Role of Human Milk Oligosaccharides (HMO's) in epigenetic modulation of bacterial sepsis on infants and toddlers' health

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Human milk oligosaccharides (HMO's) are the third most abundant solid component of breast milk, after lactose and lipids. HMO's play an important role in Infant and toddlers' growth and development, cellular gene expression, immunogenetics. Health benefits of HMO's include modulation of gut commensal bacteria, anti-inflammatory effect in our systemic circulation, and preventing entry of toxic bacteria by strengthening the gut mucosal barrier. HMO's Play a crucial role in epigenetic modification influences the expression of our genes. HMO's silence the bad genes, helping good genes to express more. HMO's optimize proper functions of Gut-Brain Axis, reduce neuroinflammation, and potentiates cortical neuronal activities, Maintain good cognitive skill and memory functions. This review article also discusses the role of HMOs on our immune system that is immune-modulation effects, focuses on concept of Berker's hypothesis (the fetal origin of adult disease). Immune modulation role of HMO's has an impact on the colonization of neonatal intestinal bacteria, fungi and other micro biomes. HMO's Potentiate growth of healthy gut commensals. Healthy gut commensal bacteria have many health beneficial effects. One of these effects is regulation of gene expression epigenetic modification etc. Human milk oligosaccharides (HMO's) are a family of highly diverse structures of unconjugated glycans, present in high concentrations (5-25g/G) in breast milk. 2FL is the most abundant HMO in the milk of secretor women; it is not present in the milk of non-secretor women. Infants, only (1-2) % of HMO's are absorbed, the majority of ingested HMO's reach the large gut, where they provide substrates for gut healthy bacteria, modulate the immune system, preventing the epithelial adhesion of intestinal pathogens. Gut micro biota has a major impact on human health and physiology including the establishment of mucosal barrier and maintenance of gut homeostasis.

Biography

Aftab Yusuf Raj graduated from Sher-E-Bangla Medical College. He then trained in the field of Paediatrics and Neonatology and served in different Medical Colleges & Hospitals across the country and held some vital positions including Associate Professor of Paediatrics and Neonatology for several years. He received training in his respective field from all India Institutions of Medical Sciences and Calgary Medical University (Neonatology) and Alberta Children Hospital, Canada. He also worked as a Consultant at United Hospital, Bangladesh, Dhaka.