DOCUMENTED PROBIOTICS FOR HEARTY KIDS & TEENS

LALLEMAND HEALTH SOLUTIONS

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Probiotics are well-positioned to develop a range of kids and teens specific food supplements. They combine the advantage of scientific evidence, safety, and benefit from an important public awareness about the key role of the gut microbiota in health maintenance.

Lallemand Health Solutions has selected a range of well-documented strains and combinations that can address many health concerns from young children to teenagers: natural defenses with gut health and immunity, stress and healthy teeth and gum. When combined with the right delivery format and flavor, these can help formulate targeted supplements for hearty kids and teens!

**CHILDHOOD IS A KEY PERIOD FOR ESTABLISHMENT OF BOTH THE IMMUNE SYSTEM AND GUT MICROBIOTA**

Soon after birth, a baby’s gastrointestinal tract is colonized by a specific microbiota through breastfeeding and the environment. This microbiota is organized in populations and evolves in the intestines with time. A recent large study [Odamaki et al., 2016] shows that a mature, “adult-like” microbiota is achieved after 3 years old, remains roughly consistent in healthy individuals (diseases, medicines, many stressors can change this balance throughout life) and changes again in elderly people (Figure 1).

**Evolution of the microbiota with age**

*Figure 1:* Adapted from Odamaki et al., 2016. Evolution of the digestive microbiota with age from a large study conducted in 364 healthy Japanese people. From 0 to 3 years old, Actinobacteria, which include Bifidobacteria are predominant and rapidly decrease, while Firmicutes, which include Lactobacilli, become predominant from 3 years old.
According to a large WHO survey, 10-30% of 15 years olds girls and boys rate their health as fair or poor [WHO Health policy for children and adolescents, 2014]. In this context, the supplementation of children’s diet with probiotics as a natural way to boost their natural defenses has become increasingly advocated. However, beyond those primary, most documented areas for probiotics namely gut health and immunity, other key issues in children and teenagers could also be linked to the microbiota balance and become potential target for innovative probiotic solutions, in particular occasional stress or oral health (Figure 2).

The number of probiotic formulas on offer for children is now booming and expected to grow as health conscious parents are always looking for natural, holistic solutions to support their children’s health and they are increasingly aware of the importance of digestive microbiota establishment and balance in children. How to select the best options? What to look for? Probiotic microorganisms are all different and most effects are species and strain specific: clinical and in vivo evidences of efficacy should be provided for the given strain.

Use of dietary supplements

Reported motivations for use of dietary supplements among US kids & teens
Participants can select more than one motivation

- To improve overall health: 41.1%
- To stay healthy: 37.2%
- To supplement the diet: 22.7%
- To prevent health problems: 20%
- To boost immunity: 13.9%

[Bailey et al., 2013]
In the first years of life children are prone to common infections (common cold, ear nose throat, gastro intestinal infections...) as their immune system is building up. This is a particular concern for parents in the first years of socialization (nursery, school), when repeated infections occur, impacting the whole family’s quality of life. The gut microbiota represents the first line of defense in the gut, forming a protective barrier along the intestinal lumen, but also through several biological mechanisms.

By enhancing the natural gut microbiota, probiotics can help keep pathogens at bay through several actions, such as competitive exclusion. For example, *Lactobacillus helveticus* Rosell®-52 binds to the attachment sites of pathogenic bacteria such as enteropathogenic *Escherichia Coli* on intestinal epithelial cells, avoiding pathogen installation and translocation. Probiotics have also been shown to improve the intestinal barrier function and enhance epithelium permeability and integrity, or enhance mucus production. Not only these, which represent the first lines of defense of the gut, but also the immune response itself, both innate and acquired (or memory) can be influenced by probiotics, even at the gene expression level [Mac Pherson *et al.*, 2017].

Clinical studies on immunity in children

These scientific data are validated by clinical studies in children. Cazzola *et al.* published a study involving 135 healthy, school-age children who had suffered from at least 3 episodes of common infections during the previous winter. A 3-month supplementation with PROBIOBABY®, a children specific synbiotic formula (*Bifidobacterium bifidum* Rosell®-71, *Bifidobacterium infantis* Rosell®-33, *Lactobacillus helveticus* Rosell®-52 and FOS), was able to decrease the risk of occurrence of common infections in these children by 25% vs placebo, and to limit school absenteeism (Figure 4). Other studies confirm the synbiotic’s effects on children’s immunity, in particular through positive effect on immunosurveillance, like increased IgA expression in children with low IgA level [Pantovic *et al.*, 2012] [Chen *et al.*, 2007]. Another study [Stojkovic *et al.* 2016] suggests that this positive effect could be due to improvement of immune maturity.
Figure 4: Effects of PROBIOBABY® on the percentage of children who developed infection and the number of children who missed at least one day of school due to adverse health event \((p<0.05)\) [Cazzola et al., 2010]

Moreover, based on several safety and tolerance studies and a track-record of safety, the synbiotic formula has been recognized for its safety in children by the North American authorities. In the US, a panel of independent experts in the field of probiotics confirmed the GRAS (Generally Recognized As Safe) status of the probiotics for infants and children while Health Canada approved the formula for children from 3 months old.

**Stress impact on immunity of teenagers and young adults**

As far as they are concerned, teenagers and young adults’ life-style and occasional stress can also be linked to sub-optimal immunity. Researchers sometimes use academically stressed students as a model of acute psychological stress which is associated with increased incidence of cold and flu. A large probiotic study conducted in 581 stressed students at University of Florida during final exams for the autumn semester [Langkamp-Henken et al., 2015] showed that the students who received *B. bifidum Rosell®-71* had a higher proportion of healthy days around the risk period as compared to a placebo group. Researchers saw a reduction in the percentage of participants who became ill and fewer episodes of cold/flu when compared with the placebo. In another study conducted in 300 healthy students suffering from frequent colds, a ten-week supplementation with *Lactobacillus helveticus* LAFTI® L10 reduced the systemic symptoms frequency (headache, muscle ache, fatigue and temperature), the occurrence of symptoms of high severity, as well as the use of medication vs a placebo [Eccles et al., 2008]. Such results suggest that teenagers could also benefit from probiotics effects!
Lallemand Health Solutions provides a wide selection of targeted probiotic formulas and strains with specifically designed delivery forms for Hearty Kids & Teens Available with carefully selected yummy flavors

REFERENCES