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Antioxidant Mediated Neuroprotective Effects of Allium Cepa Extract Against Ischemia Reperfusion Induced Cognitive Dysfunction and Brain Damage in Mice

Authors : Jaspal Rana, Varinder Singh

Abstract : Oxidative stress has been identified as an underlying cause of ischemia-reperfusion (IR) related cognitive dysfunction and brain damage. Therefore, antioxidant based therapies to treat IR injury are being investigated. Allium cepa L. (onion) is used as culinary medicine and is documented to have marked antioxidant effects. Hence, the present study was designed to evaluate the effect of A. cepa outer scale extract (ACE) against IR induced cognition and biochemical deficit in mice. ACE was prepared by maceration with 70% methanol and fractionated into ethylacetate and aqueous fractions. Bilateral common carotid artery occlusion for 10 min, followed by 24 h reperfusion, was used to induce cerebral IR injury. Following IR injury, ACE (100 and 200 mg/kg) was administered orally to animals for 7 days once daily. Behavioral outcomes (memory and sensorimotor functions) were evaluated using Morris water maze and neurological severity score. Cerebral infarct size, brain thiobarbituric acid reactive species, reduced glutathione, and superoxide dismutase activity were also determined. Treatment with ACE significantly ameliorated IR mediated deterioration of memory and sensorimotor functions and rose in brain oxidative stress in animals. The results of the present investigation revealed that ACE improved functional outcomes after cerebral IR injury which may be attributed to its antioxidant properties.

Keywords : allium cepa, cerebral ischemia, memory, sensorimotor
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