

# The 1<sup>st</sup> International Neuroinflammation Congress and 1<sup>st</sup> Student Festival of Neuroscience



Shefa Neuroscience Research Center, Tehran, Iran, 11-13 April, 2017

*The Neuroscience Journal of Shefaye Khatam*

Volume 5, No. 2, Suppl 2

## Poster Presentation

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

Marzieh Shahriari<sup>1</sup>, Mohammad Khaksari<sup>2\*</sup>, Bahram Bibak<sup>3</sup>, Affat Ramshini<sup>1</sup>, Abbas Shahabi<sup>4</sup>

<sup>1</sup>Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran

<sup>2</sup>Physiology Research Center, Institute of Neuropharmacology, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

<sup>3</sup>Faculty of Medicine, North Khorasanuniversity of Medical Sciences

<sup>4</sup>Department of Biochemistry, Kerman University of Medical Sciences, Kerman, Iran

**Published: 11 April, 2017**

#### 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

**\*Corresponding Author:** Mohammad Khaksari

**E-mail:** khaksar38@yahoo.co.uk