

Protective Effect of Nigella sativa Oil and Its Neutral Lipid Fraction on Ethanol-Induced Hepatotoxicity in Rat Model

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Abstract : In the present investigation, total oil (TO) and its neutral lipid fraction (NLF) extracted from the seed of the well know studied medicinal plant Nigella sativa were tested for their therapeutically effect on alcohol-induced liver injury in rat model. Male Albino rats were divided into five groups of eight animals each and fed a Lieber-DeCarli liquid diet containing 5% ethanol for experimental groups and dextran for control group, for a period of six weeks. Afterwards, rats received, orally, treatments with Nigella sativa extracts (TO, NLF) and N- acetylcysteine (NAC) as a positive control for four weeks. Activities of antioxidant enzymes; superoxide dismutase (SOD) and catalase (CAT), as well as malondialdehyde (MDA) and reduced glutathione (GSH). Biochemical parameters for kidney and liver functions, in treated and non treated rats, were evaluated throughout the time course of an experiment. Liver histological changes were taken into account. Enzymatic activities of both SOD and CAT increased significantly in rats treated with NLF and TO. While MDA level decreased in TO and NLF treated rats, GSH level increased significantly in TO and NLF treated rats. We noted equally a decrease in liver enzymes AST, ALT, and ALP. Microscopic observation of slides from the liver of ethanol treated rats showed a severe hepatotoxicity with lesions. Treatment with fractions leads to an improvement in liver lesions and a marked reduction in necrosis and infiltration. As a conclusion, both extracts of Nigella sativa seeds, TO and NLF, possess an important therapeutic protective potential against ethanol-induced hepatotoxicity in rats.

Keywords : alcohol-induced hepatotoxicity, antioxidant enzymes, Nigella sativa seeds, oil fractions

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