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Poster Presentation

The Effects of Aloe Vera Extract on Brain Edema and Blood-Brain Barrier Permeability after Traumatic Brain Injury

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Abstract

Introduction: Recent studies have reported that the Aloe vera (*Aloe barbadensis miller*) plant has anti-inflammatory and antioxidant effects. This study evaluated the neuroprotective effects of different doses of Aloe vera extract after traumatic brain injury (TBI) in male rats. **Materials and Methods:** In this study, 70 male rats were divided into 2 groups; each group consists of 5 of sub-groups as following: sham, TBI, TBI + vehicle, TBI + Aloe vera extract (low dose, 200mg/kg) and TBI + Aloe vera extract (high dose, 400mg/kg) groups. TBI was induced by the Marmarou method, and Aloe vera extract was administrated intra peritoneal (ip) 30 min after TBI. Brain edema was evaluated by measuring brain water content 24 h after the TBI and blood-brain barrier (BBB) permeability was determined by measuring Evans blue dye content 5 h after the TBI. **Results:** Our results showed that brain water contents was no significant difference in TBI group compared to TBI + vehicle group ($P < 0.687$). But Aloe vera extract administration after TBI in different doses (200, 400 mg/kg) significantly reduced brain water content in TBI group compared to TBI + vehicle group ($P < 0.005$). Also blood-brain barrier permeability significantly increased after TBI compared to vehicle group ($P < 0.001$). In addition there was no significant difference in TBI group compared to TBI + vehicle group ($P < 0.742$). But Aloe vera extract administration after TBI in different doses (200, 400 mg/kg) significantly reduced blood-brain barrier permeability in TBI group compared to TBI + vehicle group ($P < 0.001$). Of course, high doses of aloe vera could more effectively reduced the brain blood barrier permeability compared to low dose of aloe vera. **Conclusion:** The current study, show that the Aloe vera extract may be had neuroprotection effects after TBI. However, the mechanism(s) for this effect have not yet been elucidated.

Keyword: Tbi, Brain edema, Aloe vera

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