

## Mitochondrial DNA markers in Arabic Iraqi population

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**Background:** The D-loop region mitochondrial DNA typing is an excellent tool for forensic applications because has universal primers exist that can be applied to almost any unknown sample and generate a result from D-loop region variations are much concentrated in these regions.

**Aims:** The aim of the present study was to determine the variations of D-loop region for Arabic Iraqi mtDNA haplogroups will be useful in forensic genetics applications and determining the Iraqi population history.

**Materials and Methods:** mtDNA isolation for used as a template to overlapping extended primers to generates four partially overlapping PCR amplicons on the mtDNA D-loop hypervariable regions, which is ready to direct DNA sequencing.

**Results:** This study record 147 polymorphic positions found within the D-loop of the unrelated 100 Arab Iraqi mtDNA samples. The frequency of transitional polymorphic nucleotides were observed highest at positions 263, 73 and 16519 with 0.82, 0.66 and 0.51, respectively, as well as, frequency of insertion C is 0.71 and 0.5 at positions 315 and 309, respectively. The two samples were bearing insertion of double cytosine at positions 315 and 309, respectively. One point mutation heteroplasmy was detected located at position 16233. A statistical estimate this population showed the random match probability and the genetic diversity of 0.0294% and 99.8%, respectively. The sequence variation within D-loop control region were analyzed the composition of haplogroups that showed high frequency of haplogroups U, H, J, M, D, T and N (18%, 14%, 10%, 9%, 7%, 7% and 7%, respectively, moderate frequency of haplogroups L and I was (4%) and B, A, R and K (2%), and low frequency of haplogroup pre-HV (1%) . This study was indicated lack of V, P, Y, X, O, Z, Q, G, E and C haplogroups.

**Conclusion & Significance:** The variations of mtDNA D-loop region in this study that included point mutation, insertion, and heteroplasmy that consider as added the data in forensic genetics scope in Iraqi population.

## Biography

Nihad A.M Al-Rashedi has PhD. in Biotechnology / Forensic genetics from Babylon University in Iraq, M.Sc. from genetic engineering and Biotechnology institute for postgraduate studies -Baghdad University in Iraq. His expertise in Mitochondrial DNA for forensic applications, with extensive experience in academic teaching and forensic genetic marker researches. Currently, he assistant professor , Supervisor of Biotechnology Research laboratory in Biology Depart.–College of Science, Muthanna University and served as an editorial board of the International J. Applied Biology and Forensics. He is now working on Scanning electron microscopy in the forensic applications of hair, genotypes of eye color in Arab population and is also continuing to expand the mitochondrial DNA research field for other ethnics.

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