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Nigella sativa oil ameliorates the effect of cisplatin on brush border membrane enzymes and antioxidant system in rat intestine

Faaiza Shahid
Aligarh Muslim University, India

Cisplatin (CP; cis-diamminedichloroplatinum II) is a major antineoplastic drug effective against a broad spectrum of malignancies. Patients receiving CP, however, experience very profound and long lasting gastrointestinal symptoms. *Nigella sativa* seeds/oil has been used in a wide range of gastrointestinal disorders. In view of this, the present study investigates the protective effect of *Nigella sativa* oil (NSO) on CP-induced adverse biochemical alterations in the small intestine of rat. Rats were divided into four groups, the CP+NSO and NSO groups were administered NSO (2 ml/kg b.wt orally), with or without single dose of CP treatment (6 mg/kg b. wt. i.p) respectively. Serum parameters, activities of brush border membrane (BBM) enzymes and various oxidative stress parameters were analysed in mucosal homogenates and/or brush border membrane vesicles (BBMV). CP treatment caused significant decline in the activities of alkaline phosphatase (ALP), γ-glutamyltransferase (GGTase), leucine aminopeptidase (LAP) and sucrase both in the mucosal homogenates and in the isolated brush border membrane vesicles (BBMV). However, the CP induced decrease in the activities of ALP, GGTase, LAP and sucrase was significantly prevented when CP treatment was extended to NSO administered rats. Lipid peroxidation and total sulfhydryl groups were altered upon CP treatment. CP significantly decreased the activities of SOD, catalase, GSH-Px, GR and TR. The CP induced changes in the activities of SOD, CAT and GSH-Px, GR and TR were ameliorated when CP treatment was given to NSO fed rats. The results suggest that NSO owing to its intrinsic biochemical/antioxidant properties enhanced resistance to CP elicited adverse gastrointestinal effects.

Keywords: Cisplatin, brush border membrane, *Nigella sativa oil*, intestine, and oxidative stress

Biography

Faaiza Shahid is pursuing Ph.D. from Department of Biochemistry, A.M.U, Aligarh. She is presently working on "Protective effect of *Nigella sativa* oil on cisplatin induced intestinal toxicity".

faaizashahid@gmail.com