EVALUATION OF HONEY PROTECTIVE EFFECT ON 
LEAD INDUCED OXIDATIVE STRESS IN RATS

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ABSTRACT

Background: Lead toxicity is a worldwide health problem due to continuous exposure of the population to lead in the environment especially workers in industries. It affects many body organs especially the liver and kidneys. The aim of this study is to investigate the protective effect of natural honey against lead induced oxidative stress, hepatotoxicity and nephrotoxicity.

Materials & method: Forty male albino rats were used in this study divided into 4 equal groups. Group (1) the control group were given distilled water orally for 4 weeks. Group (II) rats were given 1.5 ml/kg natural honey orally for 4 weeks, Group (III) rats were given lead acetate (0.2%) in drinking water for 4 weeks. Group (IV) rats were given lead acetate (0.2%) in drinking water and 1.5 ml/kg natural honey orally for 4 weeks. Blood and tissue samples were taken after four weeks. Lipid peroxidation product, malondialdehyde (MDA) in plasma, liver and kidney were determined, blood glutathione peroxidase activity (GPx) and serum nitric oxide (NO) levels were also measured. Liver function tests (serum alkaline phosphatase (ALP), aspartate transaminase (AST) and alanine transaminase (ALT) were measured. Kidney function tests (blood urea & s.creatinine) were estimated. Histopathological examination of liver and kidney sections was performed.

Results: showed significant (P>0.01) increase in the mean MDA of plasma, liver and kidney of lead acetate group (Group III) with decreased antioxidant enzyme activity (GPx) activity and (NO) and increase levels of AST, ALT, ALP, urea and serum creatinine together with histopathological changes in liver and kidney sections. Honey alleviated the increased MDA levels, and ameliorate the elevated AST, ALT, ALP, urea and serum creatinine in the combination group. The present study revealed that natural honey could diminish the adverse effects of lead acetate as shown in the histological analysis of rat livers and kidneys.

Conclusions: The present results indicated that natural honey can modulate the damage in liver and kidney cells from oxidative stress induced by lead toxicity in rats.

Keywords: Lead acetate; honey; oxidative stress; liver; kidney.