عنوان مقاله:

CONSTRUCTION OF PTX-DEFICIENT BORDETELLA PERTUSSIS VACCINE STRAIN 134 BY ALLELIC EXCHANGE

محل انتشار:

نوزدهمین کنگره بین المللی میکروب شناسی ایران (سال: 1397)

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خلاصه مقاله:

Background and Aim:Vaccination of whooping cough (pertussis) caused by Bordetella pertussis is still major concern all over the world. Resurgence of pertussis has been observed globally even after replacement of second generation of vaccine (Acellular) with whole cell vaccine in many countries. The third generation of vaccines against B. pertussis has focused on the genetically manipulation of virulence genes in this bacteria. The aim of this project was to construct the B. pertussis vaccine strain 134 lacking S1 subunit of pertussis toxin (PTXA) by homologous recombination.Methods:B. pertussis 134 was obtained from Razi Vaccine and Serum Research Institute. First of all chloramphenicol resistance gene (cat) was cloned into pss1129 vector between upstream and downstream sequences of ptxA gene and the recombinant DNA was transferred to E. coli SM10 host cell. Then this donor bacterium was mated with B. pertussis 134. Finally ptxA-deficient B. pertussis was selected using chloramphenicol in the selective media.Results:B. pertussis 134 lacking S1 subunit of ptx gene should be resistant to chloramphenicol by allelic exchange. This bacterium was confirmed by PCR of ptxA, cat, upstream and downstream regions and by western blot to verify lack of S1 subunit of toxin in this target cells.Conclusion:We constructed vaccine strain 134 which S1 subunit of pertussis toxin was deleted in its genome. This strain will be very useful to further studies of manufacture of a new formula of vaccines as the third generation vaccines like live-attenuated vaccines.

کلمات کلیدی:

pertussis, vaccine, ptx, homologous recombination