



Microgram

Bulletin

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VICODIN MIMIC TABLETS (ACTUALLY CONTAINING DIAZEPAM) IN OHIO

The Toledo Police Department Forensic Laboratory received a submission consisting of heroin and various tablets. One exhibit consisted of eight white, oval tablets of suspected hydrocodone. The tablets had a chalky appearance, and were imprinted with "VICODIN ES" on one face, and a half score on the opposite face (See Photo 1). The eight tablets (total net mass 8.1 grams) averaged 15 millimeters long, 8 millimeters thick, and 10 millimeters wide. Analysis by GC/MS identified not acetaminophen and hydrocodone, but acetaminophen and diazepam (not quantitated, but in an approximate 10:1 ratio based on the TIC). This is the first submission of hydrocodone mimic tablets to the laboratory.



Photo 1

HEROIN AND COCAINE FOUND CONCEALED INSIDE WOODEN COAT HANGERS IN NORTH CAROLINA



Photo 2

The Charlotte Mecklenburg Police Department (CMPD) Crime Laboratory received eight wooden coat hangers containing powdery material. The hangers were seized by United States Customs and Border Protection personnel after passing through an airport x-ray machine. The hangers were approximately 14 inches in length, constructed of wood with a metal hanger, and contained hidden compartments. Each compartment contained either a white or tan powder wrapped in plastic and carbon paper (See Photo 2).

Analysis of the tan powder (total net mass 133.5 grams) by dual column GC/FID/MS and FTIR

confirmed heroin hydrochloride (not quantitated, but a high loading based on the TIC). Analysis of the white powder (total net mass 630.15 grams) by dual column GC/FID/MS and FTIR confirmed cocaine hydrochloride (not quantitated, but a high loading based on the TIC). This was the first submission of cocaine and heroin smuggled in hangers to the CMPD Crime Laboratory.

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4-BROMO-2,5-DIMETHOXYPHENETHYLAMINE (2C-B, "NEXUS") TABLETS SEIZED IN TENNESSEE

The Tennessee Bureau of Investigation Crime Laboratory received two well made, light red, round, clandestine tablets with a bumblebee logo (See Photo 3). Analysis of these tablets by Marquis (green color), GC/MS, and GC/IR confirmed that the tablets contained 4-bromo-2,5-dimethoxyphenethylamine (2C-B, "Nexus") (not quantitated, but a high loading based on the TIC). This is the second submission of 2C-B to the laboratory.



Photo 3

OPIUM CONCEALED IN GEAR-LIKE OBJECTS IN TEXAS



Photo 4

The DEA South Central Laboratory received 21 black gear-like objects, each containing a hidden package of a dark brown semi-soft substance (See Photos 4 - 6). The 21 gear-like objects were seized by United States Immigration and Customs Enforcement (ICE) agents. Each package contained 300 to 500 grams of the dark brown semi-soft substance (total net mass of 7,373 grams). Analysis of each package by GC/MS and GC/FID confirmed the presence of codeine, morphine, thebaine, papaverine, and noscapine. This is one of the largest single submissions of opium to this laboratory in recent years.



Photo 5



Photo 6

COCAINE SMUGGLED IN LEATHER COVERED BOTTLES IN FLORIDA

The DEA Southeast Laboratory received a submission containing four leather covered bottles from U.S. Immigration and Customs Enforcement (ICE). The four bottles, which originated in Peru, each contained a clear plastic bag of white powder (See Photos 7 - 8). The plastic bags of powder were concealed in the bottom of each bottle. A layer of silicone was used to separate the powder from the rum found in the upper part of the bottle. Analysis of the powder (total net mass 1,014 grams) by GC/FID, GC/MS and FTIR confirmed 91% cocaine hydrochloride. The laboratory typically receives submissions of cocaine concealed in a variety of containers.



