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Novel vaccine adjuvants for animal infectious diseases

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Vaccines consisting of subunit or inactivated bacteria/virus and potent adjuvants are widely used to control and prevent infectious diseases. Because inactivated and subunit antigens are often less antigenic than live microbes, a growing need exists for the development of new and improved vaccine adjuvants that can elicit rapid and long lasting immunity. Here we describe the development and characterization of novel oil in water emulsion, OW-14. OW-14 contains low cost plant based emulsifiers and was added to antigen at a ratio of 1:3 with simple hand mixing. OW-14 was stable for prolonged periods of time at temperatures ranging from 4 to 40 oC and could be sterilized by autoclaving. Our results showed that OW-14 adjuvant inactivated swine influenza viruses (SIV; H3N2 and H1N1) and *Mycoplasma hyopneumoniae* (*M. hyo*) vaccines could be safely administered to piglets in two doses, three weeks apart. Injection sites were monitored and no adverse reactions were observed. Vaccinated pigs developed high and prolonged antibody titers to both SIV and *M. hyo*. Interestingly, antibody titers were either comparable or greater than those produced by commercially available FluSure (SIV) or RespiSure (*M. hyo*) vaccines. We also found that OW-14 can induce high antibody responses in pigs that were vaccinated with a decreased antigen dose. This study provides direct evidence that we have developed an easy to use and low cost emulsion that can act as a powerful adjuvant in two common types of swine vaccines.

Biography

Jishu Shi is a Professor and Director of US-China Center for Animal Health at Kansas State University. His research focuses on development of vaccines for animal diseases. He is a frequent Consultant to animal health companies in the USA, China, Japan, Australia and Europe. He is the Member of VaxiAm Group, LLC, which is a consulting service company that focuses exclusively on the Chinese animal health market.

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