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Effect of Nicorandil in Bile Duct Ligation-Induced Liver Fibrosis in Rats: Role of Hepatic Stellate Cells

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Abstract : Liver Fibrosis is one of the most serious conditions that affect the Egyptian society. In the present study, the effect of nicorandil was investigated in experimentally-induced liver fibrosis by bile duct ligation in rats. Nicorandil (3mg/kg/day) was given orally 24 h after bile duct ligation for 14 days till the end of the experiment. Nicorandil group showed a significant improvement in liver function tests (ALT and ALP) as well as a significant decrease in oxidative stress biomarkers (TBARS and GSH), area of fibrosis and activity of hepatic stellate cells as indicated by decreased expression of alpha smooth muscle actin.Moreover, nicorandil treatment decreased HSCs proliferation due to its inhibitory effects on protein kinase C(PKC) and Platelet derived growth factor (PDGF) . Oral administration of either glibenclamide (10 mg/kg/day)(a KATP channel blocker) or L-NAME (30 mg/kg/day) (an inhibitor of nitric oxide synthase) blocked the protective effects of nicorandil. However, nicorandil and L-NAME treated group showed more or less results similar to that of untreated bile duct ligated group. In conclusion, nicorandil was effective against the development of bile duct ligated-induced liver fibrosis in rats where activation of the NO pathway plays an important role in the protective effect nicorandil.

Keywords : hepatic stellate cells, nicorandil, nitric oxide donor, liver fibrosis
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