OMICS Group Conferences
Accelerating Scientific Discovery

4th International Conference on
Vaccines & Vaccination
September 24-26, 2014 Valencia Convention Centre, Spain

Increasing of alive plague vaccine efficiency

Ponomaryova T S, Deryabin P N, Atshabar B B, Tugambaev T I, Melnikova N N, Karalnik B V, Denisova T G and **Zakaryan S B**
Kazakh Scientific Center of Quarantine and Zoonotic Diseases, Kazakhstan

Plague is the infection No 1 in the world. The natural foci of plague occupy about 40% of the territory of Kazakhstan. In the CIS, including Kazakhstan and Russia, alive plague vaccine from *Yersinia pestis* EV strains (APV) is used for vaccinations against plague. However, its application requires annual revaccination. Being active enough for primary vaccination, it is much less effective at revaccinations. We developed two approaches to increase given vaccine efficiency. The first is connected with increased vaccine's immunogenicity within the process of its production. For this purpose stock culture suspension was administrated to a rabbit intravenously at stage of vaccine operational seed lot production and further extracted from this rabbit inner organs culture was used for further stages of vaccine production. Such procedure named animalization resulted not only in confident ($p<0.05$) increase (up to 1.8-fold) of alive cells quantity of finished balk-vaccine, but also increased immunogenetic (protective) activity: Significant ($p<0.01$) increased survival rates of guinea pigs (2.2 -fold) and reduced ED50 up to 9.5-fold with confidence ($p<0.05$). The second approach to increase effectiveness of APV is connected with immunomodulation. In modeling studies with infected guinea pigs it is shown that co- administration of APV and an immunomodulator (Polyoxidonium with recombinant interleukin-1 β) increases protective activity of the vaccine ($p<0.01$) and significantly reduces mortality rates among animal models. In addition, effect of immunomodulation on antigen - spe-cific immune response indicators was studied in the studies where rabbits were immunized with APV with and without immunomodulators. It is shown that these preparations accelerate devel-opment of specific antigenetic response to APV at both early, and effector phase. Calculation of used immunization schemes efficiency integrated rate demonstrated better result for recombinant interleukin -1 β. Results of our studies demonstrated effectiveness of the described approaches to increase APV efficiency and the need for further research of immunomodulation, including dur-ing vaccinations of humans.

mice@westernair.kz