miR-27b modulates insulin resistance in hepatocytes by targeting insulin receptor and repressing insulin signaling pathway.

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Obesity is a global epidemic that has nearly tripled since 1975 and, with more than 1.9 billion overweight adults and 650 million obese people in 2016, constitutes the main risk of cardiovascular disease and type 2 diabetes mellitus (T2DM). Insulin resistance (IR) is one of the key factors in the development of T2DM however; the molecular mechanism leading to disease is still unclear. The implication of microRNAs (miR) in the pathophysiology of multiple cardiometabolic pathologies, including obesity, atherosclerosis heart failure and IR, has emerged as a major focus of interest in recent years. Indeed, upregulation of several miRNAs has been associated to obesity and IR, among them, it has been shown that miR-27b is overexpressed in liver of obese people, but its role in IR has not been deeply explored. The main objective of the present work has been to investigate the possible role of miR-27b in insulin signaling pathway regulation in hepatocytes.

Results: The results of the present study demonstrate that mir-27b is able to regulate hepatic insulin sensitivity by directly interacting with INSR and IRS1.

Conclusion: This work emphasizes the importance of miRNA modulation studies to determine their functional effects. In fact, our study demonstrates the direct effect of miR-27b on INSR and IRS1 expression and its potential role as insulin signalling regulator.