

Novel method to identify illegal drugs, faster and with greater accuracy

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For the identification of illicit drugs in forensic toxicological casework, analysis can be delayed and potentially compromised due to lengthy sample preparation. However a new technique has been developed that can provide high sensitivity and fast results.

This new development, which is described in the *Journal of Analytical Toxicology*, will impact how resources are utilized and how quickly results are conveyed to law enforcement.

In recent years, the abuse of prescription drugs, designer opioids and novel psychoactive substances has steadily increased. Preliminary testing techniques such as immunoassay are perhaps the most utilized <u>technique</u> in forensic analysis for rapid results with minimalsample preparation. However, to achieve satisfactory results with trace level detection, extensive and time-consuming sample preparation protocols may be required.

For a complete forensic identification, most forensic laboratories use single-dimensional chromatography techniques such as liquid chromatography coupled with mass spectrometry (LC/MS or LC/MS-MS). However in this study, researchers from Boston University School of Medicine (BUSM) used multi-dimensional chromatography combined with a micro-extraction technique for identifying illegal drugs in urine samples in fewer than 20 minutes.

"Through this study, we have shown that the optimized 2D liquid



chromatography methodology can provide higher sensitivity and faster results," explained corresponding author Sabra Botch-Jones, MS, MA, D-ABFT, forensic toxicologist and instructor in the Biomedical Forensic Sciences program in the department of anatomy and neurobiology at BUSM.

Botch-Jones believes with this <u>new technique</u>, <u>forensic</u> toxicology laboratories will benefit from rapid <u>drug</u> analysis with minimal sample preparation and lead to more efficient workflow and identification of a greater variety of drugs.

This research was performed in collaboration with Dr. Claude Mallet at Waters Corporation and the use of their instrumentation.

Provided by Boston University Medical Center

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