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Resveratrol prevents cypermethrin induced neurotoxicity in rat by increasing acetylcholine esterase activity

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Abstract

The aim of the study was to evaluate neurotoxic effects of cypermethrin and protective role of resveratrol in Wistar rats. 30 male Wistar rats were divided into five groups. Group- A served as control. Rats of Group- B were treated with cypermethrin at the dose of 3.38mg/kgbw for 7 days by gavaging. Posttreatment and pretreatment of resveratrol (20mg/kgbw) were administered to Group-C and D exposed to cypermethrin for 7 days. In Group-E resveratrol (20mg/kgbw) was given alone for 7 days. Cypermethrin treated group showed elevation in lipid peroxidation (LPO 83.99%) and inhibition in glutathione (GSH 12.81%), superoxide dismutase (SOD 17.08%), catalase (CAT 11.51%), glutathione S transferase (GST 12.12%), glutathione reductase (GR 77.55%), glutathione peroxidise (GPx 23.78%), total protein (42.95%) and acetyl cholinesterase activity (AChE 47.64%) in rat brain. Post, pre and treatment with resveratrol reversed the toxic effect induced by cypermethrin. Our findings strongly suggest that cypermethrin induced neurotoxicity may be mediated through free radical formation, reduced antioxidant defence mechanism and inhibition of acetylcholinestrase activity (AChE). Cypermethrin may be showing AChE inhibitory activity by interacting with the anionic substrate binding site. Administration of Resveratrol increased AChE activity and ameliorated cypermethrin induced brain damage in Wistar rats.

Biography

I have completed my PhD in 2004 from Dr. B.R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi (INDIA). Currently I am working as Associate Professor in Department of Biomedical Sciences, Bundelkhand University, Jhansi Uttar Pradesh. I have published more than 37 papers in reputed journals and presented papers in national and International conferences. I have supervised 5 PhD and 30 M Sc students. I am working in the area of Bioactive compounds from Ayurvedic medicinal plants (Antidiabetic, Antimicrobial, Antioxidant), Health effects of Probiotics.. I have completed 02 research project funding received from UGC (36 Lacs), CSIR (19 Lacs) and running 01 research project grant received from UGC (11.99 Lacs).