Construction a Live Attenuated ΔmxiA Strain by Using λ Red Recombinase System in Isolated Shigella in Iran

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ABSTRACT

Background and objective: Shigellosis is one of the acute gastrointestinal diseases. In view of outbreaks and emergence of antibiotic resistant therefore construction a live attenuated vaccine strains owing to high-cost antibiotics therapy and preparation new antibiotic urgently required. The current study was aimed at producing a live attenuated ΔmxiA by using λ Red recombinase system in isolated shigella in Iran.

Materials and methods: In this study, a total of 48 isolates of S. dysenteriae have been isolated from children at Children Medial Center, Milad and Firozabadi hospitals During the four-year period from 2006 until 2010 which were collected. By use of biochemical, serological and PCR tests, the species of isolated shigella were confirmed. The pKD46 plasmid electrotransformed into shigella and mutant strain was generated by a chloramphenicol cassette replacement through recombination using FLP flanking recognition target site. Precision of process was confirmed by PCR and sequencing.

Results: Biochemical, serological and PCR tests were demonstrate 3 strain all of them (6.25%), belong to dysenteriae's species and serotype's type 1. present of mxiA gene was confirmed by PCR reaction. Sequencing results and PCR test were verified 2061 bp of mxiA gene was deleted.

Conclusion: use of λ Red recombinase system facilitates mutant construction in more cost-effective method in comparison with the other techniques such as suicide vector.

Keywords: shigellosis, shigella, mxiA, λ Red recombinase system, homologus recombination