The faecal flora of the newborn infant begins to be established soon after birth. The speed at which the development occurs, and the type of predominant bacteria, depend mainly on the size of the baby at birth, the method of delivery (vaginal vs. Caesarean section (CS)), and the type of feeding (breastmilk vs. formula). The faecal flora of babies delivered by CS is quite different than that of vaginally-delivered babies. Increasingly, epidemiologic and clinical data support the hypothesis that perturbations in the gastrointestinal microbiota have disrupted the normal microbiota-mediated mechanisms of immunological tolerance in the mucosa, leading to an increase in the incidence of allergies, in particular allergic airway disease. The data supporting this ‘microflora hypothesis’ includes correlations between allergic airway disease and (1) antibiotic use early in life, (2) altered faecal microbiota, (3) dietary changes over the past two decades and (4) birth by CS. According to the currently adopted definition by FAO/WHO, probiotics are “live microorganisms which, when administered in adequate amounts, confer a health benefit on the host”.

Lactic acid bacteria and bifidobacteria are the most common types of microbes used as probiotics. Others include the yeast Saccharomyces boulardii. Studies have shown the benefits of many probiotics in different situations. However, the action of them is species-specific. It is not possible to extrapolate results from studies done with one particular strain of probiotics to prevent or treat one condition, to other bacterial or yeast strains or other conditions. Probiotics help normalize intestinal permeability in infants, inhibit adhesion of pathogens to intestinal cells, and can modulate the immune system. Administration of Lactobacillus has shown to decrease necrotizing enterocolitis. Lactobacillus reuteri has shown to improve infant colic in breastfed babies and improve frequency of stools in constipated ones. Probiotics prevent IgE-associated allergy until the age of 5 in Caesarean-delivered children and help mature intestinal permeability. Although there were many years from the time of discovery until their clinical use, probiotics are being investigated and used more and more frequently for the prevention and treatment of multiple ailments.