

Survival and therapeutic potential of probiotic organisms with reference to *Lactobacillus acidophilus* and *Bifidobacterium* spp.

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Abstract

The present paper provides an overview on the use of probiotic organisms as live supplements, with particular emphasis on *Lactobacillus acidophilus* and *Bifidobacterium* spp. The therapeutic potential of these bacteria in fermented dairy products is dependent on their survival during manufacture and storage. Probiotic bacteria are increasingly used in food and pharmaceutical applications to balance disturbed intestinal microflora and related dysfunction of the human gastrointestinal tract. *Lactobacillus acidophilus* and *Bifidobacterium* spp. have been reported to be beneficial probiotic organisms that provide excellent therapeutic benefits. The biological activity of probiotic bacteria is due in part to their ability to attach to enterocytes. This inhibits the binding of enteric pathogens by a process of competitive exclusion. Attachment of probiotic bacteria to cell surface receptors of enterocytes also initiates signalling events that result in the synthesis of cytokines. Probiotic bacteria also exert an influence on commensal micro-organisms by the production of lactic acid and bacteriocins. These substances inhibit growth of pathogens and also alter the ecological balance of enteric commensals. Production of butyric acid by some probiotic bacteria affects the turnover of enterocytes and neutralizes the activity of dietary carcinogens, such as nitrosamines, that are generated by the metabolic activity of commensal bacteria in subjects consuming a high-protein diet. Therefore, inclusion of probiotic bacteria in fermented dairy products enhances their value as better therapeutic functional foods. However, insufficient viability and survival of these bacteria remain a problem in commercial food products. By selecting better functional probiotic strains and adopting improved methods to enhance survival, including the use of appropriate prebiotics and the optimal combination of probiotics and prebiotics (synbiotics), an increased delivery of viable bacteria in fermented products to the consumers can be achieved.