



# Biome Daily Kids™ Probiotic

## Mechanism of Action



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#### **Probiotics help to maintain the integrity of the gut barrier**

In the small intestine, the intestinal epithelial cells (IECs) are a single layer of cells lining the lumen, which are responsible for digestion, water and nutrient absorption, and form a barrier against luminal pathogens. IECs secrete mucins and antimicrobial peptides as a barrier against pathogen invasion. Probiotics strengthen the intestinal barrier by increasing the number of goblet cells (which secrete mucus), reinforcing the mucus layer and barrier function.

#### **Probiotics modulate the function of the immune system**

Many of the cells involved in regulating the body's immune response are found in the gut, and these (most notably dendritic cells and epithelial cells) are often the first cells to come into contact with intestinal microbes and their metabolic products. Probiotic bacterial fragments can be internalised into the IECs, which results in the activation of immune cells associated with the gut, modulating mucosal and systemic immunity. There is evidence to suggest that probiotics can induce an increase in T regulatory (Treg) cells, a type of lymphocyte which helps to regulate immune response. Probiotics and their metabolites can also influence the activity of other lymphocytes - B lymphocytes and natural killer cells - to normalise their activity and optimise immune response. Further, short-chain fatty acids (SCFAs) produced by probiotics acting on fibres in the colon induce immunomodulatory effects.

A recent (2015) Cochrane review systematic review including over 3000 participants (children and adults) concluded that probiotics were better than placebo in reducing the number of episodes of common colds, the mean duration of a common cold episode, antibiotic use, and cold-related school absence (Hao, Dong & Wu, 2015).

**In short, probiotics and their metabolic products help to maintain the integrity of the intestinal mucosal epithelium and help to regulate the activity of immune cells. This supports optimal functioning of the immune system, reducing the frequency and duration of common colds.**

### REFERENCES

Hao Q, Dong BR, Wu T. Probiotics for preventing acute upper respiratory tract infections. Cochrane Database Syst Rev. 2015 Feb 3;(2):CD006895.