

## Are probiotics effective?

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Recent research has provided sound clinical evidence of the effectiveness of some defined strains of probiotic bacteria in helping to control several human disease conditions. Summaries of the present evidence have been presented in recent reviews (1–4). There are four strains with substantial published clinical data: *Lactobacillus rhamnosus* GG (Valio), *Saccharomyces cerevisiae* Boulardii (Biocodex), *Lactobacillus paracasei* Shirota (Yakult), and *Bifidobacterium lactis* BB12 (Chr Hansen Labs). There are only 10 other strains with any peer-reviewed recently-published clinical data. These include: *Lactobacillus reuterii* (Biogaia), *Lactobacillus johnsonii* La1 (Nestle), and *Enterococcus faecium* SF68 (Cernelle).

There is now strong evidence that specific probiotic strains can alleviate antibiotic-associated diarrhoea, *Clostridium difficile* diarrhoea, rotavirus diarrhoea in children, other bacterial infections causing diarrhoea, and constipation. Exciting new findings are occurring in the use of probiotic bacteria (L-GG and BB12) to delay the development of food allergies and atopic eczema in young children (5). This could prevent the development of asthma in later life. Lactose intolerance is lessened by yoghurts and other fermented dairy products, and this effect is assisted by use of probiotic strains containing active  $\beta$ -galactosidase. There is proof that some strains may lower cholesterol levels, but this effect does not seem to be sustained. Many strains will promote immune responses, but the direct effect of such modulation on health is not clear in most cases. Evidence that probiotics may reduce the incidence and duration of travellers' diarrhoea is variable, and seems to depend on age group and cause of diarrhoea. Animal models provide evidence that development of bowel cancers may be prevented by probiotics, but the evidence is inconsistent and it is not yet possible to relate probiotic intake to prevention of the development of bowel cancer in humans (6). Bio-markers such as faecal enzyme,  $\beta$ -glucuronidase, show consistent reductions when humans consume many probiotic strains.

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