



# ToxTalks:

A Bulletin for Healthcare Professionals Who Manage Poisoned Patients

In Partnership with the UVA Division of Medical Toxicology – Department of Emergency Medicine

November 2025

## Drug Testing Your Drink: A Misplaced Sense of Security

### Background

In recent years there has been a surge in products marketed to identify drinks that have been spiked with substances used in drug-facilitated crime (DFC). Social media advertises these products, which can easily be purchased and used by consumers without laboratory or professional oversight. These products claim to change colors in the setting of certain substances, such as gamma-hydroxybutyrate (GHB) or ketamine. Available products include beverage coasters, stir sticks, and nail polishes that change color when placed in contact with a spiked beverage. Conceptually, these products are very appealing due to ease of use and purported ability to prevent DFC. However, their effectiveness in practice is questionable. The efficacy of these products is poorly established, and reliance on them may provide a false sense of security while distracting from more important methods of preventing DFC, such as maintaining situational awareness and responsible drink sourcing.

### Limitations

The primary shortcoming of these tests is a narrow scope of detection. These tests claim to identify specific substances, such as ketamine, GHB, or some benzodiazepines. Yet, there is no single class of substances utilized in DFC, and even within each class there may be many structurally unique agents that will not be detected by these tests. Over recent years, there has been a rise of novel benzodiazepines, opioids, and



This coaster, developed by [Drink Safe Technologies](http://www.drinksafe.com), promises to detect date rape drugs including Ketamine and GHB.

**BRPC STAFF****Director**

Christopher Holstege, MD

**Nursing Director**

John Gilday, MSN, NREMT-P

**Medical Toxicologists**

Andy Baer, MD

Nathan Charlton, MD

Abigail Kerns, MD

Avery Michienzi, DO

Justin Rizer, MD

**Medical Toxicology Fellows**

Jacob Britton, MD

Sandra Nixon, MD

Nick Poole, MD

Anna Zmuda, MD

**Epidemiologist**

Rita Farah, PharmD, MPH, PhD

**Poison Specialists**

Andy Anderson, RN

Stephanie Beach, BSN

Andre Berkin, BSN, CSPI

Michael Brookshire, BSN, CSPI

Jenni Goodwin, BSN, CSPI

Angela Hooe, FNP-C, BSN

Akash Pandit, PharmD

Margo Redinger, RN

William Richburg, MSN

Lisa Turner, BSN, CSPI

Scott Warlitrer, MSN

**Public Health Educator**

Kristin Wenger, MA, BS

**Administrative Specialists**

Heather Collier

Debbie Philkill

synthetic sedatives all with similar clinical effects that evade these consumer tests. The continued emergence of new synthetic psychoactive substances produced in clandestine laboratories makes it nearly impossible for over-the-counter products to keep pace.

A 2023 study evaluated Drink Safe Technology's drug detection coasters, which has two test areas users can place drops of their drink to identify if ketamine or GHB is present. Results of the study showed high rates of both false positives and false negatives. Furthermore, because drink spiking is a relatively infrequent event, even a modest error rate translates to significant inaccuracy in real-world use. False negatives can provide dangerous reassurance to individuals and false positives may result in inappropriate accusations with significant legal and social consequences. Most detection coasters on the market are similar in design, limits of detection, instructions for use, and stated limited liability.

Even when accurate, the coasters' limits of detection may exceed the doses sufficient to cause amnesia, loss of consciousness, or other central nervous system-depressant effects. This is particularly true with co-ingestion of ethanol. Other operational constraints include slow development times of 5 to 10 minutes and difficulty interpreting colorimetric changes in dimly lit social environments.

***Mechanism***

Any beverage that matches or masks the test's reactive color (such as blue colored drinks) cannot be reliably tested, nor can any beverage containing milk products, crème, or oily liquors. GHB's test reagent was identified as bromocresol green, ketamine's testing agent was identified as cobalt thiocyanate. The colorimetric testing relies on pH of the beverage to cause color change in drinks containing GHB, anticipating spiked beverages will be more basic. The above study found tap water, ethanol plus water, and Bailey's coffee all tested positive or inconclusive for GHB when there was no GHB added. Any solution with a pH of 5.5 or greater tested inconclusive or positive for GHB as well. No consumable beverages spiked with ketamine HCl, which is the common street form of ketamine, tested positive for ketamine; twenty-eight beverages with various levels of ketamine at or above reported level of detection were tested.

**Conclusion**

Most cases of DFC involve voluntary co-ingestion of alcohol with opportunistic administration of readily available substances. Often these substances are rapidly metabolized in the body and challenging to detect even with advanced analytical testing. When DFC is suspected, confirmation requires highly sensitive and specific analytical testing, such as liquid chromatography-tandem mass spectrometry. While not available in real-time, these methods are the gold-standard for accuracy and reliability.

Drink-testing products like drug detecting coasters are well-marketed but not scientifically reliable based on available data. There are limited drinks on which they can be tested, they are hard to interpret in low light, and they require time to develop. They have poor sensitivity and specificity combined with a low pretest probability of positivity, which can lead to both high false positive and false negative rates. High false positive rates can facilitate a sense of danger when none is present leading to potential false accusations and investigations. Coasters that only test for GHB and ketamine do not test for other common agents in DFC. The public does not know which agents are common in DFC and these coasters may foster a false sense of security while ineffectively testing for low prevalence agents.

As early as 2018, the Maryland Coalition Against Sexual Assault advocated against the use of drug detection coasters citing false sense of security, poor detection, and limited use in dim lighting. Prevention efforts should instead be placed on maintaining situational awareness, rapid reporting of suspected DFC incidents, and prompt forensic testing when exposure is suspected.

*References available upon request.*