

Oligosaccharides in Human Milk

Asst/Prof. Lars Bode, Department of Pediatrics, University of California, San Diego School of Medicine, San Diego, California, USA.

Human Milk Oligosaccharides (HMO) are complex sugars that are highly abundant in human milk but not in infant formula. One litre of mature human milk contains 10-15g HMO, which makes it the third most abundant class of molecules after lactose and lipids and exceeds the amount of total protein. More than a hundred structurally distinct HMOs have been identified, but how these different oligosaccharides benefit the breast-fed infant remains poorly understood.

HMO are considered prebiotic as they provide an advantage for potentially beneficial bacteria to colonize the infant's intestine. In addition, HMO are considered antimicrobial as they prevent the attachment of potentially harmful microorganisms to the infant's intestinal surface. This talk will provide a general overview of HMO structures, inter- and intrapersonal variability, metabolism and the potential benefits for the breast-fed infant. This will be followed by a close look at the most recent research results showing that a single HMO may protect the breast-fed infant from necrotizing enterocolitis, one of the most common and often fatal intestinal disorders in preterm infants. Breast-fed infants are at a significantly lower risk to develop this devastating disorder and the presence of HMO may be one explanation for the beneficial effects of breast-feeding.