

# EFFICIENT MONITORING OF THE ABUSE OF AMPHETAMINES

S.A. George, S.B. Parmar, M. Chauhan. Regional Laboratory for Toxicology, Birmingham, West Midlands, England

## INTRODUCTION

The illicit use of amphetamine is declining in the UK with the number and quantity of seizures falling from 13,393 (2,019 Kg) in 1999 to 7,032 (1,765 Kg) in 2000 (1).

One reason could be the fall in the purity of the drug, from around 5% in 2000 compared to 14% to 16% between 1997 and 1999 (2).

However, there has been a marked increase in the use of methylenedioxymethamphetamine (Ecstasy or MDMA) (2).

Screening for the amphetamines group of drugs requires the use of a technique that is both sensitive but also relatively specific.

In this way, the number of confirmatory analyses needing to be performed due to false positive screening results can be minimised, thereby improving the efficiency of the laboratory.

This study was performed to determine the effectiveness of the new Microgenics CEDIA<sup>®</sup> Amphetamines/Ecstasy immunoassay.

## METHODS

A total of 1610 urine specimens submitted for routine drugs of abuse screening were analysed over a one-month period using an Olympus AU600 analyser in conjunction with the CEDIA<sup>®</sup> Amphetamines/Ecstasy immunoassay.

All specimens were subsequently re-analysed using an Agilent 6890 gas chromatograph incorporating nitrogen specific detection (GC-NPD).

The limits of assay sensitivity for amphetamine, methamphetamine and the ecstasy group of compounds (MDMA, MDEA, MDA) using the GC-NPD system was determined to be 30 ng/mL.

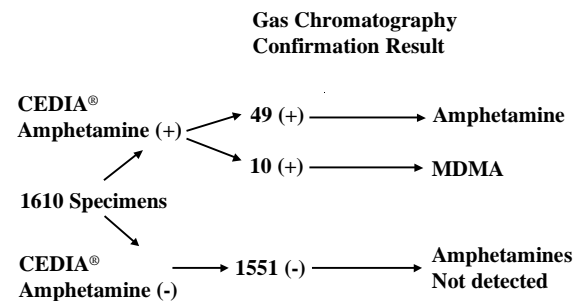
## RESULTS

The cross reactivity profile of the CEDIA<sup>®</sup> immunoassay is shown below: -

CEDIA Amphetamine/Ecstasy assay profile		
Compound	Concentration Tested (ng/mL)	% Cross reactivity
l-Amphetamine	40,000	1.0
d,l-Amphetamine	1,250	88.0
l-Ephedrine	250,000	0.5
l-Methamphetamine	8,000	18
d,l-Methamphetamine	1,000	77
MDA	1,000	116
MDMA	500	196
MDEA	300	172
Phentermine	25,000	3.3
d,l-Phenylpropanolamine	500,000	0.3
d-Pseudoephedrine	160,000	0.9

Of the 1610 specimens analysed, a total of 59 (3.7%) were found to be positive by the CEDIA<sup>®</sup> immunoassay.

Of these 49 were subsequently found to contain amphetamine and 10 were found to contain MDMA (see Below)



## DISCUSSION

The cross reactivity profile of the CEDIA<sup>®</sup> assay illustrates its calculated sensitivity towards both amphetamine and methamphetamine, and the “ecstasy” group of compounds.

The results of this study demonstrate the efficiency of the CEDIA<sup>®</sup> assay when applied to real specimens obtained from drug dependency units.

All urine specimens that screened positive were confirmed by a more specific chromatographic technique to contain either amphetamine or ecstasy.

It was also noted that there were no false negative results associated with this screening technique.

The accuracy of this immunoassay system should reduce the resources that need to be devoted to confirming false positive screening results in the laboratory.

It is therefore expected that this assay will enable screening laboratories to become more efficient when screening for the abuse of amphetamines.

## REFERENCES

- 1) Corkery, J.M. (2002) Drug seizure and offender statistics, United Kingdom, 2000. HOSB 4/02. Home Office. London.
- 2) DrugScope (2002) Annual report on the UK drug situation 2001. DrugScope. London.