Photo 7



Photo 8

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CANDY CONTAINING STANOZOLOL



Photo 9

The DEA Northeast Laboratory received a submission containing 35 pink colored candies suspected of containing a steroid (See Photo 9). Analysis of the candies (total net mass 45.2 grams) by LC/MS, UPLC, and GC/MS confirmed the presence of stanozolol (not quantitated). The laboratory has received numerous submissions of stanozolol, but this is the first submission in which stanozolol was found in candy.

SELECTED REFERENCES

[The Selected References section is a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. Abbreviated mailing address information duplicates that provided by the abstracting service. Patents and Proceedings are reported only by their *Chemical Abstracts* citation number.]

1. Auwaerter V. **Structure elucidation of synthetic materials in “Spice.”** *LaborPraxis* 2009;33(6):62-64. [Editor’s Notes: The structure was elucidated of additives in the designer drug “Spice” and other herbal blends. Two nonclassical cannabinoids, CP-47,497 and the homolog CP-47,497-C8, and 2 other cannabinoids (aminoalkylindoles), JWH-018 and JWH-073, were identified in Spice variants. Cannabimimetic activity, toxicity, and health risk are discussed of the synthetic additives. Contact: Institut fuer Rechtsmedizin, Universitaetsklinikum Freiburg, D-79104 Freiburg, Germany.]
2. Bolck A, Weyermann C, Dujourdy L, Esseiva P, van den Berg J. **Different likelihood ratio approaches to evaluate the strength of evidence of MDMA tablet comparisons.** *Forensic Science International* 2009;191(1-3):42-51. [Editor’s Notes: Two likelihood ratio approaches are presented to evaluate the strength of evidence of MDMA tablet comparisons. In this paper, the methods and their results are discussed, considering their performance in evidence evaluation and several practical aspects. Contact: Netherlands Forensic Institute, The Hague 2490 AA, Netherlands.]
3. Brandt SD, Martins CPB, Freeman S, Dempster N, Riby PG, Gartz J, Alder JF. **Halogenated solvent interactions with N,N-dimethyltryptamine: Formation of quaternary ammonium salts and their artificially induced rearrangements during analysis.** *Forensic Science International* 2008;178(2-3):162-170. [Editor’s Notes: This research has confirmed that DMT reacts with dichloromethane (DCM) to give a quaternary N-chloromethyl ammonium salt. Furthermore, this was observed to undergo rearrangement during analysis using gas chromatography/mass spectrometry (GC/MS) with products including 3-(2-chloroethyl)indole and 2-methyltetrahydro-beta-carboline (2-Me-THBC). This study further investigates this so far unexplored area of solvent interactions by the exposure of DMT to other halogenated solvents including dibromomethane and 1,2-dichloroethane (DCE). The presence of potentially characteristic marker molecules may allow the identification of solvents used during the manufacture of controlled substances, which is often neglected since these are considered inert. Contact: Institute for Health Research, School of Pharmacy and Chemistry, Liverpool John Moores University, Liverpool, UK L3 3AF]
4. Inoue H, Hashimoto H, Watanabe S, Iwata YT, Kanamori T, Miyaguchi H, Tsujikawa K, Kuwayama K, Tachi N, Uetake N. **Thermal desorption counter-flow introduction atmospheric pressure chemical ionization for direct mass spectrometry of ecstasy tablets.** *Journal of Mass Spectrometry* 2009;44(9):1300-1307. [Editor’s Notes: A novel approach to the analysis of ecstasy tablets by direct mass spectrometry coupled with thermal desorption (TD) and counter-flow introduction atmospheric pressure chemical ionization (CFI-APCI) is described. The method required neither sample pretreatment nor a chromatographic separation step. The effectiveness of the combination of TD and CFI-APCI was demonstrated by application to the direct mass spectrometric analysis of ecstasy tablets and legal pharmaceutical products. Contact: National Research Institute of Police Science, 6-3-1 Kashiwanoha, Kashiwa, Chiba 277-0882, Japan.]
5. Lanzarotta A, Baumann L, Story GM, Witkowski MR, Khan F, Sommers A, Sommer AJ. **Rapid molecular imaging using attenuated total internal reflection planar array infrared spectroscopy for the analysis of counterfeit pharmaceutical tablets.** *Applied Spectroscopy* 2009;63(9):979-991. [Editor’s Notes: A planar array IR spectrograph containing an ATR accessory has been constructed in order to permit rapid analysis of poorly transmitting materials.]

