POWERPLEX 16 ANALYSES BY MEGABACETM DNA ANALYSIS SYSTEM

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DNA typing as a routine tool for forensics and paternity casework in Brazil had a substantial increase in the past few years. However, the number of criminal and paternity backlogged cases grows every year, despite of all the efforts of public and private labs and governmental policy. According to some statistics, approximately 30% of the Brazilian children do not have the name of the father on their civil register. Attempts to meet the ever-growing demand for DNA testing have focused on the implementation of technology (e.g. capillary electrophoresis and robotics) and the use of commercial kits to analyze different loci using multiplex PCR to increase throughput. The PowerPlex™ 16 System STR can analyze 16 loci in a single reaction increasing efficiency and sample conservation, as well as reducing sample handling and the potential laboratory error associated with it. The use of PowerPlex™ 16 with ABI sequencers (Applied Biosystems) was validated by PROMEGA and it is extensively used in many genetic laboratories all over the world. In Brazil, a crescent number of laboratories are using the MegaBACETM DNA Analysis System (GE Health Care) to perform DNA sequencing and genotyping. A collaborative effort between Dialab Diagnósticos and GE HealthCare - Amersham Biosciences was designed to evaluate the reproducibility, sensitivity and applicability of the PowerPlex 16 multiplex system on the MegaBACE™ DNA Analysis System. A total number of 1291 samples, resulting in 20656 genotypes, previously determined by FMBIO or CE analysis, were amplified using PowerPlex® 16 and PowerPlex® 16 BIO and analyzed with the MegaBACETM DNA Analysis System. Anonimous criminal and paternity samples were kindly donated by DNA labs from the Scientific Police Departments (Minas Gerais, Distrito Federal, Paraná, São Paulo) and by IMESC (Instituto de Medicina Social e Criminologia de São Paulo) respectively. The amplification steps were performed according to the PowerPlex® 16 and PowerPlex® 16 BIO System Technical Manuals (TMD012, TMD016) and the profiles obtained with MegaBACE were compared with the previous known genotypes. We found an accordance index of 99.07% between MegaBACE analysis and the previous genotypes. The high throughput and sensibility of this platform associate with the efficiency of PowerPlex ™ systems and the reproducibility of the results presented in this study strongly demonstrated that MegaBACE can be an alternative platform when working with PowerPlex system analysis. Acknowledgements: Dr Jomar Pereira Laurindo - Faculdade de BiociênciasPUC- RS, Instituto de Criminalística de São Paulo- SP, Instituto de Medicina Social e Criminologia de São Paulo -IMESC