KINETICS AND MEMBRANE INCORPORATION OF INTRAVENOUS N-3 POLYUNSATURATED FATTY ACIDS ADMINISTRATED AS A 1 HOUR FAST INFUSION.

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Rationale: A 3 hr 0.2 g/kg intravenous fish oil (FO) infusion is associated with a significant incorporation of EPA and DHA into platelet membranes and blunts the physiological responses to endotoxin (Pluess et al, ICM 2007). Aiming at facilitating clinical use, we hypothesized that a shorter infusion time (1 hr) might be associated with similar EPA/DHA membrane incorporation. The present study aims at defining the timing of incorporation after a 1 hour infusion and clinical tolerance.
Methods: FO lipid emulsion (Omegaven®, Fresenius Kabi) was infused in 1 hr (0.2 g FO/kg) to 8 healthy volunteers (age 42.1±8.5 years; BMI 23.2±1.6). Blood samples: at baseline (t0), 15, 30, 60, 120, 240 and 360 minutes. Analysis: platelets' membrane phospholipids fatty acid composition, triglycerides (TG) and free fatty acids (FFA) plasma concentrations. Statistics: mean±SD, ANOVA, Wilcoxon signed-rank.
Results: Plasma TG peaked at t60 (5.2±1.1 mmol/L, 5-fold baseline value), with a return to pre-infusion values by t360 (t1/2: 100±35 min). Membrane EPA and DHA enrichments were significant already at t60 at the end of the perfusion and continued to increase until t360. Peak FFA concentrations : 0.6 mmol/L at t60. Clinical tolerance: no adverse side effect was observed.
Table:

	T000	**T060**	**T360**
TG (mmol/L)	1.2±0.5	5.2±1.1*	1.2±0.6
EPA (% of total FA)	0.48±0.17	0.66±0.2*	0.86±0.19*
DHA (% of total FA)	2.58±0.74	2.78±0.77*	2.95±0.71*
n6/n3	7.36±1.42	6.81±1.31*	6.2±0.9*

** : $p < .005$ vs baseline (t0)*

Conclusions: These data on n-3 PUFA lipid emulsion infusion are new. The 1 hr rate of infusion, which corresponds to 4 times the recommended rate is safe, based on peak TG and FFA levels below toxic thresholds. A significant incorporation of EPA and DHA into the platelets' membrane is observable already after 1 hr, opening new therapeutic perspectives.