

## Risks of Folic Acid Deficiency in Pregnancy

*By Prof. Dr. Joachim Schmidt*

Folic acid is an essential water-soluble vitamin which is of crucial importance for the amino acid and nucleotide metabolism, as well as the methylation of homocysteine to methionine. Due to its importance for nucleic acid synthesis, it is an important requirement for all growth and cell division processes.

This applies to all stages of life, but particularly during pregnancy, when folic acid deficiency can result in substantial disruption to intrauterine development of the foetus.

Folic acid deficiency during pregnancy has major effects on the development of the foetus, as well as the health of the newborn child. A lack of folic acid can cause severe developmental disorders in the foetus. So-called neural tube defects develop.

The neural tube is an important structure in the development of the embryo, from which during the subsequent course of the pregnancy the central and peripheral nervous systems develop. In just the fourth week of pregnancy, the neural tube closes. This process can be disturbed by a lack of folic acid and a neural tube defect, also known as spina bifida or "open back" develops.

A serious disorder of brain development with partial or complete absence of the cerebrum (anencephaly) can also be the result. Furthermore, the risk of a cleft lip and cleft palate, defects in the urinary tract and heart defects is also increased.

In spite of the fact that this risk is frequently pointed out, the lack of folic acid is still frequently underestimated as a risk. The National Nutrition Study II (2008) has shown that the majority of women consume insufficient quantities of folic acid in their food.

Number of women in per cent who take in vitamin B12 levels in their food which is below the reference values

Gender	Age in Years				
	19-24	25-34	35-50	51-64	65-80
Women	79.5	80.6	87.4	86.8	90.8

As a result, the daily diet in the majority of women of childbearing age represents a considerable risk of folic acid deficiency with clinical significance due to malnutrition. Furthermore, it should be taken into account that the folic acid requirement during pregnancy - at 600 µg/day - is well above the requirement of 400 µg/day for women of the same age who are not pregnant.

Through the adequate intake of folic acid, the risks of folic acid deficiency can be lowered. Corresponding studies have shown that the intake of 400 µg of folic acid in addition to the standard diet lowers the risk of neural tube defects by approximately 70%.

As the closure of the neural tube already occurs in the fourth week of pregnancy, a time in which the pregnancy is determined, the dietary supplementation should begin four weeks before the pregnancy if possible. This increased intake should then be maintained at least during the first 12 weeks of the pregnancy.

Prof. Dr. J. Schmidt  
November 19, 2012