

## IS481-associated RFLP Fingerprinting and Pulsed-field Gel Electrophoresis Analysis of *Bordetella pertussis* Vaccinal Strains, as a Means of Strain Typing

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**Background & Objectives:** Whooping cough (pertussis) is a highly contagious, acute respiratory illness of humans that is caused by *Bordetella pertussis*. Despite the introduction of extensive vaccination in Iran, pertussis has remained an endemic disease. So monitoring represented vaccine strains in our country is necessary. This study was performed to investigate any genotyping profile changes in frequencies of different subcultures of 134 & 509 vaccine strains of *B. pertussis* during a period of nearly two decades from 1995 to 2012.

**Methods:** Various techniques of DNA fingerprinting have been used to study the polymorphism of *B. pertussis* populations. We have been able to successfully use PFGE and RFLP as tools to monitor the bacterial population in vaccine surveillance. So, after providing the vaccine strains of *B. pertussis* by Razi Vaccine and Serum Research Institute in Karaj, at the first Genomic DNA was digested with the restriction enzyme XbaI and the pulsed-field gel electrophoresis analyses were carried out on a CHEFDR III apparatus (Bio-Rad). The band patterns obtained were then analyzed. Then, RFLP based on IS481 with SmaI was performed. DNA extraction was carried out by phenol/ chloroform Methods. Then SmaI-digested DNA was gel-electrophoresed by 1% agarose and studied with Gel Doc system and stored patterns were analyzed with the GelCompar software version 3.1. Afterward, the gel was transferred to Hybond N+ membrane using standard DNA blotting techniques. The IS481-based probe was used for hybridization amplified by PCR (Poddar, 2003).

**Results:** The profiles obtained were compared to those obtained with chromosomal DNA from reference strains, 18323. The PFGE profiles obtained from vaccine strains had identical profiles. The PFGE profiles in the period between 1995 to 2012 showed no significant changes in frequencies of fingerprint types investigated in the vaccine strains.

**Conclusion:** It is therefore concluded that the vaccines produced by Razi Institute had evidently no alteration or modification in accordance to IS481-based probe in RFLP and PFGE profiles analysis during of this two decades. This study had shown a good insight for further monitoring of the circulating *B. pertussis* isolates and makes a good reference for controlling and surveillance of the changes in the *B. pertussis* population in Iran. However, the effect of the vaccine strain on the spread of *B. pertussis* is currently under investigation.

**Keywords:** Pertussis; Strain Typing; IS481-associated RFLP