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A mucosal vaccine against hepatitis B & tetanus infections

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Introduction: There is a need to develop combinational vaccine to induce strong systemic and mucosal immunity for Hepatitis B & Tetanus infection. Nasal vaccination is a promising alternative choice for conventional parenteral vaccination as it is non-invasive, capable of elicit strong systemic and mucosal immunity, it does not require needles, avoiding the pain and discomfort. The use of combination vaccines is a useful way to overcome the restrictions of multiple injections, especially for starting the immunization series for children behind schedule.

Methods: In this study, the potential of combinational microparticle delivery system as nasal vaccine was investigated. Two type of microparticle formulations were prepared by using Hepatitis B Surface Antigen (HBsAg) and Tetanus Toxoid (TT) with PLGA as polymer. Tri Methyl Chitosan was used as a mucoadhesive coating material. The particle size, surface charge, morphology, protein loading efficiency, protein integrity, In vitro release studies, Fluorescence microscopy, In vivo immunological response was performed.

Results: The TMC coated PLGA microparticles has an average size of 1-10μ and a positive zeta potential while PLGA microparticles shows negative zeta potential. The protein loading efficiency was found as above 80%. The antigen integrity was retained intact in encapsulated form as well as on release. The coated microparticles shows strong IgA level as compared to Aluminum adsorbed parenteral vaccines.

Conclusion: Surface modified PLGA microparticles proved great potential as a nasal delivery system for combinational vaccines where humoral, cellular and mucosal responses are necessary particularly in conditions after bacterial and viral pathogens invade the host through the mucosal surface.

Biography

D. Kalaiyarasi completed her M. Pharmacy in The Tamilnadu Dr.MGR Medical University, Chennai and pursuing Ph.D., in JNT University, Hyderabad. She has published various papers in reputed journals

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