THE LEVELS OF TRACE METALS IN AlCl₃- INDUCED THE RAT LIVER

Harun CIFTCI, Ahmet OZKAYA, Alpaslan DAYANGAC, Ali OLCUCU

1University of Ahı Evran Science-Art Faculty, Department of Chemistry Kirsehir-Turkey
2University of Adiyaman Science-Art Faculty, Department of Chemistry Adiyaman-Turkey
3University of Ahı Evran Science-Art Faculty, Department of Biology Kirsehir-Turkey
4University of Firat-Art Faculty, Department of Chemistry Elazig-Turkey

(harunciftci@yahoo.com, Tel: 0386 2114552, Fax: 0386 2114525)

Key Words: Hesperitin, Trace Element, Aluminum, Oxidative-stress, Rat liver, ICP-OES.

Aluminum is one of the most abundant elements in the earth. It enters into the body from the environment, diet, drinking waters, sprays and medication. Aluminum is one of a number of factors that have been suggested as a cause for Alzheimer’s disease [1,2]. Hesperetin is a kind of flavonoid which occurs ubiquitously in plants, fruits, flowers and foods of plant origin. Hesperetin has multiple biological and pharmacological activities, including antioxidant and chelating properties [3]. In this study the protective role of Hesperitin on trace element levels and elimination of aluminum in the liver of rats administered pro-oxidant AlCl₃ were explored. For this purpose, four equal groups were constituted as control (C), hesperitin (H), AlCl₃ (Al) and hesperitin+AlCl₃ (H+Al). Hesperetin was dissolved in corn oil and administered to animals by gavage at the dose of 75 mg/kg body weigh. AlCl₃ was dissolved in distilled water and administered to animals by intraperitoneal injection. At the end of the 55 days period, the rats were decapitated and their livers were surgically excised. Metal levels in liver tissues were determined by ICP-OES. As a result of the analysis, it was found that the level of Ca in Al group were increased according to other all groups (P<0.001). It was obtained that Mg levels in Al and H groups was increased according to C group (P<0.01, P<0.05). While the levels of Fe in between Al and H+Al groups were not significant (P>0.05) it was found that Fe levels of C group were lower than those groups (P<0.01, P<0.05). Zn level in H group were higher than C group (P<0.05). An statistical difference could not be established between all groups in terms of Mn levels (P>0.05). While the levels of Al in Al group were increased according to other all groups (P<0.001), between C and H groups were not significant in terms of Al levels (P>0.05). It was obtained that the levels of Al in H+Al group were higher than H group (P<0.001) and lower than Al group (P<0.001). In conclusion, protective effects of hesperitin were obtained by decreasing Al levels against aluminum toxicity in rat liver. Thus, the Hesperetin supplementation may play a protective role against AlCl₃-induced oxidative stress.

References