

## IL-6: A differential transcriptional signature of Pathogenic and Non-pathogenic Mycobacteria

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Tuberculosis (TB) is a chronic infectious disease caused by several Mycobacterium species such as Mycobacterium tuberculosis, M. avium and M. marinum; however, some species like M. smegmatis and M. phlei are non-pathogenic to humans. Mycobacteria are intra-macrophage pathogens and, the macrophage response to mycobacteria infection includes production of cytokines such as tumor necrosis factor, IL-1, IL-6, IL-10, IL-12 p40 and IL-12 p70. We studied the in vitro production of cytokines by mouse peritoneal macrophages infected with both pathogenic and non-pathogenic mycobacteria. Levels of cytokines were

determined by using Bio-plex suspension array system. Very low amount of IL-6 was observed in non-infected wells ( $20.25 \pm 5.3$  and  $14.75 \pm 1.77$ ) as compared to the infected wells (pathogenic,  $552.5 \pm 19.09$  and  $454.5 \pm 16.26$ ; non-pathogenic,  $830.25 \pm 35$  and  $547 \pm 39.6$ ) on Day 4 and Day 7, respectively. Curiously, no significant difference was observed for other cytokines viz. IL-1, IL-10, IL-12 p40 and IL-12 p70. Apparently, these results indicate that IL-6 may play a role(s) in virulence and pathogenicity of mycobacteria. IL-6 thus can be used as signature molecule for the differentiation of pathogenic and non-pathogenic mycobacteria.

### Biography

Prof. Prati Pal Singh did his Ph. D. (1980) work at CDRI, Lucknow, and post-doctoral research work at The Ohio State University, Columbus, Ohio, USA and at The Stanford University, Stanford, Palo Alto, California, USA. He is a renowned molecular biologist, immunologist and neuroimmunopharmacologist. He has made some very important contribution to control and treatment of parasitic and microbial disease of national and international importance like malaria, tuberculosis, leishmaniasis, amoebiasis and trichomoniasis. He conceptualized and reported that opiate class of drugs can be used for treatment of parasitic and microbial infections. Prof. Singh has published extensively including in Nature Medicine. He has nearly 200 publications, and 10 national and international patents including one US patent. Prof. Singh was the Editor-in-Chief of the Journal of Parasitic Diseases and is an Editorial Board Member of a US journal, Journal of Neuroimmune Pharmacology. He is a Fellow of The National Academy of Sciences, India, and Association of Microbiologists of India.