A11 Evaluation of the Scent Transfer Unit (STU- 100) for the Collection of Human Odor from Porous Objects

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After attending this presentation, attendees will have been presented data from both male and female subjects demonstrating the potential that the Scent Transfer Unit-100TM (STU-100) has in collecting human odor from porous objects.

This presentation will impact the forensic science community by exhibiting the capabilities of the Scent Transfer Unit-100™ (STU-100), as well as demonstrating an appropriate technique with which law enforcement personnel can collect human scent evidence from a porous object, and in turn utilize it as corroborating evidence for the apprehension and prosecution of a suspect.

Human scent collection, although considered fairly new within the United States, has been successfully used in European countries as a form of evidence during criminal proceedings for many years. It has been previously reported that human odor is characteristic to an individual, thus making it ideal for use as a form of evidence in court. Within the United States, human scent collection is recognized as a form of corroborative evidence that can be collected, non-invasively, from other physical evidence and used to connect a suspect to a particular crime scene. The manner in which human scent can be collected without disturbance is through the implementation of the Scent Transfer Unit- 100™. The STU-100 is a portable vacuum source that utilizes airflow to transfer human odor from the surface of an object to a gauze pad. The gauze pad is then presented to scent-discriminating canines that are used to assist law enforcement officials in their investigations. These canines are able to locate a suspect by following the suspect's odor from the scene of the crime and in some countries, identify a suspect through the use of a scent line-up.

Though the abilities of these canines have been demonstrated, there is still limited analytical data that assesses the collection of human odor from various objects. Thus, it is the objective of this study to evaluate the STU-100 for the collection of human scent evidence from porous objects. Utilizing Headspace Solid-Phase Microextraction coupled to Gas Chromatography-Mass Spectrometry (HS-SPME-GC/MS) the hand odor released from a porous object and collected with the STU-100 was evaluated from both male and female subjects. The process of the human scent collection consisted of washing the hands and forearms for 30 seconds with fragrance free soap, rinsing for two minutes, air drying for four minutes, rubbing hands and forearms for five minutes and then the subject was given a porous object to clasp in his/her dominant hand for five minutes. The STU-100, containing a four inch x four inch gauze pad, was then utilized for one minute to collect the human odor from the porous object. The gauze pad was then retrieved with sterilized tweezers, placed into a vial and allowed to equilibrate for 24 hours. Solid-Phase Microextraction was then used to extract the volatile organic compounds from the headspace of the samples for 21 hours and then analyzed using Gas Chromatography-Mass Spectrometry.

Within the law enforcement field, the STU-100 has shown to be an invaluable tool when conducting criminal investigations due to its ability to collect human odor from evidence commonly left by suspects at a crime scene, such as weapons or clothing. This presentation will validate this practice through the use of instrumental analysis.

Scent Transfer Unit-100™, Human Scent, Corroborative Evidence

 ** Presenting Author*