California Walnuts – Health & Nutrition A-Z

For over 30 years, the California Walnut Global Health Research Program has supported researchers in publishing more than 250 peer-reviewed articles exploring the effects of walnut consumption across a wide range of health outcomes. Below is a summary of key findings with references at the end for additional exploration.

Alpha-Linolenic Acid (ALA)

- Walnuts are the only nut to contain significant amounts of the plant-based essential omega-3 Alpha-Linolenic Acid ALA (2.7g/30). Research reviewed by EFSA (European Food Safety Authority), leading to an approved health claim, has **shown ALA contributes to the maintenance of normal blood cholesterol levels**, which is an important risk factor for cardiovascular health.[1]
- Recent studies in the 2020s have shown that **ALA supports not only heart health, but also cognitive function and inflammation.**[2,3] Each year, new science is upending the traditional assumption that only seafood- or marine-based omega-3 fats offer significant health benefits.

Brain Power

- Eating nuts, including walnuts, may be related to **better overall cognition at older ages**, according to a study of 15,467 older women (aged 70 or above), without a history of stroke.[4]
- Eating walnuts may **improve performance on cognitive function tests**, including those for memory, concentration and information processing speed, as demonstrated by study of a representative weighted sample of US adults 20 to 90 years of age.[5]
- Researchers at the University of Reading found that eating a generous handful of walnuts with breakfast (50g), resulted in faster reaction times throughout the day and **better memory performance later in the day** compared to eating a calorie-matched breakfast without nuts.[6] The research involved 32 healthy young adults aged 18-30.
- A randomized clinical trial of 447 cognitively healthy Spanish women at high cardiovascular risk, showed walnut consumption, as part of a Mediterranean diet, is associated with better memory scores and cognitive function.[7]

Cancer

- Observational studies suggest that higher walnut intake is associated with **lower cancer-related mortality**.[8]
- A 2025 clinical trial published in *Cancer Prevention Research* found that eating walnuts daily boosted levels of urolithin A—a gut-derived compound from walnut ellagitannins**.** Urolithin A was linked to lower inflammation and beneficial immune changes in colon polyps, which are precursors to colon cancer. These findings suggest **walnuts may help support colon health and reduce cancer risk** through microbiome-driven mechanisms.[9]
- A small study of 10 middle-aged women with breast cancer, found those who consumed approximately 57g of walnuts per day for 2-3 weeks experienced beneficial genetic changes related to cancer development and growth, including apoptosis (cell death), inflammation, cell proliferation (cell multiplication), and metastasis (spread of cancer).[10]

Diabetes

- A 2025 meta-analysis of 32 studies found walnut consumption significantly improved metabolic health markers. Results showed reductions in insulin resistance (HOMA-IR) and body weight**,** reinforcing walnuts' role in glycemic control.[11]

- Large-scale epidemiological and prospective studies suggest walnut intake lowers diabetes risk. Adults who eat walnuts may have about half the risk of developing type 2 diabetes[12], and long-term data from NHS (National Health Service) cohorts show women who regularly consumed walnuts had a significantly lower risk of type 2 diabetes compared to those who rarely ate them.[13]
- Machine learning analysis from the PREDIMED study identified 19 walnut-related metabolites linked to reduced disease risk. Among 1,833 participants at high cardiovascular risk, the walnut metabolite profile was associated with a 17% lower risk of type 2 diabetes.[14]

Eye Health

- Omega-3 ALA from walnuts supports retinal health: A recent review highlighted ALA's role in reducing inflammation and oxidative stress in ocular tissues, helping maintain vision and eye health.[15]
- Large cohort data show women who regularly eat nuts, including walnuts, have a reduced risk of intermediate age-related macular degeneration, likely due to antioxidant and omega-3 content.[16,17]

Fullness

- Eating walnuts may help you feel more satisfied after meals. Clinical studies show that people report greater fullness and less hunger after walnut-containing meals compared to similar meals without walnuts.[18]
- Brain imaging studies reveal that walnut consumption activates regions involved in appetite control, suggesting improved attention to food choices and reduced cravings.[19]
- Walnuts can influence appetite-regulating hormones, increasing peptide YY (which promotes satiety) and reducing ghrelin (the "hunger hormone"), helping to control food intake.[20]

