

## Effect of *Nigella sativa* pre-treatment on sub-chronic lead acetate induced hematological and biochemical alterations

### ABSTRACT

Lead acetate (LA) toxicity can occur either by ingestion or inhalation from contaminated surfaces or from the environment. *Nigella sativa* is a natural product with immense pharmacological properties. In this study, the effects of *N. sativa* pre-treatment on lead acetate induced hematological and biochemical changes were evaluated. A total of 20 male *Sprague Dawley* rats were divided into 4 groups with 5 rats each. Group 1 (NC) was the negative control, group 2 was the lead acetate control (PC) and was administered 10 mg/kg/per day of lead acetate (LA) per OS for 30 days, group 3 (T1) was administered 200 mg/kg/daily of *Nigella sativa* orally for a month and Group 4 (T2) was pre-treated with 200 mg/kg/daily of *Nigella sativa* orally for one month, followed by administration of 10 mg/kg/daily of lead acetate (LA) orally for another month. At the end of the experiment, whole blood and serum were collected to evaluate the complete blood profile and serum biochemistry. The haemogram showed lower ( $p < 0.05$ ) level of hemoglobin, packed cell volume and prothrombin in the PC group, while total white blood cell count, band neutrophils, segmented neutrophils, lymphocytes and monocytes counts were higher ( $p < 0.05$ ) in the PC group than the treatment groups. However, eosinophil count was higher in T2, while no changes were observed in RBC and MCV values. Both alanine and aspartate aminotransferase enzymes were higher in the PC as compared to other groups. Similarly, the levels of alkaline phosphatase, cholesterol, urea and creatinine were all higher ( $p < 0.05$ ) in the PC group and comparable ( $p > 0.05$ ) in the control, T1 and T2 groups. The level of SOD and GSH were lower ( $p < 0.05$ ) in the PC and T2 groups. In summary, this study showed the prophylactic potential of *N. sativa* extract in modulating both hematological, biochemical and anti-oxidant enzymes alterations induced by sub-chronic lead acetate administration in rats.

**Keyword:** Anti-oxidant enzymes; Biochemistry; Black caraway seed; Hermatology; Lead acetate