TOXTALK®

VOLUME 42 • ISSUE 1

PRESIDENT'S MESSAGE

I am honored and thankful for the opportunity to shepherd and lead this extraordinary family that assembles as the Society of Forensic Toxicologists! As every new President does, I have been thoughtful about my life's path. As a first-generation college student who grew up in southern Ohio, with roots deep in the Appalachia Mountains, I am deeply grateful to those who sacrificed, supported, and encouraged me. I also think it is important to publicly thank your support system, and to that end: To my parents, Larry and Judy Peace, who sacrificed profoundly to lift me up, to my high school science teachers, Deanna Brewer and Sherri Swiger, who inspired me to be a scientist, to the college chemistry professor who knew I was lost on my path and turned me around, Dr. Amil Anderson, to Drs. Barry Levine and Alphonse Poklis who saw in me what I did not and opened the door to my current trajectory, and to the dozens of people in between that have nudged with a push or with butterfly's wings, you have my unadulterated and enthusiastic thanks and devotion.

I would also like to thank Bruce Goldberger for holding the reigns a few days longer in his term and leading the Board through a year of unexpected events and laying some groundwork for new organization and operational processes with our first Executive Director. I am also thankful for an engaged Board of Directors and the Congress of Past Presidents who have worked diligently to make our transitional year successful. This work was critical for the health and future of SOFT.

While our first year of transition with a full time Executive Director and a part time Administrative Assistant was busy with critical conversations about new work flows and expectations, my year ahead will be just as busy, if not more so, and I am excited for the work! The Board of Directors has begun to realize the value and importance of more staff, particularly as the amount of work that transpires in a more complicated landscape and higher expectations requiring more than 40 hours of work per week. With staff handling day-to-day operations, the BOD is now discussing long term strategy and the bright future for SOFT.

INSIDE THIS ISSUE

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PRESIDENT'S MESSAGE CONTINUED

In the eight years I have served on the Board, I was excited to lead the first brainstorming session with the BOD and all Committee Chairs around three issues: membership, revenue and finances, and a member survey. We devoted the entire Open Session at the Interim BOD meeting in Seattle to these energizing and hopeful strategic planning conversations. For membership, we wrestled with potential hurdles to people joining SOFT, in addition to short-term and long term strategies to recruit new members. With regards to revenue and finances, the conversations predominantly focused on continuing education strategies and creating new, relevant, and right-priced opportunities that are within our capacity and would provide financial strength to the organization and also large projects that we could incorporate as we grow. And, as you may now anticipate, we are developing an organized survey of the membership to better know how to serve you and provide you an opportunity to voice your opinions as we move forward. I implore you to participate as your voice is important, and I beseech you to be honest and constructive as the Board searches for balance in the progress.

The committees are also hard at work, as usual! One obvious outcome of committee work is the ToxTalk Committee! Thanks to CC Watson for designing several new layouts for ToxTalk that the committee was able to evaluate and discuss. We hope you find the new format easy to read and that it brings new energy to the content. You will also find that the Awards Committee will be reviewing applicants under a new model that will recognize students separately who working on their master's degrees and doctorates, recognizing that the head-to-head comparison of the products from the two degrees was unfair. I have also asked specific Committee Chairs to set aggressive deadlines as their work impacts the organization and operation of SOFT. The Bylaws Committee and Ethics Committee are working hard to modernize language, improve practice, and accurately define and reflect our intentions. As you can imagine, this can be hard work to find the balance between providing specificity that will be relevant for a long time and providing necessary broadness for interpretation for future Boards. Since our Bylaws Committee will be making significant changes, they are driving toward publishing a document that explains the changes in addition to providing an opportunity for you to make comment. Stay tuned for more information about this.

One of the things I think about for SOFT is that organizational and operational efficiencies will allow us to be more productive. I have asked all of the committees to think about collaborative work with other committees after I learned how each was operating in a silo while others were doing the same work. What has also come to my attention is the tremendous amount of work that happens outside of SOFT, with members working with other associations and organizations. So, I also think about how to leverage those relationships as opportunities for significant outreach to develop more partnerships and collaborations.

You may be asking "to what end"? Some of the work just needs to be done. Some of the work is a continuation of what we've been doing. Some of the work is, indeed, new.