Gut Health

- Walnuts provide key nutrients for gut health, including fibre, polyphenols, ellagitannins, and plant-based omega-3 fatty acids (ALA). This unique combination feeds beneficial bacteria and produces bioactive metabolites like urolithins, which help reduce inflammation and support overall digestive health.[21]
- Human studies show walnut consumption increases gut microbial diversity and promotes the growth of beneficial genera such as *Roseburia* and *Gordonibacter*. These changes are linked to improved metabolic and inflammatory profiles.[22,23]
- Emerging research suggests walnuts may help protect the stomach lining and reduce inflammation associated with NSAID-induced gastric damage[24], and *Helicobacter pylori* infection[25] which increases stomach cancer risk. While evidence is preliminary, findings from animal and mechanistic studies are promising and warrant further clinical investigation[26].

Heart Health

- Over 30 years of research and nearly 70 publications demonstrate a positive link between walnut consumption and heart health across numerous health measures.
- California walnuts have the heart-healthy seal of approval from the heart health charity, Heart UK, and EU-approved and GBNHC Register-adopted health claim states that a handful of walnuts a day (30g) can have a positive effect on the elasticity of the blood vessels and can thus help keep the cardiovascular system healthy.[27]
- Eating walnuts may support heart health by improving lipid profiles, lowering blood pressure, and reducing cardiovascular disease risk. Regular intake of walnuts (30g/day) has been shown to significantly reduce total cholesterol, LDL-C, and intermediate-density lipoproteins without affecting body weight.[28] In long-term cohort studies, higher walnut consumption (≥5

servings/week) was associated with a lower risk of cardiovascular disease mortality and greater life expectancy.[29] Additionally, walnut-enriched diets have been linked to reductions in proximal aortic stiffness[30ꝫ] and improvements in fasting morning cortisol levels[31], both of which are markers of cardiovascular health.

- One study found that regular consumption of foods rich in omega-3s, including walnuts and fish, can reduce risk of death by three years after suffering a heart attack.[32]
- Walnut consumption may reduce inflammatory biomarkers and the harmful response of LDL cholesterol, lowering markers such as TNF-alpha and IL-6.[33,34]
- Advanced metabolomics research identified that walnut-related compounds were linked to a 29% lower risk of cardiovascular disease in high-risk individuals.[35]

Immune Support

- Walnuts are a source of zinc and vitamin E, nutrients that play an important role in supporting immune system function.
- Walnuts provide polyphenols and plant-based omega-3 ALA, which may help reduce inflammation and support immune health. Research shows that walnut metabolites are linked to lower levels of inflammatory biomarkers, key indicators of the immune response.[36]

Joint Health

- Walnuts provide plant-based omega-3 ALA and antioxidants that help reduce systemic inflammation—a key contributor to joint discomfort and arthritis risk.[37] Chronic inflammation is linked to cartilage breakdown and pain in conditions like osteoarthritis.
- Clinical and mechanistic studies show walnut consumption can lower inflammatory biomarkers such as TNF-α and IL-6,[38,39,40] which are associated with joint health and musculoskeletal integrity. Including walnuts as part of an anti-inflammatory dietary pattern may support joint flexibility and reduce long-term risk of arthritis.

Kids

- Walnuts deliver essential nutrients—healthy fats, protein, and minerals—that support growth and development in children. Omega-3 ALA in walnuts is critical for brain development and may complement diets low in marine-based omega-3s.
- Evidence from randomized controlled trials[41] and dietary modelling[42] shows that adding walnuts to children's diets improves overall diet quality by increasing intake of healthy fats, protein, fibre, and key micronutrients such as magnesium and folate. These changes also support better lipid profiles and gut health.
- A 2025 population-based cohort study from Spain (n=1,737 mother–child pairs) found that higher maternal intake of nuts and seafood during pregnancy was associated **with improved neuropsychological outcomes in children aged 4–15**, including attention and working memory.[43] A complementary study (n=1,386) published in European Child & Adolescent Psychiatry reported that maternal nut and fish intake was linked to **reduced risky decision-making behaviours in children at age 11**.

