K3 Plasma and Urine Amphetamine Levels Following Administration of Dexedrine®

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Attendees will gain knowledge of the absorption and excretion profile of amphetamine following administration of a typical dose of Dexedrine®.

This presentation will impact the forensic community and/or humanity by showing the plasma and urine concentrations following administration of 10 mg of Dexedrine®, a commonly used treatment for ADHD. This information will allow members of the community to assess unknown samples in light of these to help interpret findings.

Dexedrine® (d-amphetamine) has been used for many years for a number of clinical indications including narcolepsy, attention deficient disorder with hyperactivity (ADHD), and as a short term adjunct to a weight reduction program. It also has a long history of abuse. Use of stimulant medications for the treatment of ADHD has increased dramatically in the last few years as the number of patients diagnosed with this disorder increased and those diagnosed during childhood continued treatment well into their adult lives. Evaluation of urine concentrations of amphetamine following administration of Adderall® (another commonly prescribed form of amphetamine used for the treatment of ADHD) has previously been reported. No data currently exists on the excretion profile and plasma concentrations of amphetamine following typical therapeutic doses of Dexedrine®, thus the current study was initiated to describe urine and plasma profiles.

Subjects were administered 10 mg of d-amphetamine in the form of two 5 mg Dexedrine® tablets. Blood samples were collected in lithium heparin tubes prior to administration of the drug and at 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 24, 36, and 48 hours following drug administration. Plasma was then separated from the sample and stored at ? 20ºC prior to analysis. Urine samples were collected in standard urine containers and stored at ? 20ºC prior to analysis. Samples were collected ad lib from each of the subjects prior to administration of the drug and at each urination for five days following initiation of the study.

Samples were analyzed using GC-MS following extraction of the analytes and derivatization with heptafluorobutyric anhydride (HFBA). Plasma samples were extracted using solid phase extraction of a 1 mL aliquot with United Chemical Technologies (UCT) XTRACKT, XRDAH203 high-flow 200 mg columns using a Zymark RapidTrace®. Urine samples were extracted using liquid-liquid extraction of 2 mL sample aliquots.

Urine samples were positive (> 500 ng/mL) for no more than 48 hours following administration of the drug. The peak concentration of amphetamine seen in urine was 6,373 ng/mL. Plasma samples showed a peak concentration of 28 ng/mL and no samples contained detectable amphetamine (LOD 4 ng/mL) at 48 hours post dose. Amphetamine was detectable (LOD 5 ng/mL) in the urine up to 118 hours post dose.

Amphetamine, Plasma, Urine

 ** Presenting Author*