

Vitamin B6 | Pyridoxine | Pyridoxal | Pyridoxamine | Pyridoxine hydrochloride | Pyridoxal-5-phosphate

Summary of benefits:

May help to...

support carbohydrate, lipid, and amino acid metabolism (39,41)

Prevent and treat anemia.

Improve mood.

Support brain health.

Ease nausea during pregnancy.

Support heart health and function.

Reduce the risk of cancer and eye disease (103,104,133)

Vitamin B6, commonly referred to as pyridoxine, encompasses six compounds (vitamers) with vitamin B6 activity: pyridoxine, pyridoxal, pyridoxamine, and their respective 5'-phosphate esters, pyridoxal 5' phosphate (PLP), and pyridoxamine 5' phosphate (PMP) [39,40]. However, while vitamin B6 is essential and plays numerous pivotal roles in the body, it should be obtained through the diet first and foremost.

Food sources:

Vitamin B6 is found in a variety of animal and plant foods such as...

- Beef liver
- Tuna
- Salmon
- Fortified cereals
- Chickpeas
- Poultry
- Some vegetables and fruits, especially dark leafy greens, bananas, papayas, oranges, and cantaloupe (134).

Vitamin B6 plays an important role in mood regulation. This, since it's necessary for the formation of neurotransmitters, including serotonin, dopamine and gamma-aminobutyric acid (GABA) (97-99).

Due to its role in hemoglobin production, vitamin B6 may be helpful in preventing and treating anemia caused by deficiency (100).

Vitamin B6 has been used for decades to treat nausea and vomiting during pregnancy. In fact, it's an ingredient in Diclegis, a medication commonly used to treat morning sickness (101).

Vitamin B6 may help to prevent the clogging of arteries and minimize heart disease risk. Research shows that people with low blood levels of vitamin B6 have almost double the risk of developing heart disease compared to those with higher B6 levels (102).

Vitamin B6 may play a role in preventing eye diseases, especially age-related macular degeneration (AMD) which affects the geriatric population. Studies have linked high blood levels of circulating homocysteine with an increased risk of AMD (103,104). Since vitamin B6 helps reduce elevated blood levels of homocysteine, getting enough B6 may lower your risk of this disease (105).

Vitamin B6, in its coenzyme forms (PLP and PMP), participates in a wide array of processes in the body, involved in over 100 enzyme reactions, many of which are associated with protein metabolism [39]. Both PLP and PMP are crucial for amino acid metabolism. Additionally PLP is involved in the metabolism of one-carbon units, carbohydrates, and lipids [41].

Further, vitamin B6 plays a role in cognitive development through neurotransmitter synthesis and is involved in gluconeogenesis, glycogenolysis, immune function (e.g., promoting lymphocyte and interleukin-2 production), and hemoglobin formation [41]. The human body absorbs vitamin B6 primarily in the jejunum, where phosphorylated forms of the vitamin are dephosphorylated, and free vitamin B6 is absorbed through passive diffusion [40].

Measuring Concentrations and Deficiency

The concentration of vitamin B6 can be directly measured by assessing the levels of PLP, other vitamers, or total vitamin B6 in plasma, erythrocytes, or urine [39]. Indirect measurements can be made by evaluating erythrocyte aminotransferase saturation by PLP or tryptophan metabolites. Traditionally, PLP concentrations exceeding 30 nmol/L have been considered indicators of adequate vitamin B6 status in adults [41]. However, the Food and Nutrition Board (FNB) at the Institute of Medicine of the National Academies, which is now known as the National Academy of Sciences, used a plasma PLP level of 20 nmol/L as a primary indicator of adequacy when determining the Recommended Dietary Allowances (RDAs) for adults [39,41,42].

The RDA for adults 19-50 years is 1.3 milligrams (mg) and 1.7 mg for adults 50 and over. Hence, we opted for 1.7 mg in our Super U formula to ensure the daily requirement is met for all age groups and to reduce the risk of deficiency while avoiding a copiously large dose which would otherwise be excreted through the urine.

It's important to note that while these statements are based on available information in the scientific literature, it is always advisable to consult with a healthcare professional before making any changes to your supplementation or health routine.

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