Circulating miR-19b and miR-181b are potential biomarkers for diabetic cardiomyopathy

Copier C.U.

León L.

Fernández M.

Contador D.

Calligaris S.D.

Diabetic cardiomyopathy is characterized by metabolic changes in the myocardium that promote a slow and silent dysfunction of muscle fibers, leading to myocardium remodelling and heart failure, independently of the presence of coronary artery diseases or hypertension. At present, no imaging methods allow an early diagnosis of this disease. Circulating miRNAs in plasma have been proposed as biomarkers in the prognosis of several cardiac diseases. This study aimed to determine whether circulating miRNAs could be potential biomarkers of diabetic cardiomyopathy. Mice that were fed with a high fat diet for 16 months, showed metabolic syndrome manifestations, cardiac hypertrophy (without hypertension) and a progressive cardiac function decline. At 16 months, when maximal degree of cardiac dysfunction was observed, 15 miRNAs from a miRNA microarray screening in myocardium were selected. Then, selected miRNAs expression in myocardium (at 4 and 16 months) and plasma (at 4, 12 and 16 months) were measured by RT-qPCR. Circulating miR-19b-3p and miR-181b-5p levels were associated with myocardium levels during the development of diabetic cardiomyopathy (in terms of cardiac dysfunction), suggesting that these miRNAs could be suitable biomarkers of this disease in asymptomatic diabetic patients.