

## IS481-Associated RFLP Fingerprinting and Pulsed-Field Gel Electrophoresis Analysis of *Bordetella pertussis* Vaccine Strains, as a Means of Strain Typing

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**Background & Objectives:** Whooping cough is a highly contagious, acute respiratory illness of humans that is caused by *Bordetella pertussis*. Despite the introduction of expense 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 vaccine strains of *B. pertussis* between 1995 and 2012.

**Methods:** 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, Genomic DNA was digested with the restriction endonuclease XbaI and the pulsed-field gel electrophoresis analyses were carried out on a CHEFDR III apparatus (Bio-Rad). On the other hand, extracted DNA by phenol/ chloroform Methods was digested with SmaI and was gel-electrophoresed by 1% agarose 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. The profiles obtained were then analyzed and were compared to those obtained with chromosomal DNA from reference strains, 18323.

**Results:** The PFGE and RFLP profiles showed no significant genetic changes in frequencies of fingerprint types investigated in the vaccine strains in the period between 1995-2012.

**Conclusion:** It is therefore concluded that the vaccines produced by Razi Institute had evidently no alteration or modification in accordance to PFGE profiles and IS481-based probe in RFLP profiles analysis during 1995 to 2012. 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.

**Keywords:** RFLP; PFGE; *Bordetella pertussis*; Genotyping; Vaccine Strains