



The double-sided tape | Photo source mit.edu

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ENGINEERS DEVELOP STICKY TAPE TO BIND TISSUES DURING SURGERY

 HEALTH & WELLBEING

The researchers hope the tape could one day be used as an alternative to sutures in some surgeries, in order to minimise the risk of complications

Spotted: Engineers at MIT have developed a double-sided tape that can be used to quickly seal tissues together. The substance can be used to tightly bind tissues during surgery, including those belonging to organs such as the lungs and intestines. They hope the tape could one day be used as an alternative to sutures in some surgeries, in order to minimise the risk of complications.

Glues are already used in place of some sutures, but they can take several minutes to set. In order to come up with a faster-acting binding agent that could work on wet surfaces, the researchers turned to the natural world and drew inspiration from the sticky material used by spiders to capture their prey in the rain. Spiders create a substance that uses charged polysaccharides to instantaneously absorb water from the surface of a wet insect, drying off a small area upon which the glue can adhere.

The researchers designed a similar material that uses polyacrylic acid (the same material used in nappies) to absorb water from wet tissues, which then forms weak hydrogen bonds between the tissues to bind them together. The polymers gelatin and chitosan allow the adhesive to hold its shape; moreover, the researchers use gelatin when they want the bandage to break down quickly, and chitosan when they need it to last longer.

The studies' senior researcher, Xuanhe Zhao, hopes the new approach will make surgery safer: "There are over 230 million major surgeries all around the world per year, and many of them require

sutures to close the wound, which can actually cause stress on the tissues and can cause infections, pain, and scars. We are proposing a fundamentally different approach to sealing tissue.”

This is not the first time researchers have created an adhesive substance modelled on a resource in the natural world. At Springwise, we have recently covered an [edible paint](#) inspired by beetles and a [concept tyre](#) inspired by coral.

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Email: zhaox@mit.edu
Website: zhao.mit.edu

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Takeaway:

The MIT researchers are working with doctors to identify possible applications for the tape. These could include sealing damage to the gastrointestinal tract and attaching implants, such as monitors or drug delivery devices. The tape works with a variety of materials, including silicone, rubber, titanium, and hydrogels, and if it proves successful, it could provide a safer and easier way to seal wounds and implant medical devices.