

The effects of Crocin on anxiety-like behaviors disorders following neuropathic pain in rat

Maryam Ghorbani¹, Zahra Bahari², Javad Raoufsarshoori³

¹Department of Pharmacology and Toxicology, Faculty of pharmacy, Baqiyatallah Medical Sciences University, P.O. Box 19568, Tehran, Iran

²Department of physiology, Faculty of medicine, University of Baqyaatallah, Tehran, Iran

³Department of Anatomy, Faculty of medicine, University of Baqyaatallah, Tehran, Iran

Background and Objective: Neuropathic pain is one of forms of chronic pain. It is associated with severe chronic sensory disturbances characterized by spontaneous pain, increased responsiveness to painful stimuli (hyperalgesia) and pain perceived in response to non-noxious stimuli (allodynia). The exposure to neurological chemicals such as the anti-nerve gas agents and the insecticide permethrin (PER), may contribute to the cognitive impairments (eg, memory and concentration problems), headaches, migraines, fatigue, gastrointestinal and respiratory problems, as well as emotional deficits. One of an important complication of neuropathic pain is memory deficit and anxiety-like behaviors. It seems investigating an appropriate remedy for veterans' treatment with neuropathy and subsequent neurologic deficits, is of importance. Hence, the purpose of the current study is to evaluate therapeutic potential of crocin on anxiety like behaviors and spatial memory following sciatic nerve injury in rat.

Material and Methods: Neuropathic pain was induced by chronic constriction injury (CCI) of sciatic nerve. Intracerebroventricular injection (right side) of crocin (40 µg/5µl) were started on day induction of neuropathic pain and continued until 10 days' post-CCI surgery. Anxiety-like behaviors (using Elevated Plus Maze) evaluates on 2, 4 and 6 and 10 days' post- CCI surgery. For the anxiety-like behaviors, we assessed 2 parameters (spent time into open arms and number of entrance into open arms).

Results: In the present study CCI surgery induced significant anxiety-like behaviors on 2, 4, 6 and 10 days after neuropathy. Indeed, CCI surgery significantly decreased number of entrance and spent time into open arms in the EPM test. Furthermore, CCI surgery dysregulated glutathione level and increased malondialdehyde (MDA) level in the hippocampus. micro-injection of crocin significantly increased number of entrance and spent time into open arms in the EPM test. Furthermore, Crocin significantly normalized ghlotathione and MDA level in the hippocampus.

Conclusion: Our findings indicate that crocin have anxiolytic effects in neuropathic pain statue, helping reduce this kind of problems in veterans.

Key Words: Neuropathic pain, CCI, Crocin, EPM.