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## Hippocampal neuroprotective effects of coenzyme Q10 against 1-methyl-4-phenyl-1,2,3,4-tetrahydropyridine-induced Parkinson's disease model in albino rats

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**Background:** CoQ10 is currently under investigation for the treatment of neurodegenerative disorders. Although not yet approved by the FDA, the product is available from health food stores.

**Aim:** The aim of this work is to investigate possible beneficial effects of coenzyme Q10 administered i.p. on hippocampi of 12 albino rats exposed to a Parkinson model on selected hippocampal oxidative stress markers [Thiobarbituric-acid reactive substance (TBARS), MDA, GSH], brain derived-neurotropic factor (BDNF) and cyclooxygenase-2 (COX-2) enzyme gene expression].

**Methods:** Thirty-six albino rats were randomly classified into 3 groups (n of each=12 rats). Group 1 includes control saline-injected i.p., Group 2 includes control Parkinson-induced model with i.p. injection with 1-methyl-4-phenyl-1,2,3,4-tetrahydropyridine without any anti-Parkinson's therapy or coenzyme Q10 injection and Group 3 includes coenzyme Q10-treated Parkinson-induced model by i.p. injection at a dose of 50 mg/kg/day for 21 days. A pilot study showed no significant ( $p<0.05$ ) changes of coenzyme Q10 on the measured parameters in hippocampi in normal saline-treated non-Parkinsonian albino rats.

**Results:** Coenzyme Q10 treated rats showed a significant ( $p<0.05$ ) reduction in both hippocampal TBARS and MDA with a significant ( $p<0.05$ ) increase in its GSH. Additionally, a significant ( $p<0.05$ ) increase in level of hippocampal BDNF with a down-regulation of gene expression of COX-2 enzyme was seen.

**Conclusion:** Data obtained from the current study pointed to possible therapeutic effects of coenzyme Q10 in a Parkinson model of albino rats. These effects included an antioxidant, a neuro regenerative and anti-inflammatory effect of the coenzyme on the hippocampi homogenates of such animal model.

### Biography

Sahar Mohamed Kamal Shams El-Dine is currently an Associate Professor in the Department of Pharmacology at Ain Shams University, Egypt. His research interest includes GABAergic and glutamergic effects of drugs acting on CNS, neurogenesis and neuroplasticity that would promote the improvement done by antidepressants and antipsychotics in treatment of depression and psychosis.

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