



Vitamin B2 (Riboflavin)



Vitamin B2, also known as Riboflavin, is found in small amounts in many foods. It is needed for converting food to energy in our mitochondria (the “engines” of our cells) and like Co-enzyme Q10 also works as an antioxidant by mopping up damaging “free radicals” (reactive chemicals produced during normal metabolic processes).

Lean meats, eggs, legumes, nuts, green leafy vegetables, dairy products and milk provide riboflavin in the diet. Breads and cereals are often fortified with riboflavin. Riboflavin is destroyed by light, therefore foods with riboflavin should not be stored in exposed glass containers. Riboflavin is stable when heated but will leach into cooking water, and the pasteurisation process causes milk to lose about 20% of its riboflavin content. Alkalis, such as baking soda, also destroy riboflavin.

The recommended daily intake of vitamin B2 is about 1 milligramme (mg) daily, although higher in pregnancy and breastfeeding women. The doses used in clinical trials of migraine are hundreds of times greater than this and its use is more like that of a drug than a nutrient.

Research

In a study of 80 adult migraineurs ^[1.] 400mg of vitamin B2 per day significantly reduced the number of migraine attacks over three months when compared with placebo (dummy pills). For 6 out of 10 of patients, the number of migraine days per month improved by more than half. Riboflavin did not reduce the severity of pain or the amount of time a migraine headache lasted. However, in another study ^[2.] in 49 patients over 3 months, the same dose of vitamin B2 (combined with 300mg of magnesium and 100mg of feverfew) was no better than 25mg of vitamin B2, intended as a “placebo” to colour the urine similarly so that (unlike in the first study) patients could not tell which medication they were taking. In both groups, about 4 out of 10 participants improved by more than half. This could mean either that the beneficial effects of vitamin B2 are largely due to expectation or that both high and low doses are truly effective.

The response to high-dose vitamin B2 in each person may be determined by genes in the mitochondria which determine exactly how food is converted into energy ^[3.]. This may explain the differing results of these studies.

Vitamin B2 has also been tested in children with migraine and found not to be effective. In one study ^[4.], 42 children aged 6-13 were given 50mg/day of riboflavin or placebo for 4 months (in random order) and then switched to the opposite treatment. No difference was found in the number of migraine attacks in the last month of treatment. Negative results were also seen with higher doses (200mg/day) in 48 children ^[5.]. Overall, the research suggests that vitamin B2 is not effective for children and may or may not be effective in adults.

FAQs

Can I take vitamin B2 with other medicines?

Riboflavin is necessary for the activation of vitamin B6. Sulfa drugs, anti-malarial drugs, oestrogen and alcohol may interfere with riboflavin metabolism. High doses of riboflavin can reduce the effectiveness of the anti-cancer drug methotrexate, whilst some antibiotics and phenothiazine drugs may increase riboflavin excretion. Riboflavin must be activated in the liver which may be inhibited by major tranquilizers and some anti-depressants.

What is the dose of vitamin B2?

The manufacturer's recommended dose varies with the brand of the vitamin B2. The dose used in the research trial varied from 25mg to 400mg daily.

How much does vitamin B2 cost?

Vitamin B2 is not available on the NHS but can be purchased in pharmacies, health food stores or from the internet. Tablets usually contain 40-100mg riboflavin. It is best to buy a product made according to Good Manufacturing Practice (GMP), which assures "pharmaceutical quality tablets". Costs can vary for a 30 day supply depending on where you buy them and at what dose.

Does vitamin B2 have side effects?

There were a few serious reported side effects of vitamin B2. Side effects are typically mild and brief, stopping without any treatment needed.

Reactions to higher doses (more than 400mg daily) may include:

- itching
- numbness (insensitivity)
- burning / prickling sensations
- yellow discolouration of the urine.

Individuals who have inadequate food intake are at risk of deficiency, particularly children in developing countries. It is thought that riboflavin also aids the body in absorbing iron, since it is common for iron deficiency to accompany a deficiency in riboflavin.

Pregnancy and breast feeding:

Vitamin B2 is not always recommended if you are planning a pregnancy, during pregnancy or whilst breast feeding. Please consult your healthcare professional.



For further information, advice on migraine management and for updates on the latest migraine research, please contact Migraine Action by calling **08456 011 033**, emailing info@migraine.org.uk, or visiting the charity's website at www.migraine.org.uk. All of our information resources and more are only made possible through donations and by people becoming members of Migraine Action. Visit www.migraine.org.uk/donate to support one of our projects or visit www.migraine.org.uk/join to become a member.

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