

Microbiota in Maintaining Normal Human Health



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Abstract

Normal commensals of organisms present in human body is known as microbiota. Various organisms are present in a symbiotic environment such as bacterias, viruses, archea and eukaryotes, helps in maintaining normal health of human being. This article brief about the role of symbiotic microorganisms in maintaining normal health of human being.

Keywords: Microbiome; Probiotics; Prebiotics; Fecal transplantation; Dysbiosis

Introduction

Symbiotic microorganisms resides in normal homeostasis of human body is known as microbiota. Genomes of microbes in a particular ecosystem is called as microbiome. 100 trillion microbes are present in and on human body and 3.3 million non-redundant genes in the gut alone of a human microbiome, when compare to 22,000 genes in the entire human genome [1].

Diversity of microbes vary among individuals. 80-90 % human microbiota is different from each other in gut or on body surface, when compare to human genomes 99.9% are identical. Human microbiota mainly consists of bacterias, archaea, viruses and eukaryotes. Many of the microbes in the host are acquired from environment. Colonization of microorganisms starts at the time of vaginal delivery compared to caesarean delivery results in various health complications later such as impaired immune activity. Type of diet consumption influence on the composition and diversity of human gut microbiota [2-5].

Probiotics are live organisms such as lactobacillus species, bifidobacterium species, E Coli and streptococcus salivarius species confer health benefits to the host on adequate administration (30×10^9 CFU/gram). Which, alters the composition and functions of gut human microbiota by direct or secreting by product, used for treatment of various disorders. Probiotics containing products are milk, curd, milk products, probiotic containing tablets and powder. Prebiotics are non-digestible food ingredients such as human milk oligosaccharides, resistant starch, various soluble and insoluble dietary fibers, and xyloglucan, which enhance the activity of beneficial organisms

composition, diversity and functions of especially human gut microbiota. Probiotics and prebiotics are used for the treatment of gastrointestinal disorders are irritable bowel syndrome, Antibiotic associated diarrhea, Crohn's disease, ulcerative colitis and also in allergic disorders, obesity, prevention of cancer, urinary tract infection, cardiovascular disorders, cholesterol reduction, psychological disorders. Because, of their anti-inflammatory, immunostimulatory, antibacterial, maintaining intestinal mucosal integrity, antioxidant and antigenotoxic activity [4-10].

Fecal transplantation is used for treatment of various gastro intestinal disorders such as antibiotic associated diarrhea, irritable bowel syndrome, ulcerative colitis, and crohn's disease by altering microbiota of gut, administered viable bacteria through rectally via catheter colonoscopy, or oro-nasally through duodenoscopy or naso-duodenal tube. Different types of fecal transplantation used are single donar from a close relative or friend without underlying disease and pathogens, multiple donors from stool banks, autologous fecal transplantation from same individual collected at disease free time, anaerobically cultivated feces from healthy donor [10,11].

Hence, maintaining the homeostasis of symbiotic microbiota of human body is very important in maintaining normal health of human being is yet to be known. Microbial imbalance or altered adaption of microorganisms in our body, such as impaired microbiota is known as dysbiosis.

Antibiotics not only destroys harmful bacteria's but also normal beneficial commensals of organisms in our body leads to many health disorders. Inadvertent use of antibiotics leads to many local or systemic adverse effects such as oral candidiasis(Acute atrophic candidiasis), adverse drug reactions, antibiotic associated diarrhea, and mainly antibiotic resistance. Which is a major cause of death worldwide because of organisms are resistant to antibiotics [11-13].

Conclusion

Antibiotic resistance is a major cause of concern, at present post antibiotic era and to find an alternative to antibiotics is in near future. Our future prospects to maintain human health largely depends on our microbiota of our body. Thorough understanding of composition, microbial diversity, their environment, factors affecting microbiota, function, interaction with other symbiotic organisms plays a very important role in health and diseases for future preventive and therapeutic strategy.

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