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Melatonin Ameliorates Oxidative Damage Induced by Maternal Lead Exposure in Rat Pups

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Abstract

During the particular period of cerebellum development, exposure to lead (Pb) decreases cerebellum growth and can result in selective loss of neurons. The detection and prevention of Pb toxicity is a major international public health priorities. This research study was conducted to evaluate the effects of melatonin, an effective antioxidant and free radical scavenger, on Pb induced neurotoxicity and oxidative stress in the cerebellum. Pb exposure was initiated on gestation day 5 with the addition of daily doses of 0.2% lead acetate to distilled drinking water and Continues until weaning. Melatonin (10mg/kg) was given once daily at the same time. 21 days after birth, several antioxidant enzyme activities including superoxide dismutase (SOD) and glutathione peroxidase (GPx) were assayed. Thiobarbituric acid reactive substance (TBARS) levels were measured as a marker of lipid peroxidation. Rotarod and locomotor activity tests were performed on postnatal days (PDs) 31–33 and a histological study was performed after completion of behavioral measurements on PD 33. The results of the present work demonstrated that Pb could induce lipid peroxidation, increase TBARS levels and decrease GPx and SOD activities in the rat cerebellum. We also observed that Pb impaired performance on the rotarod and locomotor activities of rats.

Biography:

Maryam Bazrgar is a physiologist and now PhD candidate of neuroscience at the age of 33 from the Neuroscience Research Center, Shahid Beheshti University of Medical Science, Tehran, Iran.

Speaker Publications:

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2. "Ghareeb DA, Hussien HM, Khalil AA, El-Saadani MA, Ali AN: Toxic effects of lead exposure on the brain of rats: Involvement of oxidative stress, inflammation, acetylcholinesterase, and the beneficial role of flaxseed extract. Toxicol Environ Chem 2009; 92: 187–195.
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