Plasma CircRNAs for First Trimester Prediction of Preeclampsia and Potential Biomarkers

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ABSTRACT This study investigated expression profiles and mechanisms of circular RNAs on preeclampsia patients between 7-14 weeks. RNA sequencing demonstrated 12,579 circRNAs (7,684 upregulated and 4,895 downregulated) expressed differentially in 8 pairs of plasma samples from preeclampsia patients and healthy controls. Predicted 15 upregulated and 9 downregulated circRNAs then were assessed through qRT-PCR in 50 preeclampsia patients and 30 controls. Differentially expressed circRNAs in preeclampsia patients and controls were analyzed by RNA sequencing and gene ontology, Kyoto Encyclopedia of Genes and Genomes and circRNA-miRNA-mRNA network analyzed data. Hsa_circ_0046677 and hsa_circ_0029703 were markedly increased in preeclampsia patients. Receiver operator characteristic curve analysis indicated the area under the curve was 0.083 for hsa_circ_0046677 and 0.965 for hsa_circ_00429703 while the sensitivity and specificity of these two genes were 78 percent, 88 percent and 83 percent, 93 percent, respectively. Hsa_circ_0046677 and hsa_circ_00429703 had enormous potentials for diagnosing preeclampsia of pregnant women in the first trimester.