conferenceseries.com

5th Global Summit on BRAIN DISORDERS AND THERAPEUTICS

February 08-09, 2024 | Madrid, Spain

Signals from gut microbiome to brain

Amar P. Garg
Swami Vivekanand Subharti University, India

Human microbiota is full of microbial communities having trillions of microbes, more than 10 times of the human cells, that includes 1000 (approx) bacterial species with dominance of Firmicutes, Proteobacteria, Bacteroidetes, Euryarchaeota, Actinobacteria, Verrucomicrobia, viruses and fungi. The gut starts colonization by microbes through fetus from mother's microbiome on 6th day of the birth of the child and gets internal stability and optimization by 450-500 days of growth. Human genome is estimated to consist of 61000 to 140000 genes while gut microbial genome may contain 1000,000+ genes and influence various functions of human body including the signals to brain. Gut microbiome secrete vitamin K, B12, neurotransmitter metabolite like dopamine, short chain fatty acids like butyric acid, proteases, carbohydrate-active enzymes that include inhibitors of maltases and sucrases, is responsible for 70% the total immunity, stimulate certain tissues of intestine, lympatic tissues, capillary density, production of cross reactive antibodies that prevent infection and invasion by pathogens. The colonization of gut is managed by a combination of various factors like host genetics, local environmental conditions including diet, stress, life style, food, good fatty acids, and interaction with other microbes and antimicrobial agents. For healthy, gut microbiota, avoid use of processed food and gluten containing grains to keep healthy gut microbiome.Social and environmental contacts also influence gut microbiome. The biomolecules secreted by gut microbes send the signals to brain and there are reports that the person suffering from depression may improve using healthy gut microbes like Bifidobacterium, Faecalibacterium and Coprococcus. The gut brain axis consist of bidirectional communication in three major inter-organ signaling; immune, neural and endocrine linking emotional and cognitive centers of the brain with peripheral intestinal functions. Visceral organs and central nervous system continuously communicate with body's physiological conditions to adapt as required. Trillions of microbes in and on our body regulate gut-brain axis that are connected physiologically and biochemically and may influence the health of each other. Gut is known to contain 500 million neurons that are connected to brain through vagus nerve which sends signals in both directions. Vedic science says that the type of food determines the mood, thinking and behaviour of human ("Jaisa Anna Vaisa Man"). Mechanism behind the impact of gut microbiota in neuro-development and pathogenesis need to be further investigated.

Biography

Amar Garg has his expertise in Microbiology and currently working on lactic acid bacteria (LAB), microbiology of human and animal colostrum, gut microbiome including human faeces. Mass production of LAB including assessment of probiotic and prebiotic potential of LAB with their commercial exploitation. Antimicrobial activity of herbals, antibiotic resistance and bioremediation of polythene and heavy metals from the soil environment is also an area of interest of mine.