Abstract

Background & aim: To compare the effect of fish oil-based (FO) lipid emulsions (LE) for parenteral administration with standard LE and a new FO containing LE composed of four different oils on the antigen presentation and inflammatory variables. Methods: Phytohemagglutinin (PHA) activated human mononuclear leukocytes were cultured with different LE - Control: without LE; SO: soybean oil; SO/FO: soybean and FO (4:1); MCT/SO: medium chain triglycerides and SO (1:1); MCT/SO/FO: MCT/SO and FO (4:1) and SMOF: a new LE containing FO. Cytokine production was evaluated by ELISA, the expression of antigen-presenting and co-stimulatory surface molecules were analyzed by flow cytometry and lymphocyte proliferation was assessed by H3-Thymidine incorporation, after tetanus toxoid-induced activation. Results: All LE decreased the HLA-DR and increased CD28 and CD152 expression on monocytes/macrophages and lymphocytes surface (p < 0.05). SO/FO and MCT/SO/FO decreased lymphocyte proliferation (p<0.05). All LE decreased IL-2 production, but this effect was enhanced with MCT/SO/FO and SMOF (p < 0.05). MCT/ SO/FO decreased IL-6 and increased IL-10, whereas SO had the opposite effect (p < 0.05). Conclusion: FO LE inhibited lymphocyte proliferation and had an anti-inflammatory effect. These effects seem to be enhanced when FO is mixed with MCT/SO. SMOF had a neutral impact on lymphocyte proliferation and IL-6 and IL-10 production.

Keywords

Lipid emulsion, Soybean oil, Fish oil, Co-stimulatory molecules and antigen presentation.