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The influence interleukin-1 to a protective and immunogenic activity living plague vaccine

Deryabin P.N, Ponomaryova T.S, Karalnik B.V, Tugambayev T.I, Denisova T.G, Atshabar B.B and Zakaryan S.B
Kazakh Scientific Center for Qarantine and Zoonotic Diseases, Kazakhstan

Previously, our experiments showed that polyoxidonium possessing of adjuvant and immunomodulatory effects increases the a protective and immunogenic activity living plague vaccine based on the strain *Y. pestis* EV (LPV) / PN Deryabin et al., 2012, Tatyana Ponomareva et al., 2010. On some models of infectious diseases show immunomodulatory effect of preparations on the basis of the interleukin-1 (IL-1) / «Citokin» ltd., St. Petersburg, Russia./. To assess the effect of IL-1 on the efficiency LPV we used "Betaleukin" (recombinant IL-1β, which was to be produced using genetic engineering technology).

We evaluated the influence on the efficiency of IL-1 live plague vaccine in experiments on guinea pigs (2 groups of 75 animals). The experimental group of animals was vaccinated *Y. pestis* EV (100,000 microbial cells) with IL-1 (0.5 mg/ind.). The control group - only vaccine *Y. pestis* EV (100,000 microbial cells). At 21 days after immunization, both groups of animals were infected with a virulent strain of *Y. pestis* 231 in a dose of 200 DCI.

In the experimental group within 14 days after infection of animal deaths were observed. All animals in this group were sacrificed at 14 days after infection, culture *Y. pestis* 231 is not selected. In the control group fell 50% of the animals. Surviving animals were sacrificed at 14 days after infection, some animals there was an increase of culture *Y. pestis* 231 of the spleen.

The titer of specific antibodies in the serum of animals of experimental group (before infection) was significantly higher (1: 2000) than in the control group (1:80).

Additionally influence of IL-1 on the immunogenicity LPV were studied in 8 rabbits immunized EV vaccine at 3 x 10^6 bacterial cells in 0.5 ml of physiologically solution.t. Four rabbits were injected simultaneously Betaleukin (IL-1) at a dose of 0.5 mg (experimental group), the other 4 rabbits with physiological solution in the same volume (the control group).

Antigen-specific response was evaluated to detect antibodies to F1antigenu and lymphocyte with receptors to to the same antigen (LfRF1). The use of IL-1 accelerated the appearance and disappearance of LfRF1, the maximum of of their content, reducing the amount of their maximum and total and also ensure earlier appearance of anti-F1 antibodies in rabbits that received IL-1. The findings suggest that the use of preparations by IL-1 accelerated the development of antigen-specific response to ZHCHV early and effector phase.

The study showed prospects of of application of preparations of IL-1 to increase the effectiveness living plague vaccine.

Biography

Deryabin Pavel, born in 1956. In 1992 he defended his thesis for the degree of doctor of medical sciences, specialty "Allergology and Immunology", in 1994 he got the title-the professor. The author of more than 170 scientific papers, including more than 30 peer-reviewed journals. Has 14 patents. Head of the special training center regional training center on biosafety and biosecurity Kazakh Scientific Center for Qarantine and Zoonotic Diseases.

572202@gmail.com