OMICS International
conferenceseries.com

8th Indo Global summit and Expo on
Vaccines, Therapeutics & Healthcare
November 02-04, 2015   HICC, Hyderabad, India

A novel vaccine construct containing lipidated peptide protects against *Mycobacterium tuberculosis* by bolstering enduring memory T cell response

Javed N Agrewala[1], Pradeep K Rai[1], Sajid Nadeem[1], Weiguang Zeng[3], Ashok K Janmeja[2] and **David C Jackson[3]**

[1]CSIR-Institute of Microbial Technology, India
[2]Government Medical College and Hospital, India
[3]The University of Melbourne, Australia

Background: Vaccines have been successful in worldwide eradication of dreadful diseases like smallpox, diphtheria, tetanus, yellow fever, whooping cough, polio and measles. Unfortunately, such triumph has not been achieved in controlling tuberculosis globally. Bacillus Calmette Guérin (BCG) is the only available vaccine against TB. Paradoxically, BCG has deciphered successful results in the Western population but has failed in TB-endemic areas. Hence, it is quite crucial to understand the immunity responsible for controlling *Mycobacterium tuberculosis* infection and factors responsible for the failure of BCG in TB-endemic countries. Consequently, introducing radical changes in the vaccines that would impart protection in the populations where BCG has failed. One of the main reasons considered for BCG failure in TB-endemic areas is impediment by environmental mycobacteria in its processing by antigen presenting cells and generation of memory T-cell response.

Methods: The peripheral blood mononuclear cells of sputum positive pulmonary TB patients and their house-hold contacts were separated by Ficoll-Hypaque gradient method. The cells were cultured with L91 and proliferation was monitored by CFSE-dye dilution assay and phenotypic markers by flowcytometry using fluorochrome tagged appropriate antibodies and their isotype-matched controls.

Results: Keeping in view the shortcomings of BCG, we developed a unique lipopeptide (L91) by linking the promiscuous peptide (sequence 91-110) of 16 kDa antigen of *Mycobacterium tuberculosis* to Toll-Like Receptor-2 agonist Pam2Cys. L91 does not require extensive antigen processing and targets and activate dendritic cells. This is evidenced by the fact that L91 significantly improved the activation and proliferation of polyfunctional Th1 and Th17 cells of the TB patients and their house-hold contacts. Furthermore, L91 surmounts the barrier of major histocompatibility complex polymorphism. Importantly, this peptide has self-adjuvanting property and induces enduring memory T cell response, which is significantly better than BCG.

Conclusion: L91 can be a potent future vaccine candidate against tuberculosis in TB-endemic and non-endemic zones.

Biography

Javed N Agrewala completed his BSc, MSc and PhD from Agra University, Agra. In 1989, he joined as a Scientist at the CSIR-Institute of Microbial Technology, Chandigarh.

javed@imtech.res.in

Notes:

Journal of Vaccines & Vaccination 2015
ISSN: 2157-7560, JBTBM an open access journal

VTH-2015
November 02-04, 2015

Volume 5 Issue 6

Page 43