

## Histological evaluation of the effect of crocin on sciatic nerve regeneration following experimental crush injury in rats

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**Background and Aims:** present study was designed to investigate the effect of intraperitoneal administration of crocin on histopathological changes of sciatic nerve, gastrocnemius muscle and allodynia induced by sciatic nerve crush injury in rats.

**Methods:** Male Wistar rats were divided in to 6 groups. Groups A and B were served as intact and nerve exposed groups, respectively. Groups C, D, E and F treated with intraperitoneal injection of normal saline and crocin at doses of 5, 20 and 80 mg/kg for 10 days after induction of crush injury. Sciatic nerve crush injury was induced using a standard technique in ketamine and xylazine anesthetized rats. Cold allodynia was recorded using acetone method at 7th, 14th, 21th and 28th days after cruch injury. On the 35th day after crush injury, the animals were euthanized and the distal part of sciatic nerve to crush injury and gastrocnemius muscle were removed and fixed in 10% formalin for histopathology.

**Results:** Intraperitoneal (i.p.) administration of crocin (5 and 20mg/kg) didn't effect wallerian degeneration, but crocin (80 mg/kg) considerably reduced it. Identical results occurred about muscles and crocin (80mg/kg) decreased gastrocnemius muscle atrophy. Also crocin (80mg/kg) had a robust decrease in allodynia as low as intact and exposed groups.

**Conclusions:** These findings confirm that crocin (80 mg/kg) attenuated the wallerian degeneration as well as muscle atrophy induced by crush injury. Cold allodynia was also suppressed by crocin 80 mg/kg. It is concluded that crocin may be have nerve regenerating enhancer and pain suppressing properties.

**Keywords:** Crocin; Nerve regeneration; Muscle atrophy; Neuropathic pain; Allodynia