

# Toxicology and Clinical Pharmacology

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# Generic Drugs and Biosimilars

2<sup>nd</sup> International Conference on

December 14-16, 2017 Rome, Italy

### Curcumin attenuates depression-like symptoms by advocating dopaminergic and serotonergic neurotransmission in rotenone-induced rat model of Parkinson's disease

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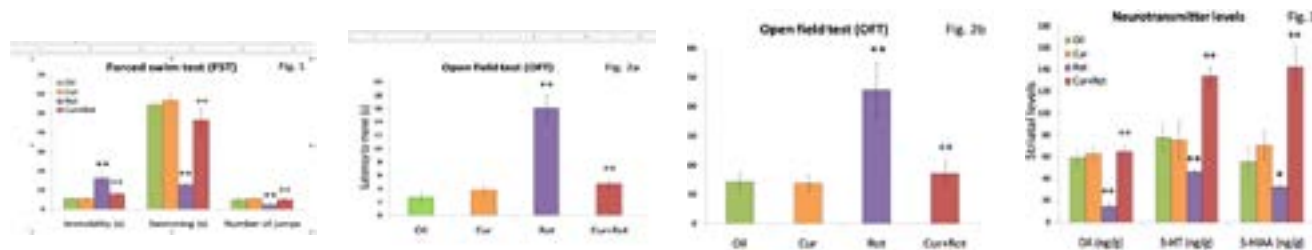
**Background:** Rotenone (organic pesticide and environmental toxin) has been associated to increase Parkinson's disease (PD) prevalence in population. Depression is one of the main non-motor symptoms of PD. Rotenone exposure in rats provides a remarkable model for studying mechanism of environmental toxin-induced depressive-like behaviors and can be used to test potential compounds for possible therapeutics. Curcumin exhibits neuroprotective action in neurodegenerative diseases. Many pharmacological effects of curcumin have been studied, however effects of curcumin on rotenone-induced depressive-like symptoms have not been studied yet.

**Objective:** In the present study we investigated the effect of pre-treatment of curcumin on rotenone-induced depressive-like behaviors and neurotransmitter alterations in rat model of PD.

**Methods:** In the present study, curcumin (100 mg/kg/day, p.o.) was supplemented for 15 days which was then followed by rotenone (1.5 mg/kg/day, S.C.) injection for 8 successive days. Depression-like behaviors were monitored by the forced swim test (FST) and open field test (OFT). Animals were decapitated after behavioral analysis and striatum was dissected out for neurochemical estimations.

**Results:** Results showed that the immobility time in FST was significantly ( $p < 0.01$ ) increased, swimming time and number of jumps were significantly ( $p < 0.01$ ) decreased in rotenone administered rats as compared with their respective controls. In OFT latency to move and immobility time were significantly ( $p < 0.01$ ) increased in rotenone treated rats. All these behavioral deficits were accompanied by the reduction of striatal dopamine (DA), 5-hydroxytryptamine (5-HT), and 5-hydroxyindoleacetic acid (5-HIAA) content following rotenone administration. Pre-treatment with curcumin significantly ( $p < 0.01$ ) reversed the despaired behavior induced by rotenone and significantly ( $p < 0.01$ ,  $p < 0.05$ ) improved neurotransmitter levels as compared to rotenone injected rats.

**Conclusion:** In conclusion, this study provides evidence that curcumin exhibits antidepressant-like activity against rotenone-induced depressive-like behaviors and restored neurotransmitters alterations.



### Biography

Syeda Madiha is doing PhD from University of Karachi, Pakistan. Her current research is on Parkinson's disease. Her research work is basically related with animal model of Parkinson's disease. In her research work she is using rotenone which is one of the main environmental toxins to induced PD-like symptoms in rats and finding treatment by using antiparkinsonian drugs. She has 9 publications to her credit. She has participated in two different international congress and represented her research work. She has participated in so many national research conferences.

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