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A mixture of trans-10, cis-12 (t10,c12) and cis-9, trans-11 (c9, t11) conjugated linoleic acid (CLA mixture) reduced atherosclerosis in animals, thus the effect of these isomers on endothelial dysfunctions leading to inflammation and atherosclerosis is of interest. We gave 75 healthy postmenopausal women a daily supplement of 5.5 g of oil rich in either CLA mixture, an oil rich in the naturally occurring c9,t11 CLA (CLA milk), respectively, or olive oil for 16 wk in a double-blind, randomized, parallel intervention study. We sampled blood and urine before and after the intervention. The ratios of total cholesterol:HDL cholesterol and concentrations of C-reactive protein, fibrinogen, and plasminogen activator inhibitor-1 were significantly higher in women supplemented with the CLA mixture than in those supplemented with CLA milk. Plasma triacylglycerol was significantly higher and HDL cholesterol was lower in women supplemented with the CLA mixture than with olive oil. Both CLA supplements increased lipid peroxidation, a marker of in vivo oxidative stress measured as urinary free 8-iso-prostaglandin F-2 alpha. However, the CLA mixture increased lipid peroxidation more than the CLA milk did. The plasma cytokines interleukin-6 and tumor necrosis factor-a were not affected by the treatments, nor were any of the other variables measured. In conclusion, oil containing trans-10,cis-12 CLA has several adverse effects on classical and novel markers of coronary vascular disease, whereas the c9, t11 CLA isomer is more neutral, except for a small but significant increase in lipid peroxidation compared with olive oil.

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