But, to be honest, my heart hurts and my mind stretches to understand the poverty and drug addiction that has ravaged the regions I grew up in for decades, and now so profoundly. As the epidemic has swept nationwide, I've struggled more deeply with how I could make a difference. What I know is that the family of SOFT makes a difference. I believe that time spent improving our operations and empowering the Board of Directors to think about bigger challenges will help make a difference in our communities. I believe that an engaged and empowered organization galvanizes some members, energizes others, and inspires yet another to find creative solutions to the problems and challenges plaguing our communities. So, selfishly, SOFT helps me make a difference. And, I thank you for this opportunity. I look forward to working with you this year!

Michelle Peace, Ph.D.
SOFT President

SEATTLE, WA
2018

SOFT INTERIM
BOARD MEETING

Call for Abstracts!

The SOFT 2018 Organizing Committee is requesting abstracts on all topics related to forensic toxicology. Topics of particular interest include inhalants, heavy metals, designer opioids, and novel psychoactive substances. The Chairs will select appropriate abstracts to be presented as either a platform presentation or poster presentation at the 2018 Annual Meeting in Minneapolis, MN, October 10-12, 2018.

To access the submission form, please visit the SOFT website, and select "Abstract Submission Form" from the Annual Meeting menu or CLICK HERE.

If you would like to serve as an abstract reviewer or moderate a session at the meeting, please email the Scientific Program Committee Chairs at

ScientificProgram@soft-tox.org

Thank you,

Dr. Erin Spargo and Dr. Phil Kemp

SOFT 2018 Scientific Program Committee Chairs

2017 MEETING INFORMATION

Due to the 2017 Meeting being rescheduled for January 2018, the annual Treasurer's Report and the SOFT Business Meeting Minutes do not appear in this issue of ToxTalk and instead will appear in Issue 2 of this year.

CULTURE, VALUES, AND DIVERSITY COMMITTEE

Submitted by: Michelle Peace, Ph.D.
SOFT President
mrpeace@vcu.edu

The Society of Forensic Toxicologists is known to practice and promulgate high standards of practice within our community and in representing SOFT and forensic toxicology to other professional associations. Our annual conference is considered one of the most productive programs in forensic science, and our commitment to excellence leads other forensic science disciplines in the march to accountability and transparency. SOFT is also a community that has supported the advancement of all our colleagues in the myriad of leadership opportunities within the Society, effectively demonstrating how we value diversity. First and foremost, SOFT serves as an organization for the purpose of promoting and developing forensic toxicology for all peoples with no regard for age, race, gender, alternative-ability, religion, sexual orientation, or national origin. This requires an atmosphere of collegiality, collaboration, and mutual respect. However, for years, conversations of concern and frustration regarding insensitive behavior vis-à-vis harassment, discrimination, and prejudicial conduct have quietly infiltrated SOFT.

As we are all aware, every office in every sector in the nation is grappling with the spectrum of behavioral transgressions and appropriate responses. Generally, corporate response and action require honest evaluation and thoughtful considerations on many levels, from organizational responsibility and work culture to individual responsibility and personal empowerment. My intention is to begin this conversation in SOFT as I have heard whispers and frustrations and have knowledge that transgressions have occurred across the spectrum of our members and non-members during SOFT events: to men, to women, to attendees who identify as under-represented, as alternatively-abled, and as LGBTQ. As President, I think about our role as an organization in the national conversation, specifically as STEM fields grapple with diversity and advancement. I think about my role in ensuring that SOFT-sanctioned events are safe, supportive, and collaborative. How do we do this effectively in a manner that does more than establish policy by which behaviors are judged? How do we do this in a way that gets to the heart of heralding our values? How do we do this in a way that empowers people to say something that would safeguard their person, their thoughts, their values, and their advancement - and also protects people from false accusations? How do we do this in a way to create pathways that authentically change the culture in which we live – to lead instead of follow?

To this end, I am organizing an *ad hoc* committee populated with people of diverse ages, orientations, backgrounds and experiences to propose clear definitions and expectations of professional conduct in the activities we engage in as a Society that align with our missions and values. My hope is that people are empowered in difficult and challenging moments to address the issues without fear and that all parties are respectful of personal boundaries. My hope is that we have a culture built on mutual respect and caring. In the end, my hope is that, in initiating this conversation, this committee will be able to identify areas of improvement for the organization, will identify opportunities for SOFT to support expansion and diversification of membership, and will identify ways for SOFT to leverage its standing in the community to lead our colleagues and the scientific community in a cultural shift. This plan may be lofty in its assertion, but beginning the conversations is inherently good and healthy and I encourage you to reach out to me with questions, concerns, and ideas which facilitate progress.

