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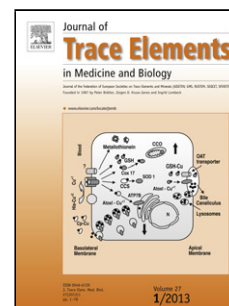
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Possible role of miR-2909 RNomics in Arsenic mediated pancreatic β -cell dysfunction

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ABSTRACT

Chronic exposure of humans to inorganic arsenic as a potential risk for the incidence of diabetes has received wide attention. However, the biological mechanism through which arsenic plays a role in the development of diabetes is still being evaluated. One of the hallmark of diabetes is the β -cell dysfunction followed by the changes in the insulin secretion. Pancreatic duodenal homeobox 1 (PDX1) has been widely recognized to play crucial role in the β -cell development, survival and its regulation of insulin gene expression. Many of the arsenic mediated cellular effects have been shown to be regulated by miR-2909 in vitro. Our present study provides evidence to reveal that arsenic affects miR-2909 expression in the pancreatic β -cell and this novel miRNA regulates PDX1 transcriptional expression indirectly through genes coding for c-Jun, MafA, PI3K and directly at the translational level by targeting the PDX1 mRNA. We provide further evidence for this miR-2909RNomics in pancreatic tissue obtained from NOD mice where the expression of miR-2909 was high compared to the control mice. Keeping in view the fact that arsenic is known to cause β -cell dysfunction and most of the cellular effects of arsenic have been shown to be mediated through miR-2909 RNomics,

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