

#0033

Profiling of Putative miRNAs (8-mer) Against the T2DM and MI Associated Genes

Author/s:

Khadam Hussain, Ayesha Ishtiaq, Iram Murtaza*

Organizations/Affiliations:

* Signal Transduction Laboratory, Department of Biochemistry, Quaid i Azam University, Islamabad, 45320, Pakistan

Abstract

Non-communicable diseases are among the leading causes of mortality across the globe. Type 2 diabetes mellitus (T2DM) is a non-communicable disease that causes the secondary cardiovascular complications leading to myocardial infarction (MI). Different therapeutic strategies are being used to treat the diabetes linked cardiovascular complications. Non-coding RNA based therapies are among the emerging strategies under investigation for diabetes linked MI. In the present study, we aimed to investigate the miRNAs that are targeting the genes involved in T2DM and MI to put forward a therapeutic approach for T2DM linked MI. Methodology: The genes associated with T2DM, and MI were selected by using Genetic Testing Registry (GTR) of National Centre of Biotechnology Information (NCBI). Moreover, the gene enrichment analysis was performed through bioinformatics database ShinyGO 0.76. The miRNAs having the 8-mer binding with these selected genes were found by using the different bioinformatics tools like miRbase, TargetScan, and miRWalk. Data analysis showed that T2DM and MI associated genes have potential target site for some common miRNAs such as miRNA-128/ 27.3p/ 181-5p/ 132-3p/ 212-3p/ 30-5p/ 101-3p.1/ 101-3p.2/ 9-5p/ 142-3p.1/ 15-5p/ 16-5p/ 195-5p/ 424-5p/ 497-5p/ 155-5p/ 124-3p.1/ 124-3p.2 and miR-506-3p. Interestingly the data analysis also showed that miRNA-1-3p/206/ 27-3p/ 181-5p/7-5p and miRNA-144-3p/ 135-5p/ 142-3p.2 are potentially targeting more than one gene involved in T2DM and MI pathological conditions respectively. The findings of the current study highlight the miRNAs that may serve as therapeutic targets against T2DM linked MI. However, wet lab based studies are required to confirm these miRNAs are the therapeutic markers.

Keywords: Hyperlipidaemia; miRNAs; Myocardial infarction; Non-communicable diseases; Type 2 diabetes mellitus