INTRODUCTION:
Drug facilitated sexual assault (DFSA) has been defined in the Journal of Legal Medicine as “offences in which victims are subjected to non-consensual sexual acts while they are incapacitated or unconscious due to the effects of alcohol and/or drugs and are therefore prevented from resisting or are unable to consent”.

Concern about DFSA is increasing and people are becoming more aware of the risks posed by leaving a drink unattended in a bar, for example. Test kits are now available to the public which claim to be able to detect small amounts of alcohol and/or drugs and are therefore preventing those who are incapacitated or unconscious from being able to resist or are unable to consent.

RESULTS:
Test 1 – GHB could be detected in all drinks tested; down to 500 mg/250 mL in three drinks (vodka & coke, larger and ethanol/water) and 1.0 g/250 mL in the other two drinks (cider & Im-Bru).

Typical dose of GHB in DFSA = 1 – 2.5 g/250 mL)

Test 2 – for GHB was severely inhibited by the colour of the drinks and any colour changes perceived were subjective.

Drink Detective™ – was able to detect GHB in 13 of the 20 tests where the concentration of GHB was above the manufacturers limit of detection (1.0 g/250 mL). It was difficult to identify what constituted a positive colour change in many circumstances even in good lighting.

TESTS:
The first test kit used was the Drink Detective™ which is available via the internet. Each test kit comprises three separate test areas; one for each of the drugs listed above. A small plastic pipette is also provided to allow application of the drink sample to the test card.

The second test kit chosen was the Drink Safe Technology Drink Spike Detector coasters which are also available via the internet.

A drop of the suspected drink is applied to both test spots A and B, smeared with a finger and left to dry for 2 minutes. A positive result is when one of the test spots turns darker blue.

The manufacturers do acknowledge that a ‘transient blue hue which dissipates when dry’ may occur with the addition of water to the test.

For comparison, four lab-based presumptive tests were investigated. These required the addition of the test reagent to a few drops of the suspect drink on a porcelain spotting tile.

Test 1: bromocresol green : methyl orange (1:1) combined with modified Schweppes reagent (3:1)

Positive : dark green colour

Test 2 : 1 % cobalt nitrate

Positive : violet colour

Test 3 : Sodium hydroxide followed by 1% cobalt thioglucosinate

Positive : lavender colour

Test 4 : 5 drops DMSO followed by 3 drops of 0.5 M NaOH. Finally add HC104 to confirm.

Positive : canary yellow colour

SURVEY:
A survey of the drinking habits of staff and students at Strathclyde University was conducted to determine the most popular drinks consumed and therefore those to use in this study:

Smirnoff Vodka and Coke; Smirnoff vodka and Lemonade

Tennent’s larger

Im-Bru

Strongbow cider and

Jack Daniels and coke and

Ethanol/water as a control

METHODOLOGY:
Examples of each of the different types of drink were spiked with one of the three drugs to generate a range of drug concentrations (4 for each drug); both above and below the Drink Detective™ and Drink Safe Coaster limits of detection. A sample of each spiked drink was tested using the kit and the appropriate lab tests.

DISCUSSION AND CONCLUSION:
The biggest difficulty encountered with these tests was trying to see the positive colour change. For the lab-based tests it was not always easy to detect a colour change in a strongly coloured solution; especially in Im-Bru.

With the Drink Detective™ colour changes were not always clear and never as clear as those indicated on the kit itself. Despite that it was possible to determine a positive result: in 13 out of 20 drinks containing GHB; all drinks containing ketamine and in 3 of the drinks containing Rohypnol.

With Drink Safe Coasters a better result was obtained when testing for ketamine than GHB but the colour changes were not as clear as the manufacturer suggested. False positives with water were also observed.

These tests are sold to provide peace of mind to people drinking in pubs and clubs. They provide the chance to test any drink a person is suspicious of and allows them to discard anything testing positive. This study highlights the fact that, even in bright lighting conditions, a positive result is not clearly visible in many cases, and in 30 % of the samples tested above the limit of detection for GHB no positive result was given with Drink Detective and with Drink Safe Coasters only two drinks gave a positive response and then only at the highest concentration tested.

Both test kits were better at detecting ketamine than GHB or Rohypnol. Further testing of a wider range of drinks is needed to understand the effectiveness of these tests on coloured drink samples.

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Presumptive Testing of Date Rape Drugs in Alcoholic Beverages

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