



B13 A Comparison of Real vs. Pseudo Contraband for Reliable Detector Dog Training

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After attending this presentation, attendees will experience the presentation of research and an opportunity to offer feedback as to how they have attempted similar tasks as well as gain information as to a different approach. There will also be an opportunity to gain further knowledge into different aspects and workings of the forensic field while seeing the wide variety of applications to which forensics can extend.

This presentation will impact the forensic community and/or humanity by educating on the differences between chemical odor signatures of real contraband with that of commercially available pseudo-scent training aids. It will show this comparison as a method for demonstrating reliability for training and testing in canine and instrumental detection.

This study presents the differences between chemical odor signatures of real contraband with that of commercially available pseudo-scent training aids as a method for demonstrating reliability for training and testing in canine and instrumental detection. Solid phase micro extraction will be used to analyze the headspace of the various compounds.

Odor detection has become a focused area of research over the past number years because of its importance to the forensic, law enforcement, and legal communities. Despite the abundance of methods for detection of these characteristic chemical odors, the use of trained canines as biological detectors remains widely accepted. Thus, detector-dog response is one of the major applications involved with odor detection studies; both for the determination of the chemical signature of individual odors to which these canines are actually alerting, and to whether or not there is a common element within different items to support the use of contraband mimics.

As an alternative to training on actual explosives and controlled substances, there are agencies that choose to apply pseudo-aids in place of the real contraband, avoiding complicated DEA and ATF regulations. Current commercially available pseudo-aids contain different amounts of either the actual explosive/narcotic or the chemical compound of suspected interest by canine detectors. As a result, there is significant interest in determining the dominant chemical odor signatures of the pseudo-aids, particularly when compared to the genuine contraband material.

The ability of solid phase micro extraction (SPME) to extract volatiles from the headspace of forensic samples has been used in conjunction with gas chromatography/mass spectrometry (GC/MS). The odor chemicals present in the headspace of actual explosive and narcotic contraband parent compounds were compared with those observed emanating from the mimic training aids. The SPME-GC/MS method utilized a 70 μ m StableFlex™ Carbowax®/Divinylbenzene (CW/DVB) SPME fiber (Supelco). This fiber has been previously determined, experimentally, to meet optimum standards for explosives and narcotics laboratory testing. Double blind field trials using local law enforcement trained explosive and narcotic canine teams were conducted to determine canine interest in the observed odors, and to evaluate the reliability of the pseudo scent.

Limited success was reported using commercially available NESTT (Non hazardous Explosives for Security Training and Testing) products and pseudo scents for explosives and narcotics for the double blind trials; while confirming that these dogs can reliably locate actual contraband. However, for the double blind field tests, promising preliminary results have been observed for alternative controlled permeation devices which show potential for use as reliable non-hazardous detector dog training aids. These alternative devices also show potential in use for calibrants to test the thresholds of odor detection by canines and machines.

Results from these experimentations detailing the dominant odor signature from each specific pseudo-scent as well as that of the real contraband will be presented. A comparison of the headspaces of the pseudo-aids gives the instrumental proof while the resulting alert/no alert dog response gives the verification from the field is also shown.

Pseudo Contraband, Canine Detection, SPME