

Antibacterial gel bandage created from durian husk

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The durian is a strange-looking tropical fruit with a greenish-yellow exterior covered completely in spikes. Food scientists from NTU Singapore have used the discarded husks of the tropical fruit to create an antibacterial gel bandage. The fruit's spiky outer husk is discarded while the sweet flesh inside surrounding the seeds is eaten and considered a delicacy.

Researchers can (<https://media.ntu.edu.sg/NewsReleases/Pages/newsdetail.aspx?news=5095d999-7221-4668-8f47-2fcd8bbe0f46>) extract high-quality cellulose from the durian husks and combine it with glycerol, which is a waste byproduct from biodiesel and soap-making industries, to create a soft gel that's similar to silicon sheets. The sheets can be cut into bandages of various sizes and shapes. Researchers added organic molecules produced from a yeast known as natural yeast phenolics to instill antibacterial properties into the dressing.

Hydrogel patches are common and available at pharmacies. They are typically used to cover wounds resulting from surgery to minimize scar formation by keeping the skin hydrated. Conventional hydrogel patches available today are created from synthetic materials like polymers, including polymethacrylate and polyvinylpyrrolidone. Bandages with antimicrobial properties use metallic compounds like silver or copper ions.

The new hydrogel is cheaper than synthetic materials approved for use in biomedical applications. Researchers on the project say that the ever-increasing threat of antibiotic-resistant bacteria means the world needs multiple alternatives to prevent infections. An effective way to protect open wounds is by using antimicrobial bandages that are biocompatible and safe for prolonged use by humans.

The husk of the durian is very thick and comprises 60 percent of the fruit. It's typically discarded and incinerated, creating an environmental issue. Using the waste material to create the bandages helps solve any environmental issues the fruit creates. The resulting proof of concept product was tested as a wound dressing on animal skin and showed antimicrobial effects for up to 48 hours.