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Crocus sativus L. (saffron) extract and its active constituents (crocin and safranal) on ischemia-reperfusion in rat skeletal muscle

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View references (٤٦)

Abstract

Saffron and its constituents have been shown to decrease ischemia-reperfusion (I/R) injury in kidney or brain tissues. In this study, the effects of saffron ethanolic extract and its constituents, crocin and safranal, were evaluated in skeletal muscle during I/R injury. Hind limb ischemia was induced using clamping the common femoral artery and vein. After ٢ h ischemia, the clamp of the femoral vessels of animals was taken off and the animal underwent ١ h reperfusion. Muscle injuries were evaluated by recording of the electromyographic (EMG) potentials and performing some biochemical analysis including thiobarbituric acid reactive substances (TBARS), total sulfhydryl (SH) groups and antioxidant capacity of muscle (using FRAP assay). The ethanolic extract of saffron (٥, ٢٠ and ٨٠ mg kg^{-1}), crocin (٥٠, ٢٠٠ and ٤٠٠ mg kg^{-1}), safranal (٠,١, ٠,٢٥ and ٠,٥ ml kg^{-1}) and normal saline (١٠ ml kg^{-1}) were administered intraperitoneally ١ h prior reperfusion. The average peak-to-peak amplitude during I/R was significantly increased in extract, crocin and safranal groups in comparison with control-ischemic group. Following saffron, crocin and safranal administration, the total SH contents and antioxidant capacity were elevated in muscle flap. The MDA level was declined significantly in test groups. It is concluded that saffron extract and its constituents show a protective effect against lower limb I/R in rat. © ٢٠٠٧ The Author(s).

Author keywords

Crocin; Lower limb ischemia; Oxidative stress; Reperfusion; Saffron (Crocus sativus L.); Safranal

Indexed Keywords

EMTREE drug terms: antioxidant; crocin; Crocus sativus extract; malonaldehyde; safranal; sodium chloride; terpene derivative; thiobarbituric acid reactive substance; thiol group; unclassified drug

EMTREE medical terms: animal experiment; animal tissue; antioxidant activity; article; controlled study; drug isolation; drug mechanism; drug screening; electromyogram; femoral artery flow; hindlimb; limb ischemia; lipid peroxidation; male; muscle injury; nonhuman; oxidative stress; pathogenesis; priority journal; rat; reperfusion injury

Chemicals and CAS Registry Numbers: crocin, ٣٩٤٦٥-٠٠-٤, ٤٢٥٥٣-٦٥-١; malonaldehyde, ٥٤٢-٧٨-٩; sodium chloride, ٧٦٤٧-١٤-٥
Manufacturers:Drug manufacturer: Fluka.

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