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Vascular and metabolic effects of omega-3 fatty acids combined with fenofibrate in patients with hypertriglyceridemia

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Background: We have reported significantly differential effects of omega-3 fatty acids (n-3 FA) and fenofibrate and even high dose of n-3 FA. However, effects of n-3 FA combined with fenofibrate are not yet investigated, compared with fenofibrate.

Methods: This was a randomized, single-blind, placebo-controlled, parallel study. Age, sex, and body mass index were matched among groups. All patients were recommended to maintain a low fat diet. Fifty patients with hypertriglyceridemia in each group were given placebo, n-3 FA 2 g+fenofibrate 160 mg (combination), or fenofibrate 160 mg, respectively daily for 2 months.

Results: Placebo, combination, and fenofibrate significantly decreased triglycerides by 7%, 41% and 30%, respectively and triglycerides/HDL cholesterol by 11%, 45% and 32%, respectively relative to baseline measurements (all P<0.05 by paired t-test). When compared with placebo and fenofibrate, these with combination were significant (P<0.001 by ANOVA). When compared with placebo, both combination and fenofibrate significantly decreased apolipoprotein B and non-HDL cholesterol and improved flow-mediated dilation and reduced CRP and fibrinogen (all P<0.05 by ANOVA), however, there were no significant differences between combination and fenofibrate. When compared with placebo, both combination and fenofibrate significantly reduced insulin and glucose (both P<0.05 by ANOVA), and improved insulin sensitivity (P=0.005 by ANOVA). However, there were no significant differences between combination and fenofibrate.

Conclusions: When compared with fenofibrate, combination significantly decreased triglycerides and triglycerides/HDL cholesterol. Otherwise, combination and fenofibrate significantly reduced apolipoprotein B and non-HDL cholesterol and improved flow-mediated dilation and reduced CRP and fibrinogen to a similar extent. Also, combination and fenofibrate significantly improved insulin sensitivity by reducing insulin and glucose to a similar extent in patients with hypertriglyceridemia.