

BTNX Rapid Response™ Xylazine 2.0 Test Strip

1000 ng/mL

Introduction

Xylazine, originally developed as a veterinary sedative and analgesic, has increasingly become a cause for concern due to its emerging role as a drug of abuse. While primarily intended for use in animals, the drug's psychoactive properties have led to its illicit use in human populations. This trend raises significant public health and safety issues, as the misuse of xylazine poses various risks and challenges.

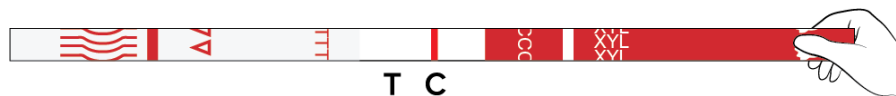
The emergence of Xylazine as a drug of abuse is characterized by its illicit use in combination with other substances, such as opioids, to enhance the effects of these drugs. This has been observed particularly in certain regions where the availability of xylazine is high. Its sedative and muscle-relaxant properties, when abused, can lead to a range of adverse effects, including respiratory depression, cardiovascular complications, and central nervous system depression.

One of the notable concerns is the association of xylazine with opioid misuse, contributing to the opioid epidemic. The combined use of xylazine and opioids can result in heightened sedation and respiratory depression, increasing the risk of overdose and fatalities. Furthermore, the clandestine production and distribution of xylazine for recreational purposes often involve varying levels of purity and potential contamination, compounding the health risks associated with its abuse.

The **Rapid Response™ Xylazine 2.0 Test Strip** from BTNX is specifically designed for the swift screening of xylazine in liquid/powder samples. This test incorporates an antibody that selectively identifies xylazine. Similar to other harm reduction test strips, it operates on the competitive binding principle. If xylazine is present in the sample at a concentration surpassing the designated cut-off, a singular-colored line will appear in the test region.

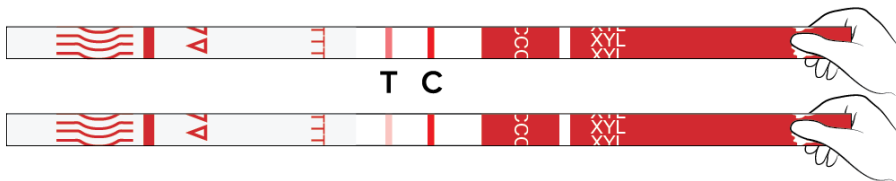
Positive - Xylazine Detected

Only one colored line appears in the control region (C). No apparent colored line appears in the test region (T).



Negative – Xylazine Could Not be Detected

Two colored lines appear on the membrane. One line appears in the control region (C) and another line appears in the test region (T).





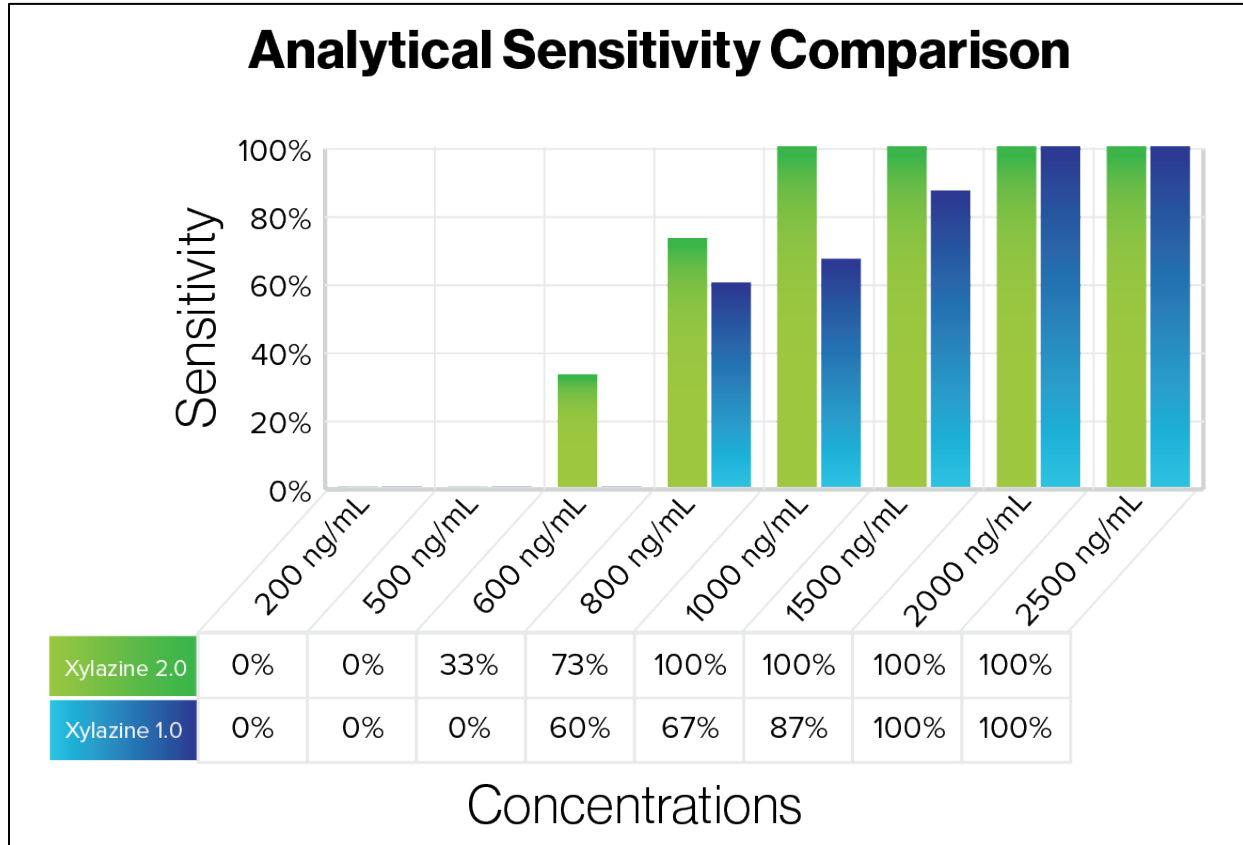
Test Performance – What has been improved?

