

Human milk microbiota and early gut colonisation

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Current evidence highlights the key role of early microbial colonization in promoting and maintaining a balanced immune system, adequate intestinal physiology and intestinal homeostasis. Disruptions to the colonization process, can be caused by factors such as C-section delivery, antibiotics, prematurity, etc., have been associated with a higher risk of non-communicable diseases (NCDs) later in life, such as obesity and allergic disease. Human microbial colonization is a complex process that has been traditionally assumed to start at birth when the neonate is exposed to maternal microbiota and continues during lactation, evolving to a complex and mature adult-type microbiota. Beyond nutritional aspects, human milk contains bioactive compounds such as microbes, oligosaccharides and other substances which are involved in host-microbe interactions, which have a key role in infant health. Different studies have shown that human milk composition is shaped by genetic factors, mode of delivery, maternal nutrition, and also, differs within feeds, the time of day, lactational stage as well as, between mothers and populations. However, little is known about the impact of those factors on the human milk microbiome. This lecture is aimed to give an overview about the maternal microbiota's influence through breastfeeding on infant health, and also provide a global overview on milk microbiota composition and activity, factors influencing microbial composition, and their potential biological relevance. Increasing our understanding on which perinatal factors are influencing the milk composition will help support the development of new strategies which are targeted to impact infant microbial colonization, with both short- and long- term health effects.