INVESTIGATION OF CALCIUM AND PHOSPHORUS IN ANIMAL MILK USED IN BABY FOOD PRODUCTION

These theses are sent to research goat's and mare's milk and their comparative composition to human and cow's milk. We have presented data on the content of components that play a significant role in the metabolism of calcium and phosphorus in the child's body.

In early childhood (especially on the first year of life) diseases (or conditions), connected with violation of a phosphorus-calcium exchange, take a leading place. It is caused by extremely high rates of child development: for the first 12 months of life the body weight increases on the average by 3 times, length in 1,5. Such intensive increase in body size is very often accompanied by absolute or relative deficiency of calcium and phosphorus in an organism.

Calcium is one of the main elements performing plastic function: 97-99% of calcium is a part of skeleton bones. Ionized calcium plays an important role in tissues exchange: seals a vascular wall, ensuring its proper discernment, normalizes the excitability of the neuromuscular system and the central nervous system, is an activator of the blood coagulation system, as well as part of several cellular enzymes. Calcium absorption in intestines depends on its ratio with phosphorus.

Disorders of a calcium and phosphorus metabolism among children of early age are mostly shown in bone and muscular system. Rachitis is the most common disease associated with the disorder of calcium and phosphorus homeostasis in children of the first year of life. Deficiency of vitamin D and its metabolism disorder caused by temporary immaturity of body enzyme system (kidneys, a liver), regulating this process, can be the reason of a hypocalcaemia. The main physiological function of vitamin D (i.e., its active metabolites) in the organism of the child is the regulation and maintenance of the required level of calcium and phosphorus homeostasis of the body. It is provided by influence on calcium absorption in intestines, its salts adjournment in bones (bones mineralization) and calcium and phosphorus reabsorbtion in kidney tubules.

The calcium and phosphorus ratio in female milk is 2:1. Such ratio of these two elements is considered to be optimal in order to avoid various dysfunctions in an organism of a child. Calcium and phosphorus ratio in cow's milk, which is used today for baby food production, is 1:1. Goat's and mare's milk was studied in search of raw materials for the production of milk base for baby adapted formulas. It should be noted that in goat's milk the ratio of calcium and phosphorus is 1,4:1, and in mare's milk is 1,5:1. Such ratio of these elements allows the use of goat's and mare's milk in baby food manufacture as cow's milk substitutes. In addition, studies have shown the benefits of goat's milk and mare's milk over cow's milk according to the vitamin D content in cow's milk is 4 times more, than in female milk. Mare's milk is more approximate according to the content of vitamin D to female milk, and exceeds its content only twice.

Conclusion

Thus, it is possible to claim that not only cow's milk can be used in baby food production; there are also other types of milk which structure is closer to composition of female milk and can be an ideal product for infant feeding.

Literature

1. Frolova T.V., Kolomenskyi V.M., Tereschenkova I.I. and Stenkova N.F. (2004) Piyntsyp kharchuvania zdorovoi dytyny rannogo viku [Principles of Feeding Young Healthy Children and Infants]: [training, important among for students of medical universities from English language teach], Region-Inform, Kharkov, Ukraine.

2. Medical history and medical abstracts to medical students, (2011), "Ways of formation of mental health", available at: <u>http://meddd.ru/lektsii-po-</u>meditsine/lektsii-po-

valeologii/puti-formirovaniya-psihicheskogo-zdo.html (accessed Jenuary 10, 2013)

3. Tishchenko V.A., Plekhanov T.M. and Mavropulo T.K. (2002) Kharchuvannia ditei rannogo viku pry porushenniakh v stani zdorovia [Food infants with disorders in health]: [training, important among, for students., interns-pediatricians, internists-neonatologists, pediatricians, neonatologists], Art Press, Dnepropetrovsk, Ukraine.