ALLELIC FREQUENCY AND CONCORDANCE STUDY IN KUWAITI POPULATION OF TWO AMPLIFICATION PCR KIT AMPFℓSTR® NGMSELECT™ AND POWERPLEX® ESI17

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Since the early eighties human DNA typing has become a cornerstone of forensic medicine. Indeed, genomic markers offer a variety of powerful means for human DNA typing. Several methods emerged developed of which the Short tandem repeats (STR), has become the leading method used in human DNA typing.

Objectives of the study: is to carry out a genetic study of the 16 STR markers used worldwide for human DNA profiling to establish a DNA database for Kuwaiti population using two kits from different suppliers and perform concordance analysis

500 samples of saliva and blood samples on FTA cards, were collected from unrelated Kuwaitis and used for genomic DNA extraction and variation analysis of the 16 STR markers and amelogenin. The concordance study performed two different human identification commercial kits. AmpFℓSTR NGM SElect (Life Technologies, USA) and PowerPlex ESI 17 (Promega, USA), used in routine typing of the same 16 STR loci.

Combined Discrimination Power (CDP) for the 16 STR loci in the Kuwaiti population has estimated as 0.9434. All the markers were in HWE except the D21S11 locus; 32 dropout alleles recorded for eight markers (TH01, D21S11, D18S51, FGA, D2S1338, D22S1045, D19S433, and SE33). Genetic variation was suspected to be the main reason behind the observed discordance and confirmed in three markers (D18S51, FGA, and SE33). Our study showed 99.65% concordance rate when comparing the 16 STR loci.

PowerPlex ESI 17 Kit are valuable forensic tools and suitable for routine use in forensic studies in the Kuwaiti population. Genetic variation could be at the basis the observation of data discordance and drop out alleles.

Keywords: DNA Profile, STR, SNP, NGM SElect, PowerPlex ESI 17, Kuwaiti Allelic frequency and concordance study.