

Lotus root (*Nelumbo nucifera* rhizome) extract causes protective effect against iron-induced toxic damage to C6 glioma cells

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Received: 17 January 2012, **Revised:** 23 January 2012, **Accepted:** 24 January 2012

Abstract

Glial cells are suggested to contribute to retaining the integrity of brain function through the protection of neuronal cells against toxic insults, and the protection of glial cells is proposed to be beneficial for the prevention of neurodegenerative diseases. Then, to search for substance(s) protecting glial cells against the cytotoxic insults, the aqueous extract was prepared from a lotus root (a rhizome of *Nelumbo nucifera*), and the cytoprotective effect of the extract was examined. The chemical analyses showed that the extract contained polyphenolic compounds, which might confer the radical scavenging and antioxidant activities on the extract, thereby being expected to protect the cells. Actually, the extract prevented the iron-induced oxidative damage, but not the azide-induced hypoxic damage to the cells. Therefore, lotus root extract is considered to contain novel substance(s) protecting glial cells against the iron-induced oxidative insults.

Keywords: Lotus root extract, Iron-induced cytotoxicity, C6 glioma cells, Polyphenols, Radical scavenging activity, Antioxidant potency

Introduction

As a potential cause of the neurodegenerative diseases, the abnormal accumulation of iron in the brain tissue, thereby resulting in the oxidative damage to neuronal cells, has been proposed, and the highly sophisticated mechanism regulating the biochemical iron homeostasis in the brain has been extensively investigated. Therefore, the dysregulation of iron metabolism is being watched with keen interest, and the recent studies on the pathogenesis of