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THE EFFECT OF BLACK CUMIN EXTRACT ON BREASTFEEDING SUFFICIENCY IN POSTPARTUM MOTHERS

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ABSTRAK : PENGARUH EKSTRAK JINTAN HITAM TERHADAP KECUKUPAN ASI PADA IBU PASCA MELAHIRKAN

Latar Belakang: Kementerian Kesehatan (Kemenkes) mencatat, persentase pemberian ASI eksklusif bayi berusia 0-5 bulan sebesar 71,58% pada 2021. Angka ini menunjukkan perbaikan dari tahun sebelumnya yang sebesar 69,62%. Namun, sebagian besar provinsi masih memiliki persentase pemberian ASI Eksklusif di bawah rata-rata nasional. %. Di Kabupaten Lampung Tengah persentasenya 77,99%. Sedangkan di Puskesmas Seputih Banyak capaian ASI Eksklusif hanya mencapai 50,40 %, angka tersebut belum mencapai target. Berdasarkan wawancara awal yang dilakukan peneliti dengan 10 ibu nifas didapatkan 6 orang tidak tau cara memperbanyak ASI selain dari sayuran hijau, 4 orang tidak tahu penggunaan obat-obatan pelancar ASI atau kandungan pada makanan lain yang dapat memperlancar ASI. Tujuan: diketahui pengaruh ekstrak jintan hitam terhadap kecukupan ASI pada ibu postpartum di Wilayah Kerja Puskesmas Seputih Banyak Kabupaten Lampung Tengah Tahun 2023.

Metode: Jenis penelitian ini merupakan jenis penelitian *kuantitatif*. Desain eksperimen yang digunakan dalam penelitian ini adalah *quasy eksperimental* dengan pendekatan *pretest-posttest control group design*. Populasi dalam penelitian ini adalah seluruh ibu nifas 0-42 hari yang menyusui bayinya dengan estimasi pada 1 Janurai s/d 31 Juni dengan jumlah rata-rata setiap bulan sejumlah 50 orang di Wilayah Kerja Puskesmas Seputih Banyak. Cara pengambilan sampel dalam penelitian ini adalah menggunakan teknik *Purposive sampling*.Sehingga kelompok dalam penelitian ini sebanyak 30 responden. Analisa data univariate dan bivariate menggunakan uji *t-dependen.*

Hasil: Kelancaran produksi ASI yang dilihat dari berat badan bayi sebelum diberi ekstrak jintan hitam dengan *mean* 3795,33gr sedangkan pada kelompok kontrol dengan *mean* 3586,67gr. Kelancaran produksi ASI yang dilihat dari berat badan bayi sesudah diberi ekstrak jintan hitam pada pengukuran ke delapan dengan *mean* 3886,00gr sedangkan pada kelompok kontrol dengan *mean* 3590,00gr. Hasil uji statistik menggunakan *tes-independen* didapat nilai *p-value 0,000* (α<0.05). Kesimpulan: Terdapat pengaruh ekstrak jintan hitam terhadap kecukupan ASI pada ibu postpartum di Wilayah Kerja Puskesmas Seputih Banyak Kabupaten Lampung Tengah Tahun 2023. Diharapkan untuk para kelompok kelas ibu atau ibu kader di Wilayah Kerja Puskesmas Seputih Banyak dapat mengkonsumsi ekstrak jintan hitam sebagai alternatif non farmakologi untuk memperlancar produksi ASI pada kelompok ibu post partum dan menyusui melalui media poster.

Kata Kunci : Ekstrak Jintan Hitam, Kecukupan ASI, Ibu Postpartum

ABSTRACT

Background: The Ministry of Health (MoH) recorded the percentage of exclusive breastfeeding for infants aged 0-5 months at 71.58% in 2021. This figure shows an improvement compared to the previous year, which was 69.62%. However, most provinces still have a percentage of exclusive breastfeeding below the national average. In Central Lampung Regency, the percentage is 77.99%. Meanwhile, in Seputih Banyak Primary Health Care, the achievement of exclusive breastfeeding is only 50.40%, which has not reached the target. Based on the initial interviews to 10 postpartum women, it was found that 6 of them did not know how to increase breast milk production other than consuming green vegetables. 4 of them were not aware of the use of medications or other foods that can enhance breast milk production. Purpose: determine the effect of black cumin extract on breastfeeding sufficiency in postpartum mothers in the working area of Seputih Banyak Primary Health Care of Central Lampung Regency in 2023.

