

The Effect Of Papaya Leaf Decoction On Increasing Breast Milk Production In Postnatal Mothers At The Pasirkuda Health Center Cianjur Regency Year Of 2025

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ABSTRACT

*Breast milk (ASI) is the primary source of nutrition for newborns and plays a crucial role in growth, development, and immune system formation. However, many postpartum mothers experience suboptimal milk production, which may hinder the success of exclusive breastfeeding. Non-pharmacological efforts, including the use of herbal remedies, are often applied to support lactation. One of the plants believed to have galactagogue effects is papaya leaves (*Carica papaya* L.), which contain bioactive compounds such as papain, flavonoids, vitamins A, C, and E, as well as minerals that stimulate prolactin and oxytocin hormones, thereby enhancing milk production. This study aimed to determine the effect of consuming papaya leaf decoction on breast milk production among postpartum mothers. The research design employed a pre-experimental method with a pretest-posttest approach. A total of 30 postpartum mothers were selected based on inclusion criteria. Breast milk production was measured before and after the intervention of papaya leaf decoction, and the data were analyzed using the Paired Sample T-Test with SPSS version 27. The results showed that the mean breast milk production before intervention was 67.03 ml, ranging from 60 to 80 ml. After consuming papaya leaf decoction, the mean increased to 130.63 ml, with a range of 70–180 ml. Statistical analysis revealed a *p*-value of 0.000 ($p < 0.05$), indicating a significant difference in breast milk production before and after the intervention. In conclusion, papaya leaf decoction significantly increases breast milk production in postpartum mothers. This finding recommends papaya leaf decoction as a simple, natural, and affordable herbal intervention to support the success of exclusive breastfeeding programs.*

Keywords: Breast milk, postpartum mothers, papaya leaf decoction, milk production

I. INTRODUCTION

Exclusive breastfeeding begins within one hour after birth and continues until the baby is 6 months old (Horwood et al., 2020). Early breastfeeding initiation and exclusive breastfeeding can help children survive and have the antibodies needed to

protect them from common diseases, such as diarrhea and pneumonia. Children who are breastfed show better results on intelligence tests and are less likely to develop obesity and diabetes. In addition, breastfeeding also provides health, nutritional, and emotional benefits for both the child and the mother (Amalia, 2023)

The WHO recommends that infants be exclusively breastfed from birth until six months of age and then continue breastfeeding alongside age-appropriate complementary foods for two years and beyond. Babies who are exclusively breastfed are 14 times less likely to die than babies who are not breastfed. However, currently only 41% of babies aged 0-6 months are exclusively breastfed worldwide, which is below the target set by WHO member states to increase exclusive breastfeeding coverage to 50% by 2025 (UNICEF, 2022). *The United Nations Children's Fund* (UNICEF) states that 44% of newborns worldwide receive breast milk within the first hour of birth, yet few infants under six months of age are exclusively breastfed. The coverage of exclusive breastfeeding in Central Africa is 25%, Latin America and the Caribbean 32%, East Asia 30%, South Asia 47%, and developing countries 46%. Overall, less than 40 percent of children under six months of age are exclusively breastfed. This is not in line with the WHO target of increasing exclusive breastfeeding in the first six months to at least 50 percent. This is the fifth WHO target for 2025 (UNICEF, 2022).

The under-five mortality rate (U5MR) worldwide reaches 58% due to malnutrition. Exclusive breastfeeding for six months can reduce the U5MR by 13%, as stated by Girsang et al. in 2021. According to *World Health Organization* (WHO) data, one of the targets for 2025 is to improve infant health by ensuring that at least 50% of infants receive exclusive breastfeeding. However, the current rate of exclusive breastfeeding is still below this target, with only 25% in Central African countries, 30% in East Asia, 47% in South Asia, 32% in Latin America and the Caribbean, and 46% in developing countries. Overall, less than 40% of children under six months of age receive exclusive breastfeeding. (Juliani, S., 2021)

Based on national data from 2020, around 67% of breastfeeding mothers experience difficulties in producing breast milk, as reported by Rahmawati and Saidah in 2021. According to Riskesdas data from 2018, the rate of breastfeeding for children aged 0-5 months in Indonesia was 37.3% for exclusive breastfeeding, 9.3% for partial breastfeeding, and 3.3% for primary breastfeeding, as reported by the Indonesian Ministry of Health in 2018. This explains that breastfeeding in Indonesia is still far below the global target that has been set.

