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Health benefits of probiotics: are mixtures more effective than single strains?

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Abstract

Purpose: Most studies on probiotics utilise single strains, sometimes incorporated into yoghurts. There are fewer studies on efficacy of mixtures of probiotic strains. This review examines the evidence that (a) probiotic mixtures are beneficial for a range of health-related outcomes and (b) mixtures are more or less effective than their component strains administered separately.

Results: Mixtures of probiotics had beneficial effects on the end points including irritable bowel syndrome and gut function, diarrhoea, atopic disease, immune function and respiratory tract infections, gut microbiota modulation, inflammatory bowel disease and treatment of *Helicobacter pylori* infection. However, only 16 studies compared the effect of a mixture with that of its component strains separately, although in 12 cases (75%), the mixture was more effective.

Conclusion: Probiotic mixtures appear to be effective against a wide range of end points. Based on a limited number of studies, multi-strain probiotics appear to show greater efficacy than single strains, including strains that are components of the mixtures themselves. However, whether this is due to synergistic interactions between strains or a consequence of the higher probiotic dose used in some studies is at present unclear.