Methods: This study was a quantitative research. The experimental design used quasiexperimental with a pretest-posttest control group design. The population in this study consists of all postpartum women (0-42 days)

who are breastfeeding their babies, taken from January 1 to June 31, with an average number of 50 women in the working area of Seputih Banyak Primary Health Care. The sampling technique used in this study is purposive sampling, resulting 30 respondents in the research group. Univariate and bivariate data analysis were conducted using the dependent t-test.

Result: The continuance of breast milk production, as seen from the baby's weight before being given black cumin extract had a mean of 3795.33 grams, while in the control group, the mean was 3586.67 grams. The continuance of breast milk production, as seen from the baby's weight after being given black cumin extract on the eighth measurement, had a mean of 3886.00 grams, while in the control group, the mean was 3590.00 grams. The results of the statistical test using the independent t-test obtained a p-value of 0.000 ($\alpha<0.05$).

Conclusion: There is an effect of black cumin extract on breastfeeding sufficiency in postpartum mothers in the working area of Seputih Banyak Primary Health Care of Central Lampung Regency in 2023. It is recommended that the maternal class or women cadres in the working area of Seputih Banyak Primary Health Care can consume black cumin extract as a non-pharmacological alternative to enhance breast milk production in the postpartum and breastfeeding group through poster media.

Keywords : Black Cumin Extract, Breastfeeding sufficiency, Postpartum women

INTRODUCTION

The process of childbirth is a common occurrence in pregnant women who have reached full term (37-42 weeks). The birth of the baby into the world involves a lengthy process of uterine muscle contractions accompanied by gradual cervical dilation. This is followed by the mother's pelvic muscles pushing the baby and placenta out through the vagina. Ideally, this process should occur without any complications that could negatively impact the mother and the baby's health, leading to outcomes such as maternal and infant mortality (Rokhamah, 2019).

In an analysis of data from the United Nations Children's Fund (UNICEF), it was found that in 123 countries around the world, the majority of infants have been breastfed at some point in their lives, with a global coverage of 95% of infants having received breastfeeding. However, these numbers vary significantly between low-income, middle-income, and high-income countries. In low and middle-income countries, only about 4% of infants are not breastfed, while in high-income countries, this number is as high as 21%. For instance, countries like Oman, Sweden, and Uruguay have nearly universal rates of breastfeeding, while in other countries, the rates are much lower. For example, in the United States, 74% of babies have been breastfed, while in Ireland, only 55% of babies are breastfed.

As recommended by UNICEF and the World Health Organization (WHO), the widest disparities are observed in West and Central Africa, where 63% of infants in the poorest families are breastfed compared to only 26% in the wealthiest families. Conversely, the gap between rich and poor is smallest in Eastern Europe and Central Asia, where breastfeeding rates among the wealthiest and poorest families are 23% and 31%, respectively (UNICEF, 2021).

The Ministry of Health (MoH) recorded that the percentage of exclusive breastfeeding for infants aged 0-5 months was 71.58% in 2021. This figure indicates an improvement from the previous year's rate of 69.62%. However, most provinces still have exclusive breastfeeding rates below the national average. Gorontalo is noted as the province with the lowest percentage, with only 52.75%. It is followed by Central Kalimantan and North Sumatra with rates of 55.98% and 57.83%, respectively (MoH Indonesia, 2021).

The provision of Breast Milk (ASI) to infants aged 0-1 year holds significant importance, particularly concerning the fulfillment of nutritional needs and other immune system-building substances against diseases. Exclusive breastfeeding during the first 0-6 months is considered highly strategic, as infants at this age are still very delicate and vulnerable to various illnesses. The coverage of infants receiving Exclusive Breastfeeding in the Lampung Province in 2021 was 73.6%, surpassing the targeted rate of 60%. In Lampung Tengah District, the percentage was 77.99%. However, at the Seputih Community Health Center, the achievement of Exclusive Breastfeeding only reached 50.40%, which is below the target (Lampung Province Health Office Profile, 2022).

