

Beneficiary effect of *Commiphora mukul* ethanolic extract against high fructose diet induced abnormalities in carbohydrate and lipid metabolism in wistar rats.

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Abstract

The present study was proposed to elucidate the effect of *Commiphora mukul* gum resin ethanolic extract treatment on alterations in carbohydrate and lipid metabolisms in rats fed with high-fructose diet. Male Wistar rats were divided into four groups: two of these groups (group C and C+CM) were fed with standard pellet diet and the other two groups (group F and F+CM) were fed with high fructose (66 %) diet. *C. mukul* suspension in 5% Tween-80 in distilled water (200 mg/kg body weight/day) was administered orally to group C+CM and group F+CM. At the end of 60-day experimental period, biochemical parameters related to carbohydrate and lipid metabolisms were assayed. *C. mukul* treatment completely prevented the fructose-induced increased body weight, hyperglycemia, and hypertriglyceridemia. Hyperinsulinemia and insulin resistance observed in group F decreased significantly with *C. mukul* treatment in group F+CM. The alterations observed in the activities of enzymes of carbohydrate and lipid metabolisms and contents of hepatic tissue lipids in group F rats were significantly restored to near normal values by *C. mukul* treatment in group F+CM. In conclusion, our study demonstrated that *C. mukul* treatment is effective in preventing fructose-induced insulin resistance and hypertriglyceridemia while attenuating the fructose induced alterations in carbohydrate and lipid metabolisms by the extract which was further supported by histopathological results from liver samples which showed regeneration of the hepatocytes. This study suggests that the plant can be used as an adjuvant for the prevention and/or management of insulin resistance and disorders related to it.

KEYWORDS: *Commiphora mukul*; Glycolytic enzymes; High fructose diet; Insulin resistance; Lipid metabolic enzymes