DIRECT-TO-PCR TISSUE PRESERVATION FOR DNA PROFILING

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Tissue preservation offers the ability to stabilize and isolate DNA from tissues in the field, far from a laboratory setting, where refrigeration may not be available. This has potential application to disaster victim identification (DVI) as well as to any form of field based forensic biological evidence or intelligence collection[1]. Forensic DNA analysis is one of the three primary methods of identification recommended by the International Criminal Police Organization (INTERPOL), together with fingerprint and dental analysis[2]. In previous work, we have demonstrated the ability to obtain full AmpFℓSTR® Identifiler® (Life Technologies) STR profiles from DNA extracted from fresh muscle tissue preserved in TENT buffer (Tris, EDTA, NaCl, Tween 20), salt-saturated DMSO-EDTA solution (DESS) and two proprietary preservatives: DNAgard® (Biomatrica) and one from DNA Genotek, Inc[3]. Three of the preservatives (DESS, DNAgard and DNA Genotek) also yielded full profiles from DNA extracted from aliquots of the preservative solution surrounding the muscle tissues. In this study, we explore the possibility of obtaining DNA profiles without DNA extraction, by adding aliquots of preservative solutions surrounding fresh and decomposing human tissue samples directly to PCR. We obtained full PowerPlex® 21 (Promega) and GlobalFiler® (Life Technologies) DNA profiles from fresh and decomposed tissue preserved at 35 ^{o}C for up to 28 days as well as from fresh tissue which had been stored at 35 ^{o}C for up to 28 days, and then at -80 ^{o}C for four years.

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