SOFT 2018 MEETING UPDATE

MINNEAPOLIS, MN
OCTOBER 7–12, 2018

Welcome to Minneapolis!

On behalf of the organizing committee and the officers of SOFT, Loralie and I would like to formally invite current, past, and future members of SOFT to attend the annual scientific meeting which will be held October 7-12 in Minneapolis, MN. In this newsletter, you will find all the information and details on the deadlines, registration, travel information, the conference facility, and much more. We look forward to seeing you all there!

Sincerely,

Loralie and Paul

Loralie Langman *Paul Jannetto*

Scientific & Social Programs

The Scientific Program will begin on Monday, October 8, 2018, with two days of focused workshops followed by three days of oral and poster presentations. Workshop proposals are being accepted through March 15, 2018 and abstracts for oral and poster presentations are being accepted through April 30, 2018.

Interested persons may download application materials from the SOFT website by clicking the appropriate link. (Workshops or Scientific Sessions)

Other scientific program features include exhibitor sponsored lunch and learn events and the Elmer Gordon Open Forum where practitioners gather for a hosted forum on current challenges to the field of forensic toxicology.

The social program will feature a welcoming reception, a night of activities (8-person foosball, bocce, bowling, arcade, karaoke, pool tables, darts, etc) & dining at the Punch Bowl Social, and the Presidents Banquet on Thursday night.

2018 PLANNING COMMITTEE MEMBERS

2018 Meeting Hosts

Dr. Loralie Langman

Dr. Paul Jannetto

Scientific Program Chairs
Dr. Erin Spargo
Dr. Phil Kemp

Workshop Chairs
Colleen Scarneo
Dr. Curtis Oleschuk

Exhibitor Liaison
Liz Kiely

Food and Beverage
Ann Marie Gordon
Denice Teem

YFT Chair
Courtney Wardwell

Volunteer Coordinator
Sarah Urfer
Dr. Sara Love

Mobile Application
Dr. Rusty Lewis

Audio/Visual
Frank Wallace

SOFT Staff
Executive Director
Beth Olson

Administrative Assistant
CC Watson

Hyatt Regency Minnaepolis

1300 Nicollet Mall Minneapolis, MN 55403 • T: 1 612 370-1234

The hotel is located on Nicollet Mall in the heart of the downtown business district, and provides spectacular views of the city skyline, skyway connection to Minneapolis Convention Center, and convenient access to the light rail system

The hotel has two restaurants & bars:

Prairie Kitchen and Bar—features cuisine and decor designed to reflect the natural resources and unique growing seasons of Minnesota and surrounding states

MPLS Market—seasonal, deli-style concept offers freshly brewed Starbucks® coffee, refreshing beverages, and locally inspired snacks

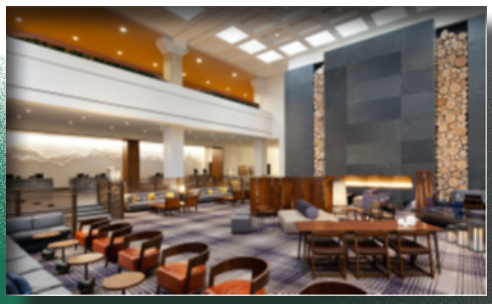
The hotel also has recreational facilities:

Indoor heated pool

Hyatt StayFit gym – a 32,000 sq. ft. full service health club featuring Life Fitness® Cardio equipment, free weights, basketball and racquetball courts

Highlights, Transportation & Parking

- Jogging paths
- Nice Ride bicycle station; Bicycling trail
- MSP International Airport (MSP): 12 miles from the hotel
- Amtrak Station:8 miles from the hotel
- Light Rail Station: 8 blocks from the hotel and takes you downtown, Mall of America, MSP airport and St. Paul
- Greyhound Bus Station: 7 blocks from the hotel
- Self-parking rates at Loring Parking Ramp: $24/day
- Hotel Valet Parking: $38/day



Places to Go, Things to See

There is no shortage of spectacular sites to see or great places to eat. You can explore over 520 stores, more than 50 restaurants, or enjoy live concerts, and exhibits at nearby Mall of America. A sampling of tourist sites is listed below, but check out the full list of attractions on the SOFT website link.
Minneapolis-St Paul Attractions

- Walker Arts Center / Minneapolis Sculpture Garden
- Guthrie Theater
- Historical State and Orpheum Theaters
- Minneapolis Convention Center
- Nicollet Mall shopping & dining
- Orchestra Hall
- Mall of America within 20 minutes
- Target Center (Minnesota Timberwolves)
- Mall of America Field at Hubert H. Humphrey Metrodome (Minnesota Vikings)
- Target Field (Minnesota Twins)
- Xcel Energy Center (Minnesota Wild)
- Loring Park
- Eat Street / Restaurant Row

SOFT 2018 Minneapolis

Important Dates & Deadlines!

