

## Abstract

Human milk is a complex biological fluid that contains valuable ingredients such as vitamins and minerals, proteins, lipids, carbohydrates and bioactive ingredients. The composition of HM is unique and adapted to the individual needs of the newborn in terms of nutrients and biological components. It should be mentioned that HM is a highly volatile solution and it consists of over 200 known substances, the number of which is constantly increasing thanks to the developing methods of laboratory analyzes. The composition of the macronutrients of human milk changes with the child's development and depending on factors such as preterm labor, lactation stage, time of day or mother's diet as well as mother's comorbidities and adjusts to the individual needs of the newborn.

The aim of the study was to evaluate macronutrients in the milk of healthy women in comparison with the milk of diabetic women. Specific objectives included: analysis of the basic components of milk of women with type 1 diabetes and food of women with gestational diabetes on a diabetic diet, the analysis of the macronutrients of the patients' milk depending on the age and assessment of the milk composition of patients after cesarean section and childbirth by means of natural means.

The study included patients who gave birth at the University Hospital in Bialystok and it was a full-term delivery (> 37 0/7 weeks of pregnancy - body weight). The number of respondents was n=78. The analysis covered the influence of diabetes mellitus, age and the method of termination of pregnancy on the levels of macroelements in milk of the examined women. The analysis of the collected food samples was performed at the Women's Milk Bank in the Department of Neonatology, University Hospital in Wroclaw, using the MIRIS analyzer (Uppsala, Sweden).

The analysis of the composition of breast milk showed the effect of diabetes and obesity on the level of macronutrients and caloric content in colostrum and transitional milk. The most significant differences were in lipids, calories and carbohydrates, especially among women with type 1 diabetes and obesity and overweight. The levels of total protein and true protein did not differ statistically significantly in any of the studied groups compared to healthy patients. The age of the respondents had a significant impact only on the level of fat, there was no significant effect of this factor on other macronutrients. There was no observed effect of the method of delivery on the level of the tested components.