New patch may allow for self-administered vaccines

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Nations worldwide are now scrambling to find staff to administer COVID-19 vaccinations amid a shortage of front-line medical workers.

But new research from Japan shows that people may one day be able to vaccinate themselves against maladies — from the coronavirus to the flu — simply by applying a patch to their skin that allows the vaccine to be absorbed into the body quicker than with conventional medical patches.

In a study published in Nature Communications, a British scientific journal, in January, Matsuhiko Nishizawa, a professor at Tohoku University, and his research team developed a "biobattery-powered microneedle patch" that allows a vaccine to be absorbed faster than with the patches currently available commercially.

"In the future, we want people to administer the novel coronavirus vaccines and other kinds of vaccines on their own," Nishizawa said. "I am doing the best I can for this technology to be used for COVID-19 vaccinations."

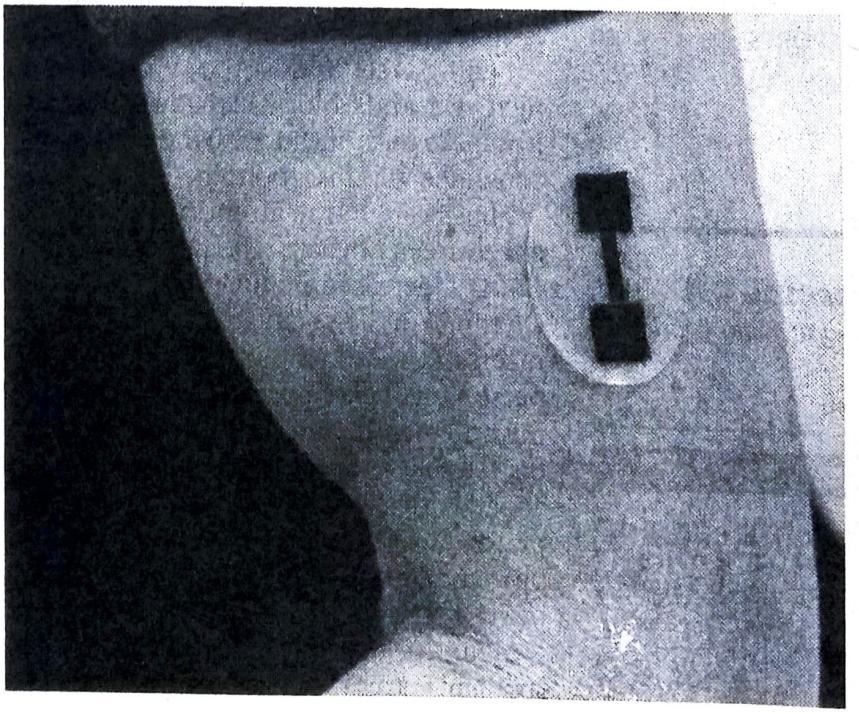
Conventional microneedle patches, which have already been commercialized for migraine treatments and pain relief, allow a limited dosage to be injected, and the drugs take longer to pass through the skin.

Nishizawa's team, however, improved on those aspects using low-voltage electricity, allowing an array of porous microneedles on the patch to administer more of the drug into the skin, and faster.

The electricity is powered by a biofuel cell, a technology developed by the same research group that generates electricity on the skin surface using enzymes.

Although it may take years to get government approval for applying the technology to vaccines, Nishizawa hopes it will be used for a COVID-19 vaccine in the future. For now, the more realistic application would allow patients to treat themselves with certain drugs at home.

Its organic composition, combined with the biofuel cells, means the patch can potentially be used for vaccinations in nations with an unstable or limited electricity supply, as well as areas hit by disaster.



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