

Walnuts

Walnuts are easily distinguished as the nut that looks like the brain, and have always been thought of as a 'brain food'. Similar to other nuts, fruits and vegetables **walnuts** are packed with a wide range of vitamins, minerals and phytochemicals beneficial to health. Enjoying a handful of nuts (30g) regularly as part of a healthy diet may reduce your risk of heart disease and type 2 diabetes and may help with weight management.¹⁻⁵ Remember to eat two serves of fruit, five serves of veggies and a handful of nuts every day. A 30g serve of **walnuts** is equivalent to about 10 whole nuts or 20 halves. Have you had yours today?



Nutrition and health benefits of walnuts

Walnuts provide not only nutrients and positive health benefits, but interesting flavours and textures making them a worthwhile addition to your diet:

- **Rich source of essential fats** – walnuts have a high polyunsaturated fat content (72% of total fat), with smaller amounts of monounsaturated fat and very low levels of 'unhealthy' saturated fat (6% of total fat). Similar to other nuts they are free from trans fats and dietary cholesterol.⁶
- **One of the few plant sources of omega-3 fats** – walnuts contain significant amounts of omega-3 fats, in the form of alpha-linolenic acid (ALA) – 6280mg per 100g or 1884mg per 30g handful.⁶ We need 1300mg of ALA/day.⁷

Research has shown that ALA from a 37g handful of walnuts each day can reduce inflammation, an important factor in the development of chronic disease such as heart disease.⁸

Another study has shown you need just four walnuts a day to positively affect ALA levels.⁹

- **Improves blood cholesterol** – a recent meta-analysis of 13 studies found that 40–100g of walnuts a day can lower both total and 'bad' LDL cholesterol levels without effecting 'good' HDL cholesterol. In addition it was found that walnut enriched diets raised antioxidant capacity and improved inflammatory markers, with no adverse effects on body weight measured as BMI.¹⁰
- **Keeps blood vessels healthy** – eating just 40g walnuts a day appears to counteract the inflammatory effects on blood vessels that occur after eating a fatty meal.¹¹ Another study found that eating 40–65g of walnuts each day as part of a low-fat, plant-based diet significantly improved endothelial vasodilation (relaxation of the blood vessel walls).¹² This combination keeps blood vessels healthy and reduces the development of atherosclerosis or hardening of the arteries.¹³
- **Contains amino acid arginine**⁶ – arginine is converted to nitric oxide in the body, also helping blood vessels to dilate and remain elastic.¹⁴
- **Rich in antioxidants** – polyunsaturated fats are susceptible to going rancid, so Mother Nature gave walnuts a big dose of antioxidants to protect them. Walnuts contain a number of different antioxidants including: ellagic acid, ellagitannins and proanthocyanidins which contribute to their overall high antioxidant capacity.¹⁵

²⁶ Ellagic acid in particular has an anti-inflammatory effect.¹⁶

- **High in potassium and low in sodium** – similar to other nuts walnuts are very low in sodium just 3mg/100g and contain 450mg potassium per 100g.⁶ A low sodium, high potassium diet containing nuts (DASH-style diet) has benefits for blood pressure and heart health.¹⁷

A combination of the healthy polyunsaturated fats, plant omega-3s, antioxidants such as ellagic acid, fibre and arginine in walnuts, plus their antioxidant and cholesterol-lowering effects, may help explain why walnuts promote heart health.

Walnuts also...

- **Helps diabetes** – people with diabetes have twice the risk of heart disease compared to those that don't.¹⁸ Research has shown that if people with diabetes include walnuts in their diet their blood cholesterol improves, insulin levels are reduced and blood vessels are more relaxed,¹⁹⁻²¹ proving walnuts are cardioprotective.
- **Good source of plant protein** – like all nuts, walnuts, with 14g protein per 100g⁶, are a vegetarian protein source. Protein also plays a role in appetite control, helping with weight management.²²

continued next page

Nutrient content of natural walnuts⁶

| Nutrient | Per 100g |
|------------------------------|----------|
| Energy (kJ) | 2904 |
| Protein (g) | 14.4 |
| Arginine (g) | 2.3 |
| Fat, total (g) | 69.2 |
| Fat, saturated (g) | 4.4 |
| Fat, monounsaturated (g) | 12.1 |
| Fat, polyunsaturated (g) | 49.6 |
| Fat, omega-3 (mg) as ALA | 6280 |
| Carbohydrate, total (g) | 3.0 |
| Carbohydrate, sugars (g) | 2.7 |
| Dietary fibre (g) | 6.4 |
| Sodium (mg) | 3.0 |
| Potassium (mg) | 440 |
| Iron (mg) | 2.5 |
| Zinc (mg) | 2.5 |
| ORAC (umol TE) ²⁶ | 13541 |

