Original Paper

Protective effect of Co-enzyme Q10 on seizure, short term spatial memory and oxidative stress in induced-epileptic rats

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Abstract

Background and Objective: Temporal lobe epilepsy is the most common type of epilepsy in human. Patients suffer from spontaneous seizures and memory deficiency. This study was done to assess the effect of Co-enzyme Q10 (CoQ10) administration on seizure, short-term spatial memory and stress oxidative indices in hippocampus of kainic acid-induced epilepsy.

Methods: In this experimental study, 48 male rats were randomly allocated into six groups: sham-operated; CoQ10 (10 mg/kg/bw)-treated SH; kainate; CoQ10 (2, 5 and 10 mg/kg/bw) treated kainic acid. CoQ10 was intraperitoneally administered daily for one week before intra-hippocampal injection of kainic acid (4µg/kg/bw) in animals.

Results: Kainic acid induced chronic and acute spontaneous seizures in animals. Also, kainic acid administration caused a reduction in alternational behavior rate (consecutive or serially entrance into all of arms in triplet set), increasing of malondialdehide, nitrite level and decreasing of superoxide dismutase activity compared to sham group ($P<0.05$). Pre-treatment of kainate rats with CoQ10 decreased rate of spontaneous seizures ($P<0.05$). CoQ10 increased alternational behavior rate, decreased malondialdehide and nitrite serum level ($P<0.05$). But it had no significant effect on superoxide dismutase activity.

Conclusion: Pre-treatment of kainic acid exposed rats with CoQ10 reduced rate of seizures and improved short-term spatial memory and oxidative stress indices in rats.

Keywords: CoQ10, Kainic acid, Temporal lobe epilepsy, Y maze, Malondialdehyde, Seizure, Rat

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