulin is soluble, which means it dissolves in water and in the stomach and forms a gelatinous substance. Some of the functions of inulin include:

- Facilitates & slows digestion which enables the body to better absorb nutrients from the food.
- Helps modulate the immune system.
- Reduces cholesterol absorption as it passes through the digestive tract.
- Provides the body with nutrients and active elements.
- Facilitates the absorption of calcium and magnesium.
- Can be fermented into lactate and short chain fatty acids which impact the way energy is metabolised in the body and provides a protective effect against metabolic diseases and obesity.

Nutraceutical

Nutraceuticals are natural health supplements recognized for their effects on targeted functions. The Bellavie IMMUNO cap contains vitamin C and D3 as they are known for the beneficial roles that they play in the immune system.

- **Vitamin C**
  - Regular supplementation trials have shown that vitamin C reduces the duration of colds (16).
  - Vitamin C intake has been proven to reduce the duration of upper respiratory tract infections. Considering the frequency of upper respiratory tract infections and the inappropriate prescription of antibiotics along with the safe nature of vitamin C, its supplementation is justified, especially in children under 6 years of age and those who present a high risk of upper respiratory tract infections (17).
  - Data suggests that there are measurable health advantages associated with vitamin C supplementation in a population with adequate to low vitamin C status (18).
  - Treatment with intravenous high-dose vitamin C reduces allergy related symptoms (19).

- **Vitamin D3**
  - Daily intake of 1000-2000 IU/day of vitamin D3 could reduce the incidence of colorectal cancer (20).
  - Evidence indicates a strong and independent relationship of 25(OH)D deficiency with prevalent cardiovascular disease in a large sample representative of the US adult population (21).
  - Low levels of vitamin D are associated with higher risk of myocardial infarction in a graded manner (22).
  - Vitamin D3 supplementation during the winter may reduce the incidence of influenza A and asthma, especially in specific subgroups of children (23).
  - There appears to be a relationship between serum levels of 25(OH)D and symptoms of depression (24).

Benefits of probiotics

The microbiota facilitates digestion and aids in providing nutrition and in the shaping of our immune system.

The intestinal microbiota contributes to the defence against pathogens by producing bactericidal substances or by the mechanism of colonization resistance and fermentation of nondigestible carbohydrates, occurring mostly in the proximal colon. The main products produced by are short chain fatty acids (SCFAs), which include acetate, propionate, and butyrate. Butyrate is a major energy source for intestinal epithelial cells

The microbiota has anti-inflammatory and antioxidative potential.

Probiotics promote healthy cytokine production in the colon (cytokines are immunomodulating agents and are crucial for fighting off infections and other immune responses).

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