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Protective Effect of Probiotic Lactic Acid Bacteria on Thioacetamide-Induced Liver Fibrosis in Rats: Histomorphological Study

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Abstract : Hepatic fibrosis is characterized by collagen accumulation in hepatic lobules following wound healing process. If lefts untreated, it could progress into hepatic cirrhosis, portal hypertension, and liver failure. Probiotics comprise of lactic acid bacteria which are crucial components of the intestinal microflora and possess many beneficial properties. The objective of this study is to investigate the hepatoprotective effects of probiotic lactic acid bacteria (mixture of Lactobacillus paracasei, Lactobacillus casei, and Lactobacillus confusus at a ratio of 1: 1: 1) on thioacetamide-induced liver fibrotic rats in term of histomorphology study. Twenty-four male Wistar rats were randomly divided into four groups with 6 rats each: (A) control, (B) fibrotic, (C) fibrotic+probiotic, and (D) probiotic. Group (A) received daily oral administration of distilled water. Group (B and C) were induced by intraperitoneal injection of thioacetamide (TAA) (200 mg/kg BW) 3 times per week for consecutive 8 weeks. In probiotic-treated group (C and D), the number of a mixture of the viable microbial cells at 10^9 CFU/ml was administered orally daily. After sacrifice, liver tissues were collected and processed for routine histological technique and stained with Sirius red. It was found that the fibrotic rats showed hepatic injury marked by area of inflammation, hydropic degeneration of hepatocytes, and accumulation of myofibroblast-like cells. The collagen fibers were substantially accumulated in the hepatic lobules. Moreover, probiotic-treated group significantly reduced the accumulation of collagen in rats treated by TAA. The liver damage was found to be lesser in the probiotic-treated group. It was noted that the liver tissues of control and probiotics groups were shown to be normal. Administration with probiotic lactic acid bacteria could improve the histomorphology in fibrotic liver and be useful for prevention of hepatic disorders.

Keywords : liver fibrosis, probiotics, lactic acid bacteria, thioacetamide
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