A COMPARATIVE STUDY OF ALUQUANT™, QUANTIFILER™ AND QUANTIBLOT™ QUANTIFICATION METHODS

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Exploring automated quantification assays which are sensitive and reproducible is an important step in the initiative to increase throughput in DNA databasing laboratories. In this study the AluQuant™ liquid hybridization and the Quantifiler™ Human DNA real-time PCR quantification methods were evaluated with reagent preparation and dispensing performed on a semi-automated robotic platform. The Quantiblot™ Human DNA Quantification Kit was included in the evaluation as a historical primate-specific quantification method "standard." The assays were compared based upon ease of use, standardization, assay quality and reproducibility in terms of DNA concentration and resulting genotype quality, additional reagent requirements, time and per sample cost. The assays were relatively equivalent in terms of standardization, per sample cost, reproducibility and genotype quality. However, Quantifiler™ requires less labor and run time, can be run overnight, consumes less extract, has a larger dynamic range and has a simplistic protocol with fewer reagents. Equipment cost, service and maintenance were not included in the evaluation. In preparation for semi-automated extraction with the DNA IQ™ System (Promega Corporation) on the Biomek® 2000 liquid handler blood punches were incubated in DNA IQ™ lysis buffer at 80°C for two hours. The incubation yields a predominately single-stranded DNA product which is inappropriate for yield gel quantification.