

## Vegetarians, the Good, the Bad, and the Challenges

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Becoming a vegetarian has become increasingly popular over the past decade, with many people turning to vegetarianism in an attempt to achieve better health. However this trend is not without its controversy. Many doctors and scientists have opposing views on vegetarianism, and this has led to confusion in the public about whether it is indeed the healthier lifestyle choice.

The major health advantage for vegetarians include decreased body mass index, waist to hip ratio, blood pressure, plasma total cholesterol (TC), triacylglycerol and LDL-C levels, serum lipoprotein(a) concentration, plasma factor VII activity, ratios of TC/HDL-C, LDL-C/HDL-C and TAG/HDL-C, and serum ferritin levels. However, being a vegetarian is not without its disadvantages and health risks. Studies have shown that vegetarians, especially vegans tend to have lower serum levels of vitamin B12 compared with omnivores. Serum vitamin B12 concentration was significantly negatively correlated with plasma homocysteine. Remethylation of homocysteine to methionine requires vitamin B12 (methylcobalamin form) as a coenzyme for homocysteine methyltransferase (methionine synthetase) and N5-methyl-tetrahydrofolate as a methyl donor [1]. Vitamin B12 is essential for new cell synthesis, blood formation, maintenance of the nervous system. Vitamin B12, as a coenzyme increases the utilization of folic acid and metabolism of carbohydrate, fat and protein etc. In the vitamins, B12 is the only one containing a mineral (cobalt), it also known as the red vitamin. Seafood, animal meats, eggs and liver are good sources for vitamin B12. Vitamin B12 is not found in plant foods, however, seaweed may contain vitamin B12 analogs which can be counted on as reliable sources of active vitamin B12. Ovo-lacto vegetarians may get vitamin B12 from eggs and dairy products. Vegans could get some very

limited vitamin B12 from fermented soybean products, seaweed and edible fungi (like mushrooms) on farms or in the wild which may be contaminated from bacteria in the soil [2].

Also, vegetarians have a lower iron status, despite iron intake of vegetarians is significantly higher than or similar to those of omnivores in different populations. Bioavailability and absorption of nonheme iron may be inhibited by certain dietary constituents that are abundant in some vegetarian diets, such as oxalates in vegetables and phytates in cereals and legumes, tannins in tea and coffee, and possibly soy protein. Heme iron comes mainly from seafood and meat, especially red meat, when it is released from the surrounding polypeptide chain. Heme is absorbed intact by the mucosal cell, where the porphyrin ring is split and iron is liberated. It is absorbed more efficiently than nonheme iron and is minimally affected by dietary factors, which probably explains the lower iron status of vegetarians compared with omnivores [1].

Many new diet trends focus on low carbohydrate and high protein. This is obviously very difficult for the vegetarian. The major challenges for vegetarians face is the imbalance of vitamins and trace elements. However, a well designed and balanced vegetarian diet will normal satisfy the body's needs in terms of vitamins and trace elements, however this is often difficult to achieve for the some vegetarian populations. They may need to do more regular nutritional assessment to ensure they are not deficient in vitamins and trace elements.

### References

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