

P014 Acute n-3 PUFA supplementation in the JCR:LA-cp rodent model of insulin-resistance: Effects on post-prandial lipid metabolism and associated inflammatory response.

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Postprandial [PP] dyslipidemia occurs in obesity and insulin-resistance (IR) and is associated with a pro-inflammatory state and ensuing CVD risk. Dietary n-3 PUFA have been proposed to modulate lipoprotein metabolism and reduce the pro-inflammatory state, however results remain inconsistent during IR. We assessed the acute lipid, adipokine and inflammatory effects of n-3 PUFA supplementation in the JCR:LA-cp rat, a model of obesity, IR and PP dyslipidemia. Obese animals (14 weeks) were fed either control isocaloric, lipid balanced diet [LBD] (15% w/w total fat, 1.0% cholesterol, P:S ratio 0.4), LBD with 5% n-3 PUFA or LBD with 10% n-3 PUFA for 3 weeks. Post-prandial chylomicron (apolipoprotein-B48) metabolism and systemic inflammatory response (haptoglobin and lipopolysaccharide binding protein [LBP]) were assessed following standardized animal-adapted 'oral fat challenge' using area under the curve (AUC) analysis. In both n-3 PUFA groups, fasting plasma triglyceride, total cholesterol, leptin and apoB48 were significantly reduced, as well a significant improvement in triglyceride ($p < 0.05$), apoB48 ($p < 0.03$) and LBP ($p < 0.05$) PP response (AUC) compared to obese controls. In contrast, we observed only a modest benefit (increase) in fasting adiponectin in the 5% n-3 PUFA group ($p < 0.05$), whereas 10% n-3 PUFA supplementation increased both fasting and PP haptoglobin ($p < 0.001$) relative to obese controls. We conclude that acute and modest dietary n-3 PUFA (5%) supplementation can potentially reduce both PP dyslipidemia and pro-inflammatory status associated with the IR and the metabolic syndrome.