SCIENCE

Natural preservative could keep foods fresh longer than ever

Ben Coxworth | 7 hours ago

The preservative has been successfully tested on fruit juice and meat samples (Credit: Nanyang Technological University)

There may be new hope for people who don't want potentially-harmful preservatives in their food, yet who still want it to have a decent shelf life. Scientists in Singapore have developed a *plant-based* food preservative, which they claim is actually more effective than its artificial counterparts.

Developed at Nanyang Technological University by a team led by Prof. William Chen, the preservative incorporates phytonutrients known as flavonoids. These occur naturally in almost all fruit and vegetable plants, helping defend them against threats such as pests, pathogens, and environmental stresses including the ultraviolet rays in sunlight.

While previous research indicated that flavonoids additionally showed promise as an antimicrobial agent, they would need to be processed via an expensive and non-sustainable prenylation procedure in order to bring out that quality. The scientists in Chen's team, however, claim to have developed a method of producing flavonoids that kill bacteria right from the start.

Utilizing a process similar to that used for the production of vaccines, they implanted the flavonoid-producing mechanism from plants into a species of baker's yeast called *Saccharomyces cerevisiae*. The yeast responded by producing ready-to-use flavonoids with high antimicrobial and antioxidant properties, both of which are essential to food preservation.

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"Flavonoids extracted directly from plants need to be further processed to be antimicrobial whereas our flavonoids produced from yeast do not require this," says Chen. "Secondly, there have been no reports on antioxidant properties in flavonoids, while our yeast-based flavonoids naturally come with it."

In lab tests, a preservative incorporating the flavonoids was added to samples of fruit juice and meat, which proceeded to last for two days at room temperature before spoiling. By contrast, samples treated with conventional artificial preservatives succumbed to bacterial contamination within just six hours.

The university is now in talks with industrial partners, in order to commercialize the technology. A paper on the research was recently published in the journal *Food Chemistry*.

Source: Nanyang Technological University

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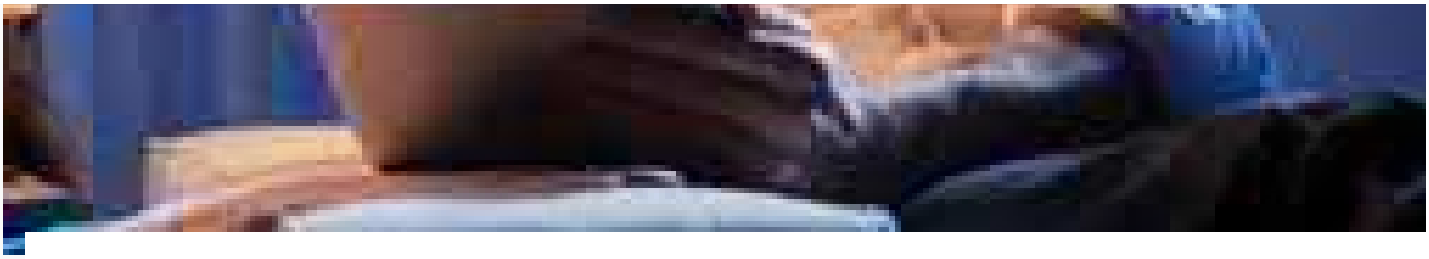

