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Effect of Nigella sativa seed extracts on ischemia-reperfusion in rat skeletal muscle

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Abstract

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In this study, the effect of Nigella saliva seed extracts was evaluated on an animal model of I/R injury in the rat hind limb. Hind limb ischemia was induced using clamping the common femoral artery and vein. After 2 h ischemia, the clamp of the femoral vessels of animals was taken off and the animal underwent 1h 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). Ischemia was induced using free-flap surgery in skeletal muscle. The aqueous (1, 1.5 and 2 g/ kg) and ethanolic extracts (1.6, 2.4 and 3.2 g/kg) of N. sativa as well as normal saline (10 ml/kg) were administered intraperitoneally 1 h prior reperfusion. The average peak-to-peak amplitude during ischemic-reperfusion was significantly increased in extracts groups in comparison with control group. Following the extracts 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 N. sativa extracts have some protective effects against muscle tissue injury caused by lower limb ischemia-reperfusion.

Reaxys Database Information

Author keywords

Electromyography; Lower limb ischemia; Nigella sativa; Oxidative stress; Reperfusion

Indexed Keywords

EMTREE drug terms: antioxidant; malonaldehyde; Nigella sativa extract; sodium chloride; thiobarbituric acid reactive substance; thiol group

EMTREE medical terms: amplitude modulation; animal experiment; animal model; animal tissue; antioxidant activity; aqueous solution; article; black cummin; controlled study; drug dose comparison; drug effect; drug solution; electromyography; fluorescence recovery after photobleaching; hindlimb; lipid peroxidation; male; muscle flap; muscle injury; nonhuman; plant seed; rat; reperfusion injury; scavenging system; skeletal muscle

Chemicals and CAS Registry Numbers: malonaldehyde, 542-78-9; sodium chloride, 7647-14-5

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