Smart device detects food contaminants in real time

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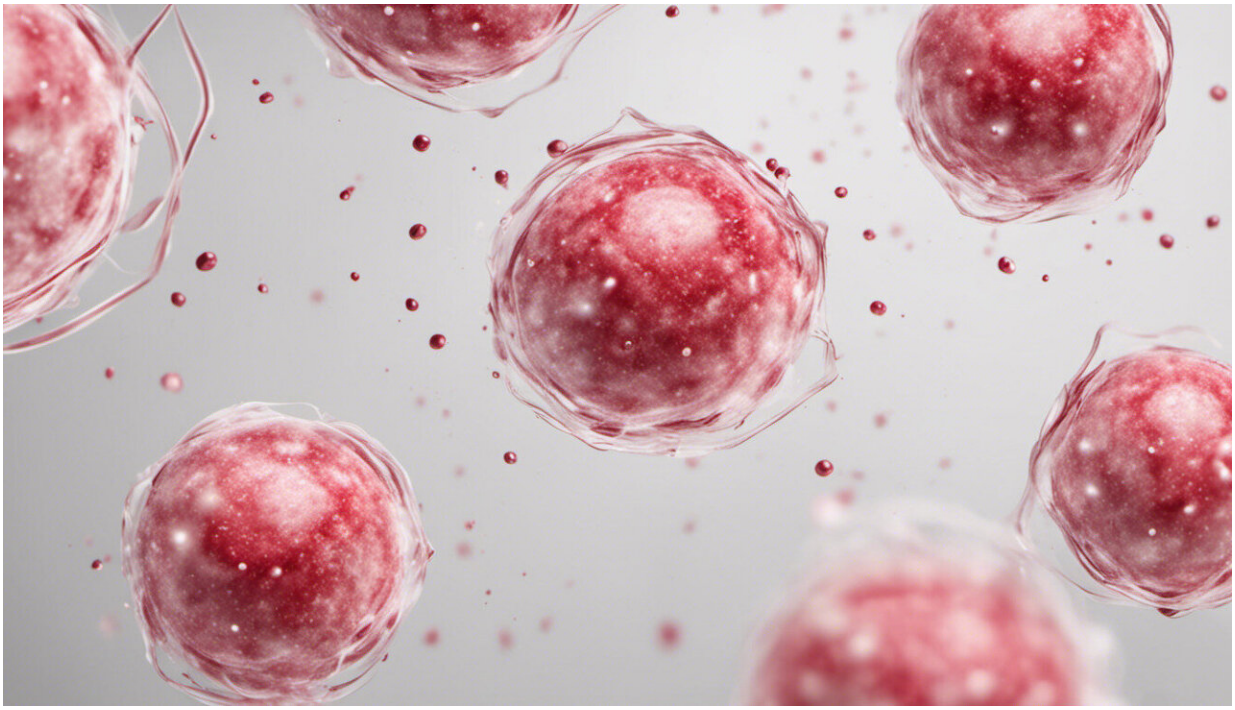

Credit: AI-generated image (disclaimer)

Some consumers place importance on locally grown or organic food. Others want the products they purchase to look and taste good. Yet others focus on low prices. However, no matter what their other requirements, everyone would like their food to be free of contaminants, which makes it quite worrying that over 97 percent of European food

products contain pesticide residues. The problem is that current contamination testing processes can be long and expensive, and can only be conducted by specialist personnel.

A new device developed by the INSPECTO project team may now offer an affordable, fast and reliable solution to this problem. Coordinated by Inspecto Solutions Ltd, the EU-funded project has introduced a portable device that identifies in real time chemical contamination in food.

The scanner device can detect chemicals at concentration levels specified by regulatory authorities. It also makes it possible for businesses to tailor their testing to their needs, scanning for specific sets of liquid or solid contaminants. Being able to conduct multiple scans in one day means they don't have to wait for results. What's more, the person operating the device doesn't have to be a skilled chemist or technician, meaning that expensive and lengthy lab tests are eliminated. Farmers are able to measure pesticide residue levels on their crops and food producers can check for contaminants when purchasing produce. Additionally, supermarkets can conduct tests before distributing fruits and vegetables and quality assurers can enforce contaminant policies in the field.

"We developed a portable device to ensure the safety of the product 'from farm-to-fork' and help food manufacture control their entire supply chains," states Inspecto Solutions Business Development Vice-President Yair Moneta in a news item published on Cision PR Newswire. "It can disrupt the entire way contaminants are currently being tested, reducing the risk of recalls, food waste, and potential lawsuits."

How the portable device works

A sample of the product to be tested is placed in a disposable capsule

that is specific to the contaminant it can detect. The capsule is inserted into the device that—with the simple press of a button—scans the sample and processes it automatically within minutes. The result provides a quantified measurement of the chosen contaminant.

The technology that makes this possible is called surface-enhanced Raman spectroscopy that causes contaminant molecules to attach to enhancement molecules. This makes the impurity signals visible to the machine. The level of diagnosis achieved is in the range of parts per billion, which is the sensitivity needed for food safety testing.

"Since each scan is conducted in real-time and the results are stored on the cloud, Inspecto can offer additional services to our customers that, until now, were impossible for them to implement," explains Inspecto Solutions CEO Avner Avidan. "For example, it enables our customers to approve or reject a shipment on the spot based on the results, and they can even use blockchain to store their information more securely."

INSPECTO: A disruptive portable device with an innovative Method for Pesticides and contaminants Detection in Food concluded in 2018, but its project team continues to work towards higher safety standards in the food industry. Its current focus is on helping to ensure that the world's most commonly grown crops are contaminant-free.

More information: For more information, see INSPECTO project website: www.inspecto.io/

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