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Randomized placebo-controlled intervention with n-3 LC-PUFA-supplemented yoghurt: effects on circulating eicosanoids and cardiovascular risk factors.

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Abstract

BACKGROUND & AIMS: The study examined the value of n-3 LC-PUFA-enriched yogurt as means of improving cardiovascular health.

DESIGN: Fifty three mildly hypertriglycerolemic subjects (TAG \geq 1.7 mmol/L) participated in a randomized, placebo-controlled, double-blind, parallel designed study. The subjects consumed 1) control yoghurt; 2) yoghurt enriched with 0.8 g n-3 LC-PUFA/d; or 3) yoghurt enriched with 3 g n-3 LC-PUFA/d for a period of 10 wks. Blood samples were taken at the beginning and the end of the study period.

RESULTS: Following daily intake of 3 g n-3 LC-PUFA for 10 weeks, n-3 LC-PUFA levels increased significantly in plasma and red blood cells (RBC) with concomitant increase in the EPA-derived mediators (PGE₃, 12-, 15-, 18-HEPE) in plasma whilst cardiovascular risk factors such as HDL, TAG, AA/EPA ratio, and n-3 index were improved ($P < 0.05$); the decrease of TAG and increase in HDL were associated with the CD36 genotype.

CONCLUSION: The observed increase of n-3 LC-PUFA in RBC and plasma lipids due to intake of n-3 LC-PUFA enriched yoghurt resulted in a reduction of cardiovascular risk factors and inflammatory mediators showing that daily consumption of n-3 PUFA enriched yoghurt can be an effective way of supplementing the daily diet and improving cardiovascular health.

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KEYWORDS: 17S-HDHA; 17S-hydroxy-docosahexaenoic acid; AA; ALA; BF(3); Blood lipids; CAD; CHD; CLA; COX; CRP; CYP450; Cytokines; DGLA; DHA; Dairy products; EPA; Eicosanoids; FAME; FFP; Food Frequency Protocol; HDL; HEPE; HETE; HETrE; HODE; IFN; IL; LA; LDL; LOX; LPS; LT; MUFA; OC; PG; PL; PPAR; RBC; RRs; Rv; SFA; SNPs; SREBPs; TAG; TBX; TC; TLC; TNF α ; VLDL; arachidonic acid; boron trifluoride; c-reactive protein; conjugated linoleic acids; coronary artery diseases; coronary heart disease; cyclooxygenase; cytochrome P450 monooxygenases; dihomo- γ -linolenic acid; docosahexaenoic acid; eicosapentaenoic acid; fatty acid methyl esters; high density lipoprotein; hydroxy-eicosapentaenoic acid; hydroxy-eicosatetraenoic acid; hydroxy-eicosatrienoic acid; hydroxy-octadecaenoic acid; interferon; interleukin; leukotrienes; linoleic acid; lipopolysaccharide; lipoxigenase; low density lipoprotein; monounsaturated fatty acids; n-3 LC-PUFA; n-3 long-chain polyunsaturated fatty acids; osteoclast; peroxisome proliferator activated receptor; plasma lipids; prostaglandins; red blood cells; relative ratios; resolvin; saturated fatty acids; single nucleotide polymorphisms; sterol regulatory element-binding proteins; thin layer chromatography; thromboxanes; total cholesterol; triacylglycerides; tumor necrosis factor alpha; very low density lipoprotein; α -linolenic acid

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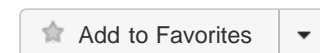
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