

Metabolism of N-3 fatty acids during short-term infusion of fish oil emulsion: favourable effects on inflammatory vascular reaction in lung tissue: A.344

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oil emulsion which may attenuate pulmonary response to inflammatory stimulation. For this purpose changes of fatty acid pattern in lung tissue and perfusate were analyzed and were correlated with physiological data after a 3-hour infusion with fish oil emulsion (Omegaven[®]) compared to a soybean oil preparation (Lipoven[®]).

Methods: Isolated lungs from anaesthetized rabbits were ventilated and recirculation-perfused (200 ml/min) with 200 ml of cell-free buffer solution, to which either 2 ml of saline (control, n = 6), 2 ml of Lipoven[®] 10% (n = 6) or 2 ml of Omegaven[®] 10% (n = 6) were added. Samples of perfusate and lung tissue were collected for gaschromatographical analysis of fatty acid composition. To study metabolic alterations in states of inflammatory stimulation, lungs of each group were stimulated with small doses of calcium ionophor A23187 ($10^{-6} M$) during the 180-min lipid perfusion period and again after washing out the lipids by exchanging the perfusion fluid. Pulmonary arterial pressure (PAP) and lung weight gain were monitored. Eicosanoids were analyzed in the perfusion fluid.

Results: Free n-3 fatty acids increased several-fold in perfusate and lung tissue during a 3 hour fish oil infusion. The intravenously administered n-3 fatty acids were rapidly hydrolysed, as evidenced by the appearance of substantial quantities of EPA in the perfusate free fatty acid fraction. This was paralleled by an attenuated pressure increase and edema formation due to calcium ionophor challenge, and an altered eicosanoid spectrum in the perfusate compared to Lipoven[®]-treated lungs.

Conclusion: Short-term n-3 lipid application (Omegaven[®]) exerts anti-inflammatory effects on lung vasculature, which is supposed to be due to the metabolism of EPA resulting in the generation of less potent inflammatory eicosanoids.

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Introduction: Aim of this study was to investigate whether modulation in the fatty acid profile can be achieved by a short-term infusion of fish