

EVALUATION OF SPIN BASKET DEVICES FOR CELL LYSIS AND DIFFERENTIAL CELL

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The transfer-to-basket step of the DNA extraction process is time consuming, with an intrinsic risk of sample contamination, transposition or loss. To simplify sample preparation of casework evidence samples, three spin basket devices were evaluated. These devices incorporate a barrier that retains liquid. Upon centrifugation, the liquid passes through while the larger particles are retained in the basket. No sample transfer is therefore required to obtain a particle-free lysate. Various samples were prepared and subjected to cell lysis using the PrepFiler LySep™ Columns (Life Technologies), the Investigator® Lyse&Spin Baskets (Qiagen) or the Sampletype i-sep® SQ (Biotype Diagnostic GmbH). Mock sexual assault samples consisting of saliva and sperm on cotton swabs were also prepared and differential cell lysis was performed using Sampletype i-sep® DL devices, designed for differential cell lysis, and the Lyse&Spin devices. DNA was extracted, quantified and STR profiles were developed. The amount and quality of DNA recovered were compared to those obtained when using the standard spin baskets SpinEze® (Fitzco Inc.). Similar DNA yields and STR profile quality were obtained for all devices tested for direct extraction. The use of a thermomixer in place of a standard incubator enhanced DNA yields for some types of samples. For differential cell lysis, cell separation was not complete and mixed profiles were obtained for the sperm fraction for the Sampletype i-sep® DL devices. On the other hand, single source male profiles were obtained when using the Lyse&Spin baskets with some modifications to the procedure although the manufacturer does not recommend their use for differential extraction. Removal of the cotton swab from the basket prior to the sperm cell lysis and washing the sperm cells improved cell separation.