Research Progress of MiRNA in Exosomes Derived from Placenta Involved in the Pathogenesis of Preeclampsia

Fei Meng, Xicui Liu, Huiqiang Liu*

Department of Obstetrics and Gynecology, the Second Hospital of Shanxi Medical University, Taiyuan, China

Email address:

mf15929365722@163.com (Fei Meng), 13694134383@163.com (Xicui Liu), sxtycyj@163.com (Huiqiang Liu)

*Corresponding author

Abstract

Preeclampsia (PE) is a clinical disease with severe complications based on hypertension that often occurs after 20 weeks of pregnancy, and is often accompanied by symptoms such as proteinuria and multiple organ dysfunctions. Currently, the pathogenesis of PE is mainly explained by the "two-stage theory" and "inflammatory immune theory", but the specific mechanism remains unclear. Exosomes are membrane vesicles secreted by cells and contain various components (such as proteins, DNA, miRNAs, mRNAs, etc.) with different biological functions. Exosomes from different sources can participate in various biological pathways such as intercellular communication and immune regulation (such as exosomes derived from the placenta acting on the immune regulation process of PE, exosomes derived from mesenchymal stem cells acting on the vascular endothelial cells of PE patients). Studies have found that exosomes derived from the placenta of PE patients differ from exosomes derived from normal placenta in miRNA expression profiles, and play an important role in helping establish immune tolerance between mother and fetus. For example, miR-30d-5p in placental exosomes can promote macrophage polarization to regulate the function of trophoblast and endothelial cells. The decrease of miR-520a-5p in placental exosomes can induce maternal systemic inflammatory reactions, which may lead to PE. Therefore, miRNAs in exosomes derived from placental trophoblast cells play an important role in regulating the occurrence of immune inflammation in PE. This article will study and discuss the role of miRNAs in exosomes derived from the placenta in the pathogenesis of PE through experimental techniques.

Keywords

Placenta Exosome, Preeclampsia, miRNA, Pathogenesis