



HSIS

FOLIC ACID – HSIS REAFFIRMS THE NEED FOR THIS NUTRIENT

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Folic acid is an essential B vitamin and it acts as a coenzyme in the metabolism of amino acids and nucleic acids which are the precursors for our DNA. As a result, it is a critical nutrient in relation to cell division and repair of genetic material. But what exactly is Folic Acid and what roles does it play in our bodies?

What is folic acid?

Folic acid, is an essential water-soluble vitamin of the vitamin B group. The chemical name for folic acid is pteroylglutamic acid and it is one of a family of chemically similar substances known as folates. The term folate(s) includes:

- folic acid, a synthetic folate which is used in supplements and food fortification.
- naturally occurring folates which are found in foods (dietary folates)

Folates differ according to their bioavailability and biological activity. Folic acid is the most stable and bioavailable form of folate and the form used most often in food supplements and food fortification. It is rarely found naturally in food.

Dietary folates are found naturally in food. For example fresh, green leafy vegetables such as spinach, cabbage, broccoli and sprouts, and also legumes, nuts and organ meats.

Folates have a poorer bioavailability than folic acid, 50-66% compared with 85-100% respectively.¹ In addition, food preparation and processing can destroy up to 100% of naturally occurring folate, as it is sensitive to light and air but especially heat. As such, both supplementation and fortification of foods is likely to be a more reliable means of increasing body tissue levels and human folate status than dietary forms.

Why do we need folic acid?

Folic acid is an essential B vitamin. It:

- acts as a coenzyme in the metabolism of amino acids and nucleic acids which are the precursors for DNA
- plays an essential part in the production of purines and pyrimidines that make up DNA. This makes it a critical nutrient in relation to cell division and repair of genetic material
- primes the homocysteine molecule for methylation
- lowers homocysteine in the blood (together with vitamin B6 and B12) through regeneration of methionine. The methyl group donated in this process is taken up by the substance, S-adenosyl methionine (S-AdoMet), which in turn participates in various chemical reactions throughout the body, including the synthesis of adrenaline, creatine and melatonin.

How much do we need?

- The UK Reference Nutrient Intake for folic acid is 200 micrograms a day.
- Women of childbearing age who could become pregnant are advised to take 400 micrograms daily (5mg/day in case of previous NTDs or where risk is considered to be high, eg, in women taking anti-epileptic medication) from a

supplement plus 200 micrograms daily from food. The supplement should be continued until the 12th week of pregnancy.

- The EU RDA used as a reference for food supplement labelling purposes is 200 micrograms daily
- National reference values in other countries vary from 200-400 micrograms daily
- The US RDA for adult men and women is *400 micrograms daily*
- The EU Scientific Committee on Food has published an opinion on the revision of reference values for food labelling of *400 micrograms folate per day*

UK folate intakes – how our diet is lacking

The UK National Diet and Nutrition Survey (NDNS)² found that:

- 13 million people (25% of the UK population) have folic acid **intakes below the RNI of 200 micrograms daily**
- 34% of adult women of childbearing age have intakes below the RNI
- 37% of people over the age of 65 years have intakes below the RNI
- 86% of women aged 19-24 years, 92% of women aged 25-34 years and 85% of women aged 35-49 years have intakes of folic acid from all sources (including supplements) below 400 micrograms daily
- In the recent FSA low income survey, mean intake of folic acid was 214 mcg/daily; 7% of women in this group had intakes of less than 100 mcg/day; mean intakes in the upper 2.5 per centile intake was just over 400 mcg/day
- 127,000 people currently have very high folic acid intakes (exceeding 1000mcg daily).

What are the benefits of folic acid?

- Folic acid reduces the risk of neural tube defects (eg, spina bifida, anencephole) in babies.³
- Evidence from observational studies suggests a protective effect of increasing folate intake on CVD risk.⁴⁻⁵ However, randomised controlled trials have not demonstrated a beneficial effect of folic acid on CVD risk ***in people who have established cardiovascular disease.***⁶⁻⁷
- Evidence from prospective studies in humans suggests a trend towards a protective effect of folate intake on colon cancer risk.⁸⁻⁹ Some animal studies suggest that folic acid may inhibit tumour development in normal tissues, but promote the progression of established cancer.¹⁰
- Data from observational studies¹¹⁻¹³ suggests that cognitive impairment and Alzheimer's disease is associated with poor folate status. A recent double-blind RCT in 818 men and women aged 50–70 years found that folic acid 800 µg daily for 3 years significantly improved domains of cognitive function including memory, information processing speed and sensorimotor speed compared with placebo.¹⁴ As part of the same trial, folic acid was also found to slow age-related decline in hearing.
- Some studies have demonstrated a link between depression and low folate status.¹⁵

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