

lesterol is obvious in septic rats. Compared with soybean oil, fish oil feeding did not lead to lower plasma concentrations of TG or cholesterol in septic rats; in contrast, plasma TG was higher and the HDL-C/TC ratio was lower in the FO-S than in the SO-S group. Fish oil feeding groups had significantly lower liver fat content than did the soybean oil group regardless of the rats being septic or not. These results suggest that, compared with soybean oil, feeding fish oil before sepsis induction may have an adverse effect on plasma lipid profiles when a high fat cholesterol-containing diet is administered. However, prefeeding fish oil ameliorated liver fat accumulation under the condition of diet-induced fatty liver in septic rats. Whether a fish oil diet without cholesterol supplementation has a favorable effect on plasma lipid profiles requires further investigation.

ACKNOWLEDGEMENTS

This study was supported by research grant NSC 87-2815-C-038-010-B from the the National Science Council, R.O.C. The authors wish to thank Ms. Wen-Ling Lin and San-Chin Hsu for their animal raising and technical assistance.

REFERENCES

1. Fong, Y., Moldawer, L.L., Shires, G.T., Lowry, S.F. The Biological Characteristics of Cytokines and Their Implication in Surgical Injury. *Surg. Gynecol. Obstet.* (1990) **170**, 363-378.
2. Lanza-Jacoby, S., Rosato, E.L. Regulatory Factors in the Development of Fatty Infiltration of the Liver During Gram-Negative Sepsis. *Metabolism* (1994) **43**, 691-696.
3. Bagby, G.J., Corll, C.B., Martinez, R.R. Triacylglycerol Kinetics in Endotoxic Rats with Suppressed Lipoprotein Lipase Activity. *Am. J. Physiol.* (1987) **253**, E59-64.
4. Lanza-Jacoby, S., Tabares, A. Triglyceride Kinetics, Tissue Lipoprotein Lipase, and Liver Lipogenesis in Septic Rats. *Am. J. Physiol.* (1980) **258**, E676-685.
5. Rosato, E., Tabares, A., Rosato, F.E., Lanza-Jacoby, S. Sepsis-Induced Changes in Hepatic Triglyceride Synthesis. *Surg Forum* (1990) **40**, 25-27.
6. Zanetti, G., Heumann, D., Gerain, J., Kohler, J., Baras, C., Lucas, R., Glauser, M. P., Baumgartner, J.D. Cytokine Production after Intravenous or Peritoneal Gram-Negative Bacterial Challenge in Mice. *J. Immunol.* (1992) **148**, 1890-1897.
7. Echtenacher, B., Falk, W., Mannel, D.A. Requirement of Endogenous Tumor Necrosis Factor/Cachectin for Recovery from Experimental Peritonitis. *J. Immunol.* (1990) **145**, 3762-3767.
8. Kinsella, J.E., Lokesh, B., Stone, R.A. Dietary N-3 Polyunsaturated Fatty Acids and Amelioration of Cardiovascular Disease: Possible Mechanism. *Am. J. Clin. Nutr.* (1990) **52**, 1-28.
9. Morlion, B.J., Torweaten, E., Lessire, H., Sturm, G., Peskar, B.M., Furst, P., Puchstein, C. The Effect of Parenteral Fish Oil on Leukotriene Membrane Fatty Acid Composition and Leukotriene-Synthesizing Capacity in Patients with Postoperative Trauma. *Metabolism* (1996) **45**, 1208-1213.
10. Grimminger, F., Mayser, P., Papavassilis, C., Thomas, M., Schlotzer, E., Heuer, K.U., Fuhrer, D., Hinsch, K.D., Walmrath, D., Schill, W.B., Seeger, W.A. Double-Blind, Randomized, Placebo-Controlled Trial of n-3 Fatty Acid Based Lipid Infusion in Acute, Extended Guttate Psoriasis. *Clin. Investig.* (1993) **71**, 634-643.
11. Rustan, A.C., Christiansen, E.N., Drevon, C.A. Serum Lipids, Hepatic Glycerolipid Metabolism and Peroxisomal Fatty Acid Oxidation in Rats Fed n-3 and n-6 Fatty Acids. *Biochem. J.* (1992) **283**, 333-339.
12. Chen, W.J., Yeh, S.L., Huang, P.C. Effects of Fat Emulsions with Different Fatty Acid Composition on Plasma and Hepatic Lipids in Rats Receiving Total Parenteral Nutrition. *Clin. Nutr.* (1996) **15**, 24-28.
13. Yeh, S.L., Chen, W.J., Huang, P.C. Effects of Fish Oil and Safflower Oil Emulsions on Diet-Induced Hepatic Steatosis in Rats Receiving Total Parenteral Nutrition. *Nutr.* (1996) **15**, 80-83.
14. Lanza-Jacoby, S., Phetteplace, H., Tripp, R. Enteral Feeding a Structured Lipid Emulsion Containing Fish Oil Prevents the Fatty Liver of Sepsis. *Lipids* (1995) **30**, 707-712.
15. Lanza-Jacoby, S., Smythe, C., Phetteplace, H., Tabares, A. Adaptation to a Fish Oil Diet before Inducing Sepsis in Rats Prevents Fatty Infiltration of the Liver. *J. Parenter. Enter. Nutr.* (1992) **16**, 353-358.
16. Wichterman, K.A., Baue, A.E., Chaudry, I.H. Sepsis