A Comparative study on the role of leptin and gemfibrozil in ethanol-induced hyperlipidemia in rats

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Abstract

The aim of the present study was to evaluate the effect of leptin hormone and gemfibrozil on the body weight, hepatic & serum lipids and lipoproteins profile in ethanol-induced hyperlipidemia in rats. The study was carried on 53 male albino rats weighing 130-160 gm classified into six groups (from A-F). Three of these groups were fed a normal diet (A, C and D), while the other groups (B, E and F) were fed a normal diet combined with ethanol (6.32 gm/kg body weight p.o.) for the first 30 days. Subsequently, the first three groups received a normal diet for group (A), in addition to gemfibrozil (100mg/kg p.o. daily) for group (C) or exogenous leptin (230µg/kg body weight, i.p.) for group D every alternate day, while Groups (E) and (F) were administered gemfibrozil and leptin respectively for the next 15 days. At the end of the total experimental period of 45 days, liver total lipids, serum concentrations of total cholesterol, triglycerides, lipoproteins, total protein, albumin and glucose were measured.

Ethanol-induced hyperlipidemia in rats resulted in marked increase of liver total lipids and significant increase of serum total cholesterol, LDL-cholesterol, VLDL-cholesterol and triglycerides levels. This was associated with concomitant decrease in serum HDL-cholesterol as well as serum total proteins and albumin levels, in addition to significant decrease observed in the body weight.
Administration of leptin or gemfibrozil separately or after ethanol-induced hyperlipidemia to rats was able to antagonize the ethanol-induced biochemical changes in the tissues studied. The results of this study showed that leptin administered alone to animals resulted in marked decrease of their body weight and fasting serum glucose levels while serum HDL-cholesterol was elevated.

While administration of gemfibrozil alone had no effects on the former parameters but only reduced LDL-C level significantly.

These findings indicate that the chronic administration of exogenous leptin is more effective as compared to gemfibrozil in prevention the rise in lipids and lipoproteins concentration significantly in an animal model of alcohol-induced hyperlipidemia.

**Keywords:** Alcohol, Leptin, Gemfibrozil, Hyperlipidemia, Lipoproteins, Proteins.

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