Original Paper

Neuroprotective effect of n-butanol, ethylacetate, aqueous and hydro-alcoholic fractions of *Anthemis nobilis* extracts through NGF gene expression after sciatic nerve injury in rats

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Abstract

Background and Objective: Neurotrophic factors increase neuron survival and growth. In addition their expression is altered in response to nerve injury. This study was done to evaluate the neuroprotective effect of n-butanol, ethylacetate, aqueous and hydro-alcoholic fractions of *Anthemis nobilis* extracts through nerve growth factor (NGF) gene expression after sciatic nerve injury in rats.

Methods: In this experimental study, 36 male Wistar rats were randomly allocated into 6 groups including control group, compression, compression + hydro-alcoholic extract, compression + n-butanol, compression + ethyl acetate fraction and compression + aqueous fraction with dose of 75 mg/kg/bw, respectively. Hydro-alcoholic, aqueous, n-butanol and ethyl acetate extract of *Anthemis nobilis* from aerial parts was prepared by soxhlet method. In control group, after anesthetizing the animals, the muscle was cut at the site of sciatic nerve without damaging and in compression and treatment group, the right sciatic nerve was compressed for 60 sec. The extract first time was injected intraperitoneally after nerve compression and the second was performed 7 days later. After 28 days, samples were prepared from the lumbar portion of spinal cord and cDNA was synthesized and total RNA was extracted. The changes in NGF gene expression evaluated using Δct and Real Time PCR methods.

Results: NGF gene expression significantly reduced in the compression group in compare to control ($P<0.05$). The expression of NGF significantly increased in treated groups including hydro-alcoholic extract, n-butanol, ethyl acetate and aqueous fractions in compare to compression group ($P<0.05$). The expression of NGF was more in hydro-alcoholic extract treated group in comparision with other factions treated groups.

Conclusion: Neuroprotective effect of of the aerial parts of *Anthemis nobilis* may be due to increase of NGF gene expression.

Keywords: *Anthemis nobilis*, Nerve growth factor, Sciatic nerve, Rat

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Received 13 Sep 2015 **Revised** 21 Feb 2016 **Accepted** 29 Feb 2016

Cite this article as: Siasar-Karbasky M, Tehranipour M, Nejad-Shahrokhabadi Kh. [Neuroprotective effect of n-butanol, ethylacetate, aqueous and hydro-alcoholic fractions of *Anthemis nobilis* extracts through NGF gene expression after sciatic nerve injury in rats]. J Gorgan Uni Med Sci. Winter 2017; 18(4): 49-55. [Article in Persian]