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[Chin J Integr Med](#). 2016 Oct;22(10):759-67. doi: 10.1007/s11655-014-1624-2. Epub 2014 Aug 26.

Hericum erinaceus (Bull.: Fr.) Pers., a medicinal mushroom, activates peripheral nerve regeneration

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PMID: 25159861 DOI: [10.1007/s11655-014-1624-2](#)

Abstract

Objective: To study the ability of aqueous extract of *Hericum erinaceus* mushroom in the treatment of nerve injury following peroneal nerve crush in Sprague-Dawley rats.

Methods: Aqueous extract of *Hericum erinaceus* was given by daily oral administration following peroneal nerve crush injury in Sprague-Dawley rats. The expression of protein kinase B (Akt) and mitogen-activated protein kinase (MAPK) signaling pathways; and c-Jun and c-Fos genes were studied in dorsal root ganglia (DRG) whereas the activity of protein synthesis was assessed in peroneal nerves by immunohistochemical method.

Results: Peripheral nerve injury leads to changes at the axonal site of injury and remotely located DRG containing cell bodies of sensory afferent neurons. Immunofluorescence studies showed that DRG neurons ipsilateral to the crush injury in rats of treated groups expressed higher immunoreactivities for Akt, MAPK, c-Jun and c-Fos as compared with negative control group ($P < 0.05$). The intensity of nuclear ribonucleoprotein in the distal segments of crushed nerves of treated groups was significantly higher than in the negative control group ($P < 0.05$).

Conclusion: *H. erinaceus* is capable of promoting peripheral nerve regeneration after injury. Potential signaling pathways include Akt, MAPK, c-Jun, and c-Fos, and protein synthesis have been shown to be involved in its action.

Keywords: *Hericum erinaceus*; dorsal root ganglia; gene expression; peripheral nerve regeneration; protein synthesis machinery; signaling pathways.

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