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Supplementation with n3 fatty acid ethyl esters increases large and small artery elasticity in obese adults on a weight loss diet.

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Abstract

Increased arterial stiffness is associated with enhanced risk of cardiovascular disease in obese individuals. Whether n3 fatty acid ethyl ester (FAEE) supplementation improves arterial stiffness in obese participants on a weight loss diet has not yet been investigated. The objective of the study was to carry out a 12-wk randomized, single-blind trial to test the effect of a 25% energy deficit weight loss diet alone (WL) (n = 12) or WL plus 4 g/d Omacor (46% EPA and 38% DHA) supplementation (WL+FAEE) (n = 13) on arterial elasticity in obese adults. Large (C1) and small artery elasticity (C2) were measured by pulse contour analysis of the radial artery. WL alone reduced (P < 0.05 in all) body weight (-3%), waist circumference (-4%), systolic (-3%) and diastolic (-3%) blood pressures, cardiac output (-4%), plasma TG concentration (-25%), and the homeostasis model assessment (HOMA) score (-12%) and increased plasma HDL cholesterol (+9%) and adiponectin (+18%) concentrations. However, WL alone did not alter C1 and C2. **The WL+FAEE intervention significantly reduced body weight (-4%), waist circumference (-4%), systolic (-8%) and diastolic (-5%) blood pressures, pulse pressure (-5%), heart rate (-8%), plasma TG concentration (-36%), and HOMA score (-12%) and increased stroke volume (+3%), plasma HDL cholesterol (+6%) and adiponectin concentrations (+28%), and C1 (+20%) and C2 (+22%) artery elasticity.** The changes in systolic blood pressure, heart rate, plasma TGs, C1, and C2 were significantly greater in the WL+FAEE group than in the WL group. Supplementation with n3 FAEEs improves C1 and C2 independently of weight loss in obese adults.