

Allergies are on the rise. Are probiotics one of the answers?

Allergy is on the rise in industrialized nations. It is estimated that the incidence of asthma in the United States doubled between 1980 and 2000. Scientists have proposed a hypothesis known as the 'hygiene hypothesis' to explain the rise in allergic conditions such as asthma and eczema. This hypothesis is based on observations that lower allergy incidence is associated with environments that have greater numbers of microbes, such as day care centers, farms, or in homes with siblings or pets. Sanitary living environments and the consumption of processed foods have limited the number of microbes in the diet. The hypothesis suggests that the exposure of infants to microbes before the age of six months helps the immune system mature to be more tolerant of exposure to allergens later in life ("Day Care May Boost Immunity To Asthma," August 2000, Washington Post.) Certainly, microbial colonization of the gut in early life is important to the development of a properly functioning immune system ([read more](#)).

Of course, increasing exposure to microbes must be done safely. This hypothesis led researchers in Finland to conduct a study evaluating the effects of a *Lactobacillus* strain on incidence of atopic eczema in 132 infants at high risk of developing eczema^{ref}. The study was double-blinded and placebo-controlled. Pregnant mothers two-to-four weeks before delivery and newborn babies through six months of age were given *Lactobacillus rhamnosus* GG. Infants were followed through two years of age and incidence of recurring atopic eczema was recorded. The study reported a 50% drop in incidence of recurring atopic eczema in the group receiving the probiotic supplement. A follow up study of these same children indicated that these same trends were still present at 4 years of age^{ref}. However, no impact on other allergic conditions was observed through seven years of age^{ref}. These results suggest that exposure to the right types of microbes early in life may decrease the risk of atopic dermatitis. However, a German research group using a very similar protocol and the same probiotic microbe as the Finnish group recently reported that no impact on incidence of atopic eczema was observed with supplementation with *L. rhamnosus* GG^{ref}. In addition, the German study noted a statistically significant increase in wheezing in the probiotic group. This study calls into question the validity of the initial observation. An ongoing NIH-funded study in this same area will hopefully clarify a role of prevention of allergy in newborns by *L. rhamnosus* GG^{ref}. The effects of probiotics on allergy have been [reviewed](#).

Probiotics and allergy.

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Abstract

Allergy is caused by an immune reaction that is out of all proportion to the antigenic stimuli. Classical allergy is a type I hypersensitivity reaction mediated by the interaction of mast cells (and eosinophils) coated with allergen-specific IgE and a cross-linking allergen. The physiological outcome is inflammation commonly displayed by urticaria, rhinitis, vomiting and diarrhoea, depending on the route of allergen entry. In extreme reactions anaphylactic shock can result that may lead to death. Chronic allergic responses most commonly present themselves as asthma and eczema. All these symptoms are the consequence of an imbalanced immune system making an unsuitable response to an environmental or food antigen. On bacterial colonisation of the colon after birth the appropriate microbiological stimuli is essential to redress the balance of the skewed T-helper 2 immune response present in the newborn. This normal interaction between baby and microbes is thought to be compromised in the Western world, with a reduction in bifidobacteria and an increase in clostridial species, particularly in bottle-fed infants. The use of probiotic therapy to prevent allergic disease has been demonstrated in two studies using a probiotic *Lactobacillus rhamnosus* GG in neonates. A long-term reduction in allergy has been shown in the test group, with lactobacillus reducing the incidence of atopic eczema. Management of allergy through probiotics has also been demonstrated in infants, using lactobacilli to control atopic eczema and cow's milk allergy. Unfortunately, these positive results have not been repeated in studies with older children and young adults.