

Infographic: No more shots? Next-gen vaccine ‘sheets’ melt on the tongue

Two issues influencing the accessibility of many vaccines are their needs for constant refrigeration from production until use and for trained personnel to administer injections.

To overcome the issue of temperature sensitivity, some vaccines are freeze-dried, a process known as lyophilization, and transported as powders. But, says [Maria Croyle](#), a pharmacologist at the University of Texas at Austin, in some instances the stability of lyophilized vaccines is less than ideal... To avoid these barriers, Croyle and her team have developed a vaccine preparation technique that both imparts temperature stability and allows easy administration. The vaccine—which for testing purposes is a live virus—is first added to a thick mixture of methylcellulose, sugar alcohol, and a surfactant. Then, under sterile conditions, the mixture is poured into thin layers and air-dried. “It’s like how you would make taffy,” Croyle says.

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The result is a thin, peelable film containing live virus that can be stored at room temperature for up to three years and can maintain viability through repeated cycles of freezing and thawing. Subjects would then take the vaccine by allowing a small square of it to dissolve in their cheek or under the tongue.

In proof-of-principle experiments, Croyle’s team prepared H1N1 influenza virus as a film and showed that its administration to the oral mucosa of mice induced antibody titers comparable to those obtained with standard intramuscular injection.

no info image

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