CHAPTER 31

MEDICAL SCIENCES
MICROBIOLOGY

Doctoral Theses

243. ROY (Sugata)
Cytokine Mediated Transcriptional Induction of Human Inducible Nitric Oxide Synthase Gene from Human Lung Epithelial Cell Line A549 Infected with Mycobacterium Tuberculosis.
Supervisors : Prof. Mridula Bose and Dr. Mandira Varma
Th 14284

Abstract

Examine the possible role of human lung epithelial cell line A549 was used as a model the study. This study was proposed to elucidate the unsuspected role of lung epithelial cells innate immune response to tuberculosis with reference to the regulation of expression of inducible nitric oxide synthase gene. Human lung epithelial cell line A549 was pulsed with proinglammatory cytokines and then challenged with live M. tuberculosis H37Rv. Release of nitric oxide as an in vitro correlate of innate immune response was assayed. The signal transduction pathway for the transcription and translation of the nitric oxide synthase (iNOS) gene was traced.

Contents

1. Introduction. 2. Review of Literature. 3. Materials and Methods. 4. Results. 5. Discussion. 6. Conslusion and Summary. Bibliography and Appendex.

244. SUJEET KUMAR
Molecular Analysis of Mycobacterium Avium Complex Isolates by Using Restriction Fragment Length Polymorphism and PCR Typing.
Supervisor : Prof. Mridula Bose
Th 14285

Abstract

Presents a report of the lS1245 based RFLP typing and PCR typing of Mycobacterium avium comples (MAC) isolates obtained from Indian patients. It confirms the previous reports that lS1245 is widely prevalent among the clinical isolates of MAC. Using DT1 and DT6 sequence markers differentiates 47 isolates into Mycobacterium avium and Mycobacterium intracellulare byt 18 of the isolates failed to give PCR amplicon for these two sequence markers. Analyzes all isolates by PCR restriction analysis (PRA). Three PRA methods (two based on hsp65 and one based on 16S-23S spacer region) are applied to these 65 isolates. Demonstrates that though these PRA methods offer several advantages (rapid, economical and theoretically applicable to all the species of mycobacteria). Concludes that both the typing methods can be employed for the typing of MAC isolate of Indian origin. PCR typing because of its rapidity (does not need tedious DNA preparation step) can be used to investigate small number of isolates collected over a short period of time of for preliminary screening (especially to investigate several specimens from a single patient), where as lS1245 based RELP remains the reference technique for strain fingerprinting.

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