Germ-killing, wound-healing, low-cost bandage made from durian husks

By [Ben Coxworth]
March 26, 2021

- Facebook
- Twitter
- Flipboard
- LinkedIn

Prof. William Chen (left) holds up one of the hydrogel bandages and a durian husk, while PhD student Cui Xi displays agar plates showing the dressing's antibacterial effect
NTU Singapore

Although not a *huge* seller everywhere, durian fruit is consumed in great quantities in countries like Singapore. Scientists there have now developed a method of using its otherwise-discarded husks to create cheap, eco-friendly, antibacterial hydrogel bandages.

First of all, hydrogel bandages themselves are nothing new. Typically applied directly to post-surgical wounds, they help reduce scarring by keeping the wound site hydrated during the early stages of the healing process. By contrast, regular gauze dressings allow the area to dry out.

MORE STORIES

MEDICAL

Handheld gamma ray camera hunts for cancer beneath the skin

SPACE

Asteroid 99942 Apophis won't hit the Earth in 2068 after all

The hydrogels themselves are usually made of synthetic polymers, with silver or copper ions added to kill harmful bacteria. Unfortunately, the polymers typically aren't biodegradable, and are made from non-renewable resources. Additionally, the inclusion of the metal ions drives up the cost of the bandages.

Led by Prof. William Chen, researchers at Nanyang Technological University instead looked to durian husks, which ordinarily just end up in landfills or composting facilities.

The team extracted high-quality cellulose from some of the husks, then combined it with two other ingredients: glycerol left over from the production of soap and biodiesel, along with baker's-yeast-derived antibacterial chemicals known as natural yeast phenols. What resulted was a soft germ-killing gel similar in texture to silicone, that could be cut into sheets.

Like other hydrogel dressings, this one is applied directly to the skin
NTU Singapore

In lab tests performed on animal skin, the material was shown to exhibit "good antimicrobial effects" for up to 48 hours after application. Additionally, the durian hydrogel bandages should be considerably less costly than their conventional counterparts, plus they will naturally biodegrade when thrown away.

"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 and reduce chances of infections," says Chen.

The research is described in a paper that was recently published in the journal *ACS Sustainable Chemistry & Engineering*.

Source: Nanyang Technological University