

AN APPLICATION DNA METHYLATION-BASED BODYFLUID TYPING ON CRIME SCENE EVIDENCE

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The identification of body fluids in forensic examinations can play an important role in crime scene reconstruction. Conventional methods rely on the detection of antigens or enzymatic activity, limiting detection sensitivity and specificity. Furthermore, there is no method for vaginal fluids. Recently, a method of DNA methylation-based body fluids typing has been developed (Lee et al., 2015). According to the study by Lee et al. (2015), a multiplex epigenetics-methylation marker was characterized by body fluids (vaginal fluid, semen, blood and saliva). We tested the DNA methylation-based bodyfluid typing using sexual assault crime scene samples. Sexual assault evidence collection kit which consists of genitalia swabs, Anorectal swabs, oral swabs, stain collection, debris, combing pubic hair and blood. Prepared DNA for STR typing was tested. It is important to confirm the minimum DNA yield for the method because the evidence of crime scene usually contains low-copy-number DNA yields. Through the experiments, we confirmed that vaginal fluid, semen, saliva and blood was properly identified with the method and detected no interferences in other body fluids mixture. In addition to special sexual molestation cases, it was revealed the existence of vaginal fluids at suspect's fingers or pennies. DNA methylation-based bodyfluid typing would be powerful tool for identifying biological fluids and reconstructing the crime scene.