

Life

Can soya residue treat diabetes?

Researchers have found in a study on mice that okara, a by-product of soya production, can impact blood glucose levels if consumed in fermented form



Joyce Teo

Given that diabetes is a serious health concern globally and in Singapore, many people are keen to discover novel approaches of managing the chronic disease.

With this in mind, a researcher here has looked at whether eating fermented okara (soya bean residue) can help lower blood sugar levels.

Meanwhile, in the United Kingdom, a pilot programme involving an extreme liquid diet that has led to diabetes remission – where blood sugar levels are back at healthy levels without the use of medication – appears to be a promising option that could potentially be applied here.

EATING OKARA

This is a by-product of soya production, which researchers recently found in a study on mice can impact blood glucose levels if it is consumed in fermented form.

The paper by senior lecturer Ken Lee from the School of Physical and Mathematical Sciences at Nanyang Technological University and his team was published late last year.

“We want to push it out as a pre-meal snack. Based on our scientific study, we realise that when the mice eat fermented okara, 15 to 30 minutes before the actual meal, we don’t see the usual blood glucose level spike after the meal,” said Dr Lee.

Eating fermented okara with the meal does not produce noticeable results.

Theoretically, those with diabetes can eat it before a big meal, like a wedding dinner or a festive meal, to manage their blood sugar levels.

He said it may take one to two

years before getting okara to a food ingredient stage.

Okara may be an unfamiliar product here as it is usually thrown away. Dr Lee got his from a soya bean milk seller at a hawker centre.

But in Japan, okara products are commonplace in markets.

“They just dry it in the oven, but without fermentation, there’s no effect on blood glucose level. We believe the key is fermentation,” said Dr Lee.

Senior consultant at the endocrinology department at Singapore General Hospital Tan Hong Chang, who was involved in the study, said although okara is rich in fibre and higher consumption of fibre is helpful to patients with Type 2 diabetes, consumption here remains limited due to its gritty texture and undesirable smell.

Attempts have been made to improve the palatability of okara through fermentation with various fungi.

Most recently, the fermentation of okara with the fungus *Eurotium cristatum* was found to produce chemical compounds that reduce dietary carbohydrate breakdown and absorption through the inhibition of the intestinal enzyme – alpha glucosidase.

When fermented okara was fed to mice, it was found to lower the magnitude of blood glucose increase after food intake – an experimental finding that will need to be verified in humans, he said.

And, if true, the consumption of okara may have additional health benefits for patients with Type 2 diabetes by blunting blood glucose increase after a meal, he added.

Dr Tan stressed that managing healthy nutrition for diabetics cannot focus on the intake of one particular type of food, but an overall change in daily food intake to the healthier variants is necessary.

In addition, other aspects of healthy living like regular exercise and compliance with medication are needed to maintain good diabetes control.

“I would emphasise the intake of non-starchy vegetables, whole-food versus highly processed food, minimisation of added sugars and refined carbohydrates, and lean sources of protein,” he said.

Dr Tan also suggested the use of the Health Promotion Board’s my healthy plate method, where a patient fills half of his plate with fruit



Okara is rich in fibre and higher consumption of fibre is helpful to patients with Type 2 diabetes. PHOTO: ISTOCKPHOTO

and vegetables, a quarter with whole grains and the remaining quarter with lean sources of meat.

“Almost every culture will have some belief that certain food or food groups would have a beneficial effect, but I don’t think any has conclusively showed that it will work in everyone with diabetes,” he said.

FOLLOWING A LIQUID DIET

In Britain, a low calorie liquid diet programme to help those with Type 2 diabetes achieve remission of the disease will be used in a pilot programme involving up to 5,000 people this year.

The UK’s National Health Service said last year that the patients will be prescribed a liquid diet of just over 800 calories a day for three months, which then continues with

a period of follow-up support.

This approach follows recent research, most notably the Diabetes Remission Clinical Trial (DiRECT) study, which shows that it is not a must to manage Type 2 diabetes with medication.

In the DiRECT trial, almost half of those who went on a very low calorie diet, with support from their general practitioners, achieved Type 2 diabetes remission after one year.

A quarter of them lost at least 15kg, and of this group, 86 per cent managed to kick-start their insulin production and reverse their condition. The participants were aged between 20 and 65, had been diagnosed with Type 2 diabetes within the previous six years. They also had a high body-mass index of 27 to 45kg/m² which puts them in the overweight to obese range.

The programme included a low calorie, nutrient-complete diet for three to five months, reintroduction of healthy food and long-term support to maintain weight loss.

At the two-year mark, more than one-third of these individuals had been free of diabetes and the need for diabetes medication for at least 24 months.

“Different kinds of diets out there, like the Mediterranean diet (rich in fruit and vegetables, nuts, whole grains and olive oil), have been shown to have modest benefits in lowering blood glucose, postponing the use of anti-diabetes drugs in those with newly diagnosed diabetes,” said Professor Tazeen Jafar from the Health Services and Systems Research programme at Duke-NUS Medical School.

“But this low-calorie formula diet is different as it can lead to normalisation of blood glucose and it took away the need for anti-diabetes medications in almost half of the pa-

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