COVID-19 point-of-care (POC) testing is critical in low income, developing countries in order to mitigate the harmful health, social and economic effects on already vulnerable populations.

Lyophilization of reagents will aid in the development of a disposable, single use point-of-care testing device.

Various formulations of trehalose and/or xylitol with water and dye were tested but none were ideal in structure or rehydration rate.

Mannitol may be used in future trials

Lyophilizer was not ideal for the development of pellets and in the future a commercial lyophilizer may be used

Students will design and build a device capable of insulating “LAMP reagents” exposed to a hair dryer for two minutes to mimic the issue of needing to keep reagents cold when delivering to developing countries.

In this open-ended inquiry based activity, students will be required to critically think about structure and function of the materials they wish to use to build a device to solve this complex real-world problem based on ASU research.

Determine the ideal formulation of lyophilized sugars to:

- Form 3-D Crystal Structure
- Quick rehydration
- Act as cryoprotectant to LAMP reagents

Solutions with various concentrations of sugars were tested to determine rate of crystal rehydration

REFERENCES


