Designing and Comparison Study of Rapid Detection Methods of Resistance to Injectable Drugs in Clinical Strains of Mycobacterium Tuberculosis

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Background & Objectives: In this study some molecular Methods were designed for rapid detection of resistance to kanamycin and amikacin.

Methods: Among 120 clinical isolates of Mycobacterium tuberculosis, 52 strains were selected for evaluation of possible mutations. A PCR-RFLP Methods was designed for detection of wild type (using enzyme AjiI) and mutant form (enzyme BstFNI) of the isolates. Furthermore, Multiplex Allele Specific Methods (MAS PCR) was design for detection mutations in codons 1401 and 1402 gene rrs. Some selected isolates were sequenced.

Results: Among the 48 strains were examined by PCR-RFLP, BstFNI enzyme could detect 15 mutant strains among 18 phenotypicaly resistant and 29 non-mutant isolates from 30 susceptible isolates. The sensitivity of this methods was 83.33% and specificity was 96.66%. In the other hand,12 mutant from 20 resistant strains and 29 non-mutant strains from 32 susceptible strains were detected by AjiI enzyme. The sensitivity and specificity of this Methods was 60% and 90.62% , respectively. In MAS PCR, 3 mutants from 6 resistant strains and 12 non-mutants from 17 resistant strains were detected. The sensitivity of this methods was 50% and specificity was 70.58%. Results of sequencing methods were proved the results of molecular methods.

Conclusion: PCR-RFLP Methods by BstFNI enzyme, was the best methods for rapid detection of *Mycobacterium tuberculosis* resistant to second-line injectable drugs and was recommended for routine use.

Keywords: *Mycobacterium tuberculosis*; PCR-RFLP; Kanamycin; Amikacin