Genetics and Molecular Research

Tetradecyl 2,3-dihydroxybenzoate promotes functional recovery after spinal cord injury in adult rats

Y.M. Ding[1], J.Y. Zhu[1], S.J. Zhang[1], S.S. Zhang[1], C. Wang[1], L.L. Wang[2] and X. Zhang[2]

[1]Department of Clinical Medicine, School of Medicine,
Zhejiang University City College, Hangzhou, Zhejiang, China
[2]Department of Basic Medical Science,
Zhejiang University School of Medicine, Hangzhou, Zhejiang, China

Corresponding author: X. Zhang
E-mail: xiongzhang@zju.edu.cn

Genet. Mol. Res. 15 (2): gmr.15028653
Received March 23, 2016
Accepted April 11, 2016
Published May 13, 2016
DOI http://dx.doi.org/10.4238/gmr.15028653

ABSTRACT. Tetradecyl 2,3-dihydroxybenzoate (ABG001) is a small molecule separated from gentian extract that has a similar effect to nerve growth factor. It is not clear whether it can promote functional recovery in animals suffering from a central nervous system injury. In order to explore the role of ABG001 in restoration of tissue structure and motor function of rats with spinal cord injury (SCI), ABG001 (0.4 mg/kg) was administered intraperitoneally. Subsequently, behavioral assessments and morphological studies were performed to detect recovery of hind limb motor function and neuroregeneration. The results showed that compared with DMSO group, the rats in the ABG treatment group had better performance in BBB score and grip strength test ($P < 0.05$), the area of necrosis was smaller ($P < 0.05$), GFAP expression was significantly reduced ($P < 0.01$), and Map-2 expression was significantly increased ($P < 0.01$). Additionally, after ABG treatment, the number of fluorogold positive cells transported reversely to red nucleus increased ($P < 0.05$).

The results suggest that ABG001 can promote recovery of hind limb motor function in rats with SCI, which may be related to its functions of inhibiting glial cell proliferation and promoting neuroregeneration.

Key words: Spinal cord injury; Tetradecyl 2,3-dihydroxybenzoate; Nerve growth factor; Neural regeneration

