

عنوان مقاله:

Construction of a Recombinant Allergen-Producing Probiotic Bacterial Strain: Introduction of a New Line for a Live Oral Vaccine Against Chenopodium album Pollen Allergy

محل انتشار:

مجله گزارش های بیوشیمی و زیست شناسی مولکولی، دوره 2، شماره 1 (سال: 1392)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

Background: During the last two decades, significant advances have been made in the fields of lactococcal genetics and protein expression. *Lactococcus lactis* (*L. lactis*) is an effective vector for protein expression and can be used as an antigen delivery system. Hence, *L. lactis* is an ideal candidate for mucosal immunotherapy. Profilin (Che a ۲), the major allergen in *Chenopodium album*, is one of the most important causes of allergic diseases in desert and semi-desert areas, especially in Iran, Saudi Arabia, and Kuwait that was cloned and expressed in *L. lactis* for the first time. **Methods:** To construct *L. lactis* that expressed Che a ۲, a DNA sequence was cloned and used to transform bacteria. Expression of Che a ۲ was analyzed via monitoring of related RNA and protein. Hydrophobicity, adherence to HT-۲۹ cells, antibiotic resistance, resistance to gastrointestinal contents, pH, and bile salt in recombinant and native *L. lactis* were evaluated. **Results:** Immunoblot analyses demonstrated that recombinant Che a ۲ is expressed as a ۳۲ kDa dimeric protein immunological studies showed it can bind human IgE. Both native and recombinant bacteria were sensitive to low pH and simulated gastric conditions. Bacterial survival was reduced ۸۰-۱۰۰% after ۲ h of exposure to pH ۱.۵-۲. Both native and recombinant bacteria were able to grow in ۰.۳ and ۲% bile salts. After incubation of recombinant *L. lactis* in simulated gastric and intestinal juices for one and two hours, respectively, cell survival was reduced by ۱۰۰%. Adhesion capability in both strains was minimal and there were no significant differences in any of our tests between native and recombinant bacteria. **Conclusion:** Successfully recombinant *L. lactis* with capability of .expression Che a ۲ was produced and revealed it is sensitive to gastrointestinal contents

کلمات کلیدی:

Chenopodium pollen allergen, Oral vaccines, Probiotic bacteria, Recombinant *L. lactis*

