

Probiotics: Significance in Human Health

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Abstract: *Probiotics have gained significant attention due to their diverse health benefits and applications in functional foods and therapeutics. The concept of probiotics dates back to the early work of Metchnikoff, later refined through scientific advancements and formalized by the FAO/WHO definition as live microorganisms that confer health benefits when administered in adequate amounts. This chapter discusses the historical background, classification, sources, selection criteria, mechanisms of action, health benefits, and safety aspects of probiotics. Probiotic microorganisms, particularly lactic acid bacteria and Bifidobacteria, play a key role in maintaining gut microbiota balance, enhancing the intestinal epithelial barrier, producing antimicrobial substances, and modulating the immune system. Advances in molecular techniques have improved the identification and characterization of probiotic strains, ensuring their effectiveness and safety, although concerns such as strain specificity and antibiotic resistance remain important considerations. The chapter also highlights recent developments and future perspectives, including next-generation probiotics and personalized therapeutic approaches, emphasizing their potential in improving human health.*

Keywords: DNA–DNA hybridization, pulsed-field gel electrophoresis, synbiotics and postbiotics

