

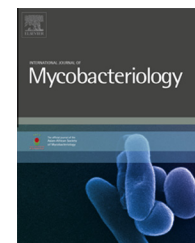
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# Rapid and simultaneous genotypic detection of Rifampin-Isoniazid and Ethambutol resistant *Mycobacterium tuberculosis* by use of MAS-PCR

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## ABSTRACT

**Aims and objectives:** This study aims to identify common mutations leading to Isoniazid (INH), Rifampin (RMP) and Ethambutol (EMB) resistance using Multiplex Allele-Specific Polymerase Chain Reaction (MAS-PCR).

**Method:** In a cross-sectional study during 2012–2013, 257 patients with smear-positive pulmonary tuberculosis residing in five frontier west and north-west provinces of Iran were evaluated in respect of common point mutations leading to resistance to first-line drugs. **Results:** The overall frequency of mutations was 37 out of which 8 mutations were related to katG 315, 26 mutations pertained to rpoB 516, 526 and 531 and 3 mutations related to emb B. The rpoB single, double and triple mutations were found in 45.3%, 42.3% and 15.4% of rpoB, respectively. Frequency of patients with mutation to katG and at least one rpoB codon was 7 cases (2.7%) at the same time. In this study 60.0% of INH-resistant and 83.3% of RMP-resistant isolates were detected by MAS-PCR technique. Mutation odds were higher in females and in patients with a history of anti-TB drug use.

**Conclusion:** The MAS-PCR is a relatively rapid, sustainable, efficient and accurate technique for detection of drug resistance in tuberculosis. This highlights also the role of mutation at inhA, ahp and oxy R genes in the creation of INH resistance which may be the causative factor in the remainder of cases.

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