Medetomidine Test Strips

Purpose

Medetomidine test strips (MTS) are immunoassay strips that detect the presence of medetomidine in drug samples. MTS are a useful tool in drug checking services because they can detect medetomidine in concentrations below the limit of detection of FTIR.

MTS have been shown to work well to detect medetomidine in opioid drug samples. Preliminary results from an MTS pilot study conducted by BCCSU on samples collected in B.C. demonstrated high sensitivity to trace amounts of medetomidine, below the limit of detection of FTIR. Cross-reactive substances that may produce a false-positive result are being evaluated.

Scope

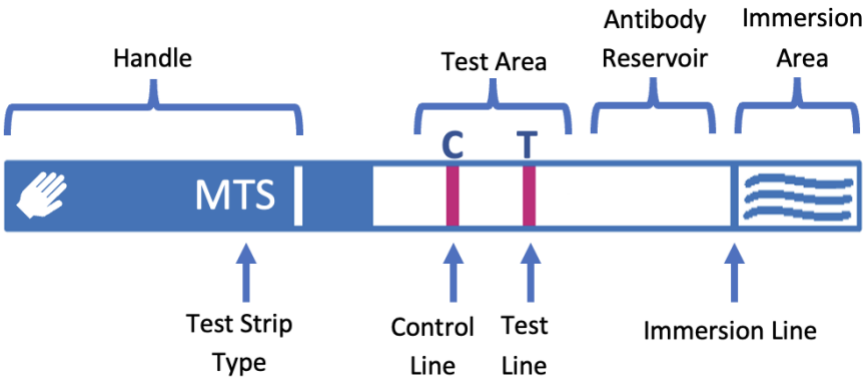
Below is the step-by-step procedure for using MTS as part of FTIR drug checking services. A combined test strip procedure is recommended for an efficient workflow that minimizes the amount of drug required for testing. Additional test strip procedures, including fentanyl test strips (FTS) and benzodiazepine test strips (BTS), are available on our website.

MTS are recommended for testing all opioid samples in community drug checking services. In addition, MTS may be offered in provincial test strip programs, but similar to BTS, are not currently recommended for take-home use.

Technicians and other staff who use test strips should be familiar with safe handling, drug crushing, and disposal procedures prior to using any test strips.

Understanding Test Strips

MTS work the same as other immunoassay strips. Dipping the strip into a solution containing the sample will draw the liquid up through a band of antibodies, which are proteins that stick to certain molecules. The antibodies are dyed, so as they wick up the test strip, they stick to the control and test lines, as shown below. While the control line must appear to be valid, the test line will not appear if the antibodies stick to the target substance (i.e., medetomidine).



Setup

Before starting, ensure a clear work area on an impermeable surface where the technician will not be bumped by passersby. Gather the following supplies:

PPE	Cleaning supplies	Testing equipment	
Nitrile gloves	Alcohol swabs	Sample cup	2 ml flip-top plastic tube
Face mask (optional)	Paper towels	Microscoop (in testing package) / lab spatula	Tap water (ideally in a gooseneck squeeze bottle)
		Mortar and pestle / drug crusher	Drug sample
		Plastic bag	MTS test strip

Check that the test strip has been stored correctly, the package is not punctured, and the expiry date has not passed (example below). Do not use damaged, opened, or expired test strips, as their results may be invalid.

Expiry date on the test strip package.


2 ml flip-top tube.

Procedure

STEP 1: Preparation

1. Don disposable gloves and (optional) face mask.
2. If chunky, thoroughly crush the sample in a plastic bag with the mortar and pestle.

STEP 2: Prepare Solution

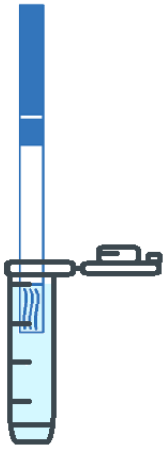
Depending on the sample:

	Opioid Sample	Non-Opioid Sample
3.	Add **1-2 mg** of the sample to the plastic tube (0.2x microscoop)	Add **5-10 mg** of the sample to the sample cup (1x microscoop)
4.	Add **1 ml** of water to the same plastic tube	Add **5 ml** of water to the same cup
5.	Close and shake for **30 seconds** to dissolve	Mix with microscoop to dissolve

Note: While the dilution ratio is the same, the volume for opioids is reduced for co-testing strips.

