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## Vegetarian lifestyle and monitoring of vitamin B-12 status.

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### Abstract

Vegetarians are at risk to develop deficiencies of some essential nutrients, especially vitamin B-12 (cobalamin). Cobalamin occurs in substantial amounts only in foods derived from animals and is essential for one-carbon metabolism and cell division. Low nutritional intake of vitamin B-12 may lead to negative balance and, finally, to functional deficiency when tissue stores of vitamin B-12 are depleted. Early diagnosis of vitamin B-12 deficiency seems to be useful because irreversible neurological damages may be prevented by cobalamin substitution. The search for a specific and sensitive test to diagnose vitamin B-12 deficiency is ongoing. Serum vitamin B-12 measurement is a widely applied standard method. However, the test has poor predictive value. Optimal monitoring of cobalamin status in vegetarians should include the measurement of homocysteine (HCY), methylmalonic acid (MMA), and holotranscobalamin II. Vitamin B-12 deficiency can be divided into four stages. In stages I and II, indicated by a low plasma level of holotranscobalamin II, the plasma and cell stores become depleted. Stage III is characterized by increased levels of HCY and MMA in addition to lowered holotranscobalamin II. In stage IV, clinical signs become recognizable like macroovalocytosis, elevated MCV of erythrocytes or lowered haemoglobin. In our investigations, we have found stage III of vitamin B-12 deficiency in over 60% of vegetarians, thus underlining the importance of cobalamin monitoring in this dietary group.

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