

ADAPTED MILK FORMULAS WITH FUNCTIONAL COMPONENTS IN THE NUTRITION OF INFANTS

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Breast milk is the only food to ensure the harmonious development of the infant. It contains not only all the nutrients necessary for the baby in a perfectly balanced ratio, but also a set of protective factors.

Unfortunately, in practice, we often face the problem when it is impossible to provide the infant with breast milk. Therefore, an important task in the work of a pediatrician is the correct individual approach to the choice of adapted milk formulas in mixed or artificial feeding of the infant. Functional food products have positive effects on improving the functioning of the infant.

Today, as a component of functional nutrition prebiotics (oligosaccharides) and nucleotides that an infant receives from breast milk are widely used. Oligosaccharides regulate digestive processes, increase the number of bifidobacteria and lactobacilli, have an immunomodulatory effect. Nucleotides play a key role in intracellular processes, immunological reactions, increase the resistance of infants to infections and improve the processes of digestion of nutrients.

For the complete development of the infant is important not only the amount of protein consumed with food, but also its biological value, which is determined by the amino acid composition of the protein component. In terms of amino acid composition, whey and casein proteins are reasonably close to the amino acid composition of breast milk proteins. But the quantity of aromatic amino acids

(phenylalanine, tyrosine, and tryptophan), neither serum proteins, nor casein can ensure complete correspondence with breast milk. Therefore, it is advisable to include in the composition of adapted milk formulas of cereal flour, as an alternative source of these amino acids.

In recent years, adapted milk mixtures have been enriched with those components that are present in breast milk. Such components include prebiotics for nucleotides.

At Khorol plant of children's food products, the manufacturing of mixtures «Maliutka premium with the addition of cereals» has been established. Its composition is specially balanced, taking into account the needs of the infant of the 2nd half of life. Due to the flour content, the cereal mixture has a good saturating effect, ensuring the infant's calm behaviour between feedings. Adding to the product of various types of flour (rice, buckwheat, and oatmeal) allows to choose a formula, taking into account the characteristics of the infant's digestion

The concentration of protein - 1.6 g in 100 ml of the finished mixture. The ratio of serum proteins to casein is 20:80. The mixture is enriched with taurine. The fat component is specially selected by the combination of milk fat and vegetable oils (corn, coconut, and rapeseed). In the mixture, the optimum ratio between ω -6 and ω -3 polyunsaturated fatty acids (10:1) is kept. The total amount of carbohydrates is 7.6 g in 100 ml of the mixture. The mixture contains a balanced complex of minerals, trace elements and vitamins.

Prebiotics are introduced into the composition of all presented milk formulas «Maliutka premium» – the combination of galactooligosaccharides (GOS), fructooligosaccharides (FOS) in the ratio of 90:10, which maximally corresponds that of the breast milk. The mixture contains 5 most important nucleotides: adenosine monophosphate, cytidine monophosphate, uridine monophosphate, guanine monophosphate, inosine monophosphate (table 1)

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Table 1**The amount of nucleotides in breast milk, cow's milk and their content in the adapted milk formulas**

Nucleotides	Cow's milk mg / 100 ml	Breast milk mg / 100 ml	«Malutka premium», мг/100мл
Adenosine	0,4	1,1	0,50-0,77
Cytidine	6,7	1,0	0,72-1,39
Guanosine	-	0,2	0,14-0,30
Inosine	0,3	0,5	0,34-0,61
Uridin	-	0,7	0,50-0,86

Babies with a tendency to constipation need buckwheat and oat flour, and in digestive disorders - rice. Due to the high content of iron in buckwheat cereal "Malutka premium" in the case of buckwheat flour can be used for prevention and as a component of the diet for anemia. «Maliutka premium with the addition of cereals» are designed to feed healthy children from 6 months of age in case of insufficient weight gain, as a transitional diet.

Today, there are scientific papers which show that feeding infants with adapted milk formulas «Maliutka premium» with enriched prebiotics and nucleotides, helps to reduce the functional disorders and improve the digestive processes in infants, who are on mixed or artificial feeding.

Consequently, adapted milk formulas «Maliutka premium with the addition of cereals» meets the requirements for functional foods. Their use allows to provide the body of the baby with all the necessary nutrients and to expand the diet of the infant.