

EFFECT OF FORTIFIER ADDITION ON THE OSMOLALITY OF DONATED BREAST MILK

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BACKGROUND AND IMPORTANCE

Fortification of breast milk (BM) is routinely implemented to meet the nutritional requirements of preterm infants. Clinical guidelines recommend a safe osmolality range of 400–600 mOsm/kg for infant feeds. Exceeding this limit may increase the risk of gastrointestinal intolerance and necrotising enterocolitis in neonates.

AIM AND OBJECTIVES

This study aimed to determine the osmolality of donated breast milk (DBM) from a tertiary hospital milk bank before and after fortification according to the manufacturer's instructions, and to assess whether the resulting values exceeded the recommended safety range.

MATERIAL AND METHODS



SAMPLE COLLECTION

DBM samples from three healthy donors analysed in unfortified and fortified states



MEASUREMENT PROTOCOL

Osmolality measured in duplicate at 0, 4, 8, 12, 16, 20 and 24 hours using freezing-point osmometer



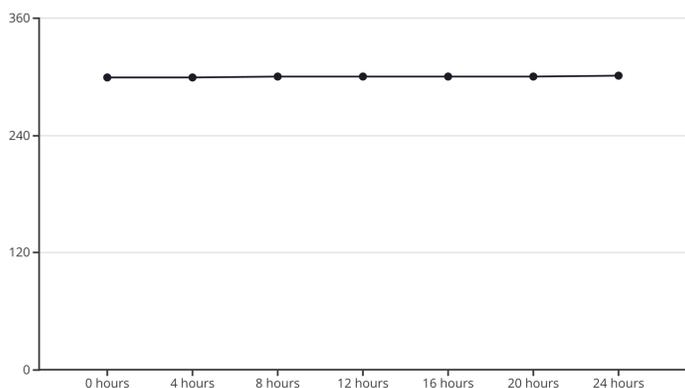
STORAGE CONDITIONS

Samples stored under refrigeration throughout the study period

The study was conducted in collaboration with the Pharmacy, Neonatology, and Clinical Analysis Departments

RESULTS

Unfortified Breast Milk Results



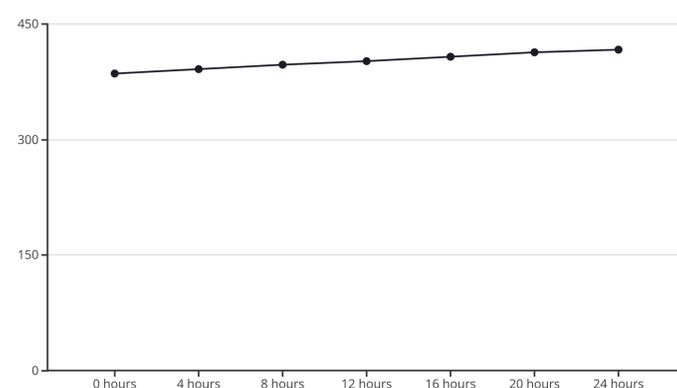
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Total Samples
84 measurements analysed

24h

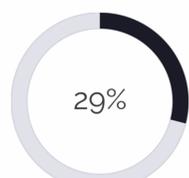
Study Duration
Monitoring period

Fortified Breast Milk Results

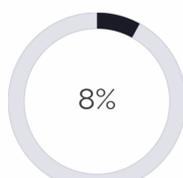


All measured values remained within the recommended safety range of 400–600 mOsm/kg for infant feeds.

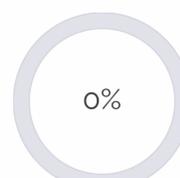
Statistical Significance



Osmolality Increase
Significant rise after fortification ($p < 0.001$)



Storage Effect
Further increase in fortified samples over 24 hours ($p = 0.009$)



Unfortified Stability
No significant change during storage ($p = 0.59$)

CONCLUSION AND RELEVANCE

Fortifier addition significantly increased human milk osmolality, although all values remained within the recommended safety range. Storage for up to 24 hours led to a further osmolality increase only in fortified samples. Mean post-fortification osmolality was slightly higher than that reported by the manufacturer. Larger studies are warranted to confirm these findings and to further investigate the effect of storage time on osmolality.