

Effect of catechin on activity and gene expression of superoxide dismutase in cultured rat brain astrocytes

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摘要

Abstract

Stroke is one of the major causes of morbidity and mortality in recent. Oxygen free radicals produced during cerebral infarction increases the damage to neurons. Superoxide dismutase (SOD) is the endogenous antioxidant enzyme that can effectively scavenge superoxide radicals. Catechin is a hydrophilic antioxidant usually existed in tea, fruits and vegetables. In the cultured rat brain astrocytes (RBA), the activity of SOD (both Cu, Zn-SOD and Mn-SOD subtypes) was markedly increased by incubation with catechin at low concentration ($0.1 \mu M$) for 2 days (short-term) and 7 days (long-term). This stimulatory effect of catechin was not related to the incubating concentration. Similar changes were also observed in the gene expression of SOD in RBA. The increase in quantity of SOD-messenger RNA was remarkable and seemed to be more obvious than the other antioxidants such as vitamin E. This result shows that catechin is an effective antioxidant to increase the activity of SOD in RBA which would be beneficial to neurons subjected to oxygen free radical damage...