

**The effect of vegetarian and omnivorous diets on plasma lipoprotein lipids and homocysteine level in healthy male subjects**

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Elevated concentrations of total cholesterol and triglycerides, and lowed levels of high density lipoprotein (HDL) cholesterol are associated with increased risk of cardiovascular disease (CVD). Recent evidence has also shown that hyperhomocysteinemia is an independent risk factor for CVD (1). The aim of this study was to investigate whether the plasma levels of lipoprotein lipids and homocysteine are influenced by habitual dietary intake.

One hundred and forty three healthy male subjects aged 20-55 years were recruited in the metropolitan area of Melbourne. According to their habitual dietary intake, they were divided into four groups: vegan (n=18), ovolacto vegetarian (n=44), moderate-meat-eaters (n=61, <300g meat/day) and high-meat-eaters (n=20, >300g meat/day). Venous blood was collected into EDTA vacutainers, and plasma levels of total cholesterol, HDL cholesterol, triglycerides and homocysteine were determined by standard methods.

	Vegan <sup>1</sup>	Ovolacto <sup>1</sup>	Moderate-meat <sup>1</sup>	High-meat <sup>1</sup>
Cholesterol (mmol/L)	3.52 ± 0.83	3.53 ± 0.74	4.55 ± 0.80 <i>ach, bch</i>	4.46 ± 0.70 <i>*h, adh, bdh</i>
TG (mmol/L)	1.08 ± 0.52	1.14 ± 0.58	1.30 ± 0.59	1.46 ± 0.83
HDL (mmol/L)	0.96 ± 0.14	1.03 ± 0.23	1.11 ± 0.27 <i>acg</i>	1.02 ± 0.17
Homocysteine (µM/L)	14.78 ± 2.59	12.69 ± 3.06	11.77 ± 2.76 <i>acg</i>	10.94 ± 2.29 <i>*h, adh, bdf</i>

<sup>1</sup>mean ± SD

\*Anova: *f* P<0.05. *g* P<0.01. *h* P<0.001.

*ac*vegan vs moderate-meat. *ad*vegan vs high-meat. *bc*ovolacto vs moderate-meat. *bd*ovolacto vs high-meat. T-test.

The level of total plasma cholesterol was significantly higher in both the moderate and high-meat eater groups than in the both ovolacto and vegan groups (P<0.001). The moderate meat-eater group had a significantly higher HDL level than vegan group (P<0.01). However, triglyceride was not significantly different between the four groups. The plasma level of homocysteine was significantly lower in the high and moderate meat-eating groups than in the vegan and ovolacto vegetarian groups (P<0.001 and P<0.01, respectively).

Both vegetarian groups have lowered levels of total cholesterol suggesting a reduced risk of CVD. This result may be due to lower intake of saturated fat in these subjects. The progressive decrease of plasma homocysteine, from vegan to high meat eaters, could reflect variations in the intake of methionine which is metabolised to homocysteine, or in the intake of folic acid, pyridoxine (B6) or vitamin B<sub>12</sub>, each of which is required for homocysteine metabolism. The relevance for vascular risk of this decrease is difficult to assess at present.

1. Ueland PM, Refsum H, Brattström L. Plasma homocysteine and cardiovascular disease. In: Francis RB Jr. ed. Atherosclerotic cardiovascular disease, hemostatis, and endothelial function. New York: Marcel Dekker; 1992:183-236.