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Researchers create a unique system for drug delivery

July 28, 2017 | News

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In an attempt to produce a better drug delivery system, researchers from Kumamoto University in Japan are focusing on a transdermal protein delivery system. There are multiple techniques currently being studied for this type of drug delivery mechanism, from microneedles to iontophoresis (transdermal drug delivery via electric current), but the Kumamoto University researchers designed to improve a technique called transdermal thermal ablation.

This technique increases the permeability of the skin by heating and removing the first skin layer, the stratum corneum.

The researchers used a combination of transparent gel patches, gold nanorods, and near-infrared (NIR) light to create a unique thermal ablation system for transdermal drug delivery. They added fluorescently labeled ovalbumin (FITC-OVA) to the patches to determine the extent of protein translocation after NIR irradiation on murine skin.

The experiments have shown that the photothermal effect on gold nanorods by irradiation of near-infrared light causes the skin to heat up and become more permeable.

The technique has yet to deliver any specific protein drugs, but the researchers are confident that it will contribute to the development of effective transdermal delivery systems.