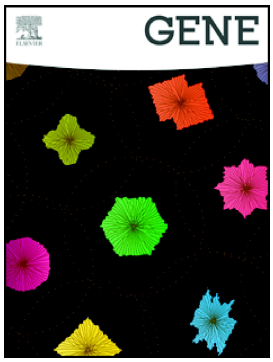

MicroRNA profiling of second trimester maternal plasma shows upregulation of miR-195-5p in patients with gestational diabetes

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MicroRNA profiling of second trimester maternal plasma shows upregulation of miR-195-5p in patients with gestational diabetes

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Abstract

Gestational diabetes (GDM) is defined as glucose intolerance that presents during pregnancy. It increases the risk of developing diabetes later in life. Recent studies indicate the important role of microRNAs (miRNAs) in the pathogenesis of diabetes, including GDM. However, information on the plasma miRNA profile in GDM patients at the late second trimester, at which time the glucose metabolism disorder manifests, is scarce. This study aimed to determine the plasma miRNA expression profiles of the pregnant women with GDM and compare them to those of pregnant controls using the real-time PCR array method. The study involved 22 single-pregnancy women (mean age ± standard deviation of 29.9 ± 4.5 years old) who underwent a glucose tolerance test between 23 and 31 weeks of gestation. Of them, 13 were diagnosed with GDM. We identified 15 upregulated miRNAs in the GDM patients that were involved in 41 pathways. Among the top 10 associated pathways, fatty acid biosynthesis and fatty acid metabolism were targeted by the most, of the miRNAs investigated, with very low p values (p < 1e-325, false discovery rate corrected). MiR-195-5p, which targeted the highest number of genes important in metabolism, showed the highest fold upregulation. We conclude that increased miRNA expression, especially miR-195-5p, in plasma is characteristic of and causally related to the development of GDM.

Keywords

Gestational diabetes; fatty acid metabolism; fatty acid biosynthesis; microRNA

Abbreviations