



Nuts and Cardiovascular Disease

Consistent evidence, over several decades, demonstrates that nuts are cardioprotective foods.

Interest in the relationship between nut consumption and heart disease risk intensified following the 1992 publication of findings from the Adventist Health Study ^[1]. This landmark study was the first to report that regular nut intake was associated with a lower risk of coronary heart disease.

Since then, a wealth of evidence has firmly established the role of nuts in cardiovascular risk reduction, for both primary and secondary prevention.



The body of evidence

An umbrella review reported daily nut consumption to be inversely associated with both cardiovascular disease (CVD) and coronary heart disease (CHD) incidence, and CVD mortality ^[2].

Compared with no nut intake, consuming a 28g handful of nuts and seeds per day was associated with the following relative risk reductions:

- 21% reduction in CVD
- 25% reduction in CHD
- 22% reduction in CVD mortality.

Evidence from several systematic reviews and meta-analyses further supports a protective effect of regular nut consumption on CVD and CHD risk ^[3-10].

There are several mechanisms by which nuts may reduce this risk, including beneficial effects on cardiovascular risk factors such as blood lipids, blood pressure, inflammation, and markers of glycaemic control ^[11].

In the context of a heart-healthy eating pattern, regular nut consumption reduces the risk of CVD ^[4].

A review by Australian researchers ^[4] found that regularly eating a 30g handful of nuts significantly reduced:

- LDL cholesterol (LDL-C)
- Total cholesterol (TC)
- Triglycerides (TG)
- TC:HDL cholesterol
- LDL:HDL cholesterol, and
- Apolipoprotein B (apo B).

Nut consumption also improved other cardiovascular risk markers, including flow-mediated dilation. Favourable, but non-significant trends were seen for other risk markers, such as systolic and diastolic blood pressure ^[4].

These findings are reinforced by another systematic review and meta-analysis of 113 randomised controlled trials, concluding that nut consumption favourably affects blood lipid profiles in adults ^[12].

Among the findings of this study, increasing nut intake led to reductions in TC, LDL-C, non-HDL cholesterol, apo B and the lipid ratios TC:HDL cholesterol and LDL:HDL cholesterol, with a non-significant effect on TG and HDL cholesterol (HDL-C).

Nuts are rich in bioactive compounds which can lower blood lipid profiles ^[12].

The evidence linking nut consumption with total CVD and CHD is strong and consistent. Emerging findings for stroke, heart failure, atrial fibrillation, and peripheral artery disease are promising, although further research is needed to clarify these associations ^[11].

The body of evidence consistently shows CVD risk reduction benefits from a 30g/day intake of nuts ^[2,4].

The Heart Foundation's 5-step heart-healthy eating pattern ^[13]:

1. Eat plenty of vegetables, fruit, and wholegrains.
2. Include a variety of protein-rich foods, with the best options being plant-based proteins like legumes, nuts and seeds, as well as fish and seafood. Include smaller amounts of eggs and lean poultry and limit lean red meat to 1-3 times a week.
3. Choose unflavoured milk, yoghurt, and cheese. If you have heart disease or high cholesterol, choose reduced-fat varieties.
4. Include healthy fats and oils, like avocados, olives, nuts and seeds, and healthy oils for cooking, like olive, canola, sunflower, peanut and soybean oil. If you eat fish, try to have it 2-3 times a week to benefit from heart-healthy omega-3 fats.
5. Use herbs and spices to flavour foods instead of salt.

Potential mechanisms of action

The cardioprotective effect of nuts is likely due to their unique nutritional profile, and the synergistic effect of multiple bioactive components.

Nuts provide unsaturated fatty acids, plant protein, phytosterols, fibre, minerals (including potassium, calcium and magnesium), vitamins (such as vitamin E and B6) and phenolic and bioactive compounds, all of which may contribute to their cardioprotective effects [4,11].

Some components of nuts, and their mechanisms of action:

Unsaturated fatty acids	Nuts are rich in unsaturated fatty acids, relative to saturated fatty acids – which supports lowering TC and LDL-C levels, without negatively affecting HDL-C [14,15]. Some nuts also provide n-3 polyunsaturated fatty acids, which may contribute to reductions in TG levels [16].
Phytosterols	Plant phytosterols, naturally present in nuts, compete with cholesterol for absorption in the intestine, thereby helping to lower circulating cholesterol levels [17,18]. Plant sterols may also regulate proteins implicated in cholesterol metabolism, contributing to a lowering of TC and LDL-C levels [19].
Amino acids	Nuts are the richest plant source of the amino acid L-arginine, which is involved in the synthesis of nitric oxide – a vasodilator, which improves endothelial function and helps regulate blood pressure [20].
Dietary fibre	Nuts provide dietary fibre, including soluble fibre. Soluble fibre has been shown to lower LDL-C levels by binding to cholesterol in the digestive system, preventing its absorption into the bloodstream [21,22]. This can lead to increased excretion of cholesterol from the body.
Phytochemicals	Nuts contain a range of antioxidant phytochemicals (such as polyphenols, vitamin E, riboflavin, selenium, manganese, copper and zinc) which are thought to positively affect lipid oxidation, oxidative stress and platelet function [23-25].

Convincing evidence shows that regular nut consumption improves weight outcomes [26]. And a healthy body weight is important for overall cardiovascular health.

If every Australian were to eat a 30g handful of nuts daily, at least \$281 million could be saved in health care expenditure due to CVD [28].

What does this all mean?

The body of evidence shows CVD risk reduction benefits with regular nut consumption. Encourage patients to eat a daily 30g handful of nuts, as part of a heart-healthy eating pattern, for primary and secondary prevention of CVD.

Most Australians are not eating enough nuts. An analysis of national dietary intake data found just 2% ate 30g of nuts a day, and 60% ate no nuts at all [27].



A daily 30g handful of nuts is good for heart health.

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