

Calcium

Vegan sources of calcium are readily available in a balanced diet; however, it is vital for vegans to ensure that a variety of calcium sources are consumed regularly to avoid deficiency.

Why it's important

Calcium is necessary for normal growth and development in animals. It is the most abundant mineral in the human body accounting for around two per cent of the total body weight. Calcium plays an important structural role in maintaining bone health and strength, in fact around 99 per cent of our calcium is deposited in the bones and teeth.

Calcium Requirements

The UK Department of Health's Reference Nutrient Intakes (the daily amount that is enough for 97% of people: similar to RDAs used previously in the UK) are as follows¹.

Age/Sex	Calcium requirement (mg/day)
0-12 months	525
1-3 years	350
4-6 years	450
7-10 years	550
Teenagers	800 - 1000
Adults	700

Vegan Sources of Calcium

Calcium is abundant in a wide assortment of vegetables. Good plant sources of calcium include:

- Green leafy vegetables: spring greens, kale, broccoli, parsley. (Spinach is not a good source of calcium. It is high in calcium, but the calcium is bound to oxalates and therefore poorly absorbed.)
- Fortified foods such as soya milk
- White flour (as calcium is added by law) and white flour products
- Calcium-set tofu

- Oranges
- Figs and black molasses
- Drinking hard water can provide 200mg of calcium daily, although soft water contains almost none²

Examples of amounts of foods providing 100mg calcium³

Type of Food	Grams
Almonds	42g
Black Treacle	18g
Broccoli	250g
Carob	29g
Chickpeas (boiled)	217g
Curly Kale (boiled)	67g
Currants	108g
Chickpea flour	56g
Figs	40g
Oranges	212g
Soya Milk (calcium-fortified)	83g
Spring Greens (cooked)	133g
Tahini	15g
Tofu (made with calcium sulphate)	33g
Watercress (uncooked)	59g
White Plain Flour	71g
Wholemeal Flour	263g
White Bread	56g
Wholemeal Bread	94g
Brown Bread	54g
Granary Bread	48g

Vegan calcium intakes

International studies measuring typical vegan intakes of calcium report that vegans generally consume about 500-940 mg daily, providing about 50-94% of recommended levels for adults to age 50²⁻⁴, which suggests that vegan calcium levels normally fall below the amount suggested for optimum bone health. Findings from one large prospective study confirmed this showing that vegans with calcium intakes of less than 525mg per day had a 30% higher increase for bone fractures⁵. However, the percentage of key nutrients required for adequate bone health is a complex issue as low calcium rates are not necessarily determinates for osteoporosis⁶.

Osteoporosis

It is estimated that more than 200 million people worldwide have osteoporosis. Several dietary recommendations include dairy products as an important part of preventing and treating this disease^{7,8}; however, studies show that osteoporosis appears to be more dominant in developed countries where dairy products are

plentiful and consumed more by the population^{9,10}. In fact, a cohort study in Sweden found that there was no risk reduction in fracture rates with milk intake, and that increased milk intake was actually associated with increased mortality.

Other Factors to Consider:

In order to adequately measure the calcium that exists in your diet, it is important to consider both the amount consumed as well as the bioavailability of calcium in specific food items. The bioavailability is determined by the amount of calcium that is actually available for absorption into the body from the food.

Though dairy products are often associated with calcium in adverts and even dietary recommendations, the amount of calcium in dairy products is actually not as easily absorbed as the calcium in many dark green leafy vegetables. The bioavailability of kale, for example, is considerably higher than that from cow's milk. In fact, a study which measured and compared the absorption of calcium from kale and cow's milk in 11 women found that kale exhibits excellent calcium absorbability¹¹.

An exception to this positive absorption level is spinach which contains a relatively high amount of calcium; however it is bound to a substance called oxalate which hinders calcium absorption¹² so it is important to obtain calcium from low-oxalate green vegetables such as collard greens, kale, and turnip greens, rocket and several others. Nonetheless, an adequate amount of calcium can be obtained from a well-planned vegan diet¹³.

Calcium is a team player

Calcium is sometimes thought of as *the* 'bone-builder', but it should not be viewed in isolation. Other nutrients including vitamin D, vitamin K, protein and potassium play an important part in building bones. Exercise also helps to build bones.

Vitamin D assists with calcium absorption so it is important to ensure a supply. Expose your face and arms to the sun for approximately 15 minutes per day. If your sun exposure is limited (for example in a British Winter), or if you are dark skinned make sure that you get 10 to 20 micrograms of vitamin D2 each day from fortified food or a supplement such as VEG1 available from The Vegan Society.

Salt (sodium) causes calcium loss, so opt for low-sodium salt (e.g. Losalt) and low-sodium foods. Caffeine reduces calcium absorption so reduce your intake of caffeinated foods and drinks such as coffee and tea.

Vegetables and fruit improve calcium balance so be sure to eat plenty. Protein stimulates bone building so it is important to ensure an adequate intake of protein, but avoid excesses. Moderate protein intake - about one gram of protein per kilogram of your healthy body weight per day - is probably ideal.

References

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