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Perspective

The Importance of Microbiome Transplantation in Chronic Obstructive Pulmonary Disease

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DESCRIPTION

All living microbes that use the human body as their habitat, including their genomes and the metabolites they create are collectively referred to as the human microbiome. It is primarily lodged on mucosal surfaces, which in the respiratory system include the oropharynx, bronchial tree, and lungs. Its components may act as commensals, mutualists, or pathogens depending on their capacity to modulate inflammatory and immune responses. The majority of studies have concentrated on the bacterial component of the microbiome. In this study, we will concentrate on the bacterial community that conform the respiratory microbiome and its relationships to Chronic Obstructive Pulmonary Disease (COPD) disease patterns, as well as the potential for modifying the bacterial flora to achieve beneficial secondary effects on the respiratory system.

Over the past few decades, there has been a lot of research on the human microbiome, particularly because it represents a promising field for brand-new medicinal therapies. Numerous physiological and metabolic functions of the human host are benefited by the microbiota that has colonized the various body surfaces, and mounting evidence points to a link between pathological illnesses and changes in the microbiota's composition and functionality. This has given justification for advantageous microbiome manipulation. Microbiome transplantation, which involves transplanting microbiota or microbiota components from healthy donors, is one strategy being investigated for altering the microbiota in ill people.

Because of its significant success in treating clostridioides difficile infections, faecal microbiome transplantation has been used to treat other diseases as well, including vaginal disorders *via* the transplantation of vaginal microbiota and skin pathologies *via* the transplantation of skin microbiota. Even Nevertheless, microbiome modification may develop into a cutting-edge method for enhancing the effectiveness of cancer treatments. This study covers the fundamentals, benefits, and drawbacks of microbiome transplantation as well as several therapeutic settings where it has been used. A change in the host microbiota's community structure that is linked to disease is known as dysbiosis. It may result in an increase in potentially dangerous bacteria while losing helpful commensals.

Microbiome research have focused on human pathological illnesses that were previously thought to have an aetiology that was unknown, such as obesity, diabetes, parkinson's disease, or arthritis. Finding potential connections between bacterial makeup, abundance, and activity, either as protective or causative agents, and the onset or course of disease has been one of the main goals of these investigations. The definition of a healthy microbiome, however, remains unclear, and it is more difficult to distinguish between commensals, pathobionts, and opportunistic pathogens than previously believed. These microbiota-related substances in excess can harm the host directly or indirectly by influencing subsequent processes. For instance, trimethylamine, a substance made from dietary quaternary amines by the microbiota, has been linked to an elevated risk for cardiovascular illnesses.

CONCLUSION

In many clinical diseases, the advantages of microbiome transplantation are now beyond dispute. However, there are risks involved with giving patients live germs from healthy donors. In order to reduce the danger of transferring microorganisms with a potential for disease, particularly those carrying antibiotic resistance, regulatory criteria on pathogen screening must be put into place. To estimate the effectiveness of microbiome transplantation in various clinical investigations, standardization of methods, techniques, and processes for microbiome collection, preparation, and storage across the various institutions would be essential.

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