

Potential Ameliorative Effects of Oat (*Avena Sativa L.*) and its Efficacy Against Lead Toxicity in Experimental Rats

Soha Mohamed Yousef¹ and Asmaa Ahmed M. Hussein²

Nutrition and Food Science, Home Economics Department, Faculty of Specific Education, Fayoum University¹ & Nutrition and Food Science Department, Faculty of Home Economics, Helwan University²

Abstract

The study aimed to assess the dietary significance and the ameliorative effects of oat (*Avena Sativa L.*) against lead toxicity in experimental rats during their growth period. Twenty-eight albino rats divided to two groups. The first group G1 (7 rats) feed a basal diet as a negative control. Rats of the second group (21 rat) were exposed to lead toxicity using lead acetate at a 200 mg/kg diet, and then the rats were divided into 3 subgroups. G2 considered a positive control group, G3 and G4 feed a diet with different levels of oat powder 10 % and 20 %, respectively. Duration of the experiment was 6 weeks. The results indicated that rats fed on oats at 10% and 20% of their intake showed a significant decrease in serum lead levels (0.016 mg/dl) and (0.005mg/dl) respectively, comparing to G2. In addition, there were noticeable improvements in iron and hemoglobin levels in rats fed on oats of their diet, the best result was in G4 (341.33mg/dl) and (14.03mg/dl) respectively. Regarding liver enzymes ALT, AST and ALP were significant decreased in G3 and G4 comparing to G2. Improvements in kidney functions were also shown in all examined groups comparing to G2. Furthermore, the antioxidant enzymes SOD and CAT showed a significant improvement in all tested groups comparing to G2. It can be concluded that a significant improvement was evident in the changes induced by exposure to lead acetate in the groups of rats that consumed oats in the diet. Results scientifically proved that oats have significant therapeutic effects against intoxication caused by lead acetate. Oats have potential health benefits as a functional supplement that has a role in liver and kidney protection and enhancing the antioxidant system against lead toxicity. The current study's recommendation is that increasing of oats in the diet may be beneficial against lead toxicity.

Key words: heavy metals intoxication, liver enzymes, antioxidant activity, renal functions.