

# Folic Acid

This fact sheet is intended to help women who plan to have children understand what folic acid is, why it is important and how to get their recommended daily intake of this essential nutrient.

## What is folic acid?

Folic acid is sometimes called “folate”. It was first identified in spinach leaves and was named “folic acid” or “folate” because of its presence in foliage (green leaves)<sup>i</sup>.

Folic acid is one of the water-soluble B complex of vitamins. It is used by the body to make red blood cells and the genetic material DNA<sup>ii</sup>.

## Why is folic acid important?

As early as 1931 folic acid was thought to prevent certain types of anaemia, particularly in pregnancy. In 1965 it was suggested that folic acid might help prevent neural tube defects (NTDs) such as Spina Bifida and Hydrocephalus<sup>iii</sup>. It was not until 1991, sixty years after the first suggestion that folic acid might be needed for a healthy pregnancy, that research showed low folic acid was a cause of NTDs<sup>iv</sup>.

These days the World Health Organisation and most governments advise women who are planning to become pregnant to take 400 micrograms of folic acid for three months before pregnancy, and for at least the first three months of pregnancy. This helps to protect the unborn child from birth defects which are caused by the neural tube not forming correctly.

The neural tube is where the brain and spinal cord develop, it starts as an open tube in the first four weeks of pregnancy when many women don't even know they are pregnant. Without enough folic acid the neural tube will never close properly. The open tube can leave the baby's brain and spinal cord exposed to the open air at birth and this can only be closed with surgery<sup>v</sup>.

NTDs cannot be diagnosed until the 20 week scan (five months pregnant). Around 700 pregnancies a year in the UK are affected by these serious birth defects. Around 500 of these pregnancies result in late stage termination and 200 go on to live birth<sup>vi</sup>. A child born with NTDs will have serious lifelong disabilities and need a lifetime of medical care, probably including multiple operations. The medical costs of NTD are approximately £34,000 in the first year of life, levelling out at around £10,600 for every further year of life<sup>vii</sup>.

## Where is it found?

Folate is found in all green leafy vegetables as well as beans and legumes such as chick peas and lentils, oranges and orange juice, fortified breakfast cereals, yeast extract and some organ meats such as liver<sup>i</sup>.

Folic acid can also be found in food supplements; many products contain 200 micrograms of folic acid which is the recommended intake for most of the population. Products formulated for women of childbearing age often contain 400 micrograms of folic acid. Food



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supplements containing folic acid are widely available from pharmacies, supermarkets and health food shops.

### Recommended intakes

There are two different recommended intakes for folic acid.

Most people are advised to consume at least 200 micrograms of folic acid a day from their diet. Eating a varied well-balanced diet with plenty of fruit and vegetables every day should provide this.

Women planning a pregnancy should take an additional food supplement containing 400 micrograms of folic acid, on top of the 200 micrograms recommended daily intake from the diet, for at least three months before pregnancy and for the first three months of pregnancy. Supplements are recommended because it can be difficult to get this much extra folate from diet alone.

If there is a family history of NTDs, for example if a previous pregnancy was affected or if someone else in a family has had a baby with neural tube defects such as Spina Bifida, women should take a much higher dose of folic acid which must be prescribed by a doctor.

### Deficiency

The UK government runs an ongoing survey of the nation's diet called the National Diet and Nutrition Survey (the NDNS). The NDNS looks at what people are eating, the levels of vitamins and minerals in the foods being eaten, and whether people are getting enough of what they need. The NDNS also measures blood levels for some nutrients, folic acid is one of the nutrients which is measured this way.

The most up to date research has found that 91% of women of childbearing age in the UK have blood levels of folate that are too low to protect against NTDs<sup>viii</sup>. If these women do not take supplements of 400 micrograms of folic acid before becoming pregnant, their unborn children may be at risk of developing neural tube defects.

Approximately half of all pregnancies in the UK are unplanned<sup>ix</sup>. NICE recommendations made in 2014 advise that health care professionals should direct any woman who could become pregnant to take at least 400 micrograms of supplemental folic acid every day<sup>x</sup>.

### Safety and risks

Because folic acid is a water soluble vitamin it is a very safe substance. It is measured in micrograms ( $\mu\text{g}$ ) and is safe with an intake of up to 1,000 $\mu\text{g}$  (1000 micrograms, or 1 milligram)<sup>xi xii</sup>.

Deficiency of both folic acid and vitamin B12 can cause forms of anaemia and very high intakes of folic acid may mask vitamin B12 deficiency anaemia. Long term intake of more than 5mg which would only be prescribed by a doctor who would use regular blood testing to make sure the patient remains healthy. In the rare instances where women may be advised to take very high dose folic acid, for example if there is a family history of NTDs, it is worth considering taking a vitamin B12 supplement at the same time.



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### References

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- <sup>iii</sup> Hibbard B. M., Hibbard E.D., Jeffcoate T. N. A. (1965) Folic Acid and Reproduction, *Acta Obstetrica et Gynecologica Scandinavica*, 44:3, 375-400, DOI: [10.3109/00016346509155874](#)
- <sup>iv</sup> Wald N., Sneddon J. (1991) Prevention of neural tube defects: Results of the Medical Research Council Vitamin Study. [The Lancet Vol. 338 Issue 8760, p131](#)
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- <sup>vi</sup> [SHINE: Prevention, Folic Acid.](#) Accessed December 2018
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- <sup>viii</sup> [Public Health England, NDNS results from years 7-8 \(combined\).](#) Accessed December 2018.
- <sup>ix</sup> [Scientific Advisory Committee on Nutrition \(2017\) Paper for discussion: timing of folic acid supplementation for prevention of neural tube defects \(NTDs\).](#) London: Scientific Advisory Committee on Nutrition.
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