



A factsheet for health professionals

Almonds

for heart health

Cardiovascular disease (CVD) including heart disease is the major cause of death in Australia. The top three attributable risk factors for CVD relate to diet: high blood pressure, high body-mass index and high total cholesterol.^{1,2}

Dietary intervention is key to managing these risk factors and there is compelling evidence that consuming nuts, including almonds, offers protection against CVD.

What your clients and patients need to know

- Almonds are a heart healthy food.
- Eating a handful of almonds every day as part of a healthy diet may help reduce the risk of CVD including heart disease.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.
- To get the most benefit, choose almonds without any added salt or sugar.

Recommended daily amount

The Australian Dietary Guidelines recommends **30 grams (a handful)** of nuts, including almonds, every day.³

When eaten as part of a healthy, varied diet, almond consumption contributes to **heart health without causing weight gain.**



Research findings: almonds and cholesterol

There is over 25 years of research looking at the effects of almond consumption on heart health.

Since an early landmark study that observed a decrease in total cholesterol and in low density lipoprotein (LDL or 'bad') cholesterol in individuals on a diet high in monounsaturated fat from almonds,⁴ a considerable body of research has emerged focusing on the relationship between nuts and cardiovascular health.

Systematic review, 2016, Canada

A systematic review and meta-analysis of 18 randomised control trials published by a Canadian research team in 2016 looked at the effects of almond consumption on blood lipid levels.⁵ Findings showed that diets enriched with almonds were associated with significant reductions in total cholesterol, LDL cholesterol and triglyceride levels without affecting high density lipoprotein (HDL or 'good') cholesterol.

Systematic review, 2016, University of Wollongong

A systematic review published in 2016 by the University of Wollongong reviewed literature from 1996 to 2014 on the effect of overall nut consumption on heart health and weight management.⁶ This was supplemented with analyses of epidemiological studies examining associations between nut consumption and cardiovascular disease end points. In particular, changes in total cholesterol, LDL cholesterol, and the ratio of LDL cholesterol to HDL cholesterol were reviewed.

Results showed that almond consumption was associated with significant reductions in total cholesterol, LDL cholesterol and also on LDL cholesterol: HDL cholesterol ratio. Additionally, the form of the food was important in mediating the observed effects, with overall poorer effects observed for nut oils compared to their whole nut equivalents.

The findings from this review were enough for Food Standards Australia New Zealand to substantiate a general level health claim that nuts (including almonds)

contribute to heart health as part of a healthy diet. All types of natural almonds scored extremely well against the Nutrient Profile Scoring Criteria which made them eligible to carry the general level health claim.

The findings support the recommendation of consuming almonds as part of a healthy diet to maintain healthy blood lipid levels and reduce the risk of CVD.

How nuts protect against CVD

Abnormal levels of lipids and/or lipoproteins in the blood is a major risk factor for CVD. The beneficial effects of nut consumption on CVD can be explained by an improvement in blood lipid and cholesterol levels. Almonds in particular are low in saturated fat, high in mono and polyunsaturated fats and contain fibre, phytosterols, plant protein and many other unique cardioprotective nutrients.

Their unique nutrient matrix is likely the reason for an observed reduction in LDL cholesterol in the body as they target the primary mechanisms behind LDL cholesterol reduction. These include decreased reabsorption of cholesterol and bile acid, increased bile acid and cholesterol excretion, and increased LDL-C receptor activity.⁷

A 2018 published literature review looked at major cohort studies and small to large intervention trials on nut intake and impact on CVD.⁸ It found that there was increasing evidence that nut consumption may help protect against CVD via lowering of oxidative stress and improvement in endothelial function.

Oxidative stress

Oxidation causes damage to the cells and tissue in the body and is said to potentially contribute to the onset and/or progression of several diseases including diabetes, metabolic disorders and cardiovascular diseases.⁹



Almonds are low in saturated fat, high in mono and polyunsaturated fats and contain fibre, phytosterols, plant protein and many other unique cardioprotective nutrients.⁷



Recent studies have suggested that regular consumption of mono-unsaturated rich nuts such as almonds may confer protective antioxidant benefits and possibly decrease oxidative stress.¹⁰

Endothelial function

Endothelial dysfunction is a central component in the development and progression of atherosclerosis and is associated with greater risk of CVD events.¹¹ Endothelial dysfunction is characterized by decreased bioavailability of nitric oxide and increased proinflammatory cells.

Given nuts contain a rich source of L-arginine, a type of protein which helps increase the bioavailability of nitric oxide, it is thought that nut intake can improve endothelial dysfunction.¹²

Collectively the evidence suggests that improvements in endothelial function and a reduction in oxidative stress can be achieved with daily nut consumption.

Almonds as part of a Mediterranean diet

The Mediterranean diet is an eating pattern emphasising certain foods based on the dietary traditions of Crete, Greece and southern Italy during the mid-20th century.¹³ It is primarily plant-based and includes wholegrains, olive oil, fruits, vegetables, beans and other legumes, nuts, herbs and spices. The emphasis is on healthy fats, with olive oil replacing butter or margarine, and the inclusion of foods that contain healthy fats, such as avocados, nuts and oily fish.¹⁴

The Prevention with Mediterranean diet, or PREDIMED study, is the largest dietary intervention trial to assess the effects of the Mediterranean diet on CVD prevention to date.^{15, 16} First published in 2013 and republished in 2018, it looked at the primary prevention of CVD in 7,447 older adults using a Mediterranean Diet supplemented with extra virgin olive oil or nuts.^{15, 16}

The original study included older adults at high CVD risk who were given either a Mediterranean diet supplemented with extra virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or a control diet (reduced dietary fat).¹⁵

Incidence of CVD in the Mediterranean diet groups was lowered by approximately 30 per cent compared to the control diet group.^{15, 16}

This large study adds to the strong body of existing evidence highlighting the positive effect that nuts, including almonds, have when consumed as part of healthy diet, and their value as a dietary intervention for preventing CVD.





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