Workshop Proposal Submission Deadline	March 15, 2018
Notification of Accepted Workshops	April 1, 2018
ERA/YSMA Application Deadline	April 6, 2018
Meeting Registration Opens	April 13, 2018
Hotel Room Block Opens	April 13, 2018
Abstract Submission Deadline	April 30, 2018
Notification of ERA/YSMA Winners	June 1, 2018
Registration Deadline to Avoid Late Fee	August 17, 2018
Registration Deadline to Avoid On-Site Fee	September 24, 2018
SOFT 2018	October 7-12, 2018

The SOFT Awards Committee is requesting applications for the Educational Research Award (ERA) and the Young Scientist Meeting Award (YSMA). These awards recognize students and young scientists performing outstanding forensic toxicology research. Awardees will present their findings at the annual meeting. Each award consists of a basic meeting registration and a $2000 stipend to be used to cover the cost of travel expenses.

Eligibility:

ERA: Applicants for the award must be enrolled in a Master's, Pre-Doctoral, Post-Doctoral or Medical Residency academic program and performing research related to forensic toxicology.

YSMA: Applicants must be bench level scientists (B.S., M.S., or Ph.D.) with 5 years or less experience in the field of forensic toxicology and complete a research project related to forensic toxicology.

Award Categories (NEW!):

In order to fairly evaluate candidates for these competitive awards, applicants in a Master's program will be judged separately from those applicants enrolled in a PhD, post-doctoral, or MD program. Typically one award will be granted in each of the following categories:

Educational Research Award: enrolled in a Master's Program

Educational Research Award: enrolled in a Pre-doctoral, Post-doctoral, or Medical Residency Program

Young Scientist Meeting Award

In the event that there are two outstanding applicants in one of the above categories, one additional award may be given. A maximum of four award winners will be selected. It is not required that an award be granted in all categories.

To apply:

For instructions on the application process, go to the 'Features' tab on the SOFT website. Select Awards and then ERA or YSMA, as applicable. Application materials must be received by the Committee Chair no later than Friday April 6th. Winners will be notified by June 1st.

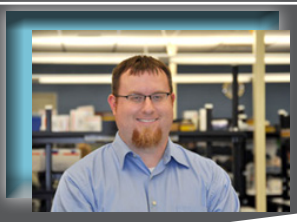
If you apply for an award, you should not submit an abstract for consideration in the scientific program via the SOFT website; in the event that you are not selected to receive an award, the committee will ensure that your abstract is provided to the Scientific Committee. Applicaiton and Questions regarding the applicaiton process shoul dbe directed to the SOFT Award Commitee Chair, Dr. Erin Spargo at, erin.spargo@dallascounty.org

Dr. Erin A. Spargo

- ERA & YSMA Applications are Due Friday April 6th, 2018!
- Questions? Contact Dr. Erin A. Spargo at, erin.spargo@dallascounty.org
- To Apply Click HERE

AWARDS COMMITTEE

From the Toxicology Literature



Submitted by: Kevin G. Shanks, M.S., D-ABFT-FT
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Indianapolis, IN

Forensic Science International

Volume 282

DOI: 10.1016/j.forsciint.2017.11.036

Multiple Fatalities in the North of England Associated with Synthetic Fentanyl Analogue Exposure; Detection and Quantitation; A Case Series from early 2017

Hikin et al. reported a series of 25 fentanyl analog-related cases from the United Kingdom during January-May 2017. History of heroin use or detection of morphine/6-acetylmorphine in postmortem blood was associated with 21 of the 25 cases. Age range was 21-54 years and 88% of cases were male. 20 of the 25 cases involved multiple fentanyl analogs (fentanyl, carfentanil, butyrylfentanyl, 4-fluorobutyrylfentanyl, and/or furanylfentanyl), whereas the other 5 cases involved carfentanil only (blood concentration range, 21-691 pg/mL; mean, 98 pg/mL). Carfentanil blood concentrations ranged 28-4,004 pg/mL in all other detections. Other drugs detected in combination with fentanyl analogs were diazepam, cocaine/benzoylecgonine, methadone, ethanol, mirtazapine, and pregabalin.

