Health benefits of macadamia nuts in borderline hyperlipidaemic male volunteers

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Macadamia nuts are high in monounsaturated fats, plant sterols, fibre and polyphenol compounds. Their consumption can therefore be expected to have a lipid lowering effects in humans. This study was conducted to determine the potential of macadamia nuts to modify favourably the biomarkers of heart health in borderline hypercholesterolemic male individuals. Seventeen male volunteers (baseline plasma cholesterol of 6.1–7.5 mmol/L and average age 54 years) were given macadamia nuts (40–90 g/day) equivalent to 15% energy intake for a period of four weeks. Plasma cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides, homocysteine, thromboxane, prostacyclin and leukotrienes concentrations and fatty acid composition of plasma lipids were determined prior to and following consumption of macadamia nuts. Nutrient intakes of volunteers were analysed at the baseline and prior to termination of intervention period by three-day food records.

As expected, monounsaturated fatty acids (MUFA, 16:1n-7, 18:1n-9 and 20:1n-9) were elevated in the plasma lipids of all volunteers following intervention with macadamia nuts. Saturated, n-6 and n-3 polyunsaturated fatty acid (PUFA) content of plasma were unaffected by macadamia nut consumption. Plasma levels of total cholesterol, LDL-cholesterol were reduced by 3.05% and 5.30% respectively and HDL-cholesterol levels increased by 7.9% following macadamia nut consumption. Plasma thromboxane (TXB_2), prostacyclin (PGI_2), TXB_2/PGI_2 ratio and leukotriene (LTB_4) levels were significantly reduced following macadamia nut consumption. Triglyceride and homocysteine levels were not affected regardless of the cholesterol status of the volunteers. Macadamia nut consumption was associated with significant increase in the intake of MUFA and a reduced intake of cholesterol, saturated and n-6PUFA.

	Baseline[1]	Post intervention[1]
Cholesterol (mmol/L)	6.51 ± 0.15	6.30 ± 0.15[a]
HDL Chol (mmol/L)	1.20 ± 0.11	1.28 ± 0.12[a]
LDL Chol (mmol/L)	4.49 ± 0.11	4.22 ± 0.11[a]
Chol/HDL-C Ratio	5.91 ± 0.37	5.37 ± 0.34[a]
Leukotriene (LTB_4) (pg/mL)	876 ± 97	679 ± 116[a]
Prostacyclin (PGI_2) (pg/mL)	192 ± 31	177 ± 26[a]
Thromboxane (TXB_2) (pg/mL)	122 ± 23	90 ± 14[a]
TXB_2 / PGI_2 Ratio	0.82 ± 0.12	0.62 ± 0.10[a]

[1] Mean ± SEM
[a] $p < 0.05$

This study demonstrates that macadamia nut consumption modifies plasma lipid profile favourably and alters eicosanoid levels to inhibit thrombosis, despite the diet being high in fat content. Macadamia nuts, as part of a healthy diet, may play an important role in the prevention of coronary heart disease.