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Novel MDP analogues with enhanced efficacy useful as vaccine adjuvants

Tunki Lakshmi, Vemireddy Sravanthi, Sreekanth Miryala and **H M Sampath Kumar**
CSIR-Indian Institute of Chemical Technology, India

New generation vaccines encompassing subunit antigens require adjuvants in order to enhance their antigenicity. While many adjuvants facilitate vaccine delivery, majority of them skew immune system towards either Th1 or Th2 response so quest for novel and safer Th1 adjuvants that elicit both innate and adaptive immune response required for the development of efficacious vaccines against intracellular pathogenesis is on wheel since decades. One such adjuvant capable of stimulating innate immune response is muramyl dipeptide (MDP)- minimal bioactive peptidoglycan motif of bacterial cell wall which acts as agonist for cytoplasmic NOD receptor- an intracellular pattern recognition molecule. MDP acts as adjuvant by improving the expression of cell surface markers necessary for antigen presentation. Inspired by modification of MDP into N-Glycolyl MDP with improved efficacy, a focused library of MDP analogues developed by creating molecular diversity around N-acetyl position of the scaffold with a view to modulate the protein activity towards stimulation of adaptive response in addition to innate. Consequently different analogues were synthesized and evaluated for their adjuvant activity against model antigen ovalbumin. Various studies like measurement of anti-OVA IgG, IgG1 and IgG2a in serum along with cytokines like pro-inflammatory and anti-inflammatory were quantified. Immuno-phenotyping for expression of $CD4^+$ and $CD8^+$ markers on splenocyte was performed. Results indicated that novel MDP analogues augmented both cellular and humoral responses. The chemistry and biology of these novel MDP adjuvants shall be presented.

Biography

Tunki Lakshmi has completed her M Pharmacy (Pharmaceutics) from Bhaskar Pharmacy College, JNTUH. Presently, she is pursuing her PhD research while working as Project Fellow in CSIR 12th five year plan supra institutional project entitled "Development of Novel Vaccine Adjuvants" (DENOVA), in Vaccine Immunology Laboratory, NPC division of CSIR-IICT, Hyderabad. She has participated in various national and international conferences and published a paper in reputed international journal. Her area of interest is in the development of mucosal vaccine delivery systems and therapeutic cancer vaccines.

tunkilakshmi@gmail.com

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