

CONTROLLED-RELEASE SYSTEMS FOR PROTEINS & PEPTIDES: 3RD-GENERATION INTRANASAL ANTHRAX VACCINE-DELIVERY SYSTEM

By S. Mohan Mohanraj, PhD, and Meir Kende, PhD

ABSTRACT

The objective was to develop microsphere-based delivery systems (MDS) for controlled and pulsed-release delivery of recombinant anthrax vaccine via intranasal immunisation. Microsphere-based recombinant protective antigen (RPA) delivery systems for intranasal immunisation were successfully developed, wherein the MDS formulations produced extremely high antibody titres (over 150,000) in mice after 65 days of immunisation compared with the aqueous RPA vaccine system (at 15,900).

Selected MDS systems were challenged with anthrax toxin. The MDS systems, on two intranasal doses, showed 100% protection against anthrax toxin challenge in mice, compared with <17% that were protected by the aqueous RPA vaccine system and none in the non-immunised control group.

These results indicate a viable intranasal delivery system for anthrax vaccine. Even three weeks immunisation time with two doses of our MDS is a significant reduction of the current parenteral immunisation protocol of 18 months with the RPA-alum adjuvant, plus the added benefits of reducing the cost of the immunisation and logistics.

“The platform technology of this intranasal delivery system is also suitable for other human and veterinary vaccines including simultaneous intranasal delivery of multiple immunogens.”



Dr. S. Mohan Mohanraj
Director of Technology

PolyMicrospheres
www.polymicrospheres.com

