ABSTRACT

The cuttlefish liver discarded during processing contains a high oil content (6-40%) and is a rich source of ω-3 polyunsaturated fatty acids (ω-3 PUFAs) like eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Feeding cuttlefish liver oil (CFLO) at 1% level to rats fed atherogenic diet (AD) for a period of 90 days, showed a lowering of gain in body weight and liver weight; lipid components in serum and tissues, LDL-cholesterol (LDL-C) & atherogenic ratio; increase in HDL-cholesterol (HDL-C), increased faecal excretion of bile acids and neutral sterols; decreased lipogenic enzyme activities, increased antioxidant enzyme activities & antioxidant levels, but, decreased levels of lipid peroxidation products in tissues. The antiatherogenic action of CFLO observed is through decreased lipogenesis, increased cholesterol transport to liver, enhanced excretion of neutral sterols and bile acids and above all a stimulated antioxidant defense system and this might be due to its high content of ω-3 PUFAs which in the presence of antioxidants (vitamins E & C and green tea flavonoids) offer greater effect.

The cardioprotective action, immune function, inflammatory response and platelet aggregation was also studied by feeding 1% CFLO for a period of 45 days. The study showed lowering of the levels of diagnostic marker enzymes, enhanced proliferation of spleen and bone marrow cells, increase in the number of plaque forming cells in the spleen and antibody titre in the circulation; inhibition of carrageenan induced acute paw oedema, formalin induced chronic paw oedema and adenosine diphosphate (ADP) induced platelet aggregation. The ω-3 PUFAs especially the EPA present in the CFLO may be responsible for the observed beneficial effects.

Key Words: cuttlefish liver oil, atherogenesis, eicosapentaenoic acid, docosahexaenoic acid, cardioprotective, immune function.