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Poster Presentation

Anti-Apoptotic Effect of Neural Regeneration Peptides (NRP) 2945 on Pentylentetrazole-Induced Seizures in Rats

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Abstract

Delayed neuronal death after seizure attack may be mediated by the induction of apoptosis-pathway. Caspase-3, a mammalian cysteine protease, promotes apoptosis after some neurological disorders. Neuron Regeneration Peptides (NRPs) are small synthetic peptides that stimulate neural proliferation, migration, and differentiation with no apparent toxicity and high target specificity in CNS. In the current study, we try to investigate the effect of NRP 2945 on the apoptosis after seizure activity induced by Pentylentetrazole (PTZ) in rats. The effects of different concentrations of NRP 2945 (5 and 20 µg/kg) were tested on expression of caspase-3 protein in the temporal cortex and hippocampal area after seizure induction by immunohistochemistry. In addition, the number of terminal deoxynucleotidyl-transferase-mediated dUTP nick end-labelling-positive neurons in the hippocampus and temporal cortex was investigated by tunnel staining after NRP 2945 application in epileptic rats. Application of NRP 2945 at 5 and 20 µg/kg decreased the expression of caspase-3 protein in the CA1 and CA3 hippocampal areas and the temporal cortex. In addition, application of NRP 2945 at 5 and 20 µg/kg reduced the number of apoptotic neurons in the both temporal cortex and hippocampal area. This study indicates that NRP 2945 is able to prevent the neuronal apoptosis induced by PTZ by suppressing of caspase-3 protease. Further studies are needed to elucidate the potential role of NRP 2945 as an anti-apoptotic drug.

Keywords: Apoptosis, Neuron Regeneration Peptides, Pentylentetrazole, Seizures.

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