Journal of Analytical Toxicology

Volume 41, Issue 9

DOI: 10.1093/jat/bkx068

Observed Carfentanil Concentrations in 355 Blood Specimens From Forensic Investigations

In this letter to the editor, Papsun et al. described carfentanil blood concentrations in human performance and postmortem toxicology casework. The total number of carfentanil positive cases was 355. Mean and median concentrations were 0.57±0.97 ng/mL and 0.38 ng/mL respectively. The range was 0.10-14 ng/mL. Mean and median age was 40±12.5 years and 38 years respectively. The age range was 20-72 years. Carfentanil was detected in 4 human performance toxicology cases – concentrations ranged 0.41-1.4 ng/mL.

Clinical Toxicology (Philadelphia)

Volume 56, Issue 3

DOI: 10.1080/15563650.2017.1357826

Synthetic Cannabinoid "Black Mamba" Infidelity in Patients Presenting For Emergency Stabilization in Colorado: A P Scan Cohort

Brandehoff et al. reported a series of 8 cases of reported "Black Mamba"-branded synthetic cannabinoid use in Colorado hospital presentations. Median age was 28 years and sex was distributed equally (4 males and 4 females). Agitation and delirium and/or chest pain were observed in half of the cases. All patients survived after treatment. Toxicological analyes were completed by LC-QToF/MS. The synthetic cannabinoid ADB-FUBINACA was detected in hospital admission serum samples in 4 of the 8 cases. All ADB-FUBINACA quantitative results were less than the lower limit of quantitation (31.25 ng/mL). AMB-FUBINACA acid metabolite was detected alongside ADB-FUBINACA in 2 of those 4 cases. MDMB-FUBINACA acid metabolite was detected in one case. Other drugs detected alongside the synthetic cannabinoids included cocaine/benzoylecgonine, methamphetamine, diphenhydramine, and 3-MeO-PCP.

Journal of Analytical Toxicology

Volume 41, Issue 9

DOI: 10.1093/jat/bkx060

Multiple Drug Toxicity Involving Novel Psychoactive Substances, 3-Fluorophenmetrazine and U-47700

Ellefsen et al. described the case of a 34 year old male who was found unresponsive and slumped over on the bathroom floor. He was unable to be resuscitated and pronounced deceased. Needles and a plastic bag labeled "5582 mg 3-FPM" were found on the scene. The man had a history of depression, bipolar disorder, suicidal ideations, and illicit substance use. Pulmonary edema and congestion were observed at autopsy. Other findings included an enlarged heart. Toxicological analyses of femoral blood were positive for amitriptyline (0.44 mg/L), nortriptyline (0.29 mg/L), diazepam (0.20 mg/L), nordiazepam (0.18 mg/L), temazepam (0.011 mg/L), flubromazolam (qualitative), deloprazepam (qualitative), methamphetamine (<0.04 mg/L), amphetamine (0.07 mg/L), U-47700 (0.36 mg/L), and 3-fluorophenmetrazine (2.4 mg/L). Cause of death was certified as multiple drug toxicity; manner of death was accident.

Journal of Analytical Toxicology

Article in Press

DOI: 10.1093/jat/bkx109

A Series of Deaths Involving Carfentanil in the UK and Associated Postmortem Blood Concentrations

Elliott and Lopez reported a series of seven (7) cases in which carfentanil was detected in postmortem blood and associated with cause of death in the United Kingdom. Ages of decedents ranged 29-44 years old with five (5) cases being male and two (2) cases being female. Extraction of carfentanil was complete by a liquid-liquid extraction at alkaline pH into butyl chloride. Blood concentrations ranged 0.22-3.3 ng/mL (mean, 0.93 ng/mL; median, 0.66 ng/mL). Other drugs detected alongside carfentanil included morphine, 6-acetylmorphine, noscapine, papaverine, codeine, methadone, and cocaine/benzoylecgonine.

Clinical Toxicology (Philadelphia)

Volume 56, Issue 2
DOI: 10.1080/15563650.2017.1340648

AB-CHMINCA-Induced Sudden Death from Non-Cardiogenic Pulmonary Edema

Maeda et al. reported the death of a 29 year old male who was working in his office and was found by a colleague in cardiopulmonary arrest. After unsuccessful resuscitation he was declared dead. Plant material products named "G Spot", "Silver", and "The Super Lemon XtC" were found on the scene. Upon autopsy, the lungs weighed a combined 1,315 grams and severe alveolar effusions with evidence of air bubbles and hemorrhage were observed. Hypoxia was indicated by sub-endocardial and neuronal cell eosinophilia and nail cyanosis. Toxicological analyses were completed by LC-QToF. The postmortem blood was positive for AB-CHMINCA (7.61±0.59 ng/mL) and its M2 metabolite (56.73±4.16 ng/mL) and M4 metabolite (2.29±0.14 ng/mL); AB-FUBINACA (0.11±0.01 ng/mL); 5F-AMB (<LLOQ); and FUB-PB-22 (<LLOQ).

