Effect of dietary supplementation with olive oil or Canola margarine on blood lipids: a community based intervention study

CA Nowson, TO Morgan

Department of Physiology, University of Melbourne, Parkville, VIC 3052

Monounsaturated fats have been reported to have a beneficial effect on blood lipid profile. The aim of this study was to determine the effect on blood lipids of increasing percent energy from fat (%EDF) from 25-30% to 38% using either olive oil (OO) or Canola margarine (CM) supplied by Goodman & Fielder. Subjects were recruited from the community as part of a larger study assessing dietary fat reduction. Subjects who had been following a 25-30% EDF for at least six weeks were randomised to receive either (OO or CM) for four weeks or continue on their usual low fat control diet (LFC) for four weeks, then crossover. The amount of OO or CM given was adjusted for energy intake and calculated to increase the %EDF to 38%. Three measurements of weight, blood pressure and blood lipids were taken during the baseline period and three in each four week phase. Subjects completed a four day measured food record in each four week phase (total three), which was analysed using computer dietary analysis program Diet 1 (Xyris Software).

	Olive oil (n=26)		Canola (n=23)	
	Baseline	Supplemented	Baseline	Supplemented
TC (mmol/L)	5.79 ± 0.22	5.73 ± 0.21	5.41 ± 0.25	5.41 ± 0.24
HDL (mmol/L)	1.26 ± 0.10	1.30 ± 0.10	1.44 ± 0.08	1.48 ± 0.09
LDL:HDL	3.56 ± 0.35	3.34 ± 0.33 *	2.47 ± 0.25	2.55 ± 0.33
Weight (kg)	76.3 ± 0.3	76.7 ± 3.3	74.2 ± 4.2	74.2 ± 4.2
% EDF	27.9 ± 0.7	36.4 ± 1.2 ***	26.2 ± 0.1	30.9 ± 1.32 **
Energy (MJ)	7.9 ± 5.2	9.1 ± 1.9 **	9.1 ± 8.6	9.6 ± 7.2

mean ± sem; *P<0.05; **P<0.01; ***P<0.001

Twenty six subjects (15 males, 11 females) completed the olive oil study, 15 were allocated oil for the first four weeks and 11 recieved oil for the second four weeks. There was no change in TC, LDL, and HDL levels with olive oil either compared to baseline or LFC, however there was a small improvement in the LDL:HDL ratio compared with baseline measurement (Table) and compared to LFC (olive oil : 3.34 ± 0.33 versus LFC: 3.57 ± 0.34)(P<0.05). Body weight was slightly lower with olive oil supplementation compared to LFC (76.25 ± 3.27 kg versus 79.97 ± 3.12 kg)(P<0.02).

Twenty three subjects (14 males, nine females) completed the Canola study, 13 were allocated oil for the first four weeks and 10 received oil for the second four weeks. There was no change in any measured parameters. Although %EDF was greater with CM compared to baseline (Table), it was not different to the LFC (30.9 ± 1.3% versus 29.2 ± 1.2%).

Increasing dietary fat intake with olive oil from 28% to 36% resulted in a small improvement in LDL:HDL ratio. Despite an increase energy intake there was no gain in body weight. There was no effect on blood lipids with Canola margarine but this may have been due inadequate compliance. Increasing monounsaturated fat intake using olive oil appears to be more acceptable and may assist in maintaining a favourable lipid profile at the level of 36% energy from dietary fat.