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Lyophilized Powder of Catalpol and Puerarin Protects Neurovascular Unit from Stroke

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Abstarc :

Hunting for an effective medicine for brain stroke has been a medical task in neuroscience for decades. The present research showed that the lyophilized Powder of Catalpol and Puerarin (C-P) in all the tested doses (65.4 mg/kg, 32.7 mg/kg, 16.4 mg/kg) significantly reduced the neurological deficiency, infarct volume and apoptotic cells in ischemic/reperfusion (I/R) rats. It also promoted astrocyte processes and prolonged neuron axons in infarct area. Further, it decreased MDA, NO, NF-?B/p65, TNF-?, IL-1? and IL-6 and enhanced the EPOR and GAF-43. 65.4 mg/kg and 32.7 mg/kg C-P could up-regulated EPO and VEGF significantly. In vitro, 49 ?g/mL and 24.5 ?g/mL C-P decreased the leakage of sodium fluorescein and increased the activity of ?-GTP. Additionally, it increased SOD and decreased MDA, NO, and LDH and decreased NF-?B/p65, TNF-?, IL-1? and IL-6 and unregulated EPO, EPOR, VEGF, and GAP-43. Only the dose of 49 ?g/mL increased TEER and Claudin-5 and turned the typically damaged morphologies of neurons, astrocytes and endothelium into a favorable trend. These data imply that C-P improved the recovery of neurological deficiency in motor, sense, balance and reflex, and protected the whole NVU by anti-oxidative stress, anti-inflammation and up-regulating some protective factors. This research provides a candidate medicine for brain stroke and, at the same time, a pattern for drug study targeting NVU in vitro.

Key Word :
Neurovascular Unit; Lyophilized Powder of Catalpol and Puerarin; Brain stroke; Oxygen and glucose deprivation; Neuroprotection

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