

## Epigallocatechin Gallate Protects against Oxidative Stress-Mediated Neurotoxicity and Hippocampus Dysfunction Induced by Fluoride in Rats

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**Abstract :** Fl (Fl) exposure engenders neurodegeneration and induces oxidative stress in the brain. The Neuroprotective role of EGCG on oxidative stress-mediated neurotoxicity in Fl intoxicated rat hippocampus has not yet been explored so far. Hence, the present study is focused on witnessing whether EGCG (40mg/kg) supplementation prevents Fl induced oxidative stress in the brain of rats with special emphasis on the hippocampus. Fl (25mg/kg) intoxication for four weeks in rats showed an increase in Fl concentration along with the decrease the AChE, NP, DA, and 5-HT activity in the brain. The oxidative stress markers (ROS, TBARS, NO, and PC) were significantly increased with decreased enzymatic (SOD, CAT, GPx, GR, GST, and G6PD) and non-enzymatic antioxidants (GSH, TSH, and Vit.C) in Fl intoxicated rat hippocampus. Moreover, Fl intoxicated rats exhibited an intrinsic and extrinsic pathway mediated apoptosis in the hippocampus of rats. Fl intoxication significantly increased the DNA damage as evidenced by increased DNA fragmentation. Furthermore, the toxic impact of Fl on hippocampus was also proved by the immunohistochemical, histological, and ultrastructural studies. Pre-administration of EGCG has significantly protected the Fl induced oxidative stress, biochemical changes, cellular apoptotic, and histological alternations in the hippocampus of rats. In conclusion, EGCG supplementation significantly attenuated the Fl induced oxidative stress mediated neurotoxicity via its free radical scavenging and antioxidant activity.

**Keywords :** brain, hippocampal, NaF, ROS, EGCG

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