



MicroRNA screening and functional study of obliterative bronchiolitis in a rat model simulating lung transplantation

J. Wang, H. Cao, X. Hong, G.H. Chen, H.M. Fan, Q.C. Li, Z.M. Liu and K.F. Li

Department of Cardiovascular and Thoracic Surgery,
Shanghai East Hospital Affiliated to Tongji University, Shanghai, China

Corresponding author: J. Wang
E-mail: jinyiwangcn@163.com

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ABSTRACT. The aim of this study was to provide the experimental basis for effective prevention and treatment of obliterative bronchiolitis (OB) by studying the changes on the microRNA (miRNA) expression profile after an orthotopic tracheal transplantation (OTT) simulating lung transplantation (LT). The OTT was performed on inbred rats to establish an OB animal model simulating LT, which was confirmed successful through pathological examination after 4 weeks. A miRNA microarray was used to screen for the most significantly differentially expressed miRNA in the OB tissues of donor transplanted trachea and real-time quantitative PCR was then used to validate the reliability of the microarray results. The microarray detection obtained 29 OB-related miRNAs, composed of 15 and 14 significantly up- and down-regulated miRNAs, respectively, among which miR-146a, miR-155, and miR-451, whose function is involved in the immune and inflammatory reactions, were subjected to relative quantitation research. The LT-simulated OTT-induced OB showed significantly differential expressions of multiple miRNAs, among which miR-146a and miR-155

were highly expressed, while miR-451 was lowly expressed, suggesting that these miRNAs may play an important regulatory role in the OB pathological process after LT.

Key words: Lung transplantation; Tracheal transplantation; Tiny RNA; Obliterative bronchiolitis; Gene expression profile