

A Comparison between Encapsulation Efficiency in Different Concentration of Leptospiral Antigen in Alginate Microsphere for New Leptospirosis Vaccine

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Background & Objectives: Leptospirosis is a world-wide zoonosis caused by the genus *Leptospira*. Pathogenic leptospires are important primarily for their ability to cause disease in human and animals. Leptospirosis was described as a characteristic febrile jaundice of human (weil's disease) during latter part of the nineteenth century. Leptospiral vaccine, (*Leptospira grippityphosa*, *Leptospira sergiohardjo*, *Leptospira canicola*) has been used as effective vaccine to elicit specific antibodies for protection. Vaccine failed to induce long-lasting immunity. Thus, there is a need of more effective vaccine that not only elicits immunity across the heterologous *Leptospira spp.* serovars but also induces long-lasting immunological memory. In this research it has been tried to have a comparison encapsulation in different concentration of leptospiral antigen in alginate microsphere to choose the best antigen concentration for new leptospiral vaccine.

Methods: Best formulation for preparation of microsphere with SEM and particle sizer had been selected, then LA including 3 serovar (whole-killed cell) with different concentrations were loaded into microspheres. Encapsulation of each concentration had been calculated and the best result will be used in animal experiments.

Results: Encapsulation efficiency of leptospiral antigen with these concentration 5, 15, 15 mg/ml are: 80%, 95.3% and 98.5%. Therefore highest concentration of LA (leptospiral antigen), have the highest encapsulation efficiency and loading capacity.

Conclusion: To prepare a better vaccine for leptospirosis, encapsulated antigen could be used. In this study the best concentration of LA with the highest encapsulation had been selected that with more in-vitro and animal tests, probably it could be used as a new vaccine.

Keywords: *Leptospira*; Vaccine; Leptospirosis; Encapsulation; LA