Original Article

Effect of Curcumin on liver enzymes in rats treated with cadmium chloride

Masoumeh Ramezanyfard Darabi (B.Sc)¹, Vahid Hemayatkhah Jahromi (Ph.D)²

¹M.Sc Student of Animal Physiology, Young Researchers and Elit Club, Jahrom Branch, Islamic Azad University, Jahrom, Iran. ²Associate Professor, Department of Biology, Jahrom Branch, Islamic Azad University, Jahrom, Iran.

Abstract

Background and Objective: The consequence of excessive usage of phosphate fertilizers, in addition to the accumulation of phosphorous in excess, is to create competition with the absorption of micronutrients, especially zinc and, most importantly, the accumulation of pollutants such as cadmium in agricultural products. This study was done to determine the effect of Hydro-alcoholic extract of Curcumin on the levels of liver enzymes in rats treated with cadmium chloride.

Methods: This experimental study was done on 56 adult male Wistar rats which allocated into 8 equal groups including control group: animals in this group were received normal saline, intraperitonally. Sham: animals in this group were received olive oil, intraperitonally. Cadmium group: animals in this group were received Cadmium with dosage 1.5 mg/kg/bw, intraperitonally. Curcumin group: animals in this group were received 120 mg/kg/bw of Curcumin, intraperitonally. The interventional group 1: animals in this group were received Cadmium with dosage 1.5 mg/kg/bw, and 30 mg/kg Curcumin, intraperitonally. The interventional group 2: animals in this group were received Cadmium with dosage 1.5 mg/kg/bw and 60 mg/kg/bw of Curcumin, intraperitonally. The interventional group 3: animals in this group were received Cadmium with dosage 1.5 mg/kg/bw and 120 mg/kg/bw of Curcumin, intraperitonally. After 21 days, the rats were sacrificed and the liver enzymes including aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) were measured by spectrophotometer method.

Results: The concentration of AST, ALT and ALP in cadmium group were significantly increased in compare to controls (P<0.05). The concentration of liver enzymes in Curcumin group was reduced in compare to controls (P<0.05). The enzymes concentration in the interventional groups 1, 2 and 3 were significantly reduced in compare to the cadmium group (P<0.05). The enzymes concentration in the interventional groups 1, 2 and 3 were significantly increased in compare to controls (P<0.05).

Conclusion: Hydroalcoholic Curcumin extract can reduces the increasing of liver enzymes induced by cadmium in rats.

Keywords: Curcumin, Cadmium chloride, Liver enzymes

* Corresponding Author: Hemayatkhah Jahromi V (Ph.D), E-mail: dr.hemayatkhah@yahoo.com

Received 13 Sep 2016  Revised 15 Jan 2017  Accepted 10 Apr 2017