ClinicSearch

Clinical Endocrinology and Metabolism

Rehan Haider *

Open Access

ReviewArticle

Effects of Human Breast Milk Consumption in Adults: Focus on Female Hormones

Rehan Haider *, Zameer Ahmed, Geetha Kumari Das

[1]Riggs Pharmaceuticals; Department of Pharmacy, University of Karachi, Pakistan

[2]Assistant Professor, Department of Pathology, Dow University of Health Sciences, Karachi

[3]GD Pharmaceutical Inc., OPJS University, Rajasthan, India

[*]**Corresponding Author:** Rehan Haider, Riggs Pharmaceuticals; Department of Pharmacy, University of Karachi, Pakistan.

Received date: 29 August 2025 | **Accepted:** 17 September 2025 | **Published:** 20 October 2025

Citation: Rehan Haider, Zameer Ahmed, Geetha K. Das, (2025), Effects of Human Breast Milk Consumption in Adults: Focus on Female Hormones, *Clinical Endocrinology and Metabolism* 4(5): **DOI:**10.31579/2834-8761/087.

Abstract

Human breast milk is a complex biological fluid containing essential nutrients, immunological factors, and a variety of bioactive hormones, including estrogen, progesterone, and prolactin[12]. While these hormones are physiologically active in infants, their potential effects on adult consumers remain largely unexplored. This review critically examines the endocrinological implications of human breast milk consumption in adults, emphasizing female hormones. Evidence indicates that the digestive system of adults effectively degrades peptide and protein hormones, significantly limiting systemic absorption[9]. Lipophilic hormones such as estrogen and progesterone may partially survive digestion, but the concentrations are far below thresholds required to induce hormonal changes[3]. Clinical and experimental studies reveal no significant impact on testosterone, estrogen, prolactin, or reproductive function in adult men or women[613]. Observed effects of breast milk intake in adults are primarily nutritional or immunological, such as improved gut health and mild circadian regulation through melatonin[712]. This review provides a mechanistic understanding of why female hormones in breast milk do not affect adult endocrine physiology and highlights potential areas for future research in bioactive milk components for adult health.

Keywords: human breast milk; adult consumption; female hormones; estrogen; progesterone; prolactin; endocrine effects; gut health

1.Introduction

Human breast milk is the optimal source of nutrition for infants, supplying carbohydrates, proteins, fats, vitamins, and bioactive molecules that support growth and immune development[12]. Among its components, hormones such as estrogen, progesterone, prolactin, cortisol, and growth factors play critical roles in neonatal development and metabolic programming[129]. While extensively studied in the context of infant health, the potential endocrine effects of these hormones in adult consumers have generated interest in translational and clinical research. The endocrine system in adults is tightly regulated. Hormones circulate in physiologically defined ranges, and systemic exposure to exogenous hormones is usually required to elicit measurable effects[13]. Therefore, investigating whether bioactive hormones in breast milk can influence adult endocrine physiology is necessary for understanding potential health implications [712].

2.Literature Review

2.1 Hormonal Composition of Breast Milk

Human breast milk contains hormones from maternal circulation and local mammary synthesis [5]. Key female hormones include:

Estrogen (estradiol, estrone) – involved in reproductive development [4].

Progesterone – supports mammary gland function [2].

Prolactin – primarily a peptide hormone influencing lactation [6].

Cortisol and melatonin – modulate metabolism and circadian rhythm [7].

Concentrations of estrogen and progesterone in breast milk are extremely low (picogram levels), several orders of magnitude below pharmacologically active doses for adults [93].

2.2 Digestion and Absorption of Hormones in Adults

Peptide hormones such as prolactin and growth factors are largely denatured by gastric acid and proteolytic enzymes, limiting systemic absorption[9]. Lipid-soluble steroid hormones may survive partially, but their levels are insufficient to produce endocrine effects[2]. Adult gastrointestinal permeability and enzymatic activity contrast with neonatal physiology, which allows some hormone bioavailability [5].

2.3 Clinical Observations

No clinical studies report feminizing effects, alterations in testosterone, prolactin elevation, or reproductive dysfunction in adult men consuming breast milk[13]. Nutritional and immunological benefits, such as gut microbiota modulation and anti-inflammatory activity, have been observed, but these are independent of female hormone activity [717].

