B53 Comparison of Commercial Blood Test Kits for Use in Crime Scenes

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After attending this presentation, attendees will learn the about the similarities and differences between the two commercial test kits "HEXAGON OBTI" and "ABAcard HemaTrace" in terns of design, sensitivity, response time, and cost for forensic identification of human (higher primate) blood.

This presentation will impact the forensic community by demonstrating how the identification of human blood at the crime scene using a fast and reliable technique is important for investigative purposes, for collection of useful stains for subsequent DNA profiling, and bloodstain pattern analysis. Two commercially available test kits based on the immunochromatographic technique were compared and reported.

To date, validation and implementation studies have been conducted for each of the two test kits but they have not been compared with each other. The objective of this study is to evaluate and compare the "HEXAGON OBTI" and "ABAcard HemaTrace" test kits in terms of their specificity, sensitivity, cost and more importantly, their ease of use at crime scenes. Human bloodstains, human body fluids (saliva, urine, semen) and animal bloodstains (sheep, cow, fish, pig, chicken, dog, goose, goat, cat, macaw, buffalo and eight kinds of higher primates) were tested according to the manufacturer's instructions.

These findings indicated that the sensitivities, specificity and cost of the two commercial test kits were comparable. Both kits were specific to human and higher primate blood and could detect up to two nanoliters of blood. The key differences between them were in their response time and the design of their component parts. The "HEXAGON OBTI" test card exhibited a much faster response time (almost immediately), compared to the one to two minutes lag time required for the "ABAcard HemaTrace" test card, for the different concentrations of blood. In terms of design, the "HEXAGON OBTI" kit design was more user-friendly than the "ABAcard HemaTrace" kit. In the former, the cotton swab for collection was designed as an integral part of the cap of the extraction buffer solution bottle. This design facilitates the ease of sampling at the crime scene and the transfer of the swab back into the extraction buffer solution for incubation. After the incubation period, the tip of the bottle cap is broken easily and two drops of the extract can be squeezed onto the test card, i.e., transferring extract directly from the bottle onto the test card. For the "ABAcard HemaTrace" kit, the cotton swab is not provided as part of the kit. A small plastic dropper is supplied to transfer the extract onto the test card. This design increases the possibility of contamination as there is a need to open the cap of the buffer solution twice: once for putting the swab into the buffer solution for incubation and a second time to transfer the extract to the test card using the dropper.

From the comparison and evaluation study of the two kits, "HEXAGON OBTI" is the preferred kit for use at crime scenes, given its faster response time and better design which facilitates the collection and testing of stains.

Immunochromatographic Technique, Human Blood Identification, Test Kit

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