Longevity

- A large prospective cohort study from Harvard, based on data from over 93,000 participants tracked for 20 years, found that adults who consumed five or more servings of walnuts per week had a 14% lower risk of death from all causes, a 25% lower risk of dying from cardiovascular disease, and gained an estimated 1.3 years of life expectancy compared to non-consumers.[44]
- Large-scale cohort studies, including the Nurses' Health Study (121,701 participants) and Nurses Health Study II (116,430 participants), show that regular nut consumption in youth is associated

with better overall diet quality and reduced long-term cardiovascular risk, a leading cause of death.[45]

- A 2023 cohort study of 71,704 women aged 60 or over found that regular nut consumption, including walnuts, was associated with a significantly lower risk of frailty.[46]

Mental Wellbeing

- Consuming walnuts may be associated with a lower prevalence and frequency of depression symptoms. Analysis of data from 26,656 adults in the NHANES survey found depression scores were 26% lower for walnut consumers and 8% lower for consumers of other nuts compared to non-consumers.[47]
- A randomized controlled trial of 80 healthy university students (ages 18–35) found that eating 57 g (2 oz) of walnuts daily for 16 weeks helped prevent negative changes in self-reported mental health, stress, and depression during a stressful academic period. Walnut consumers also showed metabolic changes linked to stress resilience and exploratory improvements in sleep quality.[48]

Neuroprotection

- Walnuts contain polyphenols, tocopherols, and polyunsaturated fatty acids that may reduce oxidative stress and inflammation, help maintain neural membrane integrity, and reduce protein aggregation involved in Alzheimer's disease.[49]
- In a Spanish cohort of older adults at high genetic risk for Alzheimer's disease, higher blood levels of omega-3 ALA—found in walnuts—were associated with better brain glucose metabolism in regions vulnerable to early Alzheimer's pathology.[50]

Older Adults

- In an epidemiological study, women who consumed at least two servings of walnuts per week in midlife had a greater likelihood of healthy aging**,** defined as living beyond 65 with good mental health and no major chronic diseases, cognitive decline, or physical impairments.[51]
- Long-term data from the CARDIA study that looked at 20 years of diet history and 30 years of physical and clinical measurements found that walnut consumption early in life was linked to better lifestyle and heart health outcomes.[52,53] Participants who ate walnuts were more physically active, had higher-quality diets, and showed improved heart disease risk profiles as they aged into middle adulthood.

Polyphenols

- Polyphenols are plant-based compounds that help protect cells from oxidative stress and support overall health. Walnuts are a rich source of polyphenols, including ellagitannins and flavonoids, which contribute to their antioxidant and anti-inflammatory properties.[54] These compounds may help reduce oxidative stress, a key factor in chronic disease development.
- Walnuts are unique among nuts for their combination of polyphenols and ellagitannins, which work together to support heart and gut health by influencing microbiota and reducing inflammation.[55]
- Research shows walnut polyphenols can modulate signalling pathways linked to inflammation and cell protection. Research suggests these bioactives may play a role reduce risk factors for cardiovascular disease and certain cancers.[56]

Quality of Diet

- Walnuts boost diet quality. Adding them to meals or snacks increases fibre, magnesium, and healthy fats while reducing less nutritious foods—consistent with the UK *Eatwell Guide* emphasis on plant-based proteins and unsaturated fats.

- Modelling studies show that substituting even part of the meat in the diet with walnuts improves nutrient intake (fibre, omega-3 ALA, magnesium) and raises overall diet quality scores—consistent with UK recommendations to reduce red and processed meat and increase plant protein.[57]
- Swapping sweets or refined grains for walnuts makes diets more nutrient-dense and lowers added sugars and saturated fat[58], supporting UK guidance to limit free sugars and saturated fat.

Reproductive Health

- Walnuts are a source of zinc and omega-3 fatty acids, which play a role in sperm quality and hormone regulation.
- In a Spanish clinical trial, men who added mixed nuts (including walnuts) to their diet reported improved orgasmic function and sexual desire compared to those who did not.[59] Additionally, these men also showed improve markers of sperm quality.[60]
- A separate study from 2012 also found that walnut supplementation improved sperm vitality and motility in healthy men.[61]