According to the Central Statistics Agency in 2023, the percentage of infants under 6 months of age who were exclusively breastfed in Indonesia over the past 3 years has increased from the previous year, namely 66.99% in 2021, in 2022 it was 69.2%, and in 2023 it was 71.58% (Central Statistics Agency, 2023). The West Java Health Profile for the past three years shows an increase in the percentage of exclusive breastfeeding from 2021 (71.11%), 2022 (76.11%), and 2023 (76.46%) (Central Statistics Agency, 2023) However, this figure has not yet reached the national target of 80%

(Ministry of Health of the Republic of Indonesia, 2023)

Based on data from the Cianjur District Health Office, exclusive breastfeeding coverage in 2022 was 71.03% and increased in 2023 to 71.85%. Nationally, the coverage of babies receiving exclusive breastfeeding in 2023 was 56.9%. This figure has exceeded the 2023 program target of 40%. (Health Office, 2023) . Preliminary survey results in the Pasirkuda Community Health Center Working Area in May-June 2025 showed that there were approximately 36 postpartum mothers. Of the 14 postpartum mothers surveyed, 9 (64.28%) experienced problems with milk production, while 5 (35.72%) did not experience such problems. Problems with milk production are still quite common. The results of this survey show that many postpartum mothers still experience difficulties in producing breast milk.

Postpartum mothers often face a number of challenges in breastfeeding, including problems with milk production. This situation has the potential to negatively impact the rate of exclusive breastfeeding during the first six months of a baby's life, as stated by Winarni and colleagues in 2020. In general, the transition period from colostrum to mature breast milk occurs between the 4th and 10th day after giving birth. As many as 42.5% of postpartum mothers often face obstacles in breast milk production, as found by Rauda and Harahap in 2023 (Rauda & Harahap, 2023)

Several factors contributing to the low rate of exclusive breastfeeding up to 6 months of age include mothers' lack of confidence in their ability to produce sufficient breast milk to meet their babies' needs. Other factors include premature birth, suboptimal maternal health, stress levels, discomfort, separation of mother and baby after delivery, limited maternal knowledge, employment outside the home, minimal support from husbands, families, and health workers, as well as difficulty understanding how to breastfeed properly when returning to work. An additional factor is the inability to produce sufficient breast milk in the early days after giving birth, which may force mothers to give their babies formula milk. Research shows that around 38% of mothers stop breastfeeding due to insufficient milk production. Providing foods containing lactagogues can be one way to increase milk production, as found by Amalia in 2023. A lack of breast milk in newborns can lead to nutritional deficiencies that can negatively impact a child's growth and development. (Amalia, 2023) .

The impact of breast milk production problems can affect the health of infants. Infants who do not receive exclusive breast milk are more prone to stunting, obesity, allergies, malnutrition, asthma, and eczema. In addition, infants may also experience slower cognitive development and an increased risk of chronic diseases such as type 2 diabetes and heart disease. Meanwhile, breast milk production problems can increase the health risks of infants who do not receive exclusive breastfeeding, making them more susceptible to infections such as respiratory tract infections, diarrhea, and ear infections. In addition, infants may also experience digestive disorders such as diarrhea and constipation. Lack of breast milk can also affect the emotional bond between

mother and baby, which can lead to stress and anxiety in the baby. (Rauda & Harahap, 2023)

