Abstract

Aim: To study the effects of different protocols of fish oil lipid emulsion (FOLE) infusion on acute inflammation in a rat model of colitis. Methods: Adult male Wistar rats (n = 51) were randomized into 5 groups to receive parenteral infusion of saline (SS) or soybean oil lipid emulsion (SO), as controls, and FOLE composed of: fish oil alone (FO); a mixture (9:1 v/v) of SO with FO (SO/FO); or 30% soybean oil, 30% medium-chain triglycerides, 25% olive oil, and 15% fish oil (SMOF). After 72 h of intravenous infusion, experimental colitis was induced with acetic acid. After 24 h, colonic samples were analyzed for histological and cytokine changes. Results: In relation SS group, macroscopic necrosis was less frequent in the FO group and histological necrosis was more frequent in the SMOF group. There was a direct and inverse relation of colon interleukin (IL)-1 and IL-4 respectively, with histological necrosis. In comparison to the SS group, FO increased IL-4 and IFN-gamma and decreased TNF-alpha, SO/FO decreased TNF-alpha, and SMOF increased IL-1 and decreased IL-4. Conclusion: In acetic acid-induced colitis, the isolate infusion of FOLE composed of fish oil alone was more advantageous in mitigating inflammation than the infusion of FOLE containing other oils, and this difference may be due the influences of their different fatty acid contents.

Keywords