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The Effect of Menatetrenone Intraperitoneal Administration on Thermal and Mechanical Allodynia after Closure of Sciatic Nerve in Male Rat

Submission Author: Parisa Hesari

Parisa Hesari¹, Masoud Fereidoni²

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 allodynia can occur following damage to the nervous system, a pain that even arise with non-noxious stimuli and is a common disabling condition that affects millions of people around the world. Drug therapy has had limited success. It can be assumed that menatetrenone because of its antioxidant properties, inhibition of oxidative stress and inhibitions of bradykinin and dynorphin potentially could inhibit the formation of thermal and mechanical allodynia.

Methods : This experimental study was performed on 42 male rats weighing 200-250 g. Neuropathic allodynia was created with the Sciatic Nerve chronic constriction injury Model (CCI). Animals were randomly divided into 6 groups (n=7). Positive control group, CCI negative surgical group, chronic vitamin K2 recipient groups with 25, 50, 100 mg/kg doses during the 14 days after surgery, and the sham group received(1% v/v DMSO) as vitamin K2 vehicle for 14 days after surgery. Mechanical (von fray test) and thermal (acetone test) allodynia were measured at the day zero (before surgery) and days 3, 7, 14, 21 And 28 after surgery.

Results : Chronic intra-peritoneal administration of Menatetrenone with 25, 50, and 100 mg/kg doses, significantly decreased mechanical and thermal allodynia by the days 3, 7, 14, 21 and 28 (p <0.05) post-surgery. The dose of 100 mg/kg was the most effective dose for reducing both the thermal and mechanical allodynia (p <0.01).

Conclusion : The reported abilities for reduction of oxidative stress and inhibition of bradykinin and dynorphin by menatetrenone treatments are likely, in the present study, could prevent the

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changes leading to neuropathic allodynia following nerve injury, details should be further investigated.

Keywords : Intra-peritoneal, Mechanical allodynia, Menatetrenone, Rat, Thermal allodynia