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Cataloguing of novel miRNAs during thermal stress in cattle

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MicroRNAs (miRNAs) are short non-coding RNA involved in post-transcriptional repression of genes by base-pairing with their target gene transcripts. During cellular stress responses, the miRNA play a key role by regulating the specificity, timing and concentration of gene expression. Various studies have shown the involvement of miRNA in wide array of biological processes such as cell-fate specification, embryonic development and metabolic pathways. In dairy cattle, miRNA mediated regulations have been shown to regulate energy metabolism, lactation activity of mammary epithelial cells, reproductive functions and susceptibility to mastitis and other infections. We investigated that, a number of miRNAs are differentially expressed in dairy cattle breeds during peak summer compared to peak winter seasons. To characterize the stress response during peak summer we estimated different physiological and biochemical parameters including characterization of stress granules. Most of the overexpressed miRNAs were found to target heat shock responsive genes especially members of heat shock protein family and network analysis revealed most of them having stress-mediated effects on signaling mechanisms. We have also seen the *in vitro* effects of certain over expressed miRNAs on their conserved heat shock protein by reporter assay. Our studies provides the ground work for unveiling the role of miRNA in thermal stress which may be thus helpful to develop miRNA based molecular biomarker for cellular thermo-tolerance in dairy cattle.

Biography

Gyanendra Singh Sengar is a Research Scholar at Sam Higginbottom University of Agriculture, Technology and Sciences (SHUATS) in India. He has very vast expertise in the area of Molecular Genomics and Biotechnology. He has contributed as the author in peer-reviewed International and National research papers. He has obtained 5 years of research and teaching experience in the field of Molecular Biotechnology.

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