Breast milk (ASI) consists of proteins, lactose, and a significant amount of fats in an organic salt solution broken down into particles, serving as the transmission pathway from the mother's breast glands (Walyani, 2015). According to Government Regulation Number 33 of 2012 on

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Exclusive Breastfeeding, Breast Milk (ASI) is the secretion fluid from the breast glands. Every mother who gives birth is obligated to provide exclusive breastfeeding to her newborn, except when there are medical indications, the mother is deceased, or the mother is separated from the baby. Breastfeeding also has positive impacts on the mother, such as accelerating postpartum recovery, protecting maternal health against conditions like breast and ovarian cancer, aiding in weight loss, and reducing stress by triggering the release of oxytocin, which induces relaxation (Dwi, 2019).

The World Health Organization (WHO) and UNICEF recommend that newborns up to the age of 6 months should only consume breast milk without any other fluids or foods, except for vitamin, mineral, and/or medication supplements for medical purposes. This practice should continue until the baby is two years old, with the addition of complementary foods. To ensure exclusive breastfeeding for the first 6 months, WHO recommends that mothers initiate breastfeeding within the first hour of the baby's life, avoiding the use of bottles or pacifiers (WHO, 2018).

Galactogogues are substances that can increase the production or flow of breast milk. They can be found in foods, herbal plants, and medications. Some examples of galactogogues include the blessed thistle, fenugreek, fennel, stinging nettle, goat's rue, vervain, and bitter black cumin. (Hidayati, 2019) Bitter black cumin, commonly known as black seed or habbatussauda (nigella sativa), is not widely recognized in society as a breast milk enhancer; it has been known more for its healing properties and as a supplement/vitamin. Bitter black cumin contains lipid compounds and hormonal structures that actively participate in the breast milk production process due to its lactogogic effects. Lactogogues are substances that stimulate, maintain, or increase the production of a breastfeeding mother's breast milk (Ritongga et al., 2017; Hari, 2016; Siregar et al., 2021).

RESEARCH METHODS

This was a quantitative study with experimental design that employed quasi-experimental with a pretest-posttest control group approach.

The population in this study comprised all postpartum mothers within 0-42 days who are breastfeeding their infants, estimated from January 1st to June 31st, with an average monthly count of 50 individuals in the Seputih Banyak Primary Health care. Thus, there are 30 respondents in this study, with 15 subjects in each group, which is considered the minimum for experimental research. The sampling method employed in this research is using the Purposive sampling technique. The variables utilized in this study are Independent Variable (Black cumin extract) and Dependent Variable (Adequacy of breast milk / ASI). The study conducted by Zakaria (2022), titled "The Influence of Black Cumin (Nigella Sativa) on Breastfeeding Mothers," utilized bivariate analysis with Wilcoxon and Mann Whitney tests. The results indicated a significant difference in breast milk volume ($p = 0.001$) between the control and intervention groups. This research recommends the implementation of black cumin as a strategy to enhance breast milk volume in breastfeeding mothers.

Based on initial interviews conducted with 10 postpartum mothers, the researcher found that 6 of them were unaware of methods to increase breast milk supply apart from consuming green vegetables, while 4 were unaware of the use of lactation-promoting medications or other foods that could aid lactation.

Considering the information above, the researcher is interested in conducting a study titled "The Influence of Black Cumin Extract on Breastfeeding Sufficiency in Postpartum Mothers within the Seputih Banyak Primary Health care, Central Lampung Regency, in the Year 2023."

RESEARCH RESULTS

Based on Table 1, it can be observed that the characteristics of the respondents based on age show that 13 respondents (86.7%) in the intervention group and 11 respondents (73.3%) in the control group fall within the non-risk age range of 20-35 years. The majority of infants are male, with 8 respondents (53.3%) in the intervention group and 8 respondents (53.3%) in the control group being female.

