



the **POWERS THAT**

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OF B-GROUP
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A NUTRITIOUS DIET full of B-group vitamins will not only help boost your body's energy levels, but it'll also keep illness at bay.

Most of us are familiar with the B vitamins and how important they are for our health. But, what do we really know about their function, apart from what our mothers told us and what we've read on those breakfast cereal boxes?

Vitamin B, once thought to be a single vitamin, is in actuality, a collection of eight B vitamins that are chemically distinct, but often co-exist in the same foods. Playing an important role in cell metabolism, B vitamins help the body to use the energy provided by macronutrients, such as carbohydrates, proteins and fats, to help cells make new



ENHANCE YOUR DAY

DNA, enabling them to multiply.

Orla Hugueniot from Nutrition Australia, says that B vitamins 'tend to be involved in the nitty gritty chemical reactions. The vast majority of them are involved in carbohydrate metabolism and with the nervous system in electrical activity. They're involved in chemical reactions and, in the first instance, mainly relate to the release of carbohydrates in food and the utilisation of carbohydrate by the cells in the body.'

Although found in many foods, due to the delicate nature of B vitamins and the body's limited capacity to store most of them, deficiencies can occur. One exception is folate (B9) and B12, which are more readily available as they are stored in the liver with excess amounts excreted in the urine.

'B vitamins work together, and if one is deficient then it can impact on the function of the other. Very often B vitamins are involved with similar reactions and are interdependent. There's quite a complex relationship that goes on between folic acid and B12, for example, and, often, if you are taking too much folic acid it can actually hide the fact that you mightn't be absorbing enough vitamin B,' explains Orla.

Although deficiency can occur with

one or more of the B vitamins Orla says that 'functional deficiency, which is the failure of the absorption of the vitamin, is relatively common and mainly found in elderly people.'

And while vitamin B deficiencies are common in alcoholics or in those with HIV, anyone with a prolonged poor or unbalanced diet is also at risk of a deficiency. Cooking easily destroys these vitamins and food processing can reduce the amount of B vitamins that remain in foods. This is why foods made from white flour and white rice are often less nutritious than their wholegrain or wholemeal counterparts.

Adequate amounts of these vitamins should be eaten regularly as part of a well-balanced diet, but be aware that B vitamin supplements can sometimes mask deficiencies of other vitamins, while some vitamins can be toxic if taken incorrectly. For this reason, it is always recommended that you seek professional advice from a doctor or dietitian when it comes to supplementation and/or deficiency diagnosis.

THE 8 B-GROUP VITAMINS

VITAMIN B1 (thiamine)

Function: Helps to convert glucose into energy and has a role in nerve function.

Good food sources: Wholemeal cereal grains, seeds (especially sesame seeds), legumes, wheatgerm, nuts, yeast and pork. In Australia, white and wholemeal flour used for bread is fortified with thiamin.

Deficiency: Generally found in countries where white rice is the dietary staple. In the Western world deficiencies are generally caused by excessive alcohol intake and a very poor diet. Symptoms include confusion and irritability, poor arm or leg (or both) coordination, lethargy, fatigue and muscle weakness.

VITAMIN B2 (riboflavin)

Function: Primarily involved in energy production and helps vision and skin health.

Good food sources: Milk, yoghurt, cottage cheese, wholegrain breads and cereals, egg white, leafy green vegetables, meat, yeast, liver and kidney.

Deficiency: Rarely found, but usually coinciding with other B-group vitamin deficiencies. Those most at risk are people who consume excessive amounts of alcohol, or who avoid milk or milk products. Symptoms include an inflamed tongue, cracks and redness in the tongue and corners of the mouth, anxiety, inflamed eyelids and sensitivity to light, hair loss, reddening of the cornea and skin rash.

B VITAMINS ARE ESSENTIAL FOR:

- >> The breakdown of fats and proteins aiding the normal functioning of the nervous system.
- >> The breakdown of carbohydrates into glucose providing energy for the body.
- >> Muscle tone in the stomach and intestinal tract.
- >> The skin, hair, eyes, mouth and liver.

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VITAMIN B3 (niacin)

Function: Essential for converting carbohydrates, fat and alcohol into energy. It helps maintain skin health and supports the nervous and digestive systems. It's very heat stable and little is lost in cooking.

