

New Smart Packaging Keeps Fruits And Vegetables Fresh For Months By Killing Bacteria

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Monit Khanna

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Highlights

The smart packaging has been developed by researchers from Harvard and the Nanyang Technological University. However, what looks like yet another plastic alternative is actually quite environmentally friendly as it is biodegradable.

The packaging material is made via a process dubbed electrospinning where charged threads of polymer solution are drawn out into fibres.

The crucial material in this is a protein dubbed zein that is a waste by-product released from corn starch or oils, during the production of ethanol.

Testing this on a batch of strawberries, when kept under the smart packaging, they lasted for seven days compared to four days when kept in a regular plastic container.

Groceries, especially fruits and vegetables tend to go bad just after a few days, which can be a bummer if your favourite veggie ends up in some corner of your refrigerator.



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However, now, researchers have **created** a smart food packaging that slowly releases microbials, killing vegetable-rotting bacteria and keeping them fresh for a while longer.

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To this, the researchers add plant starch cellulose and acetic acid. These were further infused with natural antimicrobial compounds derived from plants like thyme oil, citric acid.

Lab testing revealed that the antimicrobials are released in miniscule amounts from the fibres in the packaging material when it is exposed to either rise in humidity or release of enzymes by certain microorganisms.

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By only releasing compounds when needed, the packaging can survive for multiple exposures stretching across months.



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Professor Philip Demokritou, Adjunct Professor of Environmental Health at Harvard Chan School explained, "Due to the globalisation of food supply and attitude shift towards a healthier lifestyle and environmentally friendly food packaging, there is a need to develop biodegradable, non-toxic and smart/responsive materials to enhance food safety and quality."

She added, "Development of scalable synthesis platforms for developing food packaging materials that are composed of nature derived, biodegradable biopolymers and nature-inspired antimicrobials, coupled with stimuli triggered approaches will meet the emerging societal needs to reduce food waste and enhance food safety and quality."

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