Table 1
Characteristics of Postpartum Mothers in the Working Area of Seputih Banyak Primary Health Care Central Lampung Regency in 2023

Characteristics	Intervention		control	
	F	P(%)	F	P(%)
Age				
Not at risk	13	86,7	11	73,3
At risk	2	13,3	4	26,7
Gender of the Children				
Male	8	53,3	7	46,7
Female	7	46,7	8	53,3

Univariate Analysis

Table 2
Average Breastfeeding Sufficiency in Postpartum Mothers Before Administered Black Cumin Extract in the Working Area of Seputih Banyak Primary Health Care Central Lampung Regency 2023

Breastfeed suf	N	Mean	SD	SE	CI 95%
Wt Pretest Intervention	15	3795,33	159,726	41,241	113,896
Wt Pretest Control	15	3586,67	81,211	20,969	303,438

From Table 2, it can be observed that the smoothness of breast milk production, as assessed by the infant's weight before receiving black cumin extract, in the working area of Seputih Banyak Primary Health Care, Central Lampung Regency, Year 2023, had a mean weight of 3795.33 grams in the intervention group, whereas in the control group, the mean weight was 3586.67 grams.

Table 3
Average Breastfeeding Sufficiency in Postpartum Mothers After Administered Black Cumin Extract in the Working Area of Seputih Banyak Primary Health Care Central Lampung Regency 2023

Breastfeed suf	N	Mean	SD	SE	CI 95%
Wt Posttest Intervention	15	3886,00	154,956	40,010	204,157
Wt Posttest Control	15	3590,00	78,376	20,237	387,843

From Table 3, it can be observed that the smoothness of breast milk production, as assessed by the infant's weight after having black cumin extract, in the working area of Seputih Banyak Primary Health Care, Central Lampung Regency, Year 2023, during the eighth measurement, had a mean weight of 3886.00 grams in the intervention group, whereas in the control group, the mean weight was 3590.00 grams.

Bivariate Analysis

Table 4
The Effect of Black Cumin Extract on Breastfeeding Sufficiency in Postpartum Mothers in the Working Area of Seputih Banyak Primary Health Care Central Lampung Regency 2023

Breastfeed suf	N	Mean	Std. Dev	Selisih Mean	p-Value	CI-95%
Posttest Intervention	15	3886,00	154,956	90,67		202,682
Control	15	3590,00	78,376	3,33		89,318

From Table 4, it is evident that the difference in breast milk production, as assessed by the infant's weight after receiving black cumin extract, in the working area of Seputih Banyak Primary Health Care, Central Lampung Regency 2023, during the eighth measurement, had a mean weight of 3886.00

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grams in the intervention group, whereas in the control group, the mean weight was 3590.00 grams.

The difference in the mean difference of breast milk production, as seen from the infant's weight before and after receiving black cumin extract, in the working area of Seputih Banyak Primary Health Care, Central Lampung Regency, Year 2023, during the eighth measurement, in the pre-test control was 3586.67 grams, while in the post-test control it was 3590.00 grams, resulting in a mean difference of 3.33 grams. Meanwhile, in the pre-test intervention, the mean was 3795.33 grams, and in the post-test intervention, it was 3886.00 grams, resulting in a mean difference of 90.67 grams.

DISCUSSION

Average Breastfeeding Sufficiency in Postpartum Mothers Before Receiving Black Cumin Extract in the Working Area of Seputih Banyak Primary Health Care, Central Lampung Regency 2023

Breast milk production, as observed from the infant's weight before receiving black cumin extract in the working area of Seputih Banyak Primary Health Care, Central Lampung Regency in 2023, had a mean weight of 3795.33 grams, while in the control group, the mean weight was 3586.67 grams.

According to the theory proposed by Fikawati (2015), breast milk is the best food for infants in their first 6 months of life. All nutritional needs such as protein, carbohydrates, fats, vitamins, and minerals are fulfilled through breast milk. Early breast milk contains immune substances from the mother that protect the baby from diseases that cause infant mortality worldwide, such as diarrhea, acute respiratory infections, and pneumonia. In adulthood, it has been proven that babies who are breastfed have a lower risk of degenerative diseases like hypertension, type 2 diabetes, and obesity. Hence, since 2001, WHO recommends exclusive breastfeeding for babies up to 6 months of age.

The success of breastfeeding is greatly influenced by a comfortable environment and support from the spouse or family during the nursing process. Conversely, the inability of mothers to breastfeed is influenced by various factors. The mental and psychological factors of a nursing mother have a significant impact on the breastfeeding process and the smoothness of breast milk production. Feelings of stress, depression, and discomfort experienced by a mother can inhibit the amount of breast milk produced.

