Mnemonic and Histopathological Assessment of the Neuroprotective Effects of Murraya Koenigii Leaves Extract in Rats with Partial Global Cerebral Ischaemia

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Abstract

Introduction: Preclinical studies have reported that Murraya koenigii leaves (MKL) could enhance memory. MKL is also known for its antioxidant activity. The current study was to assess the possible neuroprotective potential of MKL methanolic extract in a two vessel occlusion (2VO) rat model of partial global cerebral ischaemia. Methods: Rats were divided into memory and learning groups. Each group was subdivided into sham control, untreated 2VO and MKL-treated 2VO subgroups. The Morris water maze test was implemented to assess the rats' cognitive function postoperatively. Brain samples were histopathologically examined for viable neurons within the CA1 hippocampal region. Results: Water maze test findings showed that MKL positively improved memory and learning impairments. However, this improvement in memory test for the treated group was still significantly inferior to that of the healthy control group. Additionally, MKL treated group exhibited insignificant difference in the number of viable hippocampal CA1 pyramidal neurons from that of the untreated 2VO group, whereas both MKL treated and untreated 2VO groups showed significantly less viable neurons when compared with the control group. Conclusion: MKL extract modestly improved memory without providing substantial neuroprotective action to the hippocampal neurons in rats with chronic partial global cerebral ischaemia.

Keywords

Author Keywords: Murraya Koenigii; Spatial memory; Neuroprotection; Cerebral hypoperfusion; neurodegeneration; Pyramidal cell; Hippocampus

KeyWords Plus: CAROTID-ARTERY OCCLUSION; FLUORO-JADE-C; ALZHEIMERS-DISEASE; NITRIC-OXIDE; HYPOPERFUSION; PERMANENT; STRESS; MODEL

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