

# Gestational Diabetes is Associated with an Increased Expression of miR-27a in Peripheral Blood Mononuclear Cells

## Abstract

**Background:** Dysregulation of microRNA-based mechanisms is associated with various human pathologies, including gestational diabetes mellitus (GDM), suggesting they may be potential diagnostic and/or prognostic biomarkers of GDM.

**Methods:** The expression of miR-340-5p, miR-27a-3p and miR-222-3p in peripheral blood mononuclear cells (PBMCs) obtained from patients with GDM (n = 42) and healthy controls (n = 34) were evaluated, together with their correlation to the clinical parameters of participants and their newborns. Expression of the selected microRNAs was quantified by quantitative real-time polymerase chain reaction (qPCR), after reverse transcription with microRNA-specific stem-loop primers.

**Results:** The expression of miR-27a-3p was significantly higher in patients with GDM than in controls ( $p = 0.036$ ), whereas no significant difference between groups was found for the other two tested microRNAs. The expression level of miR-27a-3p in GDM patients was found to negatively correlate with the number of erythrocytes, concentration of haemoglobin, haematocrit, and low- and high-density lipoprotein (LDL/HDL) ratio, and positively with the concentration of glycated haemoglobin (HbA1c). In the case of miR-222-3p, a negative correlation between its expression and the concentration of cholesterol, LDL and LDL/HDL ratio was found only in healthy pregnant women. The expression level of miR-340-5p negatively correlated with erythrocyte count, haemoglobin concentration and haematocrit in GDM patients, as well as with the concentration of cholesterol, LDL and LDL/HDL ratio in healthy women.

**Conclusions:** The results obtained illustrate the potential of PBMC-derived microRNA miR-27a-3p to serve as a diagnostic biomarker of GDM. On the other hand, MiR-27a and miR-340 may help in assessing the metabolic status relevant for pregnancy.