Journal of Analytical Toxicology

Article in Press

DOI: 10.1093/jat/bkx092

Fatality Following Ingestion of Tetrahydrofuranylfentanyl, U-49900 and Methoxy-Phencyclidine

Krotulski et al. reported the case of a 31 year old male, who had a history of schizophrenia and biopolar disorder, and who was found vomiting and convulsing by a family member. Emergency services were called and naloxone was administered – resuscitation was unsuccessful. The male was pronounced deceased at the scene. Paraphernalia and drug materials were collected at the scene. Pulmonary edema and congestion and cerebral edema were observed at autopsy. Toxicological analysis of the postmortem blood revealed naloxone (qualitative), alprazolam (10 ng/mL), paroxetine (10 ng/mL), topiramate (6,500 ng/mL), zolpidem (8.6 ng/mL), trazodone (360 ng/mL), aripiprazole (170 ng/mL), chlorpheniramine (63 ng/mL), dextromethorphan (46 ng/mL), promethazine (27 ng/mL), tetrahydrofuranfentanyl (339 ng/mL), U-49900 (1.5 ng/mL), and Methoxy-PCP (1.0 ng/mL). The cause and manner of death was accidental acute intoxication by the combined effects of Tetrahydrofuranfentanyl, U-49900, and Methoxy-PCP.

THANK YOU!

A special thanks to the participants, volunteers, and sponsors of the 21st Annual Karla Moore Memorial Fun Run this past January. Over 200 attendees registered for the run and were treated to a beautiful January South Florida morning. Through your participation and the generous support of our sponsors, we were able to send a donation to the American Cancer Society in Dr. Karla Moore's honor in the amount of $4,460.00.

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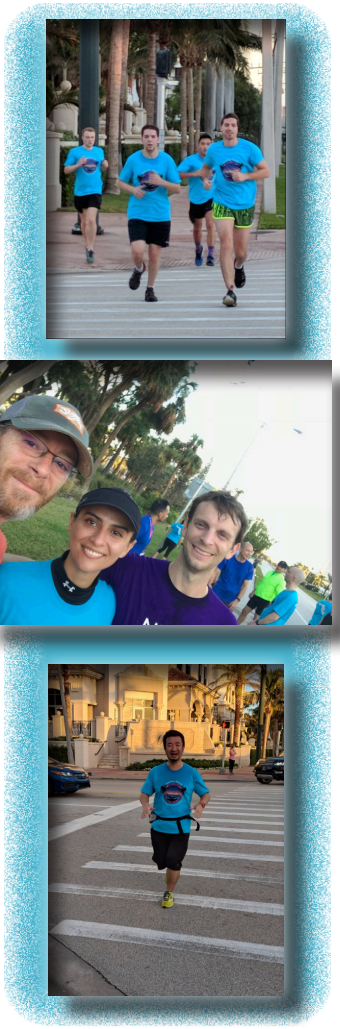


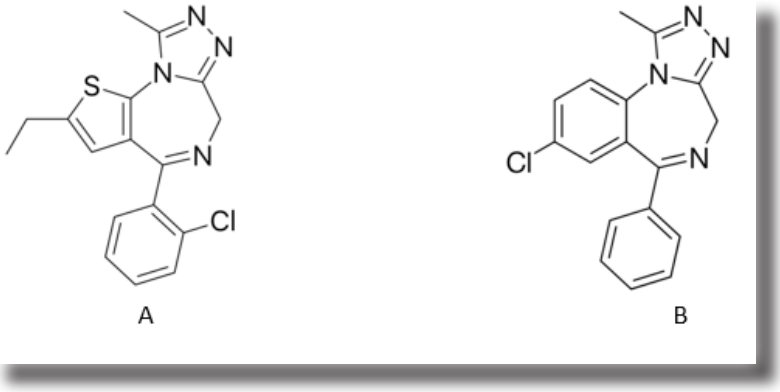
Erin C. Strickland, Jeremy Smith, Gregory McIntire*
Ameritox, LLC, 486 Gallimore Dairy RD, Greensboro, NC 27409

The rapid proliferation of designer drugs is an ongoing problem for health care professionals as well as forensic toxicologists. K2/spice (synthetic cannabinoids) and Bath Salts (synthetic cathinones) are the best known with large numbers of synthetic analogs (1-3). Synthetic benzodiazepines such as metizolam and etizolam are less well known designer drug analogs (4). Although these drugs are regulated differently in various countries, they are not approved by the FDA in the United States. This report details the investigation into the identity of unknown pills.

