PROTECTIVE EFFECTS OF QUERCETIN AGAINST ACRYLAMIDE INDUCED TOXICITY

Chhavi Uthra, Sadhana Shrivastava and Sangeeta Shukla

UNESCO- Trace Element Satellite Center, School of Studies in Zoology, Jiwaji University, Gwalior (M.P.) India

Abstract: The acrylamide (ACR) contamination of food products or the formation during the technological processes are among the main risk factors for public health owed to the potential to generate toxicity from this contamination with multiple noxious effects. This study was aimed to evaluate the protective effects of quercetin, a polyphenolic natural flavonoid which possesses antioxidant activity against ACR induced hepatorenal and cerebral injuries in rats. Female albino rats were administered ACR (38.27mg/kg p.o.) for 10 days, followed by the oral administration of quercetin at different doses for 3 days. Animals of all groups were sacrificed after 24 h of last treatment. Significant rise was observed in the serum level of liver marker enzymes: AST and ALT. Concentration of serum triglyceride, total cholesterol, urea, creatinine and albumin were also increased whereas hemoglobin percentage was decreased. Level of antioxidant enzymes (SOD and CAT) and GSH contents were significantly decreased while TBARS was significantly increased after ACR exposure indicated oxidative stress in liver, kidney and brain. Activity of AChE in brain was significantly depleted after ACR intoxication. Treatment with quercetin ameliorated the toxicity of ACR and the studied parameters were reversed towards the control level. Thus it is concluded that quercetin possess antioxidant properties offering promising efficacy against oxidative stress induced by ACR administration.

Keywords: Acrylamide, quercetin, oxidative stress.

Acknowledgments: We are thankful to Jiwaji University, Gwalior (M.P.) and University Grants Commission {(F.4-1/2006(BSR) 7-97/2007 (BSR)} for financial assistance.