

## Abstract

Peripheral nerve injury (PNI) is a global issue resulting intoincomplete or full loss of sensory, autonomic or motor functions in the patient. It impairs sensation, function of gland and organ, and movement, depends on type of affected nerve. The purpose of this study was to analyzed the influence of Acorus calamus rhizome extract on sciatic nerve regeneration. In this study, 30 adult male Swiss albino mice were divided randomly into five groups (n=6). All mice were trained for the behavior tests. Aqueous and ethanolic extracts of Acorus calamus were administered orally for 28 days (7 days of pre-treatment and 21 days after the crush injury of sciatic nerve in thigh region). Crush injury of sciatic nerve in thigh regionwas performed in all the five groups on day 8. The first group (control group) mice were given distilled water. Aqueous Acorus calamus (Aq/AC) rhizome extract was administered orally at low and high dose (250 mg/kg, 500 mg/kg) to group 2 and group 4. While group 3 and 5 were administered low and high dose of ethanolic Acorus calamus (Eth/AC) rhizome extract. Behavior assessment tests (Pinprick test and Toe-spread motor reflex test was performed daily while sciatic functional index (SFI) was performed on weekly basis) were performed for the estimation of sensory and motor functional recovery. Sensory and motor recovery was observed during 2<sup>nd</sup> and 3<sup>rd</sup> week of injury in aqueous Acorus calamus Aq/AC (LD and HD) treatment groups compared to the Eth/AC and vehicle groups. Histological assessment was performed on the 14<sup>th</sup> day of the crush injury can validate our behavioral data. An increase in axonal growth was observed in nerve sections. And the myelin sheath thickness increased in the muscle section of damaged hind limb in the group treated with low dose aqueous A. calamus (250 mg per kg) and with high dose aqueous A. calamus (500 mg per kg) compared with low and high doses of ethanolic A. calamus (250mg/kg and 500mg/kg) treatment groups and the vehicle group. It can be concluded that Acorus calamus has the potential of nerve regeneration after crush injury and may be used as an adjunctive medicine to cure peripheral nerve injuries, but further investigations at the molecular level are necessary.