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Research Article

Using Mare's Milk for Baby Food

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The problem of baby food, especially infants, has now become extremely acute. According to medicine, at least one third of infants need additional groundbait from the first days of life. Great difficulties arise with the provision of adequate nutrition for infants with diseases of mothers, feeding orphans, for whom special products are needed that replace human milk. Now these babies are fed with cow and goat milk or artificial breast milk substitutes. However, such nutrition does not fully replace the mother's milk. The search for the best recipes continues. Through many years of scientific experiments and practical experience, it has been established that, that the most complete natural substitute for breast milk for babies is fresh mare's milk. It almost completely corresponds to human milk in terms of protein composition, sugar content and a number of other components. The state standard for "Mare's Milk" has been developed and approved.

In Western Kazakhstan, milking of mares has been widely practiced for a long time for the production of kumis. It is now possible to use fresh mare milk for feeding babies. To do this, it is necessary to test this natural substitute in specific local conditions. It is possible to spread this method throughout the territory of Kazakhstan and the CIS, to transfer the feeding of babies left without mother's milk to the world experience.

In our country and in foreign countries, recipes and technologies for the preparation of various breast milk substitutes have been developed. These substitutes consist of socially processed cow milk, enriched with 8-15 additional components, which are often very scarce. Cooking technology is also

complex. and requires special equipment. As a result, all this is fraught with certain difficulties. Even the best substitutes do not contain "live" biologically active substances necessary for an infant, often cause indigestion, allergies, and diathesis. In France, most of the orphanages have arrangements for the supply of mare's milk for feeding a baby. Over 30% of babies need additional complementary foods, and some are 100% transferred to artificial feeding.

For example: positive results were obtained in special medical studies in Bashkiria, where, according to the supervision of doctors, 30 babies were successfully fed on mares' milk. In the village of the All-Russian Research Institute of Horse Breeding, at different times, three mothers, due to the lack of their mother's milk, successfully fed their babies with mare's milk, without any damage to the development and health of the baby.

Meanwhile, nature has an exceptionally complete product that can reliably ensure the normal development of a child. This is fresh mare's milk. Compared to cow milk, in terms of its biochemical composition, it is much closer to human milk. Under the influence of gastric juice, it does not coagulate, like a cow, into curdled clots, which are not acceptable for the baby's body. There is almost the same amount of essential amino acids and sugar - lactose - in mare's milk as in breast milk. However, they also have less milk fat.

In 1951, experiments were carried out abroad on the norms of feeding a child in appropriate clinical trials, the results of which are reported by Kalliala, Seleste, Hallnan that 75 - 85 calories per 1 kilogram of weight are enough for children. If the child's nutrition consists of mare's milk, then it should be given 210-220 ml per 1 kilogram of live weight.

Kind of Milk	Fats	Proteins	Including		Lactose	Calcium	Phosphorus	Energy Value
			Casein	Albumins and Globulins				
Feminine	4	1,25	0,5	0,7	6,5	0,03	0,05	65
Mare	1,65	2,2	1,23	0,9	6,91	0,09	-	47,2
Cow	4,5	3,3	2,8	0,5	4,7	0,14	0,2	62
Goat	4,7-7,0	3,5-5,2	3,6	-	4	0,15	0,28	155

Table 1 Chemical composition of human milk and milk from domestic animals Author: A. Pokrovsky

The table shows that the differences in the composition of mother's milk and milk from domestic animals are great, and the biological value of various types of milk, apparently, is optimal for newborns of this particular biological species.

Modern science has established the features of the composition and physical and chemical properties of breast milk. Compared to other animal species, cow's milk differs significantly less from human milk. But nevertheless, it is less assimilated by the newborn's body: - human milk contains a large percentage of low-disperse or so-called whey proteins - albumin and globulins, which are easily digested in the baby's stomach, while cow's milk is dominated by more coarse and hard-to-digest proteins - caseins.

Fats in human milk contain a large percentage of biologically valuable polyunsaturated fatty acids. In the composition of carbohydrates, lactose predominates, contributing to the development of bifidogenic organisms that protect newborns from gastrointestinal diseases. A feature of lactose is slow absorption (assimilation) by the walls of the stomach and intestines. Reaching the large intestine, it stimulates the vital activity of bacteria that produce lactic acid, which suppresses the development of

putrefactive microflora. Human milk also contains enzymes, such as lipase, which breaks down milk fat.

