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Cerebroprotective effects of extract of *Beta vulgaris* (C.) in middle cerebral artery occlusion (MCAO)-induced cerebral ischemia

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Abstract

Lack of efficient and widely applicable pharmacological treatments for ischemic stroke has necessitated attention towards novel traditional medicines. The effect of *Beta vulgaris (B. vulgaris)* extract on neurobehavior, grip strength, serum lactate dehydrogenase and brain SOD activity were studied at the dose of 250 mg/kg body weight in right middle cerebral artery occlusion model. *B. vulgaris* extract significantly improved the neurobehavioral function in rats after cerebral ischemia and reperfusion, increased grip strength as compared to the MCAO group. Moreover, treatment significantly boosted the defence mechanism against cerebral ischemia by increasing SOD activity and decrease in serum LDH. These experimental results suggest that extract of *B. vulgaris* may exert protective effect after cerebral ischemia. Administration of extract significantly reduced focal cerebral ischemic/reperfusion injury by augmenting antioxidants. Thus therapeutic strategies against oxidative stress could serve effective in ischemic diseases.

Key words: Cerebral ischemia; Cerebroprotective; *Beta vulgaris;* MCAO; oxidative stress

Introduction

Ischemic hypoxic brain injury causes irreversible brain damage by activating the cascade of events such as release of cytokines and free radicals, and induction of inflammation, apoptosis, and excitotoxicity which ultimately lead to neuronal injury and death (Kuroda et al., 1997). Reperfusion of ischemic areas could aggravate ischemic brain injury through the generation of reactive oxygen species. Moreover, a growing concern in traditional medicines has raised due to lack of effective and widely applicable pharmacological treatments for ischemic stroke.

