Y-SCREENING AND DIRECT AMPLIFICATION OF SEXUAL ASSAULT SAMPLES

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Current serological screening of sexual assault samples is time consuming and limited in sensitivity when compared to amplification based methods for the detection of male DNA. Due to the robust performance of current qPCR and STR amplification chemistries in the presence of PCR inhibitors found in casework samples, it is possible to perform direct amplification from such samples without the need for a DNA purification step. Elimination of this step reduces both cost and the potential for DNA loss during purification, especially with low level DNA samples. The prototype Casework Direct Kit provides a method for the rapid generation of lysates from casework samples that may be subsequently used in amplification based assays to screen sexual assault samples for male DNA using the PowerQuant® System and/or generation of STR profiles with one of the PowerPlex® Systems. Unlike direct amplification from a punch, quantification results from the lysate can be used to normalize template DNA in downstream STR amplification reactions. The method is fast (less than one hour) and requires minimal hands on manipulation due to the use of new and improved spin baskets during the incubation step. We present data from Y-screening and mock casework applications, including the ability to detect the presence of male DNA and a full PowerPlex® Y23 System profile in a 96 hour post-coital sample.

Key Words: PowerQuant®, PowerPlex®, Y-screening, casework, direct amplification, inhibitors,