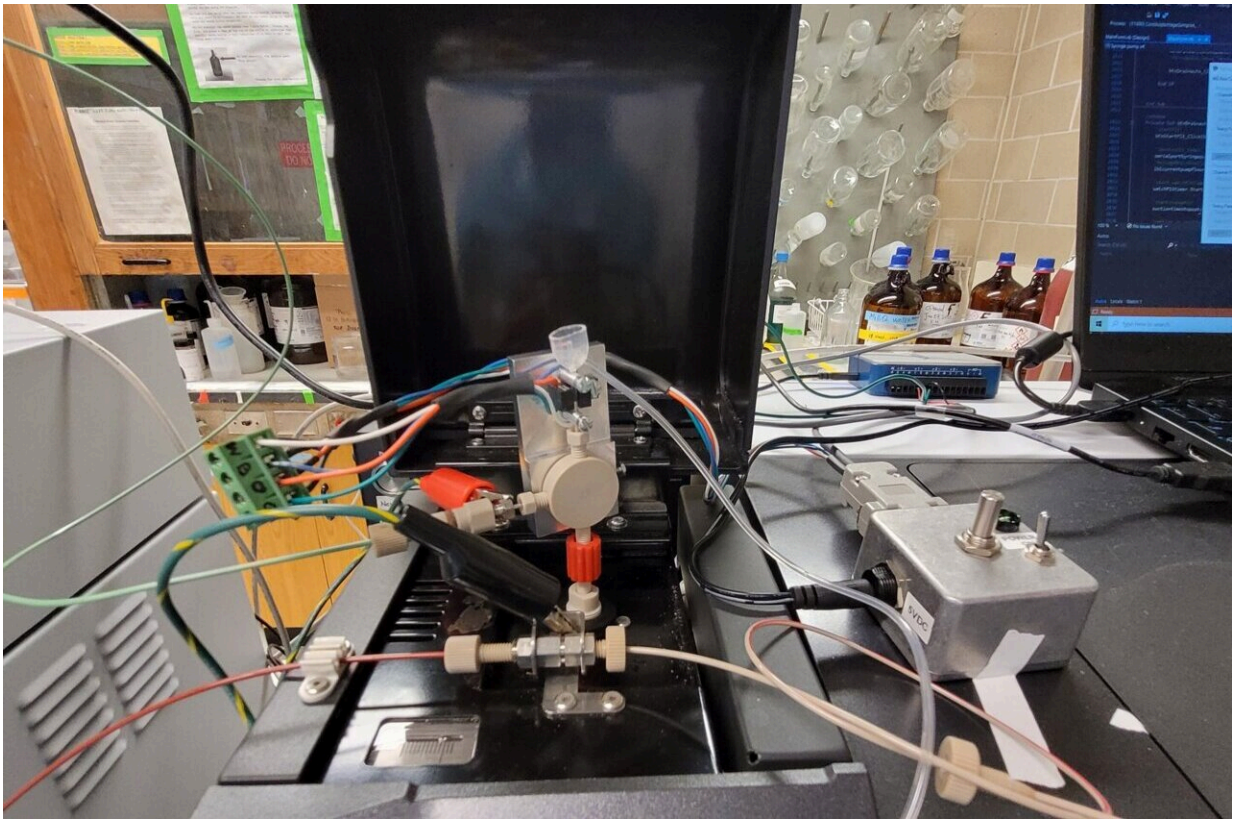


New technique can quickly detect fentanyl and other opioids

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Picture of the microfluidic open interface system described in the press release.
Credit: University of Waterloo

University of Waterloo researchers have developed a new blood testing method that can detect potent opioids much faster than traditional

approaches and potentially save lives.

The method, the latest effort by Waterloo researchers and entrepreneurs to lead health innovation in Canada, can simultaneously analyze 96 [blood samples](#) that could contain opioids such as [fentanyl](#) in under three minutes—twice as quickly as other techniques.

A [study](#) detailing the new blood testing method was published in the journal *Analytical Chemistry*.

"The difference between our blood testing method and traditional methods used in laboratories and hospitals is that we can do it faster and reach the same conclusion," said Emir Nazdrajić, a postdoctoral fellow in Waterloo's Department of Chemistry and co-author of a study that details the new technique.

"Let's say someone who has overdosed is in the [emergency room](#), and doctors need to quickly determine what they've taken to treat them effectively. The speed of our method can be lifesaving."

In 2022, over [70,000 Americans died of overdoses from fentanyl](#), an opioid that is 50 times more powerful than heroin. About 7,000 people die from fentanyl annually in Canada, nearly one-third of which occurs in British Columbia, which is among the worst rates per capita in North America.

When using the Waterloo-designed method, the researchers place a small amount of blood in a 96-well plate with a phosphate buffer. The well plate is then put in a machine that agitates the samples, and a solid phase microextraction (SPME) probe is introduced to enhance the drugs of interest. The sample is then analyzed by a mass spectrometer coupled to a microfluidic open interface, with results available in about 90 seconds.

"There is a high demand for rapid screening methods using [mass spectrometry](#) (MS) that can decrease the turnaround time, cost, and limits of quantitation of existing methodologies," said Dr. Janusz Pawliszyn, corresponding author of the study and a professor in Waterloo's Department of Chemistry. "Our method targets not only fentanyl but other drugs and certain types of diseases."

More information: Emir Nazdrajić et al, Rapid Analysis of Fentanyl and Fentanyl Analogues from Whole Blood Using SPME Coupled to the Microfluidic Open Interface, *Analytical Chemistry* (2023). [DOI: 10.1021/acs.analchem.3c04354](#)

Provided by University of Waterloo

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