

Vegetarian Diets



Vegetarians are people who choose to either avoid all or certain types of animal derived foods. Naturally, when food groups such as meat or dairy are eliminated from the diet, as are their respective nutrients. Deficiencies in these nutrients can arise when a vegetarian diet is not carefully planned. Vegetarian eating is certainly a healthy option and has been shown to be beneficial in the prevention and management certain diseases, when it is executed correctly and includes a variety of different foods.

Specific types of vegetarianism:

1. Lacto-ovo vegetarians
 - Follow a predominantly plant based diet
 - Avoid meat, poultry and seafood
 - Include dairy foods and eggs
2. Lacto vegetarians
 - Follow a predominantly plant based diet
 - Avoid meat, poultry, seafood and eggs
 - Include dairy foods
3. Vegans
 - Only consume plant foods
 - Avoid all animal derived foods

Planning a vegetarian diet which is nutritionally complete:

Generally speaking the wider food variety you have the easier it is to ensure that you will obtain all the essential nutrients. Excluding meat, poultry, seafood, dairy and eggs can make it difficult to obtain nutrients such as protein, vitamin B12, vitamin D, omega-3 fatty acids and minerals, iron and calcium.

The following are the key nutrients for consideration in vegetarian/vegan diets.

Protein

Dietary proteins are digested to release amino acids which the body uses to make new proteins e.g. for building or repairing tissue. There are 21 different amino acids, some of which can be produced by the body (non-essential) and the remainder which must be supplied by food (essential). Animal sources of protein e.g. meat, fish or chicken contain all of the essential amino acids however plant proteins do not.

Some plant foods, for example grains, are low in the amino acid lysine. Legumes on the other hand contain high levels of lysine. This example highlights the importance of including a variety of plant proteins to ensure that all essential amino acids are obtained. Eating complimentary proteins at the same time is not necessary if a good variety of plant proteins are consumed across the day.

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PROTEIN *Continued*

Plant sources of protein:

- Legumes e.g. lentils, beans and peas
- Grains (breads and cereals)
- Soy foods (tofu, soy milk and soy yoghurt)

VITAMIN B12 (CYANOCOBALAMIN)

Vitamin B12 is a water soluble [vitamin](#) which plays a major role in the functioning of the [brain](#) and [nervous system](#). It also is important for the process of [blood](#) formation and [DNA](#) synthesis. It requires the presence of folate to work properly.

This vitamin is found in foods of animal origin such as meat, eggs and milk. In fact, no plant food naturally contains significant amounts of active vitamin B12.

Lacto-vegetarians and lacto-ovo vegetarians can obtain adequate amounts of vitamin B12 from dairy foods and/or eggs. For vegans however, fortified products including soy milk, rice milk and meat analogs need to be consumed regularly. Alternatively a daily vitamin B12 supplement is required.

VITAMIN D

Vitamin D helps the body to absorb calcium through the small intestine. This process, with the action of calcium, helps us to develop and maintain healthy bones, teeth and muscles. The major source of vitamin D for most Australians is sunlight. Those who are bedbound or wear clothes which cover most of their skin surface would have difficulties obtaining adequate amounts of vitamin D.

Dietary sources of vitamin D: oily fish, eggs and fortified products such as margarine, soy milk and breakfast cereals.

When sun exposure is inadequate and the intake of dietary sources of vitamin D is inadequate, vitamin D supplements are recommended.

OMEGA-3 FATTY ACIDS

Omega-3 fatty acids Eicosapentaenoic acid (EPA) and Docosahexaenoic acids (DHA) play a key role in cardiovascular health and eye and brain development.

Dietary sources of omega-3 include: oily fish, algae and fortified eggs.

Vegetarian diets are generally rich in omega-6 fatty acids however low in omega-3 fatty acids as these occur naturally in animal based foods.

Plant based omega-3 fatty acid, alpha-linolenic acid (ALA), can be converted to EPA, however this tends to be at a rate of <10% and even lower for DHA.

ALA sources include: flaxseed, walnuts, canola oil and fortified soy milk and cereals.

Supplements are available to ensure adequate omega-3 fatty acids are obtained. DHA and EPA can be supplemented by fish oil capsules which may be acceptable to some vegetarians/vegans. Alternatively, micro-algae supplements providing DHA are well absorbed and can be converted effectively to EPA.

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IRON

Iron plays an important role in the transportation of oxygen in the blood. When there is an iron deficiency, less oxygen is delivered to the cells which can lead to fatigue, tiredness and lowered immunity.

Vegetarian/vegan diets can be high in iron however the iron derived from plant foods is 'non-haem iron'. This type of iron is not well absorbed in comparison to animal sources (red meat). For this reason, the recommended iron intake for vegetarians is 1.8 times that of non-vegetarians.

Plant sources of iron include: wholegrains, green leafy vegetables, legumes and fortified fruit juice, soy milk and cereals.

Non-haem iron is more sensitive to the inhibitors of absorption such as phytates (found in grains, beans and seeds), calcium and polyphenolics found in tea, coffee and cocoa. Limiting these inhibitors when eating iron rich foods will help maximize iron absorption.

Vitamin C can actually enhance the absorption of iron and reduce the effects of the phytates. Therefore combining sources of plant iron and foods rich in vitamin C (fruits and vegetables) will help the absorption of iron.



CALCIUM

Calcium is important for the health of bones and teeth.

The calcium intake of vegans tends to be lower than lacto-ovo vegetarians and non-vegetarians. Dietary sources of calcium include: dairy (milk, cheese, yoghurt), fortified cereals and soy/rice milks, dark green vegetables, legumes and almonds.

Vegans will find it easier to meet their dietary requirements of calcium by using fortified plant foods/beverages and/or taking calcium supplements.

It certainly is possible to follow an nutritionally sound vegetarian/vegan diet with careful planning and consideration of 'at risk' nutrients. If necessary see a dietitian for individual specialist advice.

REFERENCES:

2009 Position of the American Dietetic Association: Vegetarian Diets. *Journal of the American Dietetic Association*