According to the researcher, breast milk production, as observed from the infant's weight, represents the success of a mother in providing nutrition to her child. The increase in the baby's weight is used to monitor growth in the first three months of life. After 6 months, the baby will begin to receive complementary foods, marking the end of exclusive breastfeeding. This can be seen from the average weight gain of babies, which reaches 150-200 grams per week (Nurhasanah, 2016). If a mother encounters issues with breast milk production, it can result in insufficient milk supply, indicating the mother's inability to provide adequate nutrition to the baby. Thus, techniques like breast massage and oxytocin stimulation are essential to maximize breast milk production's smoothness, especially in the pursuit of a baby's growth during the first 3 months. In this study, the average breast milk production's smoothness was obtained from 15 respondents with infant weight in the intervention group, resulting in a mean of 3795.33 grams.

Average Breastfeeding Sufficiency in Postpartum Mothers After Administered Black Cumin Extract in the Working Area of Seputih Banyak Primary Health Care, Central Lampung Regency in 2023

Breast milk production, as observed from the infant's weight after receiving black cumin extract in the working area of Seputih Banyak Primary Health care during the eighth measurement, had a mean weight of 3886.00 grams, while in the control group, the mean weight was 3590.00 grams.

This study bears similarities to the research conducted by Nurul Hidayati in 2019, titled "The Effect of Nigella Sativa Extract on Breast Milk Production in Breastfeeding Mothers at PMB Afah Fahmi Amd.Keb Surabaya." The results of that study indicated the influence of Nigella sativa extract on breastfeeding production in mothers.

According to the theories proposed by Bahriyah et al. (2017) and Nurbaiti (2018), breast milk plays a crucial role in maintaining the health and survival of infants. Infants exclusively breastfed tend to have better immune systems compared to those who aren't exclusively breastfed. Therefore, such infants are less prone to illnesses and nutritional problems. Insufficient breast milk intake can result in an imbalance in the baby's nutritional needs, which, in turn, can negatively impact their growth and development. In the control group, where black cumin extract was not given, the infant's weight also increased, albeit not significantly. This can be attributed to nursing mothers receiving adequate nutritional intake during breastfeeding,

which can affect the smoothness of breast milk production.

Within 14 days postpartum, the mother's breast milk enters the Mature Breast Milk stage, which means the milk output becomes relatively constant and stable. Additionally, the baby's weight returns to its birth weight and begins to increase. During this time, the baby establishes a regular nursing pattern. Many babies finish nursing within 5-10 minutes, although some might take longer, up to half an hour. This variation is not a concern as each baby's nursing needs are unique. To maintain breast balance, it's recommended to nurse from both breasts during each feeding session.

Bivariate Analysis

The Effect of Black Cumin Extract on Breastfeeding Sufficiency in Postpartum Mothers in the Working Area of Seputih Banyak Primary Health Care Central Lampung Regency in 2023

The statistical test results using an independent t-test yielded a p-value of 0.000 (α<0.05), indicating a significant impact of black cumin extract on breastfeeding sufficiency in postpartum mothers within the Seputih Banyak Primary Health Care, Central Lampung Regency in 2023.

This outcome aligns with the theory proposed by Siregar et al. (2021), asserting that the administration of black cumin can enhance breast milk production. This is attributed to the lipid content and hormonal structure present in black cumin. These active compounds actively participate in the breast milk production process by exhibiting lactogogic effects. The polyphenol content in black cumin also plays a role in increasing prolactin and oxytocin levels, as evidenced by Hidayati's study (2019) titled "The Effect of Nigella Sativa Extract on Breast Milk Production in Breastfeeding Mothers at PMB Afah Fahmi Amd.Keb Surabaya," which showed a significant impact of nigella sativa extract on breast milk production with a p-value of 0.000 (<0.05).

Baby growth is influenced by genetics, overall health, and nutrition. To assess whether a baby's growth is appropriate, weight, height, and head circumference measurements are compared to the WHO growth curves, which serve as ideal references for infant growth. Regularly taking the baby to health centers, midwives, doctors, or pediatricians for measurements on a monthly basis enables us to gauge the adequacy of the baby's growth. This approach allows prompt intervention if the baby's weight gain deviates from the reference curve (Fitra, 2017).