Sleep

- Eating a handful of walnuts (about 40 g) with dinner improved overall sleep quality and reduced daytime tiredness in healthy young adults during a four-week trial.[62]
- In this study, eating walnuts increased natural melatonin production, as shown by urinary biomarkers. Melatonin is a hormone that regulates sleep, and researchers suggest walnuts' unique nutrient mix—tryptophan (84.6 mg), plant-based melatonin (118 ng), magnesium (45 mg), B vitamins, and healthy fats—may help support better rest.
- Another study in university students showed that eating walnuts regularly helped protect mental well-being during stressful periods and was also linked to better self-reported sleep quality over time. Improvements included feeling more rested, fewer night-time awakenings, and better overall sleep scores compared to the control group.[63]

Taste

- Walnuts taste great—and that matters. People stick with healthy foods they enjoy, and walnuts rank high for flavour. Promoting them isn't just practical—it's a smart public health move.
- Large-scale surveys report that the number one reason people eat walnuts is because they find them "delicious," followed by health benefits and convenience.[64] Their texture is also perceived as versatile and suitable for many recipes including Walnut Mince Chilli, Walnut and Kale Pasta and Salmon with Chipotle Walnut Quinoa.
- Walnuts are celebrated in global dishes. Their cultural adaptability makes walnuts a practical, flavourful choice for promoting healthy eating habits everywhere.

Urolithin A

- Urolithin A is a compound that the body makes when gut bacteria break down certain plant-based compounds (polyphenols) found in walnuts.[65]
- Research shows urolithin A can reduce inflammation in the gut and throughout the body, support healthy immune function, and may even help protect against chronic diseases like cancer by improving cell health and mitochondrial function [1–3]. [66]
- A 2025 clinical trial found that people who ate walnuts had higher levels of urolithin A, which was linked to reduced inflammation in the gut and bloodstream. Researchers observed positive changes in colon polyp tissue—precursors to colorectal cancer—as well as lower levels of inflammatory markers (TNF-α, IL-6) and healthier immune cell profiles.[67]

Vegan

- A healthy handful of walnuts (approx. 30g) provides a rich source of the plant based essential omega-3 fatty acids alpha-linolenic acid (ALA). Research suggests that walnuts, when substituted for meat, may improve diet quality, support cardiovascular health and lower the risk for developing type 2 diabetes and overall all-cause mortality.[6869]

Weight Management

- Walnut intake does not lead to weight gain. Large prospective studies show that adults who regularly eat nuts, including walnuts, tend to gain less weight over time (about 0.37 kg less over four years per extra half-serving per day) and have a lower risk of becoming obese compared to those who rarely eat them.[70]
- Clinical trials show that eating walnuts as part of a healthy diet can help reduce fat stored deep around the organs (known as visceral fat) and fat inside the liver. These changes are important because excess fat in these areas is linked to higher risk of heart disease and diabetes. [71]
- Walnuts provide about 21% fewer usable calories than food labels suggest because not all the energy in nuts is absorbed by the body. A controlled study in healthy adults confirmed that a 30 g portion delivers approximately 146 kcal—significantly less than the 185 kcal value listed in standard food composition tables. For people watching their weight, this means walnuts are less energy-dense than they appear, making them a smart snack choice.[72]
- Adding walnuts to the diet improves overall diet quality and helps replace less healthy foods. This swap is linked to better nutrient intake and less weight gain over time.[73]

X-factor Nutrients

- Walnuts stand out for unique compounds not commonly found in other nuts, including **tryptophan** (an amino acid that helps produce serotonin and melatonin), **plant-based melatonin** (supports healthy sleep), and **ellagic acid** (a polyphenol with antioxidant and anti-inflammatory properties).
- Walnuts also contain antioxidants such as **gamma-tocopherol** (a form of vitamin E) and phytochemicals that work together to protect cells and support heart, brain, and gut health.

Young Adults

- A 2023 randomised trial (n=84) found that snacking on tree nuts including walnuts improved metabolic health markers such as waist circumference and insulin levels in young adults with metabolic syndrome risk factors.[74]
- Data from the CARDIA study, which followed young adults for 30 years, found that walnut consumers had better heart health profiles, including lower blood pressure and cholesterol, and were more likely to maintain healthy behaviours into middle age—factors linked to longer lifespan.[75]

Zinc

- Walnuts provide zinc, a nutrient important for immune function, wound healing, and overall metabolic health.
- Zinc deficiency is a global concern, especially in populations with low meat intake. Promoting walnuts can help close nutrient gaps.[76]

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