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The antihyperlipidemic effects of coenzyme Q10 and gemfibrozil on hyperlipidemic male rats: a comparative study

Abstract :

Dyslipidemia is considered as the most common risk factor for cardiovascular diseases, cerebrovascular diseases, and fatty liver disease. The available therapy aimed to decrease lipid profile and reduced long-term risk which do require lifelong therapy, hence adverse effects are suggestive. The goal of the present study is to compare the anti-hyperlipidemic influence and hepatic side effects of CoQ10 and gemfibrozil in the hyperlipidemic male rats model. Twenty-five albino rats were divided into 5 groups: group 1(normal group), group 2 (olive oil group), group 3(hyperlipidemia-induced group) group 4 (CoQ10-treated group), and group 5 (gemfibrozil-treated group). Induction of hyperlipidemia lasts for 90 days and treatment lasts for 30 days. Serum liver enzyme analysis and liver histological study conducted to demonstrate the safety profile of the treatment agents. Analysis of the data revealed that the lipid profile parameters (except HDL) and liver enzymes were significantly ($p < 0.001$) higher in the hyperlipidemic group (Group 3) compared to either the control group (Group 1) or olive oil group. Using CoQ10 (Group 4) and gemfibrozil (Group 5) has revealed that the lipid parameters and liver enzymes were significantly ($p < 0.001$) lower compared to the hyperlipidemic group (Group 3). Compared to control group, liver showed congestion of sinusoids, severe necrosis of hepatocytes, vacuolar degradation, and infiltration of inflammatory cells, these effects reversed in presence of CoQ10. Compared to gemfibrozil, CoQ10 provides safer and equally effective option for treatment of dyslipidemia represented by improved lipid parameters and liver enzymes alongside protected hepatic architecture.