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Protective effect of vitamin D on cerebral ischemia reperfusion injury

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Ischemic stroke is the main types of clinical stroke. Ischemic stroke cause severe brain inflammation and pro-inflammatory cytokines secretion through the activation of toll-like receptor and inflammasome. This study aims to investigate the protective action of vitamin D on cerebral ischemia reperfusion injury and the possible molecular mechanism. Middle cerebral artery occlusion (MCAO) was performed with eight-week-old male Sprague-Dawley rats and 90 minutes late to initiate reperfusion to investigate the effect of vitamin D supplements and deprivation to the brain damage and the performance of relational molecular. Results from the study found that: Vitamin D deficiency increases the severity of brain damage, vitamin D can reduce the damage; dietary deprivation of vitamin D caused the brain tissue lipid peroxidation product MDA accumulation, vitamin D can reduce lipid oxidation products; vitamin D can reduce caspase-1 and cleaved caspase-1 protein expression and inhibit IL-1β secretion; vitamin D can inhibit TLR2-MyD88-NF-κB signaling cascade. In conclusion, vitamin D may reduce cerebral ischemic reperfusion oxidative damage and inflammation by inhibiting activation of TLR2 and reduce the pro-inflammatory factor IL-1β of mature to protect against cerebral ischemia reperfusion injury.

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