

## **ABSTRACT**

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Title of Thesis: Evaluation of the Composition of Breast Milk in Relation to Nutritional Lactating Women

Maternal milk is considered the ideal nutrition for infants during the six months of life. Its quality is an important factor affecting the well-being of newborns. The quality of breast milk is linked with a number of internal and external factors. One of the external factors is maternal nutrition which means a diet of lactating mothers.

Our study included 38 lactating mothers with their babies. We made a number of measurements, in which we focused on the composition of dietary intake of mothers and composition of breast milk. The aim of our study was to detect interactions between maternal nutritional intake and composition of breast milk.

The composition of nutritional intake of mothers did not observe statistically significant differences depending on the duration of breastfeeding. Energy intake of lactating mothers in kcal/kg varied slowly (ANOVA  $P = 0.4666$ ). No statistically significant changes between intake of vitamins, intake of minerals and trace elements were observed.

We revealed a statistically significant decrease of retinol in milk (ANOVA  $P = 0.0003$ ), protein content (ANOVA,  $P < 0.0001$ ), decrease fatty acid C 20:0 (ANOVA  $P = 0.0324$ ), decrease acid dihomo- $\gamma$ -linolenic (ANOVA  $P < 0.0001$ ) and decrease acid arachidonic (ANOVA  $P = 0.0283$ ). We also found a correlation between the duration of breastfeeding and milk fat content (ANOVA  $P = 0.0337$ ) where there was an increase. We have seen an increase in the case of myristic acid (ANOVA  $P < 0.0001$ ).

The most statistically significant correlation we have found between maternal intake of retinol and its content in milk (ANOVA  $P < 0.0001$ ,  $r = 0.4317$ ). Other significant correlations were between nutritional intake kcal / kg and protein in milk

(ANOVA  $P = 0.0060$ ,  $r = -0.2974$ ), between fat intake and  $\alpha$ -tocopherol (ANOVA  $P = 0.0284$ ,  $r = 0.2393$ ), between carbohydrate and protein content of milk (ANOVA  $P = 0.0019$ ,  $r = -0.3340$ ) between intake of carotenoids and protein content (ANOVA,  $P = 0.0462$ ,  $r = -0.2181$ ).

We found significant correlations with palmitoleic acid. Its content in milk was affected by nutritional intake kcal / kg (ANOVA,  $P = 0.0372$ ,  $r = -0.2277$ ), nutritional intake protein (ANOVA,  $P = 0.0321$ ,  $r = -0.2341$ ), fat intake (ANOVA  $P = 0.0046$ ,  $r = -0.3062$ ), with intake of cholesterol (ANOVA,  $P = 0.0348$ ,  $r = -0.2307$ ) and vitamin E intake (ANOVA  $P = 0.0474$ ,  $r = -0.2170$ ). Stearic acid content was significantly affected by protein intake (ANOVA  $P = 0.0405$ ,  $r = 0.2240$ ), fat intake (ANOVA  $P = 0.0095$ ,  $r = 0.2813$ ) and lactose intake (ANOVA  $P = 0.0009$ ,  $r = 0.3558$ ).

The content of  $\gamma$ -linolenic acid was associated significantly with intake kcal / kg (ANOVA,  $P = 0.0212$ ,  $r = 0.2517$ ), with carbohydrate intake (ANOVA  $P = 0.0104$ ,  $r = 0.2783$ ) and retinol intake (ANOVA  $P = 0.0148$ ,  $r = 0.2651$ ). Another correlation was observed between the content of eicosapentaenoic acid in milk and nutrient intake of vitamin D (ANOVA  $P = 0.0087$ ,  $r = 0.2847$ ).

Nutritional intake of retinol were significantly associated with the content of arachidonic acid (ANOVA,  $P = 0.0007$ ,  $r = 0.3632$ ), oleic (ANOVA,  $P = 0.0207$ ,  $r = 0.2521$ ), capric (ANOVA,  $P = 0.0039$ ,  $r = -0.3119$ ), and lauric (ANOVA,  $P = 0.0084$ ,  $r = -0.2860$ ) in milk.

During our study, we have found several significant correlations between maternal nutrient intake and the composition of breast milk. What is the role of other nutritional components such as other vitamins, minerals and trace elements on the composition of breast milk still remains the subject of further studies. It is necessary to do further research to uncover more correlations and relationships between maternal nutrition and composition of breast milk.