In terms of the amount and composition of proteins, as well as the content of lactose, mare's milk is close to that of a woman's. Mare's milk belongs to the milk of the albumin group - casein accounts for 50-60% of the total amount of proteins. Casein in human and mare's milk is easily soluble in water, which ensures its good digestibility. In turn, albumin and globulin, present in female (0.7g / 100g) and mare's (0.9g / 100g) milk in significant quantities, contain the valuable essential amino acid tryptophan (up to 7%), which no other protein and are carriers of immune bodies. Albumin and globulin are plasma proteins.

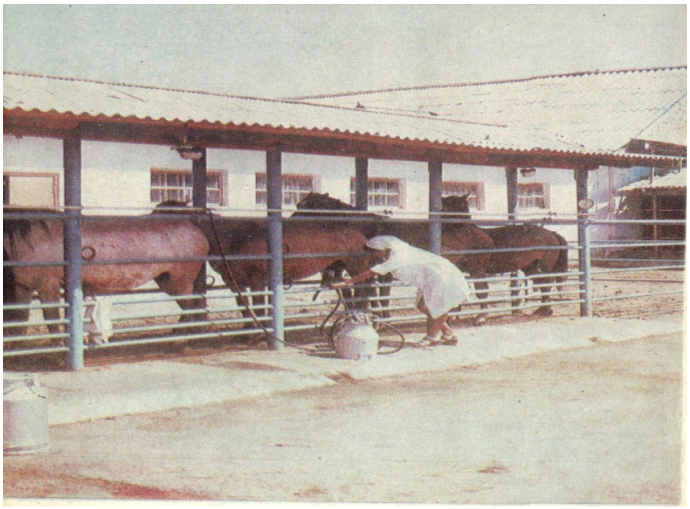
Udder of a mare during lactation

The lactation period, which includes education, accumulation and periodic withdrawal of milk, lasts about nine months in mares. Milk is formed in the udder, which consists of two complexes of mammary glands and two nipples located in the groin, between the thighs.

Milk is synthesized from the blood in the exocrine (mammary) glands, in the epithelial cells of the alveoli, which are located radially around the milk ducts, connecting with each other and opening into the milk cisterns. Milk is formed from the constituent parts of the blood coming through the udder of the mare. The required amount of blood for the synthesis of one kilogram (according to other sources - one liter) of milk is about 500 liters. Milk is formed in four stages:

1. "filtration" of necessary components and blood;
2. synthesis of milk constituents in the secretory cells of the gland;
3. accumulation of milk inside the cytoplasm of secretory cells;
4. separation of milk into the cavity of the alveoli and other containers of the mammary gland.

Milk is synthesized from amino acids, glucose, neutral fat and free fatty acids of the blood, with the formation of proteins, respectively, milk sugar-lactose and milk fat.



We have an agreement with the Gorbachev kumis company. In the kumys company, year-round, stationary, machine milking of mares. There are all conditions for keeping mares, they are of a specialized nature. They employ a permanent production staff, staffed with a permanent breeding stock; in addition to pastures, there is a sufficient forage base for the stall period. The company has a milking parlor in the form of an independent room or a separate part of the stable, as well as a kumis shop, located in accordance with sanitary standards.

Fresh mare's milk has bactericidal properties, due to which microorganisms that have got into it cannot multiply for a certain time. The duration of the bactericidal phase ends after 6.5 hours. With cleanliness, milk should only be of the first class, which is ensured by the general veterinary and sanitary well-being of the company, and special attention should be paid to careful processing of the udder of mares and washing the apparatus after each milking.

Target consumers of the results obtained;

Mom's house. Maternity hospitals in Uralsk, hospitals in Uralsk, 12 district hospitals in West Kazakhstan region, Orphanage in West Kazakhstan region, Orphanages in Uralsk, hospitals in Uralsk, dairy stores in Uralsk, kumyskhan in Uralsk, cafes and restaurants, the project is a necessary useful helping to preserve the health of citizens of the Republic of Kazakhstan, the impact of the results obtained on the development of life science, research in the field of medicine and health promotion, product processing technology, mare's milk is the best natural substitute for breast milk.

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