GENETIC PROFILES OBTAINED FROM SEVERELY DAMAGED BONE SAMPLES USING POWERPLEX® ESX17

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Genetic identification of severely damaged human remains is one of the most challenging tasks for forensic labs around world. Mini-STRs loci and increased resistance to inhibitors have been used as tools in order to obtain genetic information from critical samples. In this work we evaluated the PowerPlex® ESX17 kit in highly degraded bone samples. Skeletal remains were recovered from graves in northern Brazil where acid soil and severe weather conditions are observed. It is supposed that bodies were buried about forty years ago and bones present a fragile structure, low density and are easily crumbed when manipulated. Ten femurs were chosen and wedge shaped samples were taken from medial portions of each bone. Samples were ground using a cryogenic mill and two grams of the obtained powder were submitted to full demineralization protocol followed by concentration in Amicon filter 100K (Millipore) and purification using QIAamp columns (Qiagen). Samples were quantified using Plexor HY (Promega) and, based on the results, amplified using PowerPlex® ESX17 (Promega) as recommended. PCR products were detected in an ABI 3130 (Life technologies) and profiles analyzed by Genemapper IDX (Life Technologies). Partial profiles with most of alleles sized shorter than 250 bp were obtained for six of the ten tested samples, significantly increasing the amount of information when compared with others kits used for the same samples, demonstrating the usefulness of PowerPlex® ESX17 for challenging bone samples.

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