

Evaluation of the effect of royal jelly on histopathological and biochemical changes in the lungs of rats following arsenic trioxide toxicity

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Abstract

Reactive oxygen species (ROS) and the oxidative damage are the main factors involved in tissue damage caused by arsenic trioxide. In the present study, we investigated the protective effects of royal jelly on the parameters of oxidative stress and histopathological damage to lung tissue due to arsenic trioxide toxicity. Forty male Wistar albino rats received arsenic trioxide and royal jelly orally for 30 days and were randomly divided into eight groups of five; The first group received normal saline at a dose of 1 mg /kg, the second group received royal jelly at a dose of 150 mg /kg, the third group received arsenic trioxide at a dose of 1 mg / kg, the fourth group received arsenic trioxide (1 mg /kg) with Royal jelly at a dose of 150 mg /kg, the fifth group received arsenic trioxide (1 mg /kg) with royal jelly at a dose of 100 mg /kg, the sixth group received arsenic trioxide (1 mg /kg) with royal jelly at a dose of 50 mg /kg, the seventh group received arsenic trioxide (1 mg /kg) with vitamin E at a dose of 100 mg /kg, and the eighth group received arsenic trioxide (1 mg /kg) with vitamin E and royal jelly (both) at a dose of mg/ kg 100. Oxidative stress parameters including malondialdehyde (MDA), glutathione peroxidase (GPx), superoxide dismutase (SOD) and catalase (CAT) were evaluated. Damage to lung tissue was also assessed by hematoxylin-eosin (H&E) tissue staining. The results of the present study revealed that arsenic trioxide increased the level of MDA and decreased the levels of GPx, SOD and CAT. Royal jelly treatment decreased MDA levels and increased GPx, SOD and CAT concentrations in lung tissue. The severity of lung tissue damage was also reduced. In general, Royal Jelly reduced oxidative stress and lung tissue damage.

Key word: Arsenic trioxide, Royal jelly, Lung, Oxidative stress

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