The technique has been optimized to allow molecular spectroscopic information to be collected in roughly 2 seconds with a corresponding peak-to-peak noise value as low as 2.14×10^{-4} absorbance units. The feasibility of this system was demonstrated for the rapid authentication of suspected counterfeit pharmaceutical tablets. Contact: Molecular Microspectroscopy Laboratory, Department of Chemistry and Biochemistry, Miami University, Oxford, OH 45056, USA.]

6. Lindigkeit R, Boehme A, Eiserloh I, Luebbecke M, Wiggermann M, Ernst L, Beuerle T. **Spice: A never ending story?** Forensic Science International 2009;191(1-3):58-63. [Editor's Notes: Several potentially interesting alkylaminoindoles were synthesized (alkylchain C₃ to C₇). CP 47,497-C8 was isolated from "Spice Gold." These compounds were purified and characterized by NMR and mass spectrometry methods. With the aid of these authentic references we were able to detect and quantify added psychoactive compounds in different herbal blends. Four weeks after Germany's prohibition of several non-traditional cannabinoids, JWH-018 was replaced with its non-regulated C₄-homolog JWH-073 in some of the acquired herbal blends. The data and method presented here will facilitate and accelerate the detection of these compounds in complex matrixes. Contact: Institute of Pharmaceutical Biology, Braunschweig University of Technology, Braunschweig 38106, Germany.]

Additional References of Possible Interest:

1. Florian R. NM, Parada A. F, Garzon M. WF. **Study of cannabinoid content in marihuana samples (Cannabis sativa L.) cultivated in several regions of Colombia.** Vitae 2009;16(2):237-244. [Editor's Notes: Presents title study. Contact: Laboratorio del Area Cientifica, Grupo de Criminalistica, Departamento Administrativo de Seguridad-DAS, Bogota, Colombia.]
2. Garzon M. WF, Parada A. F, Florian R. NM. **Forensic analysis of cocaine samples produced in Colombia: I. Chromatographic profiling.** Vitae 2009;16(2):228-236. [Editor's Notes: Presents title study. Contact: Laboratorio de Quimica de la Division Criminalistica, Fiscalia General de la Nacion, Bogota, Colombia.]
3. Melucci D, Monti D, D'Elia M, Luciano G. **Multivariate analysis of powder drugs using reflectance NIR spectrometry.** Chimica e l'Industria 2009;91(4):83-89. [Editor's Notes: Presents the title study. Contact: Dipartimento di Chimica "G. Ciamician," Universita di Bologna, Italy.]
4. Polli JE, Hoag SW, Flank S. **Near-infrared spectrophotometric comparison of authentic and suspect pharmaceuticals.** Pharmaceutical Technology 2009;33(8):46-52. [Editor's Notes: The authors applied NIR to assess whether eight drug products were authentic or counterfeit. The authors concluded that NIR is a viable method for this application. To minimize incorrect NIR-based conclusions about products, the authors caution that NIR spectra should be analyzed with care because products from various sources may have different formulations and still be legitimate. Contact: University of Maryland School of Pharmacy, Baltimore, MD 21201, USA.]
5. Romero GM, Chianella I, Piletska EV, Karim K, Turner APF, Piletsky SA. **Development of a piezoelectric sensor for the detection of methamphetamine.** Analyst (Cambridge, United Kingdom) 2009;134(8):1565-1570. [Editor's Notes: A computationally designed molecularly imprinted polymer specific for methamphetamine was used as a synthetic receptor for the development of a piezoelectric sensor. Contact: Cranfield Health, Cranfield University, Bedfordshire, UK MK43 0AL.]