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Poster Presentation

The Neuroprotective Effect of Periodic Fasting on the Brain Damages

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Abstract

Apoptosis plays an important role in many pathological processes of the central nervous system. The neuroprotective effect of periodic fasting (PF) in contrast to severe fasting or starvation has been suggested. However, these beneficial effects seem to depend on the type and duration of the used feeding protocol. This study was designed to evaluate the effects of different PF protocols on the apoptosis in the epileptic rats. Recurrent generalized seizures were caused by repetitive injection of Pentylenetetrazole (PTZ) for a period of 4 weeks every other day. While control animals had free access to food and water, animals on a PF diet were on intermittent fasting for 24 hours every 48 hours for 4 weeks before (T1), after (T2), or both before and after (T3) the injection of PTZ. Histological investigations were performed after the experiments were completed. Dark neuron densities in hippocampal CA1 and CA3 areas were decreased in PF groups, but never in the temporal cortex. The PF-diet also decreased the number of terminal deoxynucleotidyl-transferase-mediated dUTP nick end-labelling-positive neurons in the hippocampus in both areas and all PF-diet protocols. These results support the idea that a PF-diet has neuroprotective effect on the epileptic rats but underlines different PF-diet protocols can have varying effects. The dark neurons number was decreased and apoptosis was prevented by all PF-diet protocols investigated in this work. Further evaluation of PF-diet protocols for possible clinical neuroprotective effect is suggested.

Keywords: Dark Neuron, Pentylenetetrazol, Neuroprotection, T3.

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