Etizolam is not strictly a benzodiazepine; it is more correctly described as a thienotriazolodiazepine derivative where the benzene ring has been replaced with a thiophene ring and the triazole ring has been fused, similar to the more familiar alprazolam (Xanax®) (figure 1). It is a prescription medication available in Japan, India, and Italy to treat neurological conditions such as anxiety and sleep disorders, but has recently emerged on the illicit drug market in Europe and the United States. Etizolam has been found in powder and tablet form as well as spiked on blotter paper. It is 6-10 times more potent than diazepam. Nakamae, et al, (5), reported on an LC/MS/MS method for etizolam and its metabolites as well as etizolam involvement in two unnatural death cases. Fracasso, et al, (6) reported a mean elimination half-life of 3.4 hr for etizolam while the metabolites demonstrated half-lives of approximately 8 hr. These metabolites demonstrated the same pharmacological activity as the parent drug in animals and may contribute to an extended pharmacodynamic effect in patients.

NMS Laboratories reported that etizolam was the most popular (i.e., frequently positive) new psychoactive substance (NPS) observed in their testing at the end of the second quarter of 2016. The Drug Enforcement Administration (DEA) reported 5 identifications of etizolam from drug seizures in the second quarter of 2017 (7).

Figure 1. Structures of etizolam (A) and alprazolam (B)



Forensic scientists should be aware of the existence of and testing for this molecule and its metabolites. Etizolam should be considered a short acting benzodiazepine with intermediate elimination kinetics. In postmortem and drug abuse samples, the metabolites are more prevalent than the parent drug which is present at low levels in urine (8).

Two 225 mg ± 0.03 mg pink pills approximately 10 mm in diameter and 5 mm thick were received from a clinic. These pills were well formed and hard and as such did not flake or crumble (figure 2); they also had no discernable markings or stamps. One pill (225 mg) was crushed and exposed to 200 mL of 90% methanol/10% DMSO for dissolution. After several hours with occasional gentle swirling, an aliquot of the supernatant was taken and further diluted 10x with water for enzyme immunoassay (EIA) screening and Liquid Chromatography Tandem Mass spectrometry (LC/MS/MS) confirmation.

Figure 2. Unknown Pill

The solution was screened across several classes of compounds. The EIA screens indicated a positive result for the "benzodiazepines" class. A conventional LC/MS/MS confirmation analysis of this sample for benzodiazepines consisting of 7-amino clonazepam, alprazolam, α-hydroxyalprazolam, lorazepam, nordiazepam, oxazepam, and temazepam was negative. Further analysis of the sample by an LC/MS/MS test for various "designer drugs" including K2/spice, Bath salts, and kratom returned a positive result for etizolam. The identification was verified against a control matching both retention time and 2 independent ion ratios.

Since the confirmation was below the limit of quantification for the method, the sample was evaporated to dryness and diluted in 10-fold less volume. The sample was again screened for benzodiazepines and re-analyzed on the LC/MS/MS confirmation method where the results were consistent with the initial analysis, but were able to provide definitive and quantitative LC/MS/MS confirmation value of 37 ng/mL for etizolam. Findings confirm that the unknown pink pill dissolved at approximately 11.3 mg/mL (the initial 1.13 mg/mL solution concentrated 10-fold) contained about 37 ng/mL of etizolam. These results suggest that the 225 mg pill provided about a 736.7 ng dose of etizolam. We can further speculate that due to lack of complete solubility of the unknown pink pill the synthesizers provided an approximately 1 mg dosage of etizolam within the 225 mg pink pill which is consistent with prescribing directions for etizolam in countries where it is legal (i.e., "up to 3 mg/day") (9).

The methods used in this report were fully validated as per SOP (standard operating procedure) and consistent with College of American Pathologists (CAP) accreditation. Standards for etizolam and its metabolite and internal standard were purchased from Cerilliant (Round Rock, TX). The mass transitions for etizolam, α-hydroxy etizolam, and the internal standard, etizolam D3, are given in Table 1. Retention times are from a Phenomenex Kinetex XB-C18, 1.7 um, 50 x 2.1 mm UPLC column used on an Agilent 1290 chromatography system coupled to an Agilent 6460 LC/MS/MS unit.

