Pradeep K Rai et al., Journal of Vaccines & Vaccination 2015, 6:5
http://dx.doi.org/10.4172/2157-7560.C1.033

OMICS International
conferenceseries.com

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

Future peptide vaccine for TB endemic regions: Challenges and Solutions

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

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

Despite of the fact that BCG is most widely administered vaccine than any other vaccine; Tuberculosis is a leading global threat that causes considerable mortality and provoke 1.5 million new cases annually. Further emergence of drug resistant strains, alarm a threat signal to develop a novel strategy of prophylactic and therapeutic vaccination approach against tuberculosis (TB). It is hypothesized that failure to generate adequate long lasting memory and weak Th1 immune response are associated for restricting long term prophylactic efficacy of BCG. Also BCG has limited therapeutic efficacy either alone or in combination with drugs. Recently, we have developed a lipidated peptide based vaccination strategy in which promiscuous peptide (91-110) of the late stage antigen 16 kDa is combined with Pam2Cys, a ligand of toll-like receptor-2 (L91). The L91 vaccine promotes a long lasting Th1 and Th17 immunity against tuberculosis that is characterized by a high proportion of memory and multifunctional CD4 T cells. In prophylactic and therapeutic mouse models, L91 imparts protective immunity illustrated by a more proficient containment of bacterial load at late-stage infection as compared to placebo and adjuvant control. Furthermore, L91 elicits Th1 and Th17 immune response in TB endemic population; this was evident by the fact that PBMCs isolated from TB patients elicited higher level of IFN-γ and IL-17 and considerably amplified central memory (CD45RAhi/CD45ROhi) phenotype when *in vitro* stimulated L91. This study signifies that L91 can robustly elicit Th1 and Th17 in both mice and human PBMCs model. This novel vaccination strategy can be a future prophylactic and therapeutic measure to control TB in TB endemic population.

Biography

Pradeep K Rai is a PhD scholar from Jawaharlal Nehru University. He is working as a Senior Research Scholar in Immunology laboratory, CSIR-Institute of Microbial Technology, Chandigarh, India. His thrust area of research is 'Development of novel vaccine against tuberculosis'. Currently, he is working on DBT funded Indo-AUS project entitled 'Novel vaccine delivery systems that elicit robust and enduring T-cell memory responses: Alternatives to BCG vaccination in tuberculosis endemic regions'. He has published 6 papers in reputed journals and more than 3 are under communications in reputed journals.

pkrai28@gmail.com;
pradeeprai@imtech.res.in

Notes: