Quantitative analysis of synthetic hallucinogens: 25I-NBOMe, 25C-NBOMe, and 25B-NBOMe in blood and urine by LC-MS/MS

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RESULTS

BACKGROUND

Among the drug using population, the use of synthetic compounds has increased over the past decade. Popular synthetic compounds such as cathinones (bath salts) and synthetic cannabinoids (K2 and Spice) have been joined by the emerging synthetic LSD compounds, NBOMe. Recently, the DEA classified three NBOMe drugs 25I-NBOMe, 25B-NBOMe, and 25C-NBOMe as schedule I drugs [1].

MATERIALS AND METHODS

Extraction

Quantitative analysis of 25I-NBOMe, 25C-NBOMe, and 25B-NBOMe was achieved using the following procedure. Calibrators and QCs, ranging from 5 pg/mL to 500 pg/mL, were prepared in 12 X 75 mm glass borosilicate tubes using negative urine for all three NBOMe drugs. These calibrators were spiked with 100 µL of 10 ng/mL D3-25I-NBOMe for a final ISTD concentration of 1 ng/mL. To adjust the pH, 200 µL of ammonium hydroxide were added to each calibrator and QC. Extraction was performed by adding 2.4 mL of 50%TO/30%EA/15% HE/5% IA mixture to each tube followed by rocking for 10 minutes and centrifugation at 2500 RPM for 10 minutes. From the upper organic layer, 2 mL were transferred to clean 12 X 75 glass borosilicate tubes and evaporated, reconstituted and transferred to autosampler tubes for LC-MS/MS analysis.

LC/MS/MS Analysis

Chromatographic separation was achieved on an Agilent Poroshell 120 C-18 column with gradient elution. Mobile phases of water:methanol (90:10 v/v) with 5mM ammonium formate (solvent A) and acetonitrile with 0.1% formic acid (solvent B) were used in gradient elution program; 30% B to 70% B over in 3 mins, returning to initial 30% of B over in 0.5 mins and held for 0.5 min for a total run time of 4 min. The transitions monitored (+MRM) were 25I-NBOMe (428–121/91 m/z); 25B-NBOMe (382–121/91 m/z); and 25C-NBOMe (336–121/91 m/z). The transitions monitored (+MRM) were 25I-NBOMe (428–121/91 m/z); 25B-NBOMe (382–121/91 m/z); and 25C-NBOMe (336–121/91 m/z). The transitions monitored (+MRM) were 25I-NBOMe (428–121/91 m/z); 25B-NBOMe (382–121/91 m/z); and 25C-NBOMe (336–121/91 m/z).

RESULTS Cont.

Table 1: Mean and %CV at 5, 50 and 500 pg/mL calibrators in urine

Table 2: Mean and %CV at 5, 50 and 500 pg/mL calibrators in blood

CONCLUSIONS

The method and the calibration curves reconcile well with forensic toxicology criteria. The extraction and LC/MS/MS method developed for analysis of blood and urine for 25I-, 25B-, and 25C-NBOMe is precise, sensitive and reproducible at forensically relevant concentrations. The establishment of a deuterated internal standard (D3-25I-NBOMe) allowed for a precise analysis of the NBOMe drugs at low concentrations. The accuracy, precision, and R² values of both the blood and urine calibration curves met SWGTOX validation criteria [3].

REFERENCES