

Toxicological approach to DFSA

Samples and sample collection

Delay in collecting samples can be a critical factor for drugs that exhibit short elimination half-lives, e.g. GHB, as these may not be detectable at concentrations above endogenous levels after around 10–12 h of administration. In the UK, the Association of Chief Police Officers (ACPO) produced the report Operation MATISSE – Investigating drug facilitated sexual assault (Gee et al. 2006), which assessed the time periods between alleged incidents and the collection of urine samples. They found that, out of a total of 117 samples collected, 25.6% of samples had been collected within the first 6 h, 47.8% within 11.59 h, 84.5% within 23.59 h and 94.8% within 47.59 h.

It is essential that specimens for analysis should be collected as soon as possible after the victim becomes aware that a drug-related sexual assault has taken place. This of course depends on the victim reporting the incident to the appropriate authorities and is outside the toxicologist's control. Laboratories can, however, take a proactive role in working with their local authorities, colleges, health departments, police forces and forensic medical examiners to make them aware of the need to educate the population at large to report incidents and of the need to collect specimens as soon as possible after an alleged offence is suspected to have taken place. **Urine specimens can be collected without the need for trained medical personnel to be present and without the need for observed supervised collection, thus facilitating the obtaining of an early evidence specimen while waiting for medical examiners to arrive and collect blood specimens. In order to avoid irretrievable loss of forensic evidence, it is recommended that a urine specimen should be collected before the commencement of any interviews with the victim. At least 20–25 mL urine should be collected as soon as possible after an incident has been reported. Ideally the urine should contain sodium fluoride as preservative at a minimum final concentration of around 1.5% w/v. There have been anecdotal reports of concerns being expressed in some areas of the USA that supervised collection should be enforced, as in workplace drug testing, to ensure that alleged victims do not add drug substances to their urine specimens in order to make malicious accusations against an innocent party.**

As soon as the forensic medical examiner is available, a specimen of blood should be collected. The volume of blood collected should ideally be of a minimum volume of 10 mL and should be collected into a sealed glass container with a minimum final concentration of 1.5% w/v sodium fluoride as preservative. A second urine specimen (20 mL) should also be collected into a container with sodium fluoride preservative as above. All specimens should be clearly labeled with the name of the victim as well as the time and date that the specimen was collected. Specimen containers should not be over-filled. This avoids breakage if the sample is frozen at a later time. Once the early evidence specimens have been obtained, the case history and information regarding the events and circumstances should be recorded. Many police forces and clinics will have their own protocols for collecting details of the case circumstances. However, it is important that the case history should be as detailed and comprehensive as possible. The information that should be collected is summarized in Figure 8.1. Information can provide the toxicologist with important clues as to what, or what not,

to look for and in cases where limited sample volumes have been submitted for analysis can make the difference between detection of an incapacitating agent and a negative finding.

In addition collection of a detailed case history and blood, hair and urine from the alleged victim, any suspected tablets, powders, drinks, containers or residues in cups, etc. should be collected and submitted for possible analysis. While this may be impracticable if the alleged drink spiking occurred in a bar, many alleged incidents take place in the home where exhibits are less likely to have been disposed of. The examination of drinking vessels may reveal drug or tablet residues. In cases where gelatin capsules have been added to hot drinks it is not uncommon to be able to see the melted capsule adhering to the base of the cup. If the subject has vomited and vomit stains are available, these may also be considered for analysis. Alleged incidents in public bars may be recorded on security video systems and examination of these can also provide useful evidence of an alleged incident.