ABSTRACT

This thesis is focused on folic acid and its preventive effects on human health. Folic acid has many important functions in the human body and is especially important during pregnancy. It is essential for the proper development of the fetus and its adequate intake is the prevention of serious congenital malformations, such as neural tube defects, premature birth, abortion and other pathologies. The increased need for this vitamin is not easy to supplement with a regular diet. It is therefore recommended to take it in the form of food supplements (400-600 μg/day) during pregnancy and at least one month before the planned conception. For these reasons, it is necessary to focus on supporting the primary prevention of folic acid use, preferably in all fertile women. Folic acid also plays a crucial role in hematopoiesis and the main manifestation of its deficiency is megaloblastic anemia. Folic acid is further associated with the prevention of cardiovascular and cancer diseases and influencing the development of cognitive functions.

The practical part of this thesis was focused on monitoring the saturation of pregnant women with this vitamin. The work contains a laboratory analysis of the content of the metabolite folic acid 5-methyltetrahydrofolate (5-MTHF) in the urine of pregnant women in order to determine its content and assess whether they are sufficiently saturated and how the levels of this metabolite in urine at the beginning and end of pregnancy differ. Also included is a questionnaire survey to find out whether pregnant women are well informed about the importance of folic acid use, whether they use the vitamin and whether they have adjusted their eating habits in favor of the vitamin. The analysis showed measurable concentrations of 5-MTHF in all urine samples, indicating saturation of the organism. The average value of 5-MTHF content of all samples in the 1st sample was 3.56 g/g krea, in the 2nd sample 2.75 μg/g krea and in the 3rd sample 3.15 μg/g krea. Furthermore, 60 % of the samples were found to have an increase in 5-MTHF content in the second or third trimester compared to the first. In contrast, 30 % of the samples had a reduction in 5-MTHF. In 10 % of samples, the measured values of all samples differed only slightly. The questionnaire survey has an important finding, namely that all women included in the research knew about the importance of folic acid and used dietary supplements containing it, and almost 70 % of them were informed about this importance before visiting pregnancy counseling. However, not even half of the women increased their consumption of foods with a higher folic acid content. An ideal case would be to increase the intake of folic acid from a normal diet in combination with the use of a dietary supplement.

keywords: folic acid, folate, congenital malformations, prevention, nutrition