Table 1. Mass Transitions for Etizolam, alphaHydroxy Etizolam, and the Etizolam D3 Internal Standard

Analyte	Etizolam	α-Hydroxy Etizolam	Etizolam D3
M+1	343.1	359.1	346.1
Fragmentor (V)	125	190	185
Quantifier Ion	314	315	317
CE (V)	28	20	20
Cell Acc (V)	5	4	4
Qualifier Ion	224	305	292
CE (V)	48	28	24
Cell Acc (V)	3	4	4
Qualifier Ion	259	-	224
CE (V)	40	-	48
Cell Acc (V)	2	-	2
RT (min)	2.213 ± 0.7	2.053 ± 0.7	2.213 ± 0.7

Table 2 provides the gradient parameters using a constant flow rate of 0.5 mL/min with 10% Methanol in Water with 0.1% Formic Acid for Mobile Phase A and 100% Methanol with 0.1% Formic Acid for Mobile Phase B. A needle wash solution of 50:50 Methanol:Water was also used. The LC column was maintained at 20°C. Method cycle

time was 3.5 min with an overall run time of 4.2 min/sample. Sample volume of 300 µL was diluted with 40 µL of internal standard and 40 µL of β-glucuronidase and submitted to hydrolysis at 60°C for 30 min. Post-hydrolysis, samples were extracted and reconstituted in 150 µL of 25:75 Methanol:Water solution and 10 µL was injected for analysis. As mentioned above, this method was for many analytes in addition to etizolam, hence the longer cycle time.

Table 2. Gradient Parameters

Time (min)	%A	%B
Initial	90	10
1.1	80	20
2	2	98
2.5	2	98
2.51	90	10

The results of these analyses indicate etizolam as the active ingredient in the pills supplied. Identification by retention time and 2 ion ratios all determined from standards is consistent with this result with no other observable medications or metabolites from the testing library used at Ameritox. Unlike other illicits, information about dose and overdose issues for etizolam can be found on the internet (9).

References

M. A. Rech, E. Donahey, J. M. Cappiello Dziedzic, L.Oh, and E. Greenhalgh, New Drugs of Abuse, Pharmacotherapy, 2015, 35(2), 189-197.

M.D. Krasowski, J. Brown, The New Wave of Designer Drugs: A Review for Criminal Justice and Forensic Professionals, Forensic Scholars Today, 2017, 2 (3).

B.O.Crews, M.S.Petrie, Recent Trends in Designer Drug Abuse, Clin Chem 2015, 61(7), 1000-1001.

B.Moosmann, L.A.King, V. Auwarter, Designer Benzodiazepines: A New Challenge, World Psychiatry, 2015, 14(2), 248.

T.Nakamae, T. Shinozuka, C. Sasaki, A. Ogamo, C. Murakami-Hashimoto, W. Irie, M. Terada, S.Nakamura, M.Furukawa, K. Kurihara, Case Report: Etizolam and Its Major Metabolites in Two Unnatural Death Cases, Forensic Science International, 2008, 182(1-3), e1-e6.

C. Fracasso, S. Confalonieri, S. Garattini, S. Caccia, Single and Multiple Dose Pharmacokinetics of Etizolam in Healthy Subjects, Eur. J. Clin. Pharmacol 1991, 40(2), 181-185.

Emerging Threat Report, second quarter 2017, DEA.Emerging.Trends@usdoj.gov

R.C.Baselt, Disposition of Toxic Drugs and Chemicals in Man, 11th ed., Biomedical Publications, Seal Beach, CA, pp 848-849.

http://www.medindia.net/doctors/drug_information/etizolam.htm

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The International Association of Chiefs of Police (IACP) is looking for presentation submissions for their upcoming Drugs, Alcohol and Impaired Driving (DAID) conference. This conference tends to focus on the Drug Recognition Expert (DRE) and their role in detecting drugs in human performance. This year, the IACP is requesting presentations that would be specifically relevant to toxicologists! The IACP is looking to expand conference attendance beyond DREs by creating a program that would also be relevant to toxicologists. Topics from last years' DAID conference include marijuana and driving impairment, Novel Psychoactive Substances (NPS) trends and their effects on human performance and other topics related to current drug trends and their effects. Please consider submitting a presentation for the conference this year.

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2021	Nashville, TN	September 26 – October 1, 2021	TBD
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