Benefits of human milk oligosaccharides

Although it is widely accepted that breast milk provides the best nutrition for new-borns, there is still much we don’t know about it. Until now, one of the most puzzling aspects has been the presence of human milk oligosaccharides (HMOs), components that offer no nutritional value. Nestlé is revolutionising our understanding of these elements. Their research shows that HMOs promote good bacteria in the gut, reduce risks from infection and allergy, and support brain development and improve cognitive functions. New findings presented by Nestlé at the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) Annual Meeting 2019 confirm their position as a world leader in HMO research. This fresh era of infant nutrition brings Nestlé a step closer to their aim of offering formulae for babies who cannot be breastfed.

HMOs are synthesised by the mammary gland and each oligosaccharide contains a basic lactose (milk sugar) backbone to which various other components are added in many different combinations. Over 200 different HMOs have been identified so far. Curiously, this seems to be a unique feature of human milk; these sugars are almost absent in cow’s milk and other farmed animals. When these fascinating compounds were first described in the early 1930s, their function was a mystery. Eventually, researchers uncovered their importance for the development of the gut microbiota in infants, promoting the establishment of good bacteria, such as Bifidobacteria and Lactobacilli. But this was just the beginning.

NESTLÉ: LEADING THE CHARGE IN HMO RESEARCH

Nestlé Research, the largest private research organisation working on nutrition, has been at the forefront of innovations in infant nutrition for over 150 years. Over 30 years ago, Nestlé scientists were among the first to identify the potential of HMOs and began further investigations into these wonder molecules. Since then, scientists working around the world have discovered that HMOs offer many other important functions. A growing body of evidence put forward by Nestlé and others suggests that HMOs are essential to establish beneficial gut microbiota, aid the development of a strong immune system, strengthen the gut barrier, and eliminate infection-causing pathogens.

Today, Nestlé continues to lead the field in exploring the benefits of HMOs and the mechanisms underpinning their beneficial properties. Nestlé’s groundbreaking research also highlights the importance of breastfeeding and enables HMOs to be incorporated into formula milk, taking us towards a new era of infant nutrition. At the recent 2019 European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) Annual Meeting held in Glasgow, UK, Nestlé presented six different studies on the benefits of HMOs. These initial results are very promising, suggesting that the formula offers benefits to babies beyond nutrition. If further studies can confirm these protective benefits, this would be of enormous value to those infants who are unable to be breastfed.

DELVING DEEPER

The team at Nestlé were keen to investigate the link between HMOs and respiratory infections and understand what was going on at a deeper level. They analysed stool samples from infants and found that those who had experienced respiratory infections had less Bifidobacteria in their gut. Several studies have shown the importance of gut microbiota in systemic infections, so perhaps the higher levels of beneficial bacteria and the lower levels of respiratory infections in those infants fed the HMO combination formula were linked?

To better understand the mechanism behind the protection conferred by the

The Nestlé team demonstrated that infants receiving this combination of two HMOs had higher levels of Bifidobacteria and a lower propensity to respiratory infections.

Breast milk contains HMOs molecules that provide additional benefits to the baby beyond nutrition.
Behind the Research: Nestlé

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One of the most recently discovered and most fascinating effects of HMOs can be seen in brain development and improved cognitive functions.


References


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