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Evaluation of a Homogenous Enzyme Immunoassay for the Detection of Synthetic Cannabinoids in Urine

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ABSTRACT

Introduction: The recent emergence and widespread availability of many new synthetic cannabinoids support the need for an accurate and high-throughput urine screen for these new designer drugs. We evaluated performance of the Immunalysis homogeneous enzyme immunoassay (HEIA) to sensitively, selectively, and rapidly identify urinary synthetic cannabinoids.

Methods: 2443 authentic urine samples were analyzed with the HEIA that targets JWH-018 N-pentanoic acid, and a validated LC-MS/MS method for 29 synthetic cannabinoids and metabolites. Semi-quantitative HEIA results were obtained, permitting performance evaluation at and around three cutoffs (5, 10 and 20 µg/L), and diagnostic sensitivity, specificity and efficiency determination. Performance challenges at ±25 and ±50% of each cutoff level, cross-reactivity and interferences also were evaluated.