Source: *The Straits Times,* pB9
Date: 21 June 2018

NUS researchers are now using okra seeds to develop rice noodles suitable for diabetic patients. PHOTO: NATIONAL UNIVERSITY OF SINGAPORE

Plant substances with health benefits

South-east Asia is one of the world's most diverse botanical regions. Its wide array of plants is a treasure trove of natural compounds that could be elixirs of good health.

Over the last decade, Associate Professor Huang Dejian and his team from the National University of Singapore's Food Science and Technology Programme have developed a database of more than 500 plant samples. The team analysed these plants and uncovered around 20 natural bioactive substances which could have health benefits.

The leaves of the Malay cherry plant, for example, contain substances that can slow down the digestion of food. The NUS team found that noodles made using flour and extracts from the leaves are digested more slowly, making them potentially suitable for diabetic patients.

In addition, the scientists identified a compound called dracoflavan B in dragon's blood – a resin from a type of palm tree known as *Daemonorops* – that could potentially be used for controlling high blood glucose.

This novel compound is as active as acarbose, which is an anti-diabetic drug used to treat Type 2 diabetes, and may serve as a natural alternative for diabetic patients.

In another study, the seeds of okra – commonly known as ladies' fingers – were found to contain a group of natural substances called proanthocyanidins, which is more potent than acarbose. NUS researchers are now using the seeds of okra to develop rice noodles suitable for diabetic patients.

The scientists are also studying the plants in the Healing Gardens within the Singapore Botanic Gardens, and the Sarawak Biodiversity Centre in Kuching with the hope of unearthing more bioactive components that could be incorporated into food products.

PhD student Miss Vong Weng Chan holding a dish with the enhanced okara. PHOTO: NATIONAL UNIVERSITY OF SINGAPORE

Giving new life to soya bean waste

It would normally be discarded, but scientists have given okara – the residue from the production of soya milk and tofu – a new lease of life by adding enzymes and microbes, which make it more nutritious and taste better.

In Singapore, about 10,000 tonnes of okara are produced annually. While fresh okara smells grassy and tastes bland, it turns bad easily, and will then smell like sweaty socks and taste sour. It is usually disposed of by soya food producers.

To reduce food waste, Associate Professor Liu Shao Quan and his PhD student, Miss Vong Weng Chan, who are both from the National University of Singapore's Food Science and Technology Programme, devised ways to put okara to good use.

They experimented by fermenting okara with 10 different yeasts that are typically used to make cheese and wine.

With the *Lindnera saturnus* yeast, they got lucky: Okara fermented by this yeast gains a pleasant fruity smell.

With the improved aroma, okara could potentially be used as a functional food ingredient, or as an inexpensive material for flavour extraction, they believe.

The researchers also used a combination of natural microorganisms and enzymes to enrich the nutritional value of okara and enhance its flavour. After the transformation, the enhanced okara contains more soluble fibre, which helps to maintain gut health, and its texture becomes finer as its insoluble fibres are broken down.

In addition, the enhanced okara gains a meaty taste, making it suitable for a variety of food products, such as baked goods and meat substitutes.

The research team is now working on developing functional food products using the enhanced okara.