The number of individuals reporting the use of LSD in the UK, and the number of LSD related visits to Emergency Departments in the US have shown a dramatic decline in recent years (1,2). However, despite this apparent downturn in the use of LSD, there are still considerable quantities of LSD seized by law enforcement agencies (3).

Because LSD continues to be seized, and due to its current link to the dance and rave scenes, there remains a requirement to be able to identify LSD abuse for both clinical and occupational monitoring purposes.

Owing to the small doses taken, the concentrations that are achieved, and the short half-life of the drug, very specific and sensitive techniques need to be employed to detect LSD use. The use of the 2-oxo-3-hydroxy-metabolite of LSD (OH-LSD) has proved to be a better method of detection of LSD use due to its larger concentration and resultant longer detection window (4).

METHODS

There are several laboratories that offer both screening and confirmatory testing for LSD using immunological, chromatographic, or a combination of both techniques. As part of its remit, The United Kingdom National External Quality Assessment Scheme (UKNEQAS) for Drugs of Abuse in urine has evaluated the analytical performance of such laboratories. The evaluation was performed by review of the results that participants returned following their analysis for the presence of LSD.

A total of 7 specimens containing LSD and/or OH-LSD were distributed to scheme participants as part of routine surveys between November 2003 and August 2004. Samples were prepared by spiking weighed-in concentrations of the drugs to urine specimens often in combination with other abused drugs and metabolites. The concentration of LSD spiked ranged between 3 and 10 µg/L with only a single concentration of 160 µg/L being used for OH-LSD.

Laboratories were asked to analyse the samples as per their normal practice (for either clinical or workplace drug testing) and to report accordingly. In addition, they were asked to provide details of the techniques and test results that they had used to generate the overall report.

There are currently around 200 laboratories enrolled in the UKNEQAS drugs of abuse EQA scheme. Subsequent to the review of the analytical returns, it was found that a mean of only 16% of participants (32 laboratories) analysed for LSD. The origin of the 32 laboratories that reported for LSD for EQA sample code number 195 is illustrated below: -

The EQA samples spiked with LSD were generally detected well using either screening immunoassay or chromatographic techniques. However, when OH-LSD was added to samples, the screening techniques reported LSD as present with 7 chromatographers reporting LSD as absent, but failing to identify OH-LSD.

Laboratories generally screened samples using immunological methods prior to confirmation hence immunoassay cross-reactivity accounts for the detection of LSD and OH-LSD when either or both were added to the samples. However, the chromatographic methods used for confirmation appeared to be selective for LSD only.

Reports based solely on immunoassay are thus for ‘LSD-use’ and not necessarily the presence of LSD. For those taking the chromatographic-only approach to analysis, it could be inferred that the 7 laboratories who reported LSD as not found, but who gave no report on OH-LSD, may be failing to detect previous use of LSD.

REFERENCES


* Members of UKNEQAS Steering Committee for Drug Assays:
David Bullock, Steve George, David Holt, John Ramsey, Grace Sweeney, Brian Smith, Steve Smith, Alison Thomson, Ian Watson, John Williams & John F Wilson