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Characterization of mutations causing Rifampicin and Isoniazid resistance of *Mycobacterium tuberculosis* in Syria

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Aim & Objectives: In order to characterize mutations causing Rifampicin and Isoniazid resistance of *M. tuberculosis* in Syria.

Methods: 69 rifampicin resistant (RIFr) and 72 isoniazid resistant (INHr) isolates were screened for point mutations in hot spots of the *rpo*B, katG and *inh*A genes by DNA sequencing and real time PCR.

Results: Of 69 RIFr isolates, 62 (90%) had mutations in the Rifampin resistance determining region (RRDR) of the *rpo*B gene with codons 531 (61%), 526 (13%) and 516 (8.7%) being the most commonly mutated. We found two new mutations (Asp516Thr and Ser531Gly) described for the first time in the *rpo*B-RRDR in association with Rifampicin resistance. Only one mutation (Ile572Phe) was found outside the *rpo*B-RRDR. Of 72 INHr strains, 30 (41.6%) had a mutation in *kat*G codon 315 (with Ser315Thr being the predominant alteration) and 23 (32%) harbored the *inh*A-15C<T mutation. While the general pattern of *rpo*B-RRDR and *kat*G mutations reflected those found worldwide, the prevalence of the *inh*A-15C<T mutation was above the value found in most other countries.

Conclusion: Emphasizing the great importance of testing the *inh*A-15C<T mutation for prediction of isoniazid resistance in Syria. Sensitivity of a rapid test using real time PCR and 3'-Minor Groove Binder (MGB) probes in detecting RIFr and INHr isolates was 90% and 69.4%, respectively. This demonstrates that a small set of MGB-probes can be used in real time PCR in order to detect most mutations causing resistance to Rifampicin and Isoniazid.

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Streptococcus mutans strains isolated from dental caries patients and healthy individuals in Baghdad city

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It is well known that *Streptococcus mutans* is strongly associated with dental caries. According to many studies, carious process has been linked to this bacterium and it is used as important criteria for dental caries. In Baghdad, high level of dental caries is exists that entail studies to be done concerning this bacterium. The present work deals with the differences in the phenotype of *S. mutans* isolates from dental caries patients and healthy individuals isolated. The results indicated that the strains of *S. mutans* isolated from dental caries patients may compete successfully with other strains due to their vigorous in decalcifying apatite, adhered better to apatite and had antibacterial-like activity. It is concluded that *S. mutans* strains reveals phenotypic differences, these are depending on the caries activity of the individual from whom the strain was isolated.

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