



K29 Evaluation of the Lin-Zhi International Phencyclidine Enzyme Immunoassay for the Detection of Phencyclidine in Urine

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The goal of this presentation is to inform the toxicology community and others of the performance of the Lin-Zhi International Phencyclidine Enzyme Immunoassay for the detection of Phencyclidine in urine.

An evaluation of the performance of the Lin-Zhi International Phencyclidine Enzyme Immunoassay will impact the forensic science community by providing the field of toxicology with alternative choices for the rapid detection of phencyclidine in urine.

An evaluation of a new Phencyclidine Enzyme Immunoassay [PCPI] (Lin-Zhi International, Inc., Sunnyvale, CA) for the detection of phencyclidine (PCP) in urine will be presented. The Lin-Zhi assay is based on competitive antibody binding between PCP in urine and glucose-6-phosphate dehydrogenase labeled PCP. When PCP is present in urine, active unbound enzyme reduces the co-enzyme NAD to NADH that results in an increase of measured absorbance at 340 nm.

The PCPI was evaluated by testing 412 urine specimens collected from criminal justice clients and substance abuse treatment patients. All 412 specimens were tested with the assay in an ADVIA 1200 Chemistry System auto-analyzer (Bayer Health Care, Diagnostics Division, Tarrytown, NY) with calibrators containing 0 and 25ng (cut-off calibrator) of PCP. Controls containing 0 ng/mL of PCP and -25% (negative control) and +25% (positive control) of the 25 ng/mL cut-off calibrator (Bio-Rad Laboratories, Irvine, CA) were analyzed with each batch of samples. All urines were then analyzed by HPLC-MS/MS for PCP at a cut-off concentration of 5 ng/mL. Approximately, 29% (118) of the 412 specimens yielded positive results

by the PCP assay. Of these specimens, HPLC-MS/MS confirmed the presence of at 5 ng/mL in 118 specimens, indicating no false positive results. Only one specimen yielded a negative result and was found to contain PCP above 25 ng/mL. Therefore, the overall agreement of PCPI and HPLC-MS/MS results was 99.8%. From the presented study, the sensitivity of the PCPI was 0.992 and the selectivity 1.000. Testing at 100 mg/mL of other

drugs or their metabolites such as amitriptyline, amphetamine, benzoylgonine, diphenhydramine, doxepin, doxylamine, imipramine, morphine, and oxycodone PCPI demonstrated no cross reactivity. The within-run precision of PCPI was determined by the absorbance rates of the negative and positive controls was CV=2% (n=12); while the between-run precision of the controls was CV=<6% (n=4). The assay was found linear from -50% to 150% of cut-off concentration. The Lin-Zhi PCPI provides a precise, reliable method for the routine detection of phencyclidine in urine specimens.

Enzyme Immunoassay, Phencyclidine, HPLC/MS/MS