

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020

Virtual Congress

Count: 221

Abstract ID: 44

subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes

Presentation Type: Poster

The effect of intraperitoneal administration of celery (*Apium graveolens* L.) seed hydroalcoholic extract on neuropathic pain induced by chronic constriction injury (CCI) model on male wistar rats

Submission Author: Somaye Hoseini

Masoud Fereidoni¹, Somaye Hoseini²

1. Department of biology, faculty of science, Ferdowsi University of Mashhad, Mashhad, Iran
2. Department of biology, faculty of science, Ferdowsi University of Mashhad, Mashhad, Iran

Background and Aim : Neuropathic pain is caused by an injury or disease in somatosensory nervous system and oxidative stress is considered as one of the reasons of its occurrence. Celery seed has been used since many years ago as a sedative. The plant also contains vitamin C and Apigenin which respectively have antioxidant and anti-inflammatory effects and as a result they can be neuroprotective. Taking these facts into consideration, it is hypothesized in this study that the chemical constituents of celery seed can interfere with the mechanisms of neuropathic pain and result in reduction of its occurrence. The aim of this study is to assess if there is such a reduction.

Methods : This experimental study was performed using 35 male wistar rats weighing 200-250 g, all underwent chronic constriction injury (CCI) to induce neuropathic pain. There were 5 groups (n=7) including control, sham operated, and groups that received the extract in doses of 100,200,400 mg/kg(i.p). Related tests of thermal hyperalgesia (Hot Plate), cold allodynia (Acetone), mechanical hyperalgesia (Pin Prick), and mechanical allodynia (Von Frey) were done and results were analyzed.

Results : In Hot Plate test the extract at a dose of 200 mg/kg(i.p) compared to sham group meaningfully reduced neuropathic pain ($p < 0.0001$). Acetone test results showed that all doses of the extract have a meaningful difference with sham group ($p < 0.001$). Considering Pin Prick test results revealed that up to day 7 after surgery the extract at a dose of 200 mg/kg(i.p) could reduce neuropathic pain in a meaningful manner ($p < 0.001$). In Von Frey test mechanical allodynia reduced meaningfully ($p < 0.001$) up to day 7 post surgery by dose 200 mg/kg(i.p).

Conclusion : The hydroalcoholic extract of *Apium graveolens* L. Possesses antineuropathic pain effect on thermal hyperalgesia and cold allodynia. Having antiinflammatory effect, Apigenin reduces plasma levels of IL-1 β , IL-6, TNF α and PGE2. It can also can reduce cold allodynia through IL-6 reduction. but in mechanical hyperalgesia and allodynia this effect was observed in the first 7 days post-surgery. Ephrin B receptors which are considered as targets in treatment of neuropathic pain can induce mechanical allodynia and hyperalgesia through increasing PKC γ and Apigenin can reduce Ephrin B receptor gene expression. The extract doesn't seem to have any effect on stabilizing mechanisms of neuropathic pain after the injection period.