In this study, a difference in breast milk production adequacy, as observed from infant weight, was noted after the administration of black cumin extract in the Working Area of Seputih Banyak Primary Health Care, Central Lampung Regency. During the eighth measurement, the mean weight was 3886.00 grams in the intervention group, whereas in the control group, it was 3590.00 grams.

According to the researcher's perspective, the difference in infant weight resulting from the administration of black cumin extract to mothers can affect the smoothness of breast milk secretion, which in turn impacts infant weight. Although the increase might not be significant, during the first week after birth, babies tend to lose weight due to fluid reduction, leading to weight reduction during weighing sessions. This first week is when infants need to receive proper nutrition through breast milk, which can be facilitated by the regular consumption of black cumin extract.

As noted by Dewi (2012), lactogogues are substances believed to stimulate, maintain, or enhance the production of mother's milk. Low breast milk production is the most common reason mothers/parents decide to stop breastfeeding. Therefore, mothers and doctors actively seek remedies to address this issue. Black cumin (Nigella sativa) is a natural lactogogue and an alternative option for increasing breast milk production. The mechanism of action of black cumin extract involves its polyphenol content, stimulating the hypothalamus to produce prolactin hormone, stimulating alveoli, and triggering the let-down reflex, resulting in smooth breast milk production.

Weight gain represents the increase or decrease in all bodily tissues, including bones, muscles, fat, body fluids, and more. Weight serves as the best indicator for assessing the current state of nutrition and infant growth.

Infant weight gain occurs irregularly, especially in breastfeeding infants. On average, weight gain ranges between 150-200 grams per week and tends to slow down after three months, further slowing after six months. Of course, babies experience growth spurts and deviations from normal weight gain at times due to various factors, including genetics, hormones, and the environment (Khasanah, 2013).

However, an infant is considered to be growing optimally when physical growth (weight and height) is accompanied by good cognitive abilities and creativity. Babies typically lose weight in the

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first few days after birth, around 10% of their birth weight, which is considered normal due to the excretion of meconium and urine. This weight loss is expected and it takes about 10 to 14 days for babies to regain their birth weight. Healthy babies might take even longer.

CONCLUSION

From the research conducted by the researcher with the title "The Effect of Black Cumin Extract on Breastfeeding Sufficiency in Postpartum Mothers in the Working Area of Seputih Banyak Primary Health Care, Central Lampung Regencyin 2023," the following conclusions were drawn:

1. Breast milk production sufficiency, as observed from infant weight before being administered black cumin extract, had a mean of 3795.33 grams, while in the control group, it had a mean of 3586.67 grams. The control group showed a mean of 3586.67 grams in pretest and a mean of 3590.00 grams in posttest, resulting in a mean difference of 3.33 grams.
2. Breast milk production sufficiency, as observed from infant weight after receiving black cumin extract, showed a mean of 3886.00 grams during the eighth measurement, while in the control group, it had a mean of 3590.00 grams. The intervention group displayed a mean of 3795.33 grams in pretest and a mean of 3886.00 grams in posttest, resulting in a mean difference of 90.67 grams.
3. The statistical test results using an independent t-test yielded a p-value of 0.000 ($\alpha<0.05$), indicating a significant impact of black cumin extract on breastfeeding sufficiency in postpartum mothers within the Working Area of Seputih Banyak Primary Health Care, Central Lampung Regency, Year 2023.

RECOMMENDATIONS

For the Toddler Class Group

It is recommended that the toddler class group within the Working Area of Seputih Banyak Primary Health Care consider consuming black cumin extract as a non-pharmacological alternative to enhance breast milk production among postpartum and breastfeeding mothers. This information can be conveyed through educational posters.

For the Working Area of Seputih Banyak Primary Health Care

Healthcare personnel within the Working Area of Seputih Banyak Primary Health Care are advised to provide health education and awareness to mothers of newborns, in line with government initiatives to support Exclusive Breastfeeding programs. This includes educating families and husbands about the benefits of consuming black cumin extract to promote breast milk production.

For Future Researchers

Future researchers are encouraged to use this study as a reference and additional resource for investigations related to non-pharmacological alternatives to enhance breast milk production. Furthermore, researchers are urged to conduct studies that compare multiple groups and incorporate controlled dietary interventions among postpartum mothers.

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