For further information on the nutritional benefits of nuts and for recipes visit www.nutsforlife.com.au or for walnuts go to www.walnut.net.au

This initiative has been funded by the Australian Tree Nut Industry with matching funds from the Australian Government for R&D activities through Horticulture Australia Ltd.

© 2013 Horticulture Australia Ltd for Nuts for Life



Walnuts

- **Helps weight management** – although high in fat, research has found that eating walnuts (and other nuts) maintains body weight as measured by BMI.^{1–4, 10} One study found eating around a handful of walnuts a day did not result in weight gain.²³
- **May affect brain health** – yes, walnuts look like the brain, contain polyunsaturated fat like the brain and are often thought of as ‘brain food’, but does science support this claim? Preliminary research has found that walnut extracts appear to have anti-inflammatory effects on brain cells.²⁴ In addition another study found a diet rich in antioxidant foods such as berries, grapes, and walnuts may enhance cognitive and motor function in aging.²⁵ These are promising results, so eating walnuts may in fact be of benefit to brain health.

Future research

New areas of walnut research include PCOS²⁷, semen quality²⁸ and cancer^{29–30} with preliminary animal and test tube studies showing promising results.

7 ways to include walnuts in your diet

- ➔ Walnuts make a great addition to muffins or cake – try banana and walnut cake, date and walnut muffins or carrot, zucchini and walnut loaf.
- ➔ Mix natural yoghurt with berries and top with chopped walnuts, pepitas and sunflower seeds for a quick and tasty breakfast or dessert.
- ➔ Add finely chopped walnuts to turkey and cranberry for a tasty sandwich filling.
- ➔ Replace pine nuts with walnuts in your favourite pesto recipe.
- ➔ Add chopped walnuts to home baked bread for extra fibre and flavour.
- ➔ Bring back the Waldorf salad – walnuts, apple, celery, cos lettuce
- ➔ Mix chopped walnuts into your crumble topping for a tasty winter dessert.

Buying and storage tips

When choosing nuts, look for crisp, plump kernels with a light skin colour. If buying walnuts in the shell, select clean nuts free from cracks and holes. To keep nuts in the

best condition, store them in an airtight container in the refrigerator or freezer. Nuts can be refrigerated for up to 4 months and frozen for up to 6 months. Return nuts to room temperature before eating.

