Genotyping of urinary samples stored with EDTA for forensic applications

S.H. Zhang, S.M. Zhao, Z.M. Zhao and C.T. Li

Shanghai Key Laboratory of Forensic Medicine, Institute of Forensic Sciences, Ministry of Justice, Shanghai, PR China

Corresponding author: C.T. Li
E-mail: lichengtaohla@163.com

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ABSTRACT. Individual identification of urinary samples is necessary when sample switching or handling are suspected during a judicial process. To improve the rate of successful genotyping of urinary samples, we examined the stability of DNA in urinary samples stored for up to 30 days. Urinary samples from 20 healthy individuals (10 males and 10 females) were stored at -80°C with different concentrations of EDTA (0, 10 and 40 mM). Urinary DNA was extracted at days 0, 3, 9, and 30 after collection. The Quantifiler Human DNA Quantification Kit was used for measuring DNA concentration. Twenty STR loci were co-amplified using amelogenin-specific PCR with the Goldeneye 20A Kit. Significant differences in DNA concentration were observed between samples from females and males. In the case of female urinary DNA preservation with 10 and 40 mM EDTA the mean detection rate reached 0.95 after up to 30 days; for the male urinary samples, the mean detection rate of urinary DNA preserved with 40 mM EDTA was significantly higher than with 10 mM. We concluded that 40 mM EDTA is the best concentration for preservation of the DNA in urinary samples.

Key words: Forensic genetics; Urine; EDTA; DNA genotyping