



A factsheet for health professionals

Almonds and diabetes

Diabetes has overtaken heart disease and cancer as the fastest growing chronic condition in Australia.¹ There are different types of diabetes; the most common are type 2, type 1 and gestational diabetes.

Strong international evidence shows that type 2 diabetes can be prevented in almost two thirds of cases and the risk of type 2 diabetes can be reduced by maintaining a healthy weight, being physically active, managing blood pressure and cholesterol, and by following a healthy eating plan.²

Almonds are a nutrient-dense tree nut and a healthy source of plant-based protein, monounsaturated fats, fibre, antioxidants, vitamins and minerals.³ Over the last two decades a body of evidence has emerged from both epidemiological and controlled trials demonstrating the favourable effects of regular nut consumption, including almonds, on diabetes-related outcomes.^{4,5}

The Australian Dietary Guidelines recommends 30 grams (a handful) of nuts, including almonds, every day.⁶

What your clients and patients need to know

- Eating a handful of almonds (30g) every day as part of a healthy diet may help manage the risk factors for type 2 diabetes – particularly high cholesterol and being overweight or obese.
- Adding almonds to a meal slows digestion of the overall meal, lowering its glycaemic index, therefore assisting to manage blood glucose levels.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.



Almonds and managing the risk factors for diabetes

Overweight and obesity

Overweight and obesity are major risk factors for developing type 2 and gestational diabetes, with weight loss being the primary strategy for glycemic control and prevention and management of diabetes.

In those with newly diagnosed type 2 diabetes, a large retrospective cohort study found that individuals who lost approximately 10% of their body weight after diabetes diagnosis were more likely to achieve glycemic control and blood pressure targets, despite weight regain, four years later compared with individuals with stable or weight gain trajectories.⁷

Despite their high energy content, there is good evidence to suggest that including almonds in an energy-restricted diet does not compromise, and may actually enhance, weight loss.^{8,9,10,11} A 2016 randomised controlled 12-week clinical trial of 86 healthy adults evaluated the effect of consuming almonds as part of an energy-restricted diet on body composition, compared to a nut-free energy-restricted diet.¹² Results revealed that moderate almond consumption by overweight and obese individuals during energy restriction results in greater proportional reductions of truncal and total body fat as well as diastolic blood pressure.



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High cholesterol and high blood pressure

High cholesterol and blood pressure are known risk factors for diabetes, and people with diabetes are at increased risk of heart disease including heart attack and stroke.² There is strong evidence to suggest that lifestyle changes, like eating a healthy diet and doing regular physical activity, can significantly improve blood pressure and the blood cholesterol levels of people with diabetes.

A 2016 systematic review concluded that consuming almonds was associated with a significant reduction in three measurements related to heart health: total cholesterol, LDL cholesterol and LDL: HDL cholesterol ratio.⁸ Another systematic review looking at the effect of almond consumption on blood lipid levels had similar findings. Diets enriched with almonds were associated with significant reductions in total cholesterol, LDL cholesterol and triglyceride levels.¹³

Although there is robust evidence linking nut consumption with reduced blood pressure, the evidence base for almonds is still emerging. A 2016 systematic review concluded a lack of favourable effects being reported for almond consumption and blood pressure, HDL cholesterol and triglycerides.⁸ In contrast, a 2015 systematic review and meta-analysis looking at the effect of nut consumption on blood pressure suggest that total nut consumption lowered systolic and diastolic blood pressure in participants without type 2 diabetes.¹⁴



Blood glucose

A systematic review and meta-analysis of randomised controlled trials was conducted in 2014 to assess the effect of tree nuts (including almonds) on markers of glycaemic control in individuals with diabetes.⁵ Pooled analyses showed an overall significant lowering of two markers of glycaemic control: HbA1c and fasting glucose at a consumption level of 56 grams of tree nuts (including almonds) per day over eight weeks.⁵

A 2018 literature review summarised the effect of almonds on measures of glycaemia and insulinaemia in people with diabetes or those at risk.¹⁵ One study saw positive results on post-prandial glycaemia (post-meal glucose levels) in participants with type 2 diabetes that consumed 28g of almonds with their breakfast.¹⁶ Another study, conducted in Taiwan, saw a reduction in fasting blood glucose and fasting insulin in participants with type 2 diabetes who consumed 60g of almonds per day as part of the National Cholesterol Education Program step II diet for four weeks.¹⁷ Although these studies are promising, the review concluded more research is needed to show a consistent effect of almond consumption on blood glucose control.¹⁵

It is recommended that people with diabetes have moderate amounts of carbohydrate and include high fibre foods with a low glycaemic index (GI) to assist in managing blood glucose levels.¹⁸ Adding almonds to carbohydrate-rich meals lowers the overall GI of that meal,¹⁹ which can help slow the rise in blood glucose levels when the food is consumed.

Almonds, tree nuts and mixed nuts as part of a healthy diet

The traditional Mediterranean diet is widely considered beneficial in the prevention and management of diabetes.²⁰ It is characterised by high consumption of vegetables, legumes, grains, fruits, nuts, and extra virgin olive oil, moderate consumption of fish and wine, and low consumption of red and processed meat and whole-fat dairy products. The diet emphasises foods composed of healthy unsaturated fats including extra virgin olive oil, avocados and nuts (including almonds).

A prospective study in 2008 suggested a lower incidence of diabetes with increasing adherence to the Mediterranean diet in previously healthy individuals.²¹ A clinical trial the following year showed that, compared with a low-fat diet, a Mediterranean diet allowed better glycaemic control and delayed the need for anti-diabetes drug treatment in patients with newly diagnosed diabetes.²² Similar results were found by a systematic review²³ and several individual randomised controlled trials^{22, 24, 25, 26} including people with type 2 diabetes. These studies showed that a Mediterranean dietary pattern emphasising nuts (including almonds) decreased HbA1c and fasting glucose in comparison to a conventional dietary pattern.

A separate arm of the PREDIMED study tested the role of the Mediterranean diet in the prevention of diabetes in a clinical trial.²⁷ Results revealed diabetes rates were reduced by 51% and 52% with the consumption of Mediterranean diets supplemented with virgin olive oil or mixed nuts (including almonds), respectively, compared with a control diet.



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