Effect of montelukast on the expression of interleukin-18, telomerase reverse transcriptase, and Bcl-2 in the brain tissue of neonatal rats with hypoxic-ischemic brain damage

J.L. Liu¹,², X.H. Zhao³, D.L. Zhang⁴, J.B. Zhang⁵ and Z.H. Liu²

¹Laboratory of Neuromuscular Disorders, Department of Neurology, Qilu Hospital, Shandong University, Jinan, China
²Department of Neurology, Affiliated Hospital of Weifang Medical University, Weifang, China
³Department of Human Anatomy, Weifang Medical University, Weifang, China
⁴Department of Encephalopathy, Yangxin Hospital of Traditional Chinese Medicine, Binzhou, China
⁵Weifang Medical University, Weifang, China

Corresponding author: X.H. Zhao
E-mail: ljla800912abc@126.com

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ABSTRACT. The aim of this study was to investigate the effect of montelukast on the expression of interleukin (IL)-18, telomerase reverse transcriptase (TERT), and Bcl-2 in the brain tissue of neonatal rats with hypoxic-ischemic brain damage (HIBD). To establish the model of HIBD, 8% oxygen was applied to rats after the unilateral carotid artery was ligated. Twenty rats were randomly assigned to the control group, while another 40 were used to establish the HIBD model and were randomly divided equally into model group and treatment group. A 0.1 mg/kg dose of montelukast or an equal volume of saline was intraperitoneally injected to the rats in the treatment group and the model group, respectively. Brain tissue from 4
rats in each group was sampled at 0, 6, 12, 24, and 72 h after brain damage, and immunohistochemistry was used to measure IL-18, TERT and Bcl-2 expressions. IL-18, TERT, and Bcl-2 levels increased after 12 h in both the model group and treatment group, peaked after 48 h, and then decreased. Although not statistically significant, IL-18, TERT, and Bcl-2 expressions after 24, 48, and 96 h were all lower in the treatment group than those in the model group. In conclusion, montelukast has a protective effect on the cerebral tissue of neonatal rats with HIBD, and may mediate an increase of TERT and Bcl-2 levels but not of IL-18. Further study is required to elucidate the mechanism of the protective effect of montelukast on HIBD.

**Key words:** Montelukast; Hypoxic ischemic brain injury; Bcl-2; Rat brain tissue; IL-18; TERT