Single Dose Controlled Release Vaccine Formulations Using Polyanhydride Microspheres

APPLICATION AREAS
Production of single-dose vaccines for certain cancers, viruses and intracellular pathogens; especially useful for the induction of Th1 immune response.

ABSTRACT
Successful vaccination often requires multiple immunization shots or boosters to offer complete protection. In addition, generation of the appropriate type of immune response is also critical for developing immunity, and may be dependent on the type of adjuvant used in the vaccine preparation. ISU researches have developed a single-dose, controlled release vaccine formulation based on polyanhydride microspheres. The microspheres can be loaded with antigenic proteins for immunization, and the microsphere composition controls the release of the antigen. The need for alum-based adjuvants that tend to induce Th2 immunity is obviated. Additionally, preferential Th1 versus Th2 immune responses can be induced based on how the microspheres are loaded with antigen. This type of vaccination strategy may improve protection against intracellular pathogens, and be especially useful for the development of vaccines against certain cancers and viruses. These single dose controlled release vaccine formulations have the potential to simplify vaccination schedules and facilitate mass immunization campaigns.

BENEFITS
- Single-dose vaccine formulation
- Can be modulated to induce Th1 versus Th2 cellular immunity.
- Reduces the need for adjuvants and may improve safety.
- May replace multiple injections required for some conventional vaccines, resulting in greater compliance with recommended immunization schedules.

REFERENCE(S)


INVENTOR(S)
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RELATED TECHNOLOGY
This technology is related to ISURF #3719, A Drug Delivery Platform for Targeting Intracellular Pathogens

INTELLECTUAL PROPERTY STATUS
Patents issued: US Patent Nos. 7,858,093 and 8,173,104

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