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Evaluation of nasal vaccine for cervical cancer

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Human papillomaviruses (HPV) are major risk factor for development of cervical cancer, the second most prevalent cancer in women worldwide. Currently available vaccines will not provide complete protection against all HPV types as the protection is primarily type specific. Furthermore, the available vaccines are delivered via intramuscular route and require three doses and require cold chain supply which increases the cost of vaccine. Therefore a single dose vaccine delivered via non-invasive route (nasal) that protects against multiple HPV types would be a cost effective and better alternative to the currently available HPV vaccines.

The main objective of this study was to prepare HPV antigen loaded poly (lactic-co-glycolic acid) (PLGA) and Tri Methyl Chitosan (TMC) coated PLGA microparticles and compare their efficacy as nasal vaccine. The developed formulations were characterized for size, zeta potential, entrapment efficiency, mucin adsorption ability, in vitro and in vivo studies. PLGA microparticles demonstrated negative zeta potential whereas PLGA-TMC microparticles showed higher positive zeta potential. The protein loading efficiency was found as above 80%. Results indicated that PLGA-TMC microparticles demonstrated substantially higher mucin adsorption when compared to PLGA microparticles. HPV antigen encapsulated in PLGA-TMC particles elicited a significantly higher secretory (IgA) immune response compared to that encapsulated in PLGA particles. Present study demonstrates that PLGA-TMC microparticles with specific size range can be a better carrier adjuvant for nasal subunit vaccines. Surface modified PLGA microparticles proved great potential as a nasal delivery system for HPV infections where systemic and mucosal responses are necessary particularly in conditions after viral pathogens invade the host through the mucosal surface.

Biography

Krishnakumar completed his M. Pharmacy and is pursuing Ph.D., in The Tamilnadu Dr. MGR Medical University, Chennai. He has presented my papers in many international conferences and published various papers in reputed journals. He is doing a research work on developing delivery system for infectious diseases.

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