

Gut Microbiota Roles in Human Health and Diseases

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Structured Abstract

Background: Gut microbiota that reside in the gastrointestinal tract of humans are one of the microbial communities that contribute to overall human health. Different bacteria species of gut microbiota are classified by genus, family, order, and phyla.

Literature review: The human gut microbiota is essential for maintaining health by regulating immune function and metabolizing nutrients. It is made up of different microbial communities that are influenced by physiological factors such as pH, transit time and host secretions. Dysbiosis or an imbalance in the gut microbiota has been linked to metabolic, cardiovascular, hepatic, gastrointestinal and neurological illnesses. Firmicutes and Bacteroidetes are prominent phyla in the gut environment. Recent studies have highlighted the gut microbiota's involvement in systemic axes such as the gut-immune, gut-brain, gut-liver and gut-heart axes emphasizing its complicated bidirectional communication with other organs and its importance in disease development.

Objective: This review will explore the roles of gut microbiota in human gastrointestinal health and disease. For starters, understanding how the gut microbiota contributes to the health of the gastrointestinal tract by influencing immune system and barrier protection. Second, it investigates how the composition and diversity of gut microbiota different between young and old people, taking into account age-related physiological changes. Next, how external factors such as diet, medications and exercise involvement in our daily life influence the gut microbiota diversity. Delves into the way dysbiosis influences the development of chronic gastrointestinal disorders such as IBS, IBD and CRC. Lastly, this review intends to emphasize emerging therapeutic techniques such as probiotics, postbiotics and FMT, which are being developed to restore healthy gut microbiota and prevent microbiota related disorders. These objectives combine together to shed light on the role of the gut microbiota in health and clinical therapies.

Conclusion: In conclusion, this review can enhance the knowledge about gut microbiota and its role in human health. Preventative interventions can be developed to preserve the gut microbiota balance in the gastrointestinal tract.

Keywords: Gut microbiota, gastrointestinal tract diseases, physiological factor, gut microbiota composition, gut microbiota axes

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