

fatty acid rich oils may also play a role in preventing hepatic TG accumulation.^{44,45}

SOD and GSHPx are enzymes which protect tissues from the effect of free radicals and lipid peroxides, and the activities of both SOD and GSHPx increase after free-radical-mediated injury and lipid peroxidation.⁴⁶ Although DM and sepsis increase oxidative stress,^{20,21} the results from our study showed that no differences in erythrocyte antioxidant enzyme activities or plasma total antioxidant status were observed between the septic and non-septic groups, regardless of whether they were fed fish oil or safflower oil. This may indicate that the duration of sepsis in this study was not long enough to change the enzyme activities of erythrocytes, or that erythrocyte antioxidant enzyme activities and plasma total antioxidant status are not sensitive indicators for oxidative stress of these diseases. Fish oil-fed groups did not show higher antioxidant enzyme activities than did the safflower oil groups; this might mean that lipid peroxidation products did not accumulate in erythrocytes of the fish oil group. This might be explained by the presence of vitamin E supplemented in the fish oil by the manufacturer which prevented lipid peroxidation.

In conclusion, this study showed that prefeeding fish oil to DM rats had no beneficial effects on plasma glucose, cholesterol, or NEFAs, when rats were complicated with sepsis. Plasma amino acid patterns demonstrated that septic conditions result in a catabolic reaction of the rats; fish oil feeding had no favorable effects on ameliorating muscle protein breakdown or intracellular Gln depletion. However, prefeeding with fish oil protects liver fat accumulation associated with sepsis.

ACKNOWLEDGEMENTS

This study was supported by research grant NSC 89-2320-B-038-014 from the National Science Council, R.O.C. The authors wish to thank Ms. Chui-Li Yeh for her technical assistance.

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