

Researchers develop quick test for fish toxin

27 February 2015



A new Flinders device detects toxins in fish. Credit: Shutterstock

Flinders University researchers have invented a revolutionary method to test for food poisoning in fish.

Using a credit card-sized device called a microfluidic chip, the researchers have developed a way to test for [histamine](#) – a potentially toxic compound – without the need to use complex chemical additives to the fish.

Histamine is a naturally occurring organic compound found in a range of products, including fish and red wine. A known allergen, histamine concentrations can increase when food spoils, leading to potentially fatal [food poisoning](#).

Resembling a credit card, the purpose-built microfluidic chip is fitted with electrodes that detect histamine levels as the sample passes through a tiny pipe in the plastic device.

"We extract different compounds from the fish in liquid form, and these compounds will pass through the device at different rates," said Associate Professor Claire Lenehan, a lecturer in forensic and analytical chemistry.

"We can tell what compounds are histamine, and how much histamine is contained in the sample, based on the rate at which the compounds pass through the device," she said.

Associate Professor Lenehan, who built the chip with Flinders PhD candidate Leigh Thredgold, said the method is a much more efficient and cost-effective way to test for potentially toxic histamine levels in fish.

"At the moment the extraction of compounds takes longer than the actual analysis because you have to pulverise the fish, add a chemical to turn it into a different chemical and then test it," she said.

"It's an indirect testing method because you're not actually detecting histamine at all; you're detecting a product of histamine.

"Our method is a much simpler way because all you do is extract the sample and pipette it into the device without having to chemically treat it first."

In addition to preventing food poisoning, Associate Professor Lenehan said the device could be used by consumers who are allergic to histamine.

"For the seafood industry, our method is a simple, cost-effective and rapid way to monitor food quality and reduce the incidence of [food poisoning](#).

"It could also be marketed to consumers who have histamine sensitivity because they can use the device to test a product before they consume it."

The research has just been published in the international journal *Analytical Methods*.

More information: "Direct detection of histamine in fish flesh using microchip electrophoresis with capacitively coupled contactless conductivity detection." *Anal. Methods*, 2015,7, 1802-1808 [DOI: 10.1039/C4AY02866J](https://doi.org/10.1039/C4AY02866J)

Provided by Flinders University

APA citation: Researchers develop quick test for fish toxin (2015, February 27) retrieved 20 September 2020 from <https://medicalxpress.com/news/2015-02-quick-fish-toxin.html>

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