

## Hydroxy Safflower Yellow A (HSYA) Mediated Neuroprotective Effect against Ischemia Reperfusion (I/R) Injury in Cerebral Stroke

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**Abstract :** Free radical damage has been entailed as the major culprit in the ischemic stroke contributing for oxidative damage. Recent investigations on Hydroxy Safflower Yellow A (HSYA) suggested its role in cerebral ischemia and various neurodegenerative disorders with unidentified molecular mechanisms. The current study was designed to investigate putative therapeutic role and possible molecular mechanisms of HSYA administration during the onset of reperfusion in cerebral ischemia-reperfusion (I/R) injury in cerebral stroke. Cerebral stroke was achieved by focal ischemic model. HSYA (10 mg/kg) was injected intravenously via the tail vein 5 minutes before reperfusion. Losses of sensorimotor abilities were evaluated by neurological scoring, spontaneous locomotor activity, and rotarod performance. Extent of oxidative stress was evaluated by biochemical parameters i.e., malondialdehyde (MDA), Glutathione (GSH), Super Oxide Dismutase (SOD) and catalase levels. The infarct volume of brain was assessed by 2,3,5-triphenyl tetrazolium chloride (TTC) staining technique. Increased cerebral injury (I/R) was evidenced by motor impairment, increased infarct volume and elevation of MDA levels along with significant reduction in antioxidant i.e., MDA levels along with significant reduction in antioxidant i.e., GSH, SOD and catalase levels when compared to sham control. However, post conditioning with HSYA (10 mg/kg, i.v.) at the onset of reperfusion has significantly ameliorated sensorimotor abilities, attenuated MDA levels and reduced the infarct volume as compared with vehicle treated I/R injury group. Moreover, HSYA treatments improved antioxidant enzyme levels as compared with vehicle treated I/R-injury group. In conclusion, it may be suggested that HSYA post conditioning could be novel therapeutic approach against I/R injury in cerebral stroke possibly through its anti-oxidant mechanism.

**Keywords :** HSYA, Ischemia reperfusion injury, oxidative stress, stroke

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