Good food sources: Meats, fish, poultry, milk, eggs, wholegrain breads and cereals, nuts, mushrooms and all protein-containing foods.

Deficiency: People who drink excessive amounts of alcohol (or live on a diet almost exclusively based on corn!) have the greatest risk. The main symptoms of a deficiency are dementia, diarrhoea and dermatitis. Other symptoms include an inflamed and swollen tongue, irritability, loss of appetite, mental confusion, weakness and dizziness. This deficiency can actually lead to death if not treated.

Excessive intake: Large doses can produce a drug-like effect on the nervous system and on blood fats.

VITAMIN B5 (pantothenic acid)

Function: Required to metabolise carbohydrates, proteins, fats and alcohol as well as produce red blood cells and steroid hormones.

Good food sources: Liver, milk, kidneys, eggs, meats, yeast, peanuts and legumes.

Deficiency: Extremely rare. Symptoms include loss of appetite, tiredness, fatigue, insomnia, constipation, vomiting and intestinal distress.

VITAMIN B6 (pyridoxine)

Function: Needed for protein and carbohydrate metabolism, the formation of red blood cells and certain brain chemicals. It influences brain processes and development, immune function and steroid hormone activity.

Good food sources: Cereal grains and legumes, green and leafy vegetables, fish and shellfish, meat and poultry, nuts, liver and fruit.

Deficiency: Excessive alcohol drinkers, women (especially those

**FAST FACTS
ABOUT VITAMIN B**

- There are eight B vitamins.
- They are essential for various metabolic processes.
- Most can't be stored by the body so need to be consumed regularly.
- Extended cooking, food processing and alcohol can destroy or reduce the availability of many of these vitamins.

on the contraceptive pill), the elderly and people with thyroid disease are at particular risk. Symptoms include insomnia, depression, anaemia, smooth tongue and cracked corners of the mouth, irritability, muscle twitching, convulsions, confusion and dermatitis.

Excessive intake: Can lead to harmful levels in the body that can damage nerves. Symptoms include walking difficulties and numbness in the hands and feet.

VITAMIN B7 (biotin)

Function: Needed for energy metabolism, fat synthesis, amino acid metabolism and glycogen synthesis.

Good food sources: Cauliflower, egg yolks, peanuts, liver, chicken, yeast and mushrooms.

Deficiency: Very rare, although overconsumption of raw egg whites over periods of several months by bodybuilders, for example, can induce deficiency because a protein in the egg white inhibits biotin absorption. Symptoms include pale or grey skin, cracked sore tongue, depression, hallucination, abnormal heart actions, loss of appetite, nausea, dry skin and scaly dermatitis, hair loss, muscle pain, and weakness and fatigue.

Excessive intake: Can contribute to raised blood cholesterol levels.

VITAMIN B9 (folic acid)

Function: Required to form red blood cells, it helps in the development of the nervous system in a foetus, as well as DNA synthesis and cell growth. For this reason, women of childbearing age

need a diet rich in folate.

Good food sources: Green leafy vegetables, legumes, seeds, liver, poultry, eggs, cereals and citrus fruits. All flour used in bread making (except for flour to be used in breads listed as 'organic') is now fortified with folic acid.

Deficiency: Symptoms include weight loss, tiredness, fatigue and weakness, folate-deficiency anaemia and (during pregnancy) an increased risk of a neural tube defect such as spina bifida for the baby.

Excessive intake: Generally considered non-toxic, although excessive intakes above 1,000mg per day over a period of time can lead to malaise, irritability and intestinal dysfunction. The main risk with excessive folate intake is that it can mask a vitamin B12 deficiency, so it is best to always consume these two vitamins within the recommended amounts.

VITAMIN B12 (cyanocobalamin)

Function: Helps to produce and maintain the myelin surrounding nerve cells, mental ability, red blood cell formation and the breaking down of some fatty acids and amino acids to produce energy. It has a close relationship with folate, as both depend on the other to work properly.

Good food sources: Liver, meat, milk, cheese and eggs, almost anything of animal origin.

Deficiency: Most commonly found in the elderly, vegans (vitamin B12 is only found in foods of animal origin) and breastfed babies of vegan mothers. Symptoms include tiredness and fatigue, lack of appetite and weight loss, apathy and depression, anaemia, smooth tongue and degeneration of peripheral nerves progressing to paralysis.