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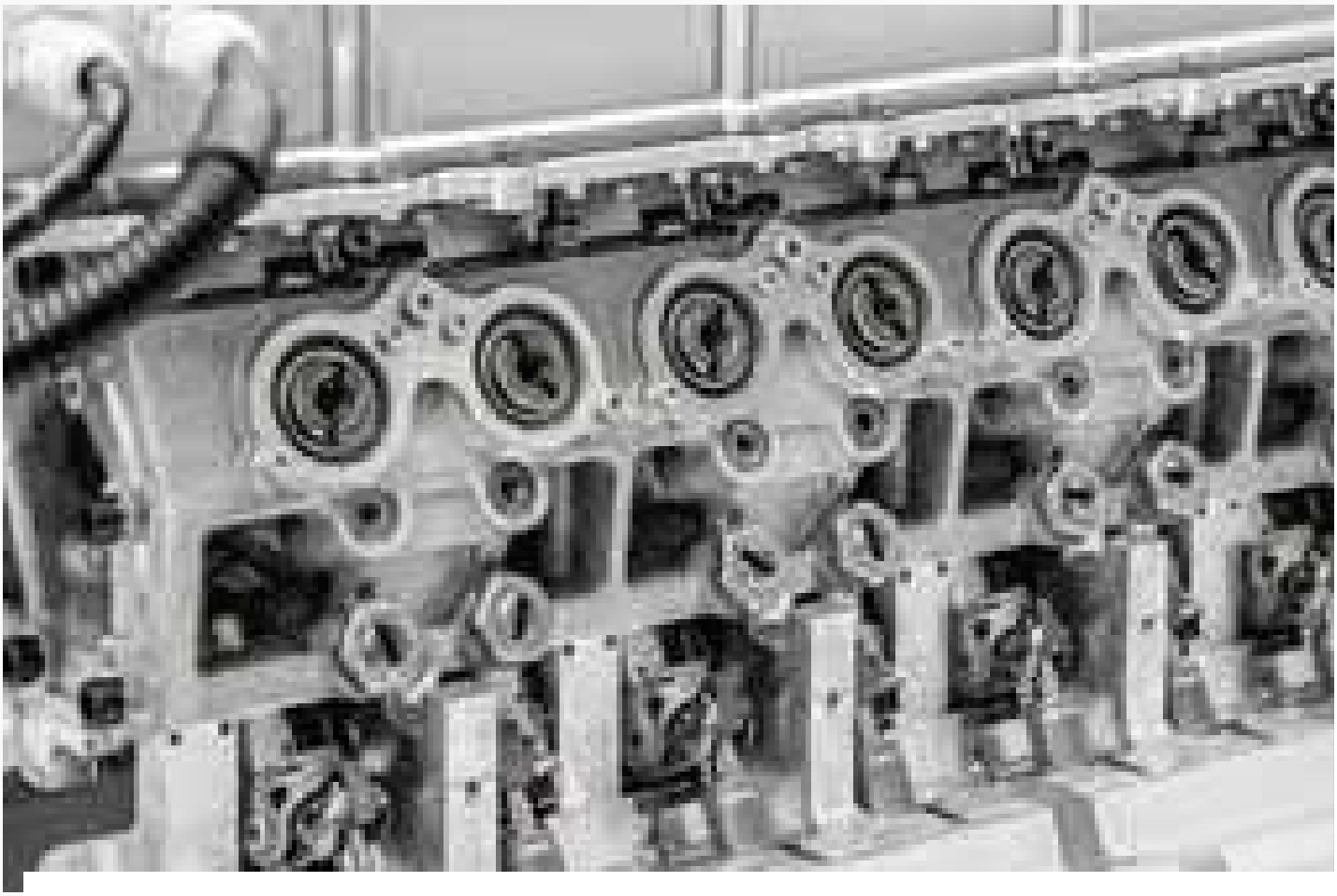

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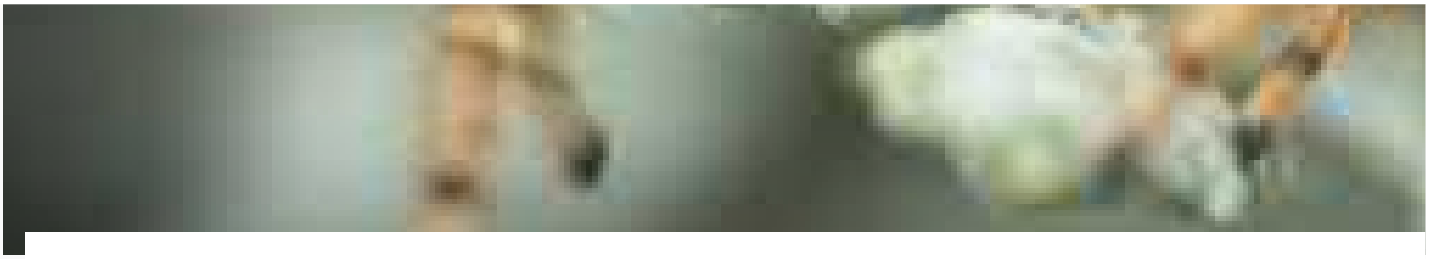