BTNX's initial version of the Rapid Response™ Xylazine Test Strip was evaluated by both the Johns Hopkins Bloomberg School of Public Health, in collaboration with the National Institute of Standards and Technology (NIST), and the Center for Forensic Science Research & Education (CFSRE). Sisco et al. reported that the test consistently detected xylazine in samples with concentration >2 µg/ml and yielded a sensitivity of 97.4%, a specificity of 100%, and an overall accuracy of 98.6%.¹ In the CFSRE study, the test demonstrated a sensitivity of 100%, specificity of 85%, and precision of 91%.² Both studies identified the lidocaine as a cross-reacting substance that may lead to false positives in field. As a result, BTNX continued to improve the specificity to reduce cross-reactivity with Lidocaine and developed the **Rapid Response™ Xylazine 2.0 Test Strip**.

Xylazine 2.0 Test Strip vs Xylazine Test Strip

Analytical Sensitivity Comparison

Although both tests detect xylazine with 100% sensitivity at concentrations above 2 µg/mL, the **Rapid Response™ Xylazine 2.0 Test Strip** has demonstrated improved sensitivity at lower concentration ranges (see Figure below). As noted by Sisco, Appley et al. from the study at National Institute of Standards and Technology, this new Xylazine 2.0 Test Strip has an analytical sensitivity of 1 µg/mL.³





Analytical Specificity

Important Note: The following compounds were observed to cross-react with the Xylazine 2.0 Test Strip at the listed concentration. However, these compounds are currently not identified to be common adulterants in the illicit drug supply.

Compounds	Concentration
Clonidine	0.3 mg/mL
Romifidine	0.8 mg/mL
Tizanidine	1 mg/mL
Brimonidine	2 mg/mL

The following compounds were spiked into water, respectively, to examine possible cross-reactivity. **No false positive was observed at 100 µg/ml.**

(-)-Ephedrine	Chlorpheniramine	Oxalic Acid
(+)-Naproxen	Creatine	Penicillin-G
(+/-)-Ephedrine	Dextromethorphan	Pheniramine
4-Dimethylaminoantipyrine	Dextrophan tartrate	Phenothiazine
Acetaminophen	Dopamine	Procaine
Acetone	Erythromycin	Protonix
Albumin	Ethanol	Pseudoephedrine
Amitriptyline	Furosemide	Quinidine
Ampicillin	Glucose	Ranitidine
Aspartame	Guaiacol Glyceryl Ether	Sertraline
Aspirin	Hemoglobin	Tyramine
Benzocaine	Imipramine	Trimeprazine
Bilirubin	(+/-)-Isoproterenol	Venlafaxine
b-Phenylethyl-amine	Methadone	Ibuprofen
Caffeine	Vitamin C (Ascorbic Acid)	Cocaine
Chloroquine	Methamphetamine	Clonidine
Brimonidine	Romifidine	Tizanidine

Some common cutting agents and opioids were tested at higher concentrations. No false positives were observed at the concentrations listed below. **Lidocaine does not cross react with the Rapid Response™ Xylazine 2.0 Test Strip.**³

Compounds	Concentration
Lidocaine	5 mg/mL
Quinine	5 mg/mL
Diphenhydramine	10 mg/mL
Caffeine	10 mg/mL
Phenacetin	5 mg/mL
Acetaminophen	5 mg/mL
Dimethylsulphone	10 mg/mL
Levamisole	10 mg/mL
Doxylamine	5 mg/mL



Disopyramide	3 mg/mL
MDMA	5 mg/mL
Methamphetamine	5 mg/mL

Ordering Information

Rapid Response™ Xylazine 2.0 Test Strip is now available to purchase as Rapid Response™ Xylazine Test Strip (Liquid / Powder) under the product code XYL-18S2-100 from Lochness Medical Supplies in the USA and BTNX Inc. in Canada and the international market.

All XYL-18S2-100 kits with expiration dates on or after 2026-01-17 (YYYY-MM-DD) will contain the Xylazine 2.0 strip and with a Lot number beginning with DOAB.

References

1. Sisco E, Nestadt DF, Bloom MB, et al. Understanding sensitivity and cross-reactivity of xylazine lateral flow immunoassay test strips for drug checking applications. *Drug Test Anal.* Published online December 3, 2023. doi:10.1002/dta.3612
2. *Evaluation of xylazine test strips (BTNX) for drug checking purposes.* The Center for Forensic Science Research & Education. <https://www.cfsre.org/nps-discovery/drug-checking/evaluation-of-xylazine-test-strips-btnx-for-drug-checking-purposes>
3. Sisco E, Appley MG, Pyfrom EM, Banta-Green CJ, Shover CL, Molina CA, et al. Beyond Fentanyl Test Strips: Investigating Other Urine Drug Test Strips for Drug Checking Applications. *ChemRxiv.* 2024; doi:10.26434/chemrxiv-2024-c39kc This content is a preprint and has not been peer-reviewed.