

STERLING NEWS & NOTES

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Everything Benzodiazepines

Third Quarter 2011

Xanax® one of the Top 10 prescribed. Deaths due to Benzodiazepine polypharmacy?

Benzodiazepines are central nervous system depressants that belong to a class of medications collectively known as sedative-hypnotic drugs. Sedative drugs reduce anxiety (anxiolytic) and exert a calming effect. Hypnotic drugs produce a state of drowsiness that promotes the onset and maintenance of sleep. The benzodiazepines were introduced into clinical practice in the late 1950s and early 1960s. They are very commonly prescribed for a variety of clinical reasons including relief of anxiety, for insomnia, for treatment of epilepsy and motor seizure disorders, for control of ethanol or other drug withdrawal states, for sedation and amnesia before and during various medical and/or surgical procedures, as a component of general anesthesia, for skeletal muscle relaxation in neuromuscular disorders and occasionally as aids in the diagnosis and/or treatment of psychiatric disorders. Other drugs that possess sedative/hypnotic properties include barbiturates, alcohol, meprobamate (Miltown®) and more recently introduced drugs like zolpidem (Ambien®), eszopicolone (Lunesta®) and zaleplon (Sonata®).

The benzodiazepines are only available by prescription in the United States and are classified as schedule IV drugs by the FDA. Fifteen benzodiazepines are available in the United States including alprazolam (Xanax®), clonazepam (Klonopin®), chlorazepate (Tranzene®), diazepam (Valium®), estazolam (ProSom®), flurazepam (Dalmane®), halazepam (Paxipam®), lorazepam (Ativan®), midazolam (Versed®), oxazepam (Serax®), prazepam (Centrax®), quazepam (Doral®), temazepam (Restoril®), and triazolam (Halcion®). Of these, alprazolam is one of the ten most prescribed medications in the United States. Many other benzodiazepines are available in Europe, Central and South America and Asia that are not legally available in the United States. One notable example is flunitrazepam (Rohypnol®), illegally imported into the United States, that has been used in conjunction with alcohol as a "date rape" drug due to its hypnotic and amnesic properties.

Benzodiazepines are relatively safe when used as directed. Physical dependence and tolerance may occur with chronic use of benzodiazepines necessitating

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higher doses to obtain the desired pharmacologic effects. Problems may occur when benzodiazepines are combined with other central nervous system depressants, especially alcohol. Concomitant use of benzodiazepines and alcohol can lead to severe additive effects involving loss of motor control, behavioural disinhibition and respiratory depression, that can be life threatening. At a recent forensic toxicology conference, polypharmacy involving benzodiazepines, alcohol and other central nervous system depressants were implicated in numerous deaths, either accidental or intentional. Drug levels in many of these cases were not at toxic levels if the drugs or alcohol had been used alone. Drug interactions, especially when polypharmacy is involved, are unpredictable, poorly understood and deserving of further study. Monitoring benzodiazepine use is especially important because of the ready availability of these drugs and the potentially severe consequences of misuse or abuse of these medications.

As always, if you have any questions on interpretation, a consulting scientist is available at (800) 442-0438, or via e-mail to certifying@regtox.com

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Meet STERLING's GCMS Department

Hello from the GCMS Department at Sterling Reference Laboratories! The GCMS (Gas Chromatography – Mass Spectrometry) Department is responsible for analyzing hundreds of presumed positive samples each day. The department consists of an Aliquot group, Extractors, and Technicians that all work hard to ensure that the samples are handled properly and in a timely manner. Samples that are received into the lab as presumed positives or that screen positive here at the lab are placed into a queue in our LIMS (Laboratory Information Management System) and slated for confirmation by either GCMS or LCMSMS. The Aliquot group batches the samples through the LIMS, and then provides the extractors with an aliquot of the original sample. The sample is then extracted by the extractors to clean up the sample and remove some of the possible interferences. Once extracted, the samples are then analyzed by our instruments and the data reviewed by our Technicians. Once this process is complete and the

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Upcoming Events – STERLING will be there! Celebration of Recovery, October 1st, Kirkland WA. Northwest Human Resource Management Association (NHRMA) 2011 Annual Conference, October 5-7, Bellevue WA. Washington State Association of Drug Court Professionals (WSADCP) Annual Conference, October 21st, Southcenter WA. State Associations of Addiction Services (SAAS) National Meeting, November 1-3, Washington DC. The Ohio Council of Behavioral Health & Family Service Providers Annual Conference, November 10-11, Columbus OH.

STERLING Reference Laboratories is full-service, nationally renowned toxicology laboratory, testing for drugs of abuse, which has been serving its clients with superior service and unsurpassed quality since 1987. SRL is certified by Health and Human Services (SAMHSA) and the College of American Pathologists Laboratory Accreditation Program (CAP) – rigorous laboratory standards designed to ensure quality testing.

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results confirmed by a Certifying Scientist, our clients are provided with a quantitative result that they can rely on.

ONSITE, INSTANT ALCOHOL SCREENS AVAILABLE

QED A150 SALIVA SWAB - DOT Approved, CLIA Waived Saliva Alcohol Screen detects Blood Alcohol Level of an individual up to 0.15%.

ALCO SCREEN 02 SALIVA STRIPS - DOT Approved 4-minute saliva screen indicates current Blood Alcohol Level greater than 0.02% by presence of a line.

ALCO SCREEN SALIVA STRIPS - Non-DOT 2-minute saliva screen approximated indication of current Blood (and other fluids) Alcohol Level to 0.30% by comparing the color of the reagent pad to a color chart.

URINE DIPS - For Forensic Use Only. One step urine-based dip provides indication of Ethanol (Alcohol) Level to 0.20% by comparing the color of the reagent pad to a color chart.

BREATH TUBES - Squeeze to break inner-capsule, blow into tube, per included instructions. Crystals react to Alcohol, and will change in color if the current, breath alcohol level has reached or surpassed the specified level, choose 0.02%, 0.04%, 0.05%, or 0.08%.

SRL Scientists Presented at 2011 SOFT/TIAFT Meeting in San Francisco

Dr. Guiping Lu, LC/MS/MS Manager, and Dr. Bert Toivola, Technical Director, were selected to present their papers at the September 2011 joint meeting of the Society of Forensic Toxicologists (SOFT) and The International Association of Forensic Toxicologists (TIAFT). Dr. Lu's paper was titled "**A Validated Quantitative Method for Analysis of MDPV and Mephedrone (Bath Salts) in Urine Using LC-MS/MS**" and Dr. Toivola's was titled "**Synthetic Cannabinoid Screening Assay in Urine Specimens by LC/MS/MS**".

The SOFT/TIAFT meeting was attended by over 1,000 forensic and clinical toxicologists from the United States and abroad.

2617 East L Street, Tacoma, WA 98421
Phone: 1-800-442-0438
Fax: 1-253-552-1549
www.SterlingRefLabs.com