STEP 3: Test Sample

6. Dip the MTS to the immersion line (see diagram to right) and wick for **15 seconds**.
7. Set the MTS down on a non-absorbent surface. Be mindful of cross-contamination. Wait **2 minutes** before reading the results.
8. Assess test strip under a direct, bright light. If the result appears positive at first, wait a full 5 minutes in case a faint test line shows. Do not interpret after 10 minutes.



STEP 4: Clean and Sanitize Workspace

9. Dispose of solution in kitty litter or an activated charcoal disposal pouch.
10. Sanitize work area and tools using isopropyl alcohol wipes.
11. Dispose of all testing materials, including the used test strip and gloves.

Interpreting Test Results

1. Positive Result

A positive test strip result (control-line only) indicates that medetomidine is **detected**.

Considerations:

If result is unexpected, consider repeating the test to confirm. (e.g., stimulants containing medetomidine).

2. Negative Result

A negative test strip result (both lines) indicates that medetomidine is **not detected**

Considerations:

- The portion of the sample tested with MTS may not contain medetomidine, but the larger sample may (aka. “hot-spots”). See the chocolate chip cookie effect.
- The sample tested may not have been crushed/shaken thoroughly enough to fully dissolve in the solution. See the drug crushing procedure.
- Medetomidine may still be present below the MTS detection threshold (<1,000 ng/ml).

3. Invalid Result

If the control line does not appear, the test is **invalid**.

Invalid test results can occur from:

- Improper handling or storage.
- Testing substances that are not compatible with test strips (e.g., alcohol).

- Saturating the result area (above the immersion line).
- Expired test strips.
- Damaged test strip packaging, introducing humidity.
- Damaged test strip due to bending.

Re-testing:

1. Repeat the test using an unexpired test strip from an intact package.
2. Carefully conduct the test to rule out operator error.
3. Ensure the test strip is being read in the correct direction.
4. Dispose of all expired test kits.

Unexpected Performance

Test strips can sometimes perform unexpectedly, providing results that are either very unlikely or known to be false. This can be due to unknown manufacturing errors and may affect a number of test strips in a batch ("bad-batch"). It is important to document these instances:

1. Take a photograph of the used test strips with unexpected results.
2. Record the 10-character lot code(s) (e.g., DOA2204278).
3. Write a brief description of how the test strip performance was unexpected.
4. Send the above items in an email to notify BTNX (support@btnx.com). For BCCSU-affiliated drug checking services in B.C. (cc: drugchecking@bccsu.ubc.ca).

Additional Resources

- BTNX Rapid Response Medetomidine Test Strips (Liquid/Powder) – 100 Tests
- Toward the Heart: Medetomidine
- BC Centre for Disease Control: Medetomidine Substance Information Sheet

References

Amate, Anita, and Marya Lieberman. "Chiral Sensitivity of Medetomidine Lateral Flow Immunoassay Test Strips." *Harm Reduction Journal* 23, no. 1 (2026): 19. https://doi.org/10.1186/s12954-025-01387-6.

Angelucci, Jen. *Piloting Medetomidine Immunoassay Test Strips in Community Drug Checking Services: Preliminary Results.* British Columbia Centre on Substance Use, 2026. https://drugcheckingbc.ca/wp-content/uploads/sites/4/2026/01/MTS-Pilot-Preliminary-Results-and-Interim-Recommendations.pdf.

BTNX. “BTNX Rapid Response Medetomidine Test Strips (Liquid/Powder).” Accessed March 6, 2026. https://strategicstrike.blob.core.windows.net/lochness-products/resources/RP5609800_MED-18S2-Product Insert-738.pdf.

TDCS. “Performance Assessment: Medetomidine Test Strips.” *Toronto’s Drug Checking Service*, January 2025. https://drugchecking.community/resource/medetomidine-test-strips/.

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