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Editorial

Peptides and Proteins from Human Milk

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EDITORIAL

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For the first several months of life, human milk is the best option for newborn nutrition. Despite the fact that the nutritional composition of infant formula has improved over time, many studies show that there are still significant differences between breast-fed and formula-fed infants in terms of growth patterns, nutritional status, infection prevalence, gut microbiota, and other factors. Breast-feeding also has advantages in long-term outcomes such as obesity, diabetes, and cardiovascular disease, according to meta-analyses. Many factors could be at play, but it's likely that different types of bioactive proteins found in human milk play a role in both short- and long-term results. Caseins, whey proteins, and mucins are the three main types of proteins found in human milk (milk fat globule membrane proteins). Mucins make up a small percentage of total protein and their concentration varies little throughout breastfeeding, whereas caseins and whey proteins make up the majority and their contents and ratios change dramatically during lactation. Human milk proteins are most likely to provide as a supply of critical amino acids for breast-fed new-borns. They do, however, have physiological effects and contribute to new-born health in a variety of ways.

Growth protein requirements

Breastfed term infants' protein consumption has been used as a model to estimate protein requirements during the first year. The real protein content of BM can be directly assessed to determine its protein content. During early lactation, at 3-4 months, and at 6 months, true protein concentrations of 14-16, 8-10, and 7-8 g/L have been recorded, respectively. The protein concentration in BM is dependent on the stage of breastfeeding and the time after delivery, according to a recent meta-analysis of 43 researches. It also reveals that protein concentrations vary greatly, especially during the first few months of lactation. Low-birth-weight new-borns have higher protein requirements than term infants due to their increased daily protein growth per unit of body weight. Protein and amino acid concentrations are higher in the first weeks of lactation in the BM of mothers who deliver preterm than in the BM of mothers who deliver at term. Feeding BM without supplements, on the other hand, does not provide protein requirements, particularly for very-low- and extremely-low-birth-weight babies. On the market, supplements are made from protein fractions of cow's milk or human donor milk.

Lactoferrin

Lactoferrin, also known as lactotransferrin, was first discovered in bovine milk in the late 1930s and was first quantified in BM in the early 1960s. It was originally thought to be a "red protein from (bovine) milk," but it was later discovered to be a multifunctional globular glycoprotein. Lactoferrin content of BM declines as lactation progresses, peaking at 5.5 g/L in colostrum and ranging from 1.5 to 3.0 g/L in mature milk, depending on lactation stage.

Secretory Immunoglobulin-A (SIGA)

It is a kind of secretory immunoglobulin that is Secretory Immunoglobulin-A (sIgA) is abundant in mother's milk, especially during the early stages of nursing.

Osteopontin

Osteopontin is a multifunctional acidic protein that is extensively glycosylated and phosphorylated and may have a role in immunological activation, ectopic calcification inhibition, cellular adhesion and migration, angiogenesis, and bone remodelling.

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