Proceedings of the Nutrition Society (2008), **67 (OCE)**, E16 doi:10.1017/S0029665108006253

1st International Immunonutrition Workshop, Valencia, 3–5 October 2007, Valencia, Spain

A new *n*-3 PUFA-enriched formula for enteral nutrition modulates oxidative LDL and inflammatory cytokines

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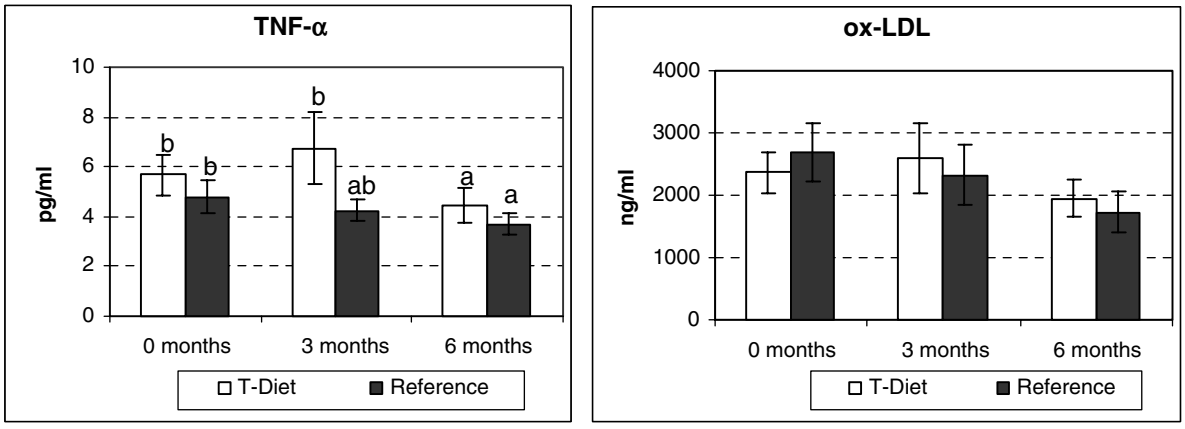
Aging is associated with chronic low-grade increases in circulating levels of inflammatory molecules. A wide range of factors including obesity, metabolic syndrome, CVD, infection, smoking, genetic and declining function of sex hormones may contribute to the systemic low-grade increase in inflammatory activity in the elderly. Circulating TNFα is a good predictor of mortality in the frail elderly population and the oxidation of LDL can be a consequence of the secretion of cytokines and adhesion molecules during the inflammatory process. Dietary interventions may be good strategies to decrease pro-inflammatory activity and improve human health. It is well known that long-chain *n*-3 PUFA decrease the production of inflammatory cytokines. The aim of the present study was to compare the effect of T-Diet Plus® *v.* a standard control diet on plasma concentrations of inflammatory markers and oxidized LDL (ox-LDL) in elderly patients feed total enteral nutrition (TEN) for 6 months.

Sixty-five patients aged 75 years feed TEN were divided into two groups (experimental and reference). The experimental group (*n* 32) was fed a new enteral formula, T-Diet Plus® (Vegenat SA), that contained (mg/l) 75 EPA and 35 DHA. Reference group (*n* 33) was fed a standard enteral diet (Jevity®, Abbot Laboratories) intended for nutrition in the elderly. At the end of the experimental period only sixteen patients from the T-Diet Plus® group and twenty from the reference group remained in the study. The daily intake was 5459 (SE 130) kJ, with no difference between groups. Cytokines (basal, 3 months and 6 months) were measured using a human serum adipokine (panel B) kit (LINCO*plex*™; Linco Research, St Charles, MO, USA) with the Luminex 200 System built on xMAP technology. Ox-LDL was determined using an ELISA kit (Biomedica Medizinprodukte GmbH & Co KG, Vienna, Austria) and the ultra-sensitive C-reactive protein (PCRus) with a turbidimetric immunoassay (Dade Behring Inc., Deerfield, IL, USA). Non-parametric tests were used for statistical analysis: Mann-Witney test was performed to evaluate differences between independent groups ($P \leq 0.05$); Wilcoxon test was used to determine the effect of each diet after 3 or 6 months (mean values with unlike superscript letters were significantly different: $P \leq 0.05$).



	T-Diet®						Reference					
	Initial		3 months		6 months		Initial		3 months		6 months	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
PCRus (pg/ml)	1.87	0.35	1.91	0.56	0.90	0.25	2.13	0.42	1.94	0.55	1.88	0.55
IL-6 (pg/ml)	47.7	10.6	44.2	10.6	34.2	13.9	41.3	11.6	59.6	18.9	42.9	17.2
IL-8 (pg/ml)	9.24	1.44	9.24	1.80	10.55	4.13	8.69	1.69	7.83	1.22	6.91	1.45

The results demonstrate that ox-LDL decreased after 6 months of monitored nutrition in both groups ($P \leq 0.05$), with no differences between groups. No differences were found in other inflammatory markers, although both TNFα and IL-6 showed a tendency to decrease after 6 months, which is important considering that the patients were frail elderly with different pathologies.

This study was financed by Vegenat SA.

https://doi.org/10.1017/S0029665108006253 Published online by Cambridge University Press