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Proteomic changes in *Mycobacterium tuberculosis* H37Rv under hyperglycemic conditions showed altered expression of Tgs3 (Rv3234c) and supportive proteins (Rv0547c, AcrA1 and Mpa)

Kundu J, Sharma S and Verma

PGIMER, India

Diabetes affects the presentation of tuberculosis including delayed clearance of the bacteria from the host cells, however, the molecular changes which help survival of phagocytosed mycobacterium in the diabetic host are still not clear. The effect of *in vitro* high glucose concentrations on the proteome of the phagocytosed mycobacterium isolated from the human monocytic THP1 cell line derived macrophages has been investigated in the present study. Concurrent tuberculosis and hyperglycemia conditions were mimicked by growing *M. tuberculosis* infected THP1 cells under high glucose conditions. Phagocytosed bacilli were isolated 5 days post infection. Proteomics analysis of the isolated bacilli was done by two-dimensional gel electrophoresis followed by mass spectrometry. A total of 224±18 protein spots were obtained out of which 10 were found to be differentially expressed under high glucose concentrations in comparison to normal glucose concentration. Further, identity of all the ten proteins namely Tgs3, Rv0547c, AcrA1, EsxU, Rv2219,

Mpa, Rv2308, ORN, LucA, and Rv1414 was elucidated by peptide mass fingerprinting using Matrix-assisted laser desorption and ionization-mass spectrometry (MALDI/MS) assisted with MASCOT software. Though Tgs3, Rv0547c, AcrA1 and Mpa proteins have been demonstrated to play a major role in lipid metabolism and fatty acid accumulation under nitric oxide stress conditions, the functional role of rest of the differentially expressed proteins remains to be elucidated. Under hyperglycemic conditions in the host cells, differential expression of these proteins might help in the better survival of mycobacteria and can further act as suitable targets to design novel drugs for more effective therapy for comorbid tuberculosis and diabetes.

Biography

Kundu J has completed her PhD at Post Graduate Institute of Medical Education and Research, Chandigarh, India.

jjyotivinay007@gmail.com