REMOVING BARRIERS TO VACCINE DISTRIBUTION

DEVELOPMENT OF A THERMO-TOLERANT, MULTIDOSE, EGG-PRODUCED, VECTOR-BASED CORONAVIRUS VACCINE

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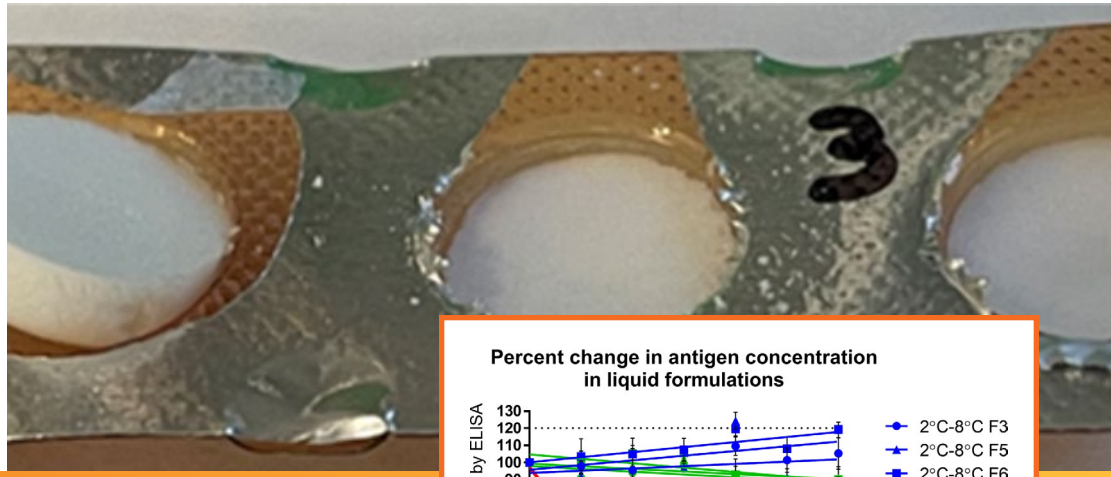
PATH Vaccines and Pharmaceutical Technologies, Seattle, WA

Type:
Non-profit Organization



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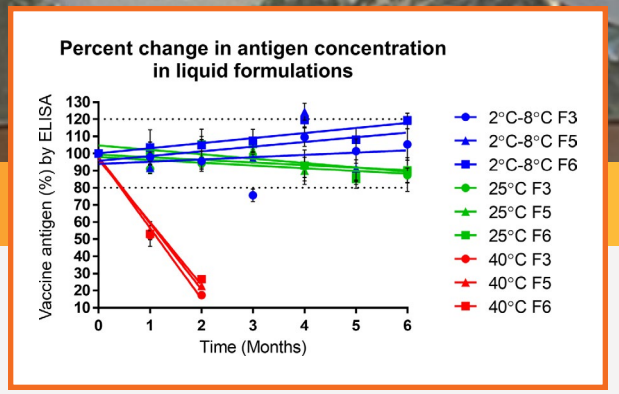

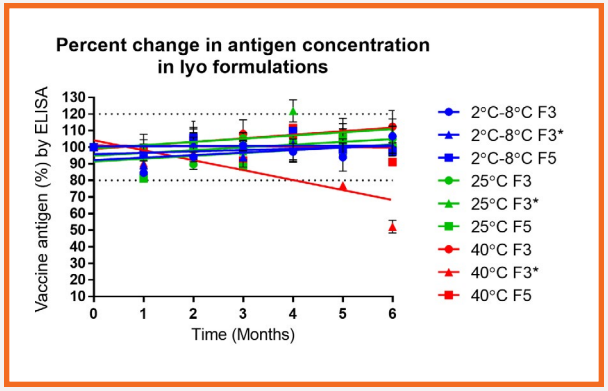

INDUSTRY NEED

Currently available coronavirus vaccines must be kept refrigerated or frozen to ensure they remain stable and effective. Keeping vaccines cold as they move from the manufacturer to the clinic relies on a continuous series of refrigerated buildings, vehicles, and equipment—together referred to as cold chain infrastructure—that is both highly complex and expensive. The requirement for cold chain infrastructure limits the distribution of vaccines, particularly to low-resource and rural areas. In addition, the need for refrigeration limits vaccine stockpiling as well as the ability to transport vaccines locally, which leads to vaccine waste.

SOLUTION

Dr. Manjari Lal's team at PATH set out to formulate a heat-tolerant COVID-19 vaccine that would be stable at room temperature or higher for extended periods of time. They developed both liquid and dry formulations of a vector-based COVID-19 vaccine candidate, NDV-HXP-S. The vaccine was originally developed at the Icahn School of Medicine at Mount Sinai and University of Texas at Austin, and was found to be effective, safe, and potent in preclinical and clinical studies. Dr. Manjari's team tested the ability of each vaccine formulation to remain stable—based on the amount of vaccine antigen remaining—after storage at various temperatures over a 6-month period.

OUTCOME

The liquid formulation was stable at 2-8°C (35-46°F) and 25°C (77°F) for up to 6 months, whereas the dry (lyophilized) formulation remained stable at temperatures up to 40°C (104°F) for 6 months. The team also developed a sublingual tablet formulation for needle-free vaccine administration, which maintained stability at 40°C for 4 weeks. Heat-tolerant vaccines eliminate the need for and expense of cold chain infrastructure, which not only expands distribution to hard-to-reach communities but also potentially reduces the cost of the vaccines themselves. New, needle-free formulations continue to be an area of active research that opens up additional opportunities for improving ease-of-use, reducing costs, and achieving equity in vaccine access.

"Vaccine manufacturers must work to make vaccines thermostable to improve access and reduce costs."

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