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Protective effects of Phycobiliprotein on streptozotocin induced behaviour and biochemical deficits in experimental model of Alzheimer's disease

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The present study was designed to explore the neuroprotective efficacy of a promising antioxidant and anti-inflammatory phycobiliprotein (PB), against intracerebroventricular- (ICV) Streptozotocin (STZ) induced cognitive impairment in rats. STZ (3 mg/kg) was introduced in rats' brains on day Ist and 3rd, bilaterally followed by treatment with PB or rivastigmine for 28 days. Estimation of alteration in the behaviour of treated and untreated groups of rats were done by Morris water maze, Elevated plus maze and Open field test. Afterwards, rats were sacrificed and brains were harvested for the evaluation of various biochemical parameters in post mitochondrial supernatant fractions of cerebral cortex and hippocampus. The levels of several oxidative stress (SOD, CAT, LPO) and inflammatory (TNF-α, NF-κB) biomarkers were analysed activity towards acetylchoine esterase was also investigated by CHAT assay. The amelioration of ICV-STZ induced spatial learning and memory impairment by PB could be associated, partially, to the downregulation of NF-κB activity and the mitigation of expression of neuroinflammatory cytokines, alongwith modulation of cholinesterase, suggesting that PB may be explored further as a potent candidate for Alzheimer's disease therapy.

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Keywords:-Alzheimer's-Disease, Intracerebroventricular, Cognitive impairment, Phycobiliprotein.

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