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PREVENTIVE EFFECT OF NIGELLA SATIVA OIL AGAINST HIPPOCAMPAL PYRAMIDAL CELL LOSS INDUCED BY PERMANENT BILATERAL COMMON CAROTID ARTEY OCCLUSION IN RATS

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Introduction: A growing body of evidence now supports the critically attained threshold cerebral hypoperfusion (CATCH) hypothesis for triggering age related neurodegeneration. Experimentally, such threshold is achieved in rats by permanent bilateral common carotid artery ligation (PBCCAL). The hippocampal CA1 region pyramidal cells are the earliest neurons to degenerate following this procedure. Nigella sativa oil extract (NSO) was found to preserve viability of cerebellar neuron cells in vitro putting forward its potential neuroprotective effect. Objective: To assess the effect of NSO on hippocampal pyramidal cells of rats with CATCH that was achieved through PBCCAL procedure.

Methodology: 30 rats were equally divided into three groups: sham control, untreated PBCCAL and NSO treated group (PBCCAL with daily oral NSO treatment). After the 10th postoperative week coronal sections of the hippocampus were stained with cresyl violet and Fluoro Jade-C (FJC) stains.

Results: Cresyl violet staining demonstrated significantly higher number of viable pyramidal cells within CA1 hippocampal region in sham control ($p < 0.001$), and NSO ($p < 0.001$) treated groups as compared to the untreated PBCCAL group while the difference was not significant when comparing the viable pyramidal cells number of sham control with NSO treated groups ($p = 0.568$). FJC staining did not display any difference in fluorescence intensity among study groups. **Conclusion:** NSO has the potential to protect hippocampal pyramidal cells from neurodegeneration. Further conclusive studies are encouraged to confirm the beneficial effect of NSO in preventing age related neurodegeneration namely Alzheimer's disease and its subsequent cognitive impairment.