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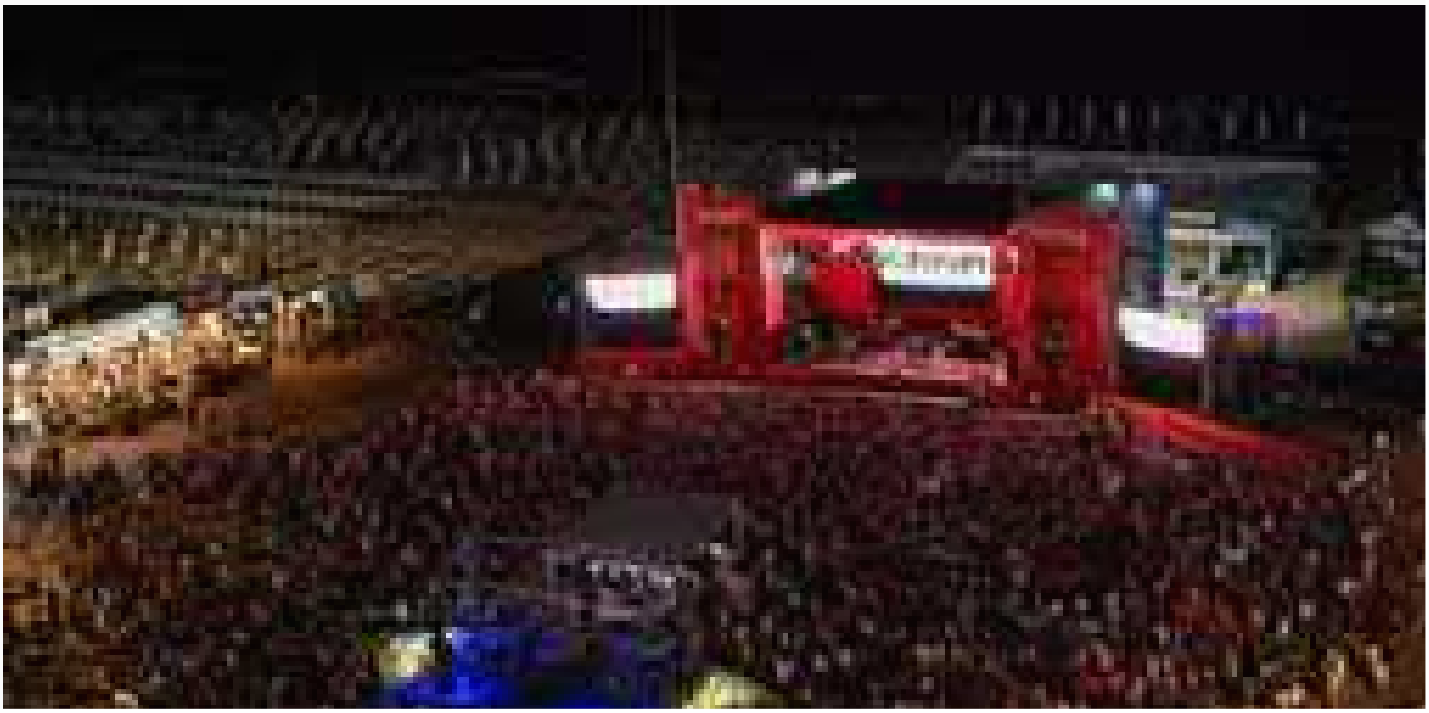

