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n-3 Fatty acid supplementation reduces hypertriacylglycerolaemia and improves lipid peroxidation and inflammation in patients with chronic renal failure

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The aim of the present study was to evaluate the effect of *n*-3 fatty acid supplementation on dyslipidaemia, lipid peroxidation and inflammation markers in patients with chronic renal failure (CRF).

Seventy-five patients with CRF (58 (SD 9) years) were identified in the hospital in Oran (west Algeria). Thirty patients with hypertriacylglycerolaemia (TAG > 1.7 mmol/l) and/or hypercholesterolaemia (total cholesterol (TC) > 5 mmol/l) were recruited for the nutritional intervention. All patients received nutritional counselling adapted for CRF (energy intake 0.12 MJ/kg body weight per d, protein intake 0.8 g/kg body weight per d, lipid intake 35 % total energy intake). Fifteen patients received an *n*-3 fatty acid supplement (2.1 g/d; 33 % EPA and 12 % DHA) for 90 d. Fifteen patients were used as controls. Blood samples were withdrawn at the beginning (T0) and at 30 d (T1), 60 d (T2) and 90 d (T3) after initiating treatment.

TAG level was reduced by 43 % at T1, and decreased with time from T1 to T3. TC, HDL-cholesterol (HDL-C), LDL-cholesterol (LDL-C), apo A-I, apo B, TC:HDL-C, TC:LDL-C and apo A-I:apo B were similar for both groups, whereas apo B values were lower at T2 compared with T0 ($P<0.05$). Decreases in TC:HDL-C and TC:LDL-C were found at T3 compared with T0 ($P<0.05$). Thiobarbituric acid-reactive substances (TBARS) were lower in treated patients compared with controls ($P<0.001$), and decreased with time from T1 to T3 ($P<0.001$). Albumin concentrations were not affected by the nutritional intervention, whereas a significant reduction in C-reactive protein (CRP) was found in treated patients compared with controls.

Table. Changes in some lipid variables, TBARS and inflammation markers

	T0		T1		T2		T3	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
TAG (mmol/l)	3.10	0.66	1.60*	0.56	1.55*	0.16	1.03**	0.22
TC (mmol/l)	5.13	0.73	4.83	0.23	4.55	0.14	3.58*	0.12
TBARS (mmol/l)	8.45	0.56	5.45***	0.14	2.37***	0.03	0.90***	0.07
Albumin (g/l)	42.2	5.03	44.9	3.0	42.2	3.86	39.9	4.0
CRP (mg/l)	<6		<1.5		<1.5		<1.5	

Mean values were significantly different from those at T0: *$P<0.05$, **$P<0.01$, ***$P<0.001$.

In patients with CRF *n*-3 PUFA supplementation reduces hypertriacylglycerolaemia and improves lipid peroxidation and inflammation and can be beneficial in the prevention of CVD.