References

1. Albert CM, et al. Nut consumption and decreased risk of sudden cardiac death in the Physicians Health Study. *Arch Intern Med.* 2002;162(12):1382–7.
2. Ellsworth JL, et al. Frequent nut intake and risk of death from coronary heart disease and all causes in postmenopausal women: the Iowa Women’s Health Study. *Nutrition Metabolism and Cardiovascular Disease* 2001;11(6):372–7.
3. Hu FB, et al. Frequent nut consumption and risk of coronary heart disease in women: prospective cohort study. *British Medical Journal* 1998;317(7169):1341–5.
4. Fraser GE, et al. A possible protective effect of nut consumption on risk of coronary heart disease. *Arch Intern Med.* 1991;152:1416–24.
5. Jiang R, et al. Nut and peanut butter consumption and risk of type 2 diabetes in women. *Journal of the American Medical Association.* 2002;288(20):2554–60.
6. Nuts for Life. 2012 Nutrient Composition of Tree Nuts. Sydney: Nuts for Life; 2012.
7. National Health & Medical Research Council. Nutrient Reference Values for Australia and New Zealand. Canberra, ACT: Australian Government Department of Health & Ageing 2006. www.nrv.gov.au
8. Zhao G, et al. Dietary alpha-linolenic acid reduces inflammatory and lipid cardiovascular risk factors in hypercholesterolemic men and women. *J Nutr.* 2004;134(11):2991–7.
9. Marangoni F, et al. Levels of the n-3 fatty acid eicosapentaenoic acid in addition to those of alpha linolenic acid are significantly raised in blood lipids by the intake of four walnuts a day in humans. *Nutr Metab Cardiovasc Dis.* 2007;17(6):457–61.
10. Banel DK, Hu FB. Effects of walnut consumption on blood lipids and other cardiovascular risk factors: a meta-analysis and systematic review. *Am J Clin Nutr.* 2009;90(1):56–63.
11. Cortes B, et al. Acute effects of high-fat meals enriched with walnuts or olive oil on postprandial endothelial function. *J Am Coll Cardiol.* 2006;48(8):1666–71.
12. Ros E, et al. A walnut diet improves endothelial function in hypercholesterolemic subjects: a randomized crossover trial. *Circulation.* 2004;109(13):1609–14.
13. Ros E. Nuts and novel biomarkers of cardiovascular disease. *Am J Clin Nutr.* 2009;89(5):1649S–56S.
14. Bai Y, et al. Increase in fasting vascular endothelial function after short-term oral L-arginine is effective when baseline flow-mediated dilation is low: a meta-analysis of randomized controlled trials. *Am J Clin Nutr.* 2009;89(1):77–84.
15. Chen CY, Blumberg JB. Phytochemical composition of nuts. *Asia Pac J Clin Nutr.* 2008;17 Suppl 1:329–32.
16. Papoutsi Z, et al. Walnut extract (*Juglans regia* L.) and its component ellagic acid exhibit anti-inflammatory activity in human aorta endothelial cells and osteoblastic activity in the cell line KS483. *Br J Nutr.* 2008;99(4):715–22.
17. Conlin PR, et al. The effect of dietary patterns on blood pressure control in hypertensive patients: results from the Dietary Approaches to Stop Hypertension (DASH) trial. *Am J Hypertens.* 2000;13(9):949–55.
18. Barr ELM, et al. Risk of Cardiovascular and All-Cause Mortality in Individuals With Diabetes Mellitus, Impaired Fasting Glucose, and Impaired Glucose Tolerance: The Australian Diabetes, Obesity, and Lifestyle Study (AusDiab). *Circulation.* 2007;116(2):151–157.
19. Tapsell LC, et al. Including walnuts in a low-fat/modified-fat diet improves HDL cholesterol-to-total cholesterol ratios in patients with type 2 diabetes. *Diabetes Care* 2004;27(12):2777–83.
20. Ma Y, et al. Effects of Walnut Consumption on Endothelial Function in Type 2 Diabetics: A Randomized, Controlled, Cross-Over Trial. *Diabetes Care.* 2010;33(2):227–32.
21. Tapsell LC, et al. Long-term effects of increased dietary polyunsaturated fat from walnuts on metabolic parameters in type II diabetes. *Eur J Clin Nutr.* 2009;63(8):1008–15
22. Noakes M. The role of protein in weight management. *Asia Pac J Clin Nutr.* 2008;17(S1):169–71.
23. Sabate J, et al. Does regular walnut consumption lead to weight gain? *British Journal of Nutrition* 2005;94(5):859–64.
24. Willis LM, et al. Walnut Extract Inhibits LPS-induced Activation of Bv-2 Microglia via Internalization of TLR4: Possible Involvement of Phospholipase D2. *Inflammation.* 2010;33(5):325–33.
25. Joseph JA, et al. Grape juice, berries, and walnuts affect brain aging and behavior. *J Nutr.* 2009;139(9):1813S–7S.
26. USDA Database for the Oxygen Radical Absorbance Capacity (ORAC) of Selected Foods, Release 2, May 2010 cited www.ars.usda.gov/Services/docs.htm?docid=15866
27. Kalgaonkar S, et al. Differential effects of walnuts vs almonds on improving metabolic and endocrine parameters in PCOS. *Eur J Clin Nutr.* 2011 Mar;65(3):386–93.
28. Robbins WA, et al. Walnuts improve semen quality in men consuming a Western-style diet: randomized control dietary intervention trial. *Biol Reprod.* 2012 Oct 25;87(4):101.
29. Vanden Heuvel JP, et al. Mechanistic examination of walnuts in prevention of breast cancer. *Nutr Cancer.* 2012;64(7):1078–86.
30. Nagel JM, et al. Dietary walnuts inhibit colorectal cancer growth in mice by suppressing angiogenesis. *Nutrition.* 2012 Jan;28(1):67–75.