

Performance assessment: Xylazine test strips

The purpose of this resource is to share results from a performance assessment conducted by [Ontario's Drug Checking Community](#) of xylazine test strips available for sale and marketed for harm reduction in Canada by [BTNX](#) and [Trimedica](#).

This performance assessment used samples of drugs collected from the unregulated (or “street”) drug supply and followed practices used by community agencies to check drugs using test strips.

Summary of our findings

- BTNX (1.0) and Trimedica xylazine test strips **reported the correct result 91% and 93% of the time, respectively**
- BTNX (1.0) and Trimedica xylazine test strips **successfully detected xylazine in the lowest amount we quantified** in the samples included in this performance assessment: as low as 0.11% of a sample
- In line with existing research, **ketamine, levamisole, and lidocaine caused false positives for xylazine** by BTNX (1.0) and/or Trimedica test strips
- **When instructions to use are closely followed, BTNX (1.0) and Trimedica xylazine test strips are effective tools for detecting xylazine in the trace amounts that are circulating in Ontario's unregulated drug supply**

Our motivation

In Canada, when test strips are used to check drugs, they are considered [consumer products](#), meaning they are not assessed by Health Canada to determine their safety, effectiveness, or quality prior to being authorized for sale. This is in contrast to test strips used to check urine, which are considered [medical devices](#), and are assessed by Health Canada. In the absence of any regulation of tools and technologies used

for community-based drug checking, our public health and safety program assesses and publicly shares information on their performance as part of our commitment to:

- Ensuring service user safety
- Supporting community agencies to deliver the best possible drug checking service
- Accurate monitoring of the unregulated drug supply and education on drug market trends
- Addressing inequities experienced by people who use drugs in our health and social systems

At this time, there is no perfect drug checking tool or technology:

- All have limitations, particularly when it comes to checking drugs most likely to contribute to overdose and related harms (i.e., those bought or got as unregulated opioids)
- All have trade-offs in terms of ease of use, quality of results, turnaround times for results, and cost

What is most important is that service providers understand that all drug checking tools and technologies have limitations, understand what the limitations of the tools and technologies they use are, and can clearly communicate those limitations to service users.

Our process

This performance assessment included:

- 120 [BTNX xylazine test strips](#) (1.0, product code XYL-18S2)
- 120 [Trimedix xylazine test strips](#)
- 120 samples of unregulated (or “street”) drugs that had already been checked as part of our provincial public health and safety program using mass spectrometry technologies

The BTNX (1.0) xylazine test strips had a cut-off concentration of 1,000 ng of xylazine/1 mL of water. The Trimedix xylazine test strips had a cut-off concentration of 200 ng of xylazine/1 mL of water. These cut-off concentrations imply both strips should be able to detect xylazine in incredibly trace amounts.

The 120 samples of unregulated drugs were collected from people who use drugs (i.e., service users) in Toronto or Peterborough between August 2024 and August 2025 by [our collection site members](#). Collected samples were analyzed by our analysis site members (the clinical laboratory at the [Centre for Addiction and Mental Health](#) or [St. Michael’s Hospital](#)) using [gold standard technologies that are validated for overdose prevention drug checking](#), including gas chromatography- or high-resolution liquid chromatography-mass spectrometry.

Mass spectrometry results are considered the “reference result,” which test strip results were compared to. Of the 120 samples selected by our team for inclusion in this performance assessment, 90 contained xylazine and 30 did not (as per the reference result).

Samples had been turned into solutions with a concentration of 10 mg of drug/1 mL of methanol for mass spectrometry analysis. As a first step in preparing samples for this performance assessment, we evaporated the methanol, returning each sample to a powder. Following the instructions provided by BTNX and Trimedix, we again turned each sample into a solution with a concentration of approximately 1 mg of drug/1 mL of water (equivalent to approximately 5 mg of drug/5 mL of water).

Both test strips were dipped into each solution, one at a time, allowing about 15 seconds for the solution to be absorbed by the strip. The strip was then removed from the solution and set aside on a flat clean surface to await results. Results for xylazine were positive or negative. None of the test strips used reported an invalid result. Results were recorded and compared to the reference result.

