

ADVANTAGES OF POWERPLEX® 16 HS IN THE ANALYSIS OF COMPLEX FORENSIC SAMPLES IN COLOMBIA

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The armed conflict that Colombia has lived through for more than 40 years has inevitably positioned Colombian national forensic laboratories at the forefront of their field as concerns the adoption of technologies and systems for DNA genotyping. Such technologies and systems have allowed these laboratories to efficiently solve complex forensic cases. The majority of these cases involve working with bone samples from human remains, many of which have been found in caves throughout the country. Due to the topographical layout of Colombia, local climates can vary dramatically, particularly as concerns temperature and relative humidity. Together with a complex soil diversity, the isolation of DNA from bone samples is often times difficult. Despite all the existing tools, the Colombian national forensic laboratories have a large number of cases that are considered very complex due to the specific conditions of the soil in which the samples were found. Such conditions do not allow an effective identification of the victims. The technical staff of Biomol Latinoamerica Inc. worked together with forensic analysts from the Forensic DNA laboratory at the National Institute of Legal Medicine and Forensic Sciences in Cali to genotype difficult samples using the new PowerPlex16HS. A total of ten samples from victims of ten different cases were used. DNA was purified from four bones, four teeth, a piece of muscle and one post-mortem blood stain. None of the samples had given complete STRs profiles in previous genotyping attempts. The samples were quantitated by real time PCR using the Plexor HY system followed by amplification with the PowerPlex 16 HS. Previous attempts at quantitation had confirmed the presence of DNA inhibitors on the samples. The amplification conditions together with the sensitivity of the PP16HS allowed us to obtain full profiles for eight out of the ten samples. Previously we had been unsuccessful in our attempts to type these same samples using other amplification kits from Applied Biosystems and Promega.