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Virus like particles as dengue vaccine candidate

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Currently, many strategies have been adopted for an ideal vaccine design. However, recent advancement of Virus Like Particle (VLPs) based platform for vaccine designing has shown great potential. Intrinsic properties of self assembly, antigen expression in repetitive manner, non-replicating, non-infectious nature, have made VLPs as a prospective vaccine design. The rationale of this work lies in exploring Envelope (E) protein based VLPs as dengue vaccine candidate. E protein of dengue virus has been reported to mediate virus-host interaction, facilitate viral entry into host cell and contain serotype specific, virus neutralizing epitopes. A customized gene encoding E protein ectodomain was designed and expressed in *P. pastoris* host. Protein was purified from the membrane fraction with the aid of histidine tag. Purified protein was characterized for the assembly into VLPs via Electron Microscopy (EM) and Dynamic Light Scattering (DLS) studies. E protein was further characterized for molecular weight by Mass Spectroscopy (MS), nature of glycosylation by N-linked oligosaccharide profiling (MALDI-TOF MS), stability assessment of VLPs by DLS. E protein was found to be N-linked glycosylated and assembled VLPs were stable in various conditions. Surface accessibility and integrity of various critical, neutralizing epitopes (previously characterized) on E VLPs were analyzed through reactivity with various mice and human monoclonal antibodies which revealed the surface exposure of these epitopes in correct conformation. Further, E VLPs were found to elicit serotype specific, neutralizing antibody immune response in BALB/c mice. In nutshell, DENV-E VLPs based vaccine candidate has shown promising results in mice model.

Biography

Ankur Poddar is currently pursuing her PhD from a reputed institute, International Center for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India. She had completed her Bachelors in Biomedical Sciences from Delhi University and Masters from All India Institute of Medical Sciences (AIIMS), India. Her research interest lies in applied research and is currently working on dengue vaccine designing project from past 4 years as a part of her PhD. She had a first author publication in a reputed journal from her PhD work.

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