



B124 Optimal Extraction of Fentanyl Volatile Organic Compounds (VOCs) for the Development of Canine Training Aid Mimics

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Learning Overview: The main objectives of this presentation are to teach attendees how VOCs are used for mimicking sent profiles as well as how proper canine training aid mimics are developed.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by informing attendees how training aids are used in police work to safely train canines on the scent profiles of illegal drugs. This training aid was developed to help train canines on the scent profile of fentanyl. Since fentanyl is such a potent and dangerous drug, many police agencies are fearful of training their canines due to the life-threatening risks. This training aid will not only take away those risks, but it will also safely prepare canines to alert to fentanyl while working. This will not only help limit the amount of fentanyl coming into our country or onto our streets, but it will also help to decrease the number of fentanyl-related overdoses.

Using canines as a way to detect controlled substances, such as illegal drugs, can be dangerous since trainers and handlers are working with a living biological detector. The danger mentioned can stem from the potency of the drug being detected as well as the health effects the drug can pose on the canine if the drug is inhaled. This led to the development of safe training aids that mimic the scent profile of illegal drugs. Training mimics have been developed for drugs such as cocaine, methamphetamine, and MDMA. This project investigates the development of a training aid mimic for fentanyl.

Prior studies have concluded that fentanyl is 100 times more potent than morphine. This potency can not only be dangerous for humans but for police canines as well. Since police canines work exclusively with their sense of smell, the inhalation of fentanyl can be fatal. It is for this reason that many police agencies choose not to train their canines to detect fentanyl. However, there are a few police agencies that are taking the risk to better prepare themselves against the fight with fentanyl. Current methods for training police canines to detect fentanyl pose a threat to the canine's lives by exposing them to pure fentanyl or assuming that the scent profile is similar enough to heroin and the canine will alert.

This study investigates the scent profile of fentanyl by using a Solid Phase Microextraction (SPME) Gas Chromatograph/Mass Spectrometry (GC/MS) method to detect the VOCs in the headspace of fentanyl. When using this method, specific VOCs are isolated and introduced to canines that have been trained on fentanyl. This was done with the expectation that canines will alert to the odor of these VOCs in the same way they would alert to fentanyl. Once the proper scent profile was detected, it was used to create a training mimic that can be used to safely train canines to detect fentanyl.

The goal of this study was to create a training aid mimic to safely train police canines to detect fentanyl. This study was completed to not only properly prepare police canines to detect fentanyl, but to then utilize those canines to decrease both the amount of fentanyl entering the country and the number of fentanyl-related overdoses.

Fentanyl, Canine Training Aid Mimic, Volatile Organic Compounds (VOCs)