DNA PROFILING OF DEGRADED FORENSIC SAMPLES BY STR LOCUS ENRICHMENT

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STR typing is widely used to scientific investigate such as identify victim, perpetrators, and the profile of DNA sample compares to crime scene evidence. Damaged DNA samples are often hard to gain STR profile because that samples couldn't complete PCR amplifies. Many approaches like mini-STRs and SNPs have proven to overcome problem in damaged sample, however, also these methods have limitations. Here we show that STR locus-specific biotinylated oligonucleotide hybrid can enrich the specific STR locus and this approach to overcome problems in STR typing of damaged DNA. An experimental investigation of factors affecting the efficiency of this method indicates that the choice of primer and the molar ratio of primers to genomic DNA are critical factors in improving enrichment of the STR locus before genotyping with multiplex kits. In addition, we find that indirect capture rather than direct capture with magnetic beads yields a better enrichment efficiency for STR locus enrichments. Using these strategies, we demonstrate an improvement in STR typing of DNA from forensic blood sample and cultured cells artificially damaged. We suggest that this approach could be applied to highly degraded forensic samples.