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Serum transcripts of hsp27b1, hsp27b2 and CD133 predict the endothelial damage in diabetes

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W ascular endothelial cell damage/dysfunction is known to be associated with the common etiology of morbidity and mortality in diabetic conditions. However, suitable markers of endothelial damage in diabetes are still required to be discovered. We studied endothelial damage in diabetes by using proteomics and genomics approaches. Human vascular endothelial cells were subjected to in vitro normoglycemia or hyperglycemia. Expression of endothelial specific genes responsible to regulate atherosclerosis, immune response, migration and adhesion were found affected in hyperglycemia. Proteomics studies by using 2D gel electrophoresis and tandem mass spectrometry indicated modulation of 12 new proteins including Hsp27b1, Macf1, Vim, Ckm, Tcp, Prv, Atm, Vinc, Smthln, Pmpcb, Nebl and Tcf20. Moreover, we observed higher transcript abundance of Hsp27b1, Hsp27b2, Ckm, Prv, Vinc, PMPCB and Tcf 20 in both type 1 and type 2 diabetic patients' serum samples compared to that of non-diabetic (control) patients. We selected Hsp27b1, Hsp27b2 and Ckm to screen a larger cohort of diabetic patients (n=20) for their transcript abundance. Significantly higher transcript abundance of Hsp27b1 (p≤0.01) and Hsp27b2 (p≤0.001) along with CD133 (an endothelial specific marker) (p≤0.05) were observed in diabetic patients' sera. Thus, our present study shows potential of hsp27b1, hsp27b2 and CD133 transcripts as a combinatorial biomarker of endothelial damage in diabetes. These biomarkers may help to detect or develop a therapy to reverse the pathophysiological changes responsible for secondary complications of diabetes.

## **Biography**

Amaresh K Ranjan is a Post-doctoral fellow at Icahn School of Medicine at Mount Sinai, New York, USA. He completed his PhD in 2011 from National Center for Cell Science, Pune India. His PhD work was related to vascular endothelial cell biology and diabetes. He has 12 publications in reputed journals and books. His publications have over 100 citations.

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