

Probiotics and Gastrointestinal Infections

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Gastrointestinal infections are a major cause of morbidity and mortality worldwide, particularly in developing countries. The use of probiotics to prevent and treat a variety of diarrheal diseases has gained favor in recent years. Examples where probiotics have positively impacted gastroenteritis will be highlighted. However, the overall efficacy of these treatments and the mechanisms by which probiotics ameliorate gastrointestinal infections are mostly unknown. We will discuss possible mechanisms by which probiotics could have a beneficial impact by enhancing the prevention or treatment of diarrheal diseases. Probiotics may stimulate immunity, regulate immune signaling pathways, produce antipathogenic factors, or induce the host to produce antipathogenic factors. Probiotics may produce secreted factors that stimulate or suppress cytokines and cell-mediated immunity. Probiotics may produce factors that inhibit pathogens and other commensal bacteria, effectively enabling these microbes to compete effectively for nutrients in complex communities.

CONCLUDING REMARKS

Probiotics may provide an important strategy for the prevention and treatment of gastrointestinal infections. Specific bacteria derived from human microbial communities may have key features that establish these microbes as primary candidates for probiotic therapies. These beneficial microbes 8 Interdisciplinary Perspectives on Infectious Diseases may have different effects within the host such as prevention of pathogen proliferation and function. Probiotics may also stimulate the host's immune function and mucosal barrier integrity. By working via different mechanisms of probiosis, probiotics may yield effects at different steps in the process. Probiotics may prevent disease from occurring when administered prophylactically. Probiotics may also suppress or diminish severity or duration of disease in the context of treatment. As our knowledge of the human microbiome advances, rational selection of probiotics based on known mechanisms of action and mechanisms of disease will facilitate optimization of strategies in therapeutic microbiology. Ultimately, we expect that probiotics will help to promote stable, diverse, and beneficial microbial communities that enhance human health and prevent disease.

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