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Quick Test for Urine Cathinones in Emergency

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OBJECTIVES: Synthetic cathinones have recently emerged as popular drugs of abuse in Taiwan. These “legal highs” are mostly described as “coffee bags”. Due to the increased number of law enforcement violent injuries and emergency room visits, toxicology laboratories have had to develop and adjust their testing panels and paradigms to meet the increasing demand on the analysis of these novel psychoactive substances.

MATERIALS & METHODS: From July 2017 to Dec 2018, a total of 97 urine samples from patients who presented to the emergency room with symptoms of drug abuse were collected. Samples were screened by 3 kinds of rapid tests for mephedrone (Mep, from Taiwan) and 3',4'-methylenedioxypropylvalerone (MDPV-t, from Taiwan and MDPV-f, from France) further confirmed by LC-Q-TOF for 70 abused drugs.

RESULTS: No confirmed MDPV abuse cases were found. The MDPV-f kit performed a greater specificity, but was found to cross react with N-ethylpropylone in urine. The Mep kit displayed 91.6%, 76.7% and 96.5% for sensitivity, specificity and negative predictive value for urine mephedrone respectively. For the detection of any cathinones in urine, MDPV-t kit showed 77.5%, 83.3% and 78.4% for sensitivity, specificity and negative predictive values respectively. The sensitivity, specificity and negative predictive value for any urine cathinone detection might be improved to 91.8%, 70.8% and 89.5% if both of Mep and MDPV-t kits are used.

DISCUSSION & CONCLUSION: There were significant cross-detection rates of other cathinones in urine by Mep/MDPV-t testing kits. The quality of the MDPV-t kit needs to be improved. The reduction of cross reactivity of any cathinone kit to most of the controlled chemicals in “coffee bags” is essential for better emergency management and law enforcement.