

## **Calcium Deep Dive: Why Plants Are the Stronger Source**

For decades, dairy has been marketed as essential for strong bones. But calcium doesn't start in milk — it starts in the soil. Plants draw calcium up through their roots, making it available in leafy greens, beans, nuts, seeds, and fortified plant milks. Cows only pass calcium along second-hand by eating plants (or through supplements added to their feed). When you go directly to the source — plants — you get the same calcium, plus added benefits dairy can't provide.

### **Plant-Based Calcium Sources**

Excellent plant sources of calcium include leafy greens like kale, collards, and bok choy; beans and lentils; almonds; sesame seeds (tahini); chia seeds; and fortified plant milks. Many fortified plant milks actually match or exceed cow's milk in calcium content — without cholesterol or hormones. In fact, about 90% of dairy milk in the U.S. comes from cows raised on large factory farms, where their feed is routinely fortified with calcium and other minerals to maintain production. This means the calcium in cow's milk is often supplemented at the farm level before it ever reaches your glass.

### **Absorption and Bioavailability**

Calcium from plants is often well absorbed. In fact, the calcium in kale and bok choy is more bioavailable than the calcium in milk. Some foods like spinach contain oxalates that limit absorption, but a varied plant-based diet ensures plenty of usable calcium. Unlike dairy, plant foods also provide fiber, magnesium, potassium, and antioxidants that work together to support bone health.



## Bone Health Beyond Calcium

Strong bones depend on more than calcium alone. Vitamin D, vitamin K, magnesium, potassium, and regular weight-bearing activity all play critical roles. Research shows that countries with the highest dairy intake also have some of the highest rates of osteoporosis — evidence that calcium from dairy is not the magic solution it's been marketed as (Willett & Ludwig, NEJM, 2020). Plant-rich diets — especially those high in legumes, leafy greens, and soy foods — have, in several large observational studies, been associated with better bone density and a lower risk of hip fractures, particularly among post-menopausal women when overall diet quality is high (Zhang et al., JAMA Intern Med., 2005; Sotos-Prieto et al., Am J Clin Nutr., 2024).

**Key Evidence:** Large cohort studies (Nurses' Health Study, Shanghai Women's Health Study) and recent reviews show that diets rich in soy, legumes, and greens are linked to stronger bones and reduced fracture risk.

## The Downsides of Dairy

While dairy delivers calcium, it also carries risks including elevated cholesterol, saturated fat, hormones, and antibiotic residues. In addition, around 65-70% of the global population is lactose intolerant, with higher rates in Asia, Africa, and South America. For these individuals, dairy can cause digestive discomfort and is not a reliable calcium source. Plants deliver calcium without these risks — and with protective phytonutrients that support overall health.



## The Bottom Line

You don't need dairy for strong bones. By going directly to the source — plants — you get calcium along with fiber, antioxidants, and other nutrients that dairy lacks entirely. A varied, plant-rich diet provides all the building blocks for strong, resilient bones, without the downsides of dairy.

## References

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3. Cui Y, Cai H, Gao YT, et al. Associations of dietary intakes of calcium, magnesium and soy isoflavones with osteoporotic fracture risk in postmenopausal women: a prospective study. *J Nutr Sci.* 2022;11:e56.
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