

Probiotic or antibiotic: future challenges in medicine

ABSTRACT

Genetic and environmental factors can affect the intestinal microbiome and microbial metabolome. Among these environmental factors, the consumption of antibiotics can significantly change the intestinal microbiome of individuals and consequently affect the corresponding metagenome. The term 'probiotics' is related to preventive medicine rather than therapeutic procedures and is, thus, considered the opposite of antibiotics. This review discusses the challenges between these opposing treatments in terms of the following points: (i) antibiotic resistance, the relationship between antibiotic consumption and microbiome diversity reduction, antibiotic effect on the metagenome, and disease associated with antibiotics; and (ii) probiotics as living drugs, probiotic effect on epigenetic alterations, and gut microbiome relevance to hygiene indulgence. The intestinal microbiome is more specific for individuals and may be affected by environmental alterations and the occurrence of diseases.