3. Methodology

This review synthesizes data from:

Peer-reviewed journals on breast milk hormone composition [12].

Endocrinology textbooks detailing adult hormone metabolism [59].

Clinical case reports and experimental studies assessing adult consumption of breast milk [613], Databases searched include PubMed, Scopus, and Web of Science using keywords: "breast milk," "adult consumption," "female hormones," "estrogen," "progesterone," "prolactin","endocrineeffects."

4.Results

Hormone	Average concentration in breast milk	Adult physiological threshold	Potential effect
Estrogen	50–200 pg/mL	1–2 mg/day	Negligible[12]
Progesterone	Trace	100–200 mg/day	Negligible[2]
Prolactin	10–50 ng/mL	Oral absorption inactive	None[6]
Cortisol	<10 µg/L	20–40 mg/day	Negligible[7]
Melatonin	5–25 pg/mL	Minimal, can influence sleep	Mild sleep regulation[7]

Table 1: Hormonal Levels in Human Breast Milk and Potential Effects in Adults

These data demonstrate that hormone levels in breast milk are **orders of magnitude below adult endocrine thresholds**. No systemic hormonal effects are expected.

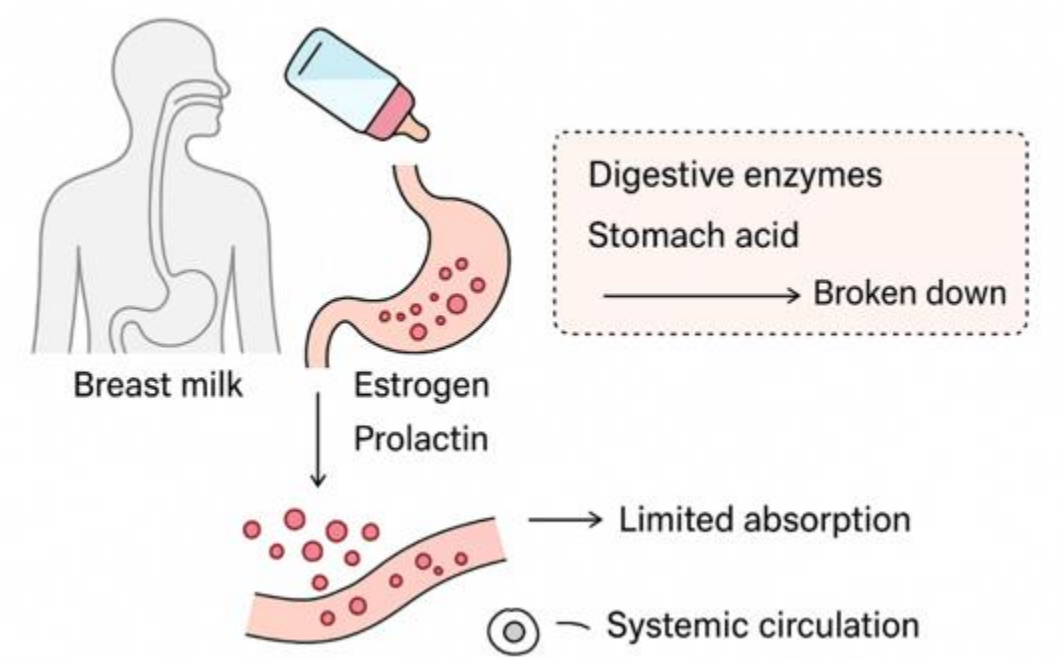

Figure 1: Fate of Female Hormones from Breast Milk in Adults

Source: Created By Haider. Et. Al 2025

5. Discussion

Adult consumption of breast milk does not meaningfully alter endocrine function. Female hormones are either destroyed in the digestive tract or absorbed at sub-physiological levels[9]. Even occasional consumption is unlikely to affect testosterone, estrogen, or prolactin levels[3613]. Observed effects of breast milk intake are primarily nutritional or immune-related, such as modulation of gut microbiota, anti-inflammatory properties, or minor circadian rhythm effects from melatonin [712].

This highlights the specificity of breast milk's hormonal activity for neonatal physiology. Potential research avenues include isolating bioactive milk peptides for adult metabolic or immunological applications, rather than endocrine modulation[29].

