



Scientific Evidence for Bellavie CHILDREN

The Bellavie CHILDREN Synbiotic is a broad-spectrum, high-CFU, multispecies probiotic supplement containing 7 probiotic microbial species and 1 yeast, 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 and contribute to maintain the growth, the immune response and the neurological function in children and infants.

The formula is completed with prebiotics and nutraceuticals which work in synergy with probiotics and enhance their activity.

Probiotics and Children

Childhood is an essential period of growth and development for an individual. Along with healthy growth, children need to maintain a strong immune system in order to fight off infections and disease. Such diseases that are common in childhood include respiratory disease, gastrointestinal disorders, dental carries, urinary tract infections, atopic dermatitis, and allergies.

Probiotics can be beneficial in the prevention of some of these diseases. They are known to enhance the function of immune cells which work together to decrease the risk of immune mediated diseases from occurring. Such effects include:

- Decreasing the risk of occurrence and symptoms of common infectious diseases.
- Playing a relevant role in the management of functional gastrointestinal disorders.
- Producing beneficial effects in the prevention and treatment of diarrhea.
- *Lactobacillus rhamnosus* and *Saccharomyces boulardii* strains are effective in the treatment of acute viral infectious diarrhea and in prevention of antibiotic associated diarrhea.
- Playing a role as antagonistic an agent of *Mutans Streptococci* (MS), acidogenic/aciduric bacteria that contributes to the caries process.
- Reducing the frequency and severity of atopic eczema.
- Exerting anti-inflammatory and immune-modulatory activity.

Bellavie Children Cap Composition

Each Bellavie capsule contains a symbiotic element (Probiotic and Prebiotic) along with a nutraceutical element to give the overall term 'synbiocetical'. Within the probiotic element of 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 Zinc bisglycinate are used for their well-documented benefits to immune defense.

Probiotics

Each probiotic contained within the Bellavie CHILDREN 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**
 - *B. Coagulans* has been proven to be efficient in reducing the symptoms of irritable bowel syndrome in children (1).
 - Probiotic *B. Coagulans* modulates immune-related proteins in healthy children, decreasing several upper respiratory tract infections and gastrointestinal tract infection symptoms (2).
 - A cost-effective probiotic such as *Bacillus Coagulans* might be effective for prevention of caries in children (3).
- **Lactobacilli & Bifidobacteria**
 - A 3-month supplementation with this symbiotic preparation can decrease the risk of occurrence of common infectious diseases in children and limits the risk of school day loss (4).
 - Daily dietary probiotic supplementation for 6 months was a safe and effective way to reduce cold and influenza-like symptom incidence and duration in children (5).
 - The administration of *Lactobacillus Rhamnosus* compared with placebo has the potential to reduce the incidence of acute otitis media, upper respiratory infections, and antibiotic use in children (6).
 - The combination of oligosaccharide and *B. Lactis* resulted in significant reduction of dysentery, respiratory morbidity, and febrile illness (7).
 - The short-term daily consumption of *Lactobacillus Rhamnosus* and *Bifidobacterium Lactis* has been shown to improve the gingival health in adolescents and decreased the microbial counts of *A. Actinomycetemcomitans* and *P. Gingivalis* (8).
 - Short-term daily consumption of fruit yogurt containing *Bifidobacterium Animalis Lactis* may reduce the levels of *Mutans Streptococci* in saliva during orthodontic treatment with fixed appliances (9).
 - *L. Reuteri* appears to reduce caries-associated bacterial counts significantly (10).

- The mixture of *Bifidobacterium Lactis*, *Lactobacillus Rhamnosus* and *Lactobacillus Acidophilus* given to the children resulted in shorter durations of diarrhea and hospitalization and a higher percentage of improved children (11).
- Administration of *L. Rhamnosus* to children receiving antibiotics reduced the risk of any diarrhea (12).
- Administration of synbiotics (*Bifidobacterium Lactis* with inulin) resulted in significant improvements in the initial complaints related to irritable bowel syndrome (13).
- *L. Reuteri* was proven to decrease the pain intensity in children with functional abdominal pain (14).
- The specific combination of *Lactobacillus acidophilus* and *Bifidobacterium lactis* was shown to prevent the pollen induced infiltration of eosinophils into the nasal mucosa and indicated a trend for reduced nasal symptoms (15).
- The administration of a probiotic mixture containing *L. Acidophilus*, *B. Lactis* and fructo-oligosaccharide was associated with significant clinical improvement in children with atopic dermatitis, with corresponding lymphocyte subset changes in peripheral blood (16).
- A combination of *L. Rhamnosus* and *L. Reuteri* was beneficial in the management of atopic dermatitis (17).
- A study demonstrated that probiotics were more effective than a placebo at reducing the risk of recurrent UTI in children with a normal urinary tract after their first episode of febrile urinary tract infection (18).
- **Saccharomyces boulardii**
 - *Saccharomyces boulardii* is effective in reducing the risk of antibiotic-associated diarrhea in children (19).

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 protective effect against metabolic diseases and obesity.

The following evidence has been backed up by clinical studies:

- Treatment with 5 x 10¹⁰ cfu of *B. Lactis* plus 900 mg inulin shortened the duration of acute watery diarrhoea by an average of 31 hours. This decrease was most pronounced in cases of rotavirus diarrhoea (20).
- Prebiotic supplementation modified the composition of the intestinal microbiota and resulted in febrile episodes and sinusitis (21).

Nutraceutical

Nutraceuticals are natural health supplements recognized for their effects on targeted functions. The BellaVie CHILDREN cap contains vitamin D and Zinc Bisglycinate as they are known for the beneficial roles that they play in the immune system.

- **Zinc Bisglycinate**
 - Zinc administered within 24 hours of onset of symptoms reduces the duration and severity of the common cold in healthy people. When supplemented for at least 5 months, it reduces cold incidence, school absenteeism and prescription of antibiotics in children (22).
 - Zinc supplementation can reduce the time to resolution of acute diarrhea, the length of hospital stays and the frequency of stools. Zinc supplementation is recommended as a routine strategy for children with acute diarrhea (23).
- **Vitamin D**
 - There is a positive dose-response effect of vitamin D supplementation on site-specific bone mineral augmentation in adolescent girls (24).
 - Vitamin D3 supplementation during the winter may reduce the incidence of influenza A and asthma in schoolchildren (25).

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