

Stability, identification and quantitation of four designer drugs: MDPV, Mephedrone, BZP and TFMPP in three biological matrices

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With the influx of designer drugs on the market, cases with these compounds are on a rise in laboratories. N-benzylpiperazine, 1-(3-trifluoromethylphenyl) piperazine, 3,4-methylenedioxypyrovalerone and 4-methylN-methylcathinone (mephedrone) were investigated. The analysis of these compounds can be further complicated by poor stability. Stability was monitored in three different biological matrices when each was stored under different conditions. Human whole blood, human serum and human urine were each stored at -20, 4 and 22°C for a period of 14 days in a sealed glass container. A quantitative method was developed for the confirmation of these compounds. The method was developed using a Thermo Fisher Scientific TSQ Liquid Chromatography/Mass Spectrometry system and assessed the following critical areas of analysis: linear dynamic range, limit of detection, limit of quantitation, recovery, intra/inter day accuracy and precision. Analysis was performed on day 1 to establish the initial concentration for each drug in each specimen type, and then the samples were divided into three parts for storage under the various conditions. Analysis was performed in triplicate on days 2, 4, 7 and 14 for each specimen type under each storage condition and the results were compared to those obtained on day 1. Following analysis of the data, it became clear that mephedrone was not stable, and that care must be taken following specimen receipt to ensure minimal degradation. The sensitive and robust method developed is efficient; utilizes a deuterated internal standard as well as an isocratic mobile phase.

Biography

Sabra is a Forensic Toxicologist located in Boston, Massachusetts. She was a member of the Federal Aviation Administration's Bio aeronautical Sciences Research Laboratory at the Civil Aerospace Medical Institute and Senior Forensic Toxicologist/Quality Manager at the Tarrant County Medical Examiner's Office. She is certified by the American Board of Forensic Toxicology. Sabra earned her Master of Science degrees in Drug Chemistry and Forensic Toxicology from the University of Florida. She completed her undergraduate and graduate degrees in Criminal Justice from the University of Central Oklahoma. Sabra has authored and co-authored 12 scientific articles.

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