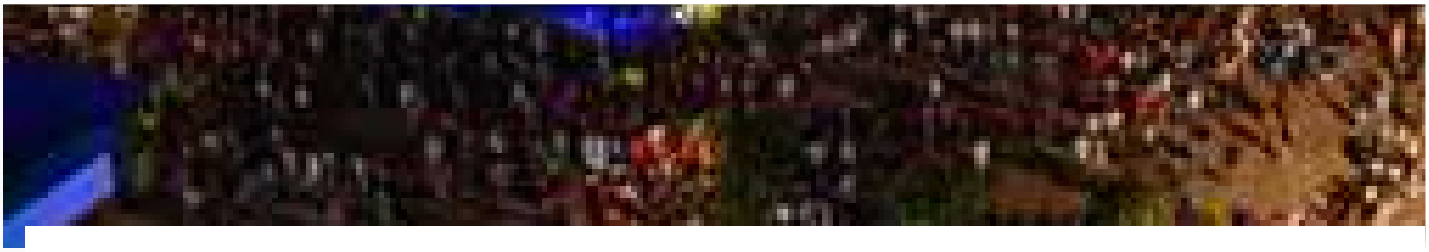

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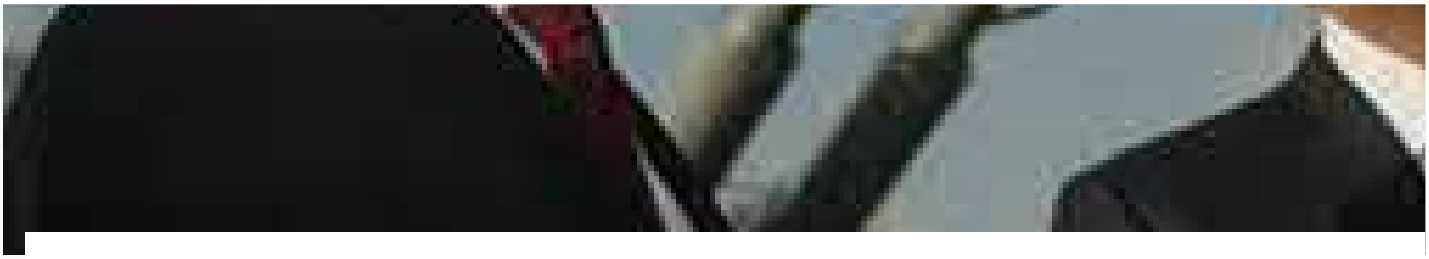

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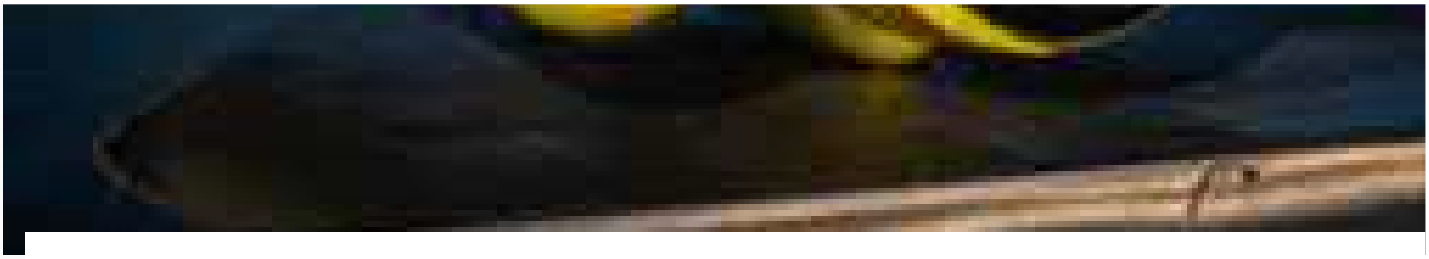

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