

Gut Microbiota - Preventive and Therapeutic Approach in Management of diseases

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Gut microorganisms govern human health, gut microbiota is a diversified microbial colony consisting of symbiotic bacteria, viruses, fungi and protozoa. There are around 2 - 3 billion germs present in only in gut, which are involved in anti-inflammatory activity and immunity [1-5,10-13]. Pathogen associated molecular patterns (PAMPs) such as LPS (Lipopolysaccharide) of bacteria and surface glycoprotein of viruses recognized by pattern recognition receptor, which belongs to toll like receptors (TLRs) activate NF- κ B a key transcription factor, which inter activate immune mediators such as cytokines in (IL-2, TNF- α , TGF- β , IL-12, interferon γ , IL-17) from inflammatory cells such as macrophages, neutrophils, mast cells, natural killer cells, dendritic cells involving innate and adaptive immunity [1,6-9,14,15].

Gut microorganisms produce short chain fatty acid involved in anti-inflammatory activity. Lactic acid produced by gut bacteria and low dose of ROS and RNS free radicals produced by NF- κ B a key transcription factor involved in anti-microbial activity NF- κ B a key transcription factor controls more than 500 genes ubiquitously present in each cell. In this post anti-microbial resistance era we need to look for better suitable alternative for antibiotics. Gut microorganisms are suitable, viable alternative of choice for anti-microbial resistance, through understanding of gut microbiota, isolation of different species type, functions and mechanisms of action helpful for future preventing and therapeutic management of various diseases.

Because most of all diseases start from gut. Dysbiosis is an altered gut microbiota by various factors such as drugs smoking, obesity, psychological stress and nutritional deficiency leads to dysregulation of NF- κ B a key transcription factor leads to overactive immune mediators involved in cancer, autoimmune diseases, chronic inflammatory diseases and diabetes [16-20]. Future research should focus on selection of gut bacteria, which is genetically modified for the use in preventive and therapeutic application in management of various diseases such as infectious diseases, cancer, and diabetes, autoimmune diseases without adverse affects, safe, effective and inexpensive.

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