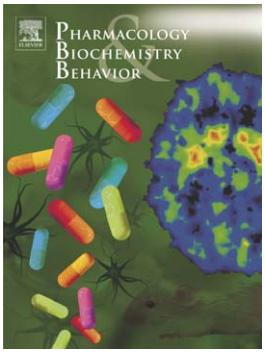

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Neuroprotective effect of curcumin as evinced by abrogation of rotenone-induced motor deficits, oxidative and mitochondrial dysfunctions in mouse model of Parkinson's disease

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Abstract

Curcumin, a natural polyphenolic compound extracted from rhizomes of Curcuma longa (turmeric), a plant in the ginger family (Zingiberaceae) used word wide and extensively in Southeast Asia. Curcumin exhibited numerous biological and pharmacological activities including potent antioxidant, cardiovascular disease, anticancer, anti-inflammatory effects and neurodegenerative disorders in cell cultures and animal models. Hence, the present study was designed in order to explore the possible neuroprotective role of curcumin against rotenone induced cognitive impairment, oxidative and mitochondrial dysfunction in mice. Chronic administration of rotenone (1 mg/kg *i.p.*) for a period of three weeks significantly impaired cognitive function (actophotometer, rotarod and open field test), oxidative defense (Increased lipid peroxidation, nitrite concentration and decreased activity of superoxide dismutase, catalase and reduced glutathione level) and mitochondrial complex (II and III) enzymes activities as compared to normal control group. Three weeks of curcumin (50, 100 and 200 mg/kg, p.o) treatment significantly improved behavioral alterations, oxidative damage and mitochondrial enzyme complex activities as compared to negative control (rotenone treated) group. Curcumin treated mice also mitigated enhanced acetylcholine esterase enzyme level as compared to negative control group. We found that curcumin restored motor deficits and enhanced the