6. Conclusion

Female hormones in human breast milk are biologically active in infants but do not impact adult endocrine physiology, even if consumed occasionally. Adults derive nutritional, immunological, and minor circadian benefits, not hormonal effects. Understanding hormone degradation and bioavailability in adults clarifies the limited role of breast milk in adult endocrine modulation [137].

Acknowledgment

The authors express their sincere gratitude to Dr. Naweed Imam Syed, Professor, Department of Cell Biology, University of Calgary, for valuable guidance and scientific insights throughout this project.

Authors' Contribution

All authors contributed equally to the study design, data evaluation, writing, and final approval of the manuscript.

Conflict Of Interest

The authors declare no conflict of interest.

Funding

The authors received no financial support for the research, authorship, or publication of this article

7. References

1. Ballard O, Morrow AL. (2013).Human milk composition: nutrients and bioactive factors. *Pediatr Clin North Am*;60:49–74.
2. Andreas NJ, et al.(2015). Human breast milk: hormones and growth factors in the neonatal period. *Front Nutr*;2:17.
3. Quinn EA, et al.(2012). Steroid hormones in human milk: maternal and infant considerations. *J Pediatr Endocrinol1 Metab*.;25:455–64.
4. Berthon BS, et al.(2013). Breast milk hormones and long-term metabolic effects. *Nutr Metab* (Lond);10:1–11.
5. Neville MC, Morton J.(2001). Physiology and endocrine regulation of lactation. *Pediatr Clin North Am*;48:13–34.
6. Ramírez-Torres A, et al.(2018). Prolactin in human milk: stability and bioactivity. *J Hum Lact*;34:72–81.
7. Hassiotou F, Geddes DT.(2015). Immune components of human milk and their role in adult health. Nutrients;7:9658–9672.
8. Pérez-Cano FJ, et al.(2019). Bioactive peptides in human milk: adult health perspectives. *Nutrients*;11:1976.
9. Lönnerdal B.(2016). Bioactive proteins in human milk: mechanisms and implications. *J Pediatr*.;173:S4–S9.
10. Andreas NJ, et al.(2019). Human milk peptides and adult digestive bioavailability. *Front Nutr*.;6:111.
11. Mølgaard C, et al.(2011). Hormones in human milk: analytical methods and implications. *Horm Res Paediatr*;75:237–245.
12. Savino F, et al.(2013). Human milk components and adult metabolism. *Nutr Metab Insights*.;6:1–8.
13. Geddes DT.(2008). Physiological role of breast milk hormones in infant vs adult. *Early Hum Dev*;84:633–639.
14. Hamosh M.(2001). Bioactive factors in human milk. *Pediatr Clin North Am*;48:69–86.
15. Lönnerdal B, et al.(2003). Impact of milk hormones on neonatal and adult physiology. *J Nutr*.;133:2001–2004.
16. Neville MC.(2003). Lactation and hormonal regulation: implications for adult consumers. *Annu Rev Nutr*;23:153–179.
17. Pérez-Cano FJ, et al.(2019). Bioactive milk peptides in adult nutrition. *Nutrients*.;11:1976.
18. Andreas NJ, et al.(2015). Hormones in breast milk: impact on neonatal and adult health. *Front Nutr*;2:17.
19. Ramírez-Torres A, et al.(2018). Stability and activity of prolactin in human milk. *J Hum Lact*;34:72–81.
20. Hassiotou F, et al.(2015). Adult bioactive responses to breast milk peptides. *Nutrients*;7:9658–9672.
21. Lönnerdal B.(2016) Mechanisms of hormone activity in human milk. *J Pediatr*;173:S4–S9.
22. Mølgaard C, et al.(2011). Analytical assessment of milk hormones and adult physiology. *Horm Res Paediatr*;75:237–245.
23. Geddes DT.(2008). Hormonal activity in human milk: neonatal vs adult effects. *Early Hum Dev*.;84:633–639.
24. Ballard O, Morrow AL.(2013). Human milk composition: hormones and growth factors. *Pediatr Clin North Am*.;60:49–74.
25. Neville MC, Morton J.(2001). Endocrine regulation of lactation: implications for adult health. *Pediatr Clin North Am*.;48:13–34.