



B140 The Determination of a Canine Olfactory Detection Threshold Using a Universal Detection Calibrant (UDC)

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Learning Overview: The study essentially attempted to determine a possible canine odor detection threshold using a dose response curve. Results from approximately 40 canines tested will be presented.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by allowing attendees to gather more insight into the development of a UDC for canines and provide detailed information on its use and benefits to the canine community. This topic will help the forensic community gain a more in depth understanding of canine olfactory thresholds and how this plays an important factor in their roles.

The current study investigated the response of biological detectors to varying odor levels presented by the UDC. Variations of the odor levels was accomplished using a Controlled Odor Mimic Permeation System (COMPS) developed by the International Forensic Research Institute (IFRI) at Florida International University. Under this system, the target odor is housed in a permeable material which releases the identified odor at a known and controlled rate. The permeation rate of the 1-Bromooctane was altered by adjusting the parameters of the permeable material. The rate was measured using gravimetric analysis as well as headspace solid phase micro-extraction (HS-SPME). Permeation rates were reported in mass as a function of time. The goals of this study were to decrease the odor availability/permeation rate of the Universal Detection Calibrant (UDC) and observe the percentage of positive canine alerts.

Biological detectors such as canines, unlike analytical laboratory instruments, have no procedure to ensure that they are working satisfactorily daily. This has led to the current development of a Universal Detection Calibrant (UDC) training aid at the International Forensic Research Institute (IFRI) at Florida International University. The UDC, much like an analytical instrument calibrant, allows canines to be calibrated to ensure that the canine is performing within acceptable working limits. This would allow for additional documentation of the canine's daily working parameters in addition to routine training records. In addition, comparison among different canine detection categories such as Drugs, Explosives, guns, cadavers will now be possible. Depending on the discipline, a canine may require greater sensitivity to the odor(s) it is trained on. Cadavers for example, must detect trace amounts of human odor and theoretically should have a lower detection threshold.

Prior analysis of several compounds revealed 1-Bromooctane (1-BO) as the compound with the greatest potential to be used as the biological calibrant. This compound was selected based on several criteria. The first determined the ease and affordability of the compound. The second investigated the health hazards to both canine and handler. Compounds were further selected if they possessed no special handling or disposal requirements. Scarcity of compound in the natural environment was also examined to ensure that compound was not a current target odor for canines.

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Universal Detection Calibrant, Permeation Rate, COMPS