

A new use for durian husks: gel bandages

Ng Wei Kai

In the near future, the protective gel bandages for a patient who has undergone surgery could be composed of fully organic materials.

Currently, they are made from synthetic materials such as polymethacrylate, more commonly known as acrylic.

Most Singaporeans, no doubt, will be surprised by the base material for the new antibacterial gel bandages.

Researchers from Nanyang Technological University (NTU) have discovered a way to make them from durian husks – the part of the fruit that is usually discarded.

The husk makes up about 60 per cent of the weight of each durian.

The gel was developed by a team led by Professor William Chen, director of NTU's Food Science and Technology programme.

The team found a way to extract cellulose from the husks and combine it with glycerol – another waste by-product from the biodiesel and soap industry – to create a soft gel which can be cut into bandages.

They then added some compounds from baker's yeast, which are deadly to bacteria, for the gel to be antibacterial.

The new bandage is similar to conventional hydrogel patches, which are used to hydrate as well as protect wounds, and are most commonly used after surgery to reduce scarring.

NTU said conventional hydrogel patches often contain metallic components such as silver or copper ions, making them more costly



Professor William Chen, director of Nanyang Technological University's Food Science and Technology programme, with the hydrogel bandage made from durian husks. With him is PhD student Cui Xi, who is holding agar plates that show the antibacterial efficacy of the natural yeast phenolics in the hydrogel. PHOTOS: NANYANG TECHNOLOGICAL UNIVERSITY

to produce compared with what Prof Chen's team has made.

"By using waste products which are currently discarded in large quantities – durian husks and glycerol – we could turn waste into a valuable biomedical resource that can enhance the speedy recovery of wounds to reduce the chances of infections," he added.

NTU also said the bandages made from the gel are biodegradable, and as they are organic in nature, they are expected to have a smaller environmental footprint than conventional synthetic bandages.

Researchers are now in talks with industry partners to scale up production. Prof Chen said that if all goes to plan, the product could hit the market in about two years. The cost of the bandage is expected to be competitive when production is scaled up.



The bandage is similar to conventional hydrogel patches, which are used to hydrate as well as protect wounds, and are most commonly used after surgery to reduce scarring. The hydrogel patch can be cut into small pieces to fit plasters of varying sizes.

In 2017, Singapore imported 14,300 tonnes of durian, or about 10 million durians.

Incidentally, there is little

chance of the new bandages raising a stink – they are odourless.

ngweikai@sph.com.sg