Neuroprotective effects of the selected polyphenols against ischemia/reperfusion damages in ischemic stroke

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Stroke is caused by the sudden cease of blood flow to one part of the brain. According to the WHO global health estimates, stroke ranks the third in causing of death and the first in causing of disability in adult worldwide. Ischemic stroke is caused by the occlusion of cerebral arteries by thrombus. tPA (tissue plasminogen activator), a thrombolytic drug, is now the only FDA-approved pharmacological therapy for ischemic stroke. However, tPA has some limitations including the short window time and the increased cerebral hemorrhagic rate.

Experimental evidences show that the development of neuroprotective agents to combine with the thrombolytic therapy may be a potential effective way to treat ischemic stroke. The neuroprotective effects of polyphenols only start to be investigated but gain increased attention. Many kinds of polyphenols had been reported to posses significant neuroprotective effects including flavonoids, stilbenes and phenolic acids.

In this current study, we chose some polyphenol compounds (pterostilbene, pinostilbene, pinosylvin, 4-methoxystilbene, apigenin and its derivative, as well as dihydromyricetin and its derivative) that may have neuroprotective effects according to the literatures and examined their neuroprotective effects against H2O2 and OGD/R damages in PC12 cells. Pinosylvin, dihydromyricetin and its derivative were tested to have significant neuroprotective effects against both H2O2 and OGD/R damages while apigenin derivative was only examined to protect neurons against OGD/R damages. Further studies will be performed to explain their function mechanisms and drug targets both in vitro and in vivo.

-All Are Welcome-