

Nanyang Technological University team invents new natural food preservative



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Professor William Chen (left), with team members Lyu Xiaomei and Ng Kuan Rei on 16 August, 2018. (PHOTO: NTU)

A team of Nanyang Technological University (NTU) scientists has come up with a “100 per cent natural” preservative that is purported to be healthier and more effective than its artificial counterparts.

In tests carried out on meat and fruit juice samples at room temperature (about 23°C), the organic preservative kept them fresh for two days without refrigeration. Comparatively, food samples with commercial-grade artificial food preservatives succumbed to bacteria contamination within six hours.

This is because the NTU team, led by Professor William Chen, director of NTU’s Food Science & Technology programme, found a way to grow flavonoids with high anti-microbial and anti-oxidant properties in a natural and sustainable manner.

Flavonoids, a naturally occurring group of phytonutrients found in almost all fruits and vegetables, help defend against pathogens, herbivores, pests, and even environmental stress.

In a statement released by the university on Thursday (16 August) Prof Chen said, “This may open new doors in food preservation technologies, providing a low-cost solution for industries, which could in turn encourage a sustainable food production system that produces healthier food that stay fresh longer.”

An estimated \$2 worth of flavonoids is enough to treat 1,000 litres of fruit juice, according to Prof Chen.

“It will be more cost effective than artificial preservatives, but at the moment, we cannot get an estimate (of manufacturing cost) because we only just began negotiating with industry leaders,” he added.

The team’s findings were published last month in the scientific journal Food Chemistry.

Scientific breakthrough

Flavonoids have not previously been used as a food preservative because they require further processing before they can mitigate bacteria. This process is not cost-effective or sustainable.

However, the NTU team achieved a breakthrough by implanting the flavonoid-producing mechanism from plants into baker’s yeast.

Similar to the process by which vaccines are manufactured using yeast, they found that the yeast produced flavonoids with high anti-microbial properties, which are not present in pure flavonoid samples extracted directly from plants.

The team is already in talks with multinational companies to further develop the new food preservative and aims to enhance its efficacy and safety so that it can be used in all packaged food products.

“Flavonoids are important natural food supplements with vitamins, but also used as food additives, without causing harm to the human system,” said Dr Gabriel Oon Chong Jin, a consultant medical oncologist at Mount Elizabeth Medical Centre.

“This is unlike currently available artificial preservatives used in most processed foods such as aspartame and nitrates, which may cause cancer among other adverse health effects.”

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