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Poster Presentation

Neuroprotective Effect of Safranal, an Active Ingredient of Crocus Sativus, in a Rat Model of Transient Cerebral Ischemia

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Abstract

Safranal is a monoterpene aldehyde found in saffron (Crocus sativus L.) petals. It has been previously reported that safranal has a wide range of activities such as antioxidant and anti-inflammatory effects. In this study, we examined the effect of safranal on brain injuries in a transient model of focal cerebral ischemia. Transient focal cerebral ischemia was induced by middle cerebral artery occlusion for 30 min, followed by 24 h of reperfusion. Safranal in the doses of 72.5 and 145 mg/kg was administered intraperitoneally at 0, 3, and 6 h after reperfusion. Neurobehavioral deficit, infarct volume, hippocampal cell loss and markers of oxidative stress including thiobarbituric acid reactive substances (TBARS), total sulfhydryl (SH) content, and antioxidant capacity (using FRAP assay) were also assessed. The focal cerebral ischemia induced a significant increase in the neurological score, infarct volume and neuronal cell loss in the ipsilateral hippocampal CA1 and CA3 subfields ($p < 0.001$) and also oxidative stress markers ($p < 0.01$). Following safranal administration, the total SH content and antioxidant capacity significantly increased, while marked decreases were observed in the neurological score, infarct volume and hippocampal cell loss, as well as TBARS level. This study concluded that safranal had protective effects on ischemic reperfusion injury in the rat model of stroke. Such effects of safranal may have been exerted mainly by suppressing the production of free radicals and increasing antioxidant activity.

Keywords: Safranal, Saffron (Crocus sativus L), Middle Cerebral Artery Occlusion (MCAO), Cerebral Ischemia, Oxidative Stress

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