Investigating the effect of storage temperature and length on the cell viability and nutritional quality of breast milk

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Background

Breast milk contains all of the bioactive components necessary for an infant’s growth and development, including live cells like STEM and progenitor cells.

Infants born prematurely often have difficulty latching to the breast to feed, and so they are typically fed with breast milk that has been refrigerated or frozen.

Considering their increased susceptibility to infection and developmental issues, how do we ensure that breast milk is provided to premature infants at its peak quality?

Methods

Aim 1: Determine Changes in Cell Count & Viability

Breast milk cell counts were used for enumeration and identification. Cell activity was assessed using live/dead staining.

Aim 2: Assess Changes in Nutritional Quality

Nutritional analysis of breast milk was performed to determine the energy and macronutrient levels.

Results

Going Forward

This study was a pilot for a much larger study that the Briere Human Milk Lab will be pursuing in the upcoming years.

The results of this study will be important in several contexts of neonatal care, including:

➔ Deepening our understanding of the quantity and types of cells present in breast milk, and how to best keep them alive.

➔ Advocating for better milk storage practices in the hospital.

Nutritional data was unable to be collected for the frozen samples, but in a 48 hour period in the fridge, macronutrient levels did drop slightly.

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