A HIGHLY EFFICIENT METHOD TO CONCENTRATE DNA FOR FORENSIC STR GENOTYPING USING DNAstable®

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Forensic laboratories routinely use STR genotyping for identity testing of biological samples. However, forensic samples often contain low copy numbers of target DNA, making it difficult to obtain complete STR profiles. Increasing PCR amplification cycles is commonly performed to address this issue, but it can lead to stochastic effects that call into question the accuracy of the data analysis. To overcome this challenge, forensic scientists use a variety of techniques to concentrate samples in an attempt to increase the total amount of DNA available for amplification prior to the PCR step. These techniques include centrifugal filtration, sample dry-down and re-suspension, as well as precipitation with ethanol and polyethylene glycol. Such concentrating techniques have a variety of drawbacks, with the most critical being sample loss. We describe a technique for easily and effectively concentrating DNA from forensic samples using the commercially available reagent, DNAstable. This method minimizes sample loss. We provide case studies from two different forensic laboratories successfully using DNAstable to concentrate DNA for STR analysis. We show that this technique avoids many of the drawbacks associated with other DNA concentration strategies while providing accurate STR analysis results.