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Poster Presentation

Berberin Exerts Neuroprotective Effects by Modulating Pro and Anti-Inflammatory Cytokines in Rat Model of MCAO

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Abstract

Many complicated mechanisms are involved in brain ischemia and the role of inflammatory factors in the progression of post-ischemic injury is inevitable. In present study, anti-inflammatory effect of berberine has been investigated in reperfusion injury after acute ischemic stroke. Male Wistar rats weighing 250-270 gr were randomly divided into four cohorts: healthy rats (control, n=20), sham-operated animals (sham, n=20), ischemia/reperfusion (I/R) cohort (MCAO=20), I/R+ berberine cohort (MCAO+ berberine, n=20). The animal subjected to ischemia for 45 min and berberine (40mg/kg) was interaperitoneally administrated 1 h after reperfusion. At 24 h after reperfusion, the animals were sacrificed under deep anesthesia and expression changes of pro and anti-inflammatory cytokines were determined by immunohistochemical assay. To evaluate brain edema, brain water content was measured in experimental groups 24 h after reperfusion. The infarct size was determined using 3, 5-Triphenyltetrazolium chloride (TTC) staining. significant increased levels of pro-inflammatory cytokines (IL1β and TNFα) were found in MCAO cohort compared with control and sham cohorts. Likewise, expression level of anti-inflammatory cytokines (IL10) was slightly increased following I/R in MCAO cohort. berberine conferred a neuro-protective effect via reduction of infarct size, preventing brain edema and significant down-regulation of pro-inflammatory cytokines and up-regulation of anti-inflammatory cytokines. In sum, our findings demonstrate that berberine post-treatment attenuates focal cerebral IR injury by targeting inflammation process. This opens up potential avenues for future research and treatment of ischemic stroke.

Keywords: Berberine, Inflammatory Cytokines, MCAO Model, Neuroprotection

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