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Unveiling Milk Kinship: Profiling MicroRNAs in Milk Siblings for Epigenetic Insights

[Journal of Human Lactation](#) • Article • 2026 • DOI: 10.1177/08903344261430156

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Abstract

Background: Milk kinship, in some cultures, posits that infants who receive breast milk from non-biological mothers establish a consanguinity, prohibiting future marriage between the recipient infants and the biological children of the breastfeeding mother. This kinship may be influenced by specific miRNAs in breast milk that modulate gene expression epigenetically, leaving marks within the recipient infants. **Research Aim:** This study aims to identify lactation-specific miRNAs shared among milk siblings, compare miRNA similarity between a breastfeeding mother's milk and milk siblings' plasma, and determine their persistence post-infancy. **Methods:** RNA was extracted from plasma and breast milk samples, followed by NanoString miRNA analysis to profile individual miRNAs. Differential Gene Expression (DGE) analysis using the R studio NOISeq package identified significantly expressed miRNAs across all samples. **Results:** Detailed comparisons revealed that several similarly detected miRNAs in milk siblings were present in their corresponding breastfeeding mother's milk. DGE analysis identified five miRNAs: hsa-let-7b-5p, hsa-miR-223-3p, hsa-miR-873-3p, hsa-miR-23a-3p, and hsa-miR-378e, with hsa-miR-23a-3p exhibiting the most consistent expression pattern throughout the study. **Conclusion:** This study successfully identifies potential lactation-specific miRNAs that may be shared between milk siblings, providing valuable insights and laying a foundation for future identification of milk kinship biomarkers. However, despite promising findings, current evidence remains insufficient to establish a definitive link

Author keywords

breast milk; breastfeeding; epigenetics; microRNAs; milk kinship; NanoString

Indexed keywords

MeSH

Breast Feeding; Epigenesis, Genetic; Female; Gene Expression Profiling; Humans; Lactation; MicroRNAs; Milk, Human; Siblings

EMTREE drug terms

microRNA

EMTREE medical terms

breast feeding; breast milk; chemistry; female; gene expression profiling; genetic epigenesis; human; lactation; metabolism; procedures; sibling

Chemicals and CAS Registry Numbers

Unique identifiers assigned by the Chemical Abstracts Service (CAS) to ensure accurate identification and tracking of chemicals across scientific literature.

MicroRNAs

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
Ministry of Higher Education, Malaysia See opportunities by MOHE 		MOHE

Funding text

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was funded by the Fundamental Research Grant Scheme

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