Our findings

	BTNX (1.0) xylazine test strips	Trimedix xylazine test strips
Lowest amount of xylazine detected that we quantified¹	0.11% of a sample	0.11% of a sample
Sensitivity² How often the strips correctly reported a positive result (i.e., a true positive)	90%	100%
Specificity³ How often the strips correctly reported a negative result (i.e., a true negative)	93%	73%
False negative rate⁴ How often the strips incorrectly reported a positive result as a negative result	10%	0%
False positive rate⁵ How often the strips incorrectly reported a negative result as a positive result	7%	27%
Accuracy (or Correctness) How often the test strip result matched the reference (i.e., mass spectrometry) result	91%	93%

¹ Using high-resolution liquid chromatography-mass spectrometry, we often report the precise amount (or concentration) of xylazine in the samples we check. The lowest amount of xylazine quantified in the samples included in this performance assessment was 0.11% of a sample (0.11% of 10 mg/mL is equal to 0.011 mg/mL or 11,000 ng/mL). Based on their advertised cut-off concentrations of 1,000 ng/mL for the BTNX (1.0) strips and 200 ng/mL for the Trimedix strips, both test strips should be able to detect xylazine in much more trace amounts than we quantified and are currently finding in Ontario's unregulated fentanyl supply.

² The sensitivity of the BTNX (1.0) xylazine test strips was impacted by false negatives for (i.e., missing) xylazine in nine samples included in this performance assessment. See note 4 to learn more.

³ The specificity of the BTNX (1.0) and Trimedix xylazine test strips was impacted by false positives for xylazine in ten samples included in this performance assessment. See note 5 to learn more.

⁴ The BTNX (1.0) xylazine test strips missed that xylazine present (i.e., reported a false negative) in nine samples included in this performance assessment. For six of those nine samples, we believe xylazine was below the cut-off concentration (i.e., limit of detection) for the BTNX (1.0) strips. The Trimedix test strips, which have a much lower cut-off concentration (200 ng/mL), did find xylazine in those six samples. Xylazine was present in too low of an amount for us to quantify (i.e., found below our limit of quantification) in those six samples, which implies it was present in very trace amounts. Understanding why the BTNX (1.0) xylazine test strips missed xylazine in the other three samples requires further research.

⁵ One sample containing ketamine and one sample containing lidocaine caused false positives for xylazine by the BTNX (1.0) strips. Six samples containing ketamine and two samples containing levamisole caused false positives for xylazine by the Trimedix strips. Research by our drug checking colleagues found that [ketamine, levamisole, and lidocaine can cause false positives by xylazine test strips](#). In the absence of a quantitative method for ketamine, levamisole, or lidocaine, we are unable to determine precisely how much of these drugs were in the samples with a false positive result.

[BTNX has released a new version \(2.0\) of their xylazine test strip](#), with advertised improvements such as a reduced likelihood of lidocaine causing a false positive for xylazine. **We will assess BTNX's 2.0 xylazine test strips at a later time.**

Learn more

Education is crucial for understanding when to use test strips, how to use test strips, and what test strip results mean. You may also be interested in:

- Other [resources on drug checking tools and technologies](#) developed by our program
- The British Columbia Centre on Substance Use Drug Checking Program's [test strip training and resources](#)
- [Ontario Harm Reduction Distribution Program](#) resources (please email info@ohrdp.ca to request)

We are committed to ensuring our public health and safety program adds value to the communities it serves. If you have any questions, comments, or feedback about this resource or our program, please contact hello@drugchecking.community.

This performance assessment was undertaken by Meera Bissram, Dr. Sarah Delaney, Raisa Iffat, Karen McDonald, Claire Snelgrove, Dr. Cristiana Stefan, and Hayley Thompson. This resource was reviewed by Jason Sereda and our colleagues at the Ontario Harm Reduction Distribution Program.

About Ontario's Drug Checking Community: Ontario's Drug Checking Community is a national leader in drug checking service delivery and community-led unregulated drug market monitoring and education. This public health and safety program offers the most precise, timely, and accessible information on the unregulated drug supply to reduce harm and inform evidence-based responses to the worsening toxic opioid supply crisis.

Our program is comprised of a group of members, including collection sites, analysis sites, and a small central team that operates from within St. Michael's Hospital in Toronto.

Our work would not be possible if people who use drugs did not donate their drugs to our program in an effort to reduce the harms associated with using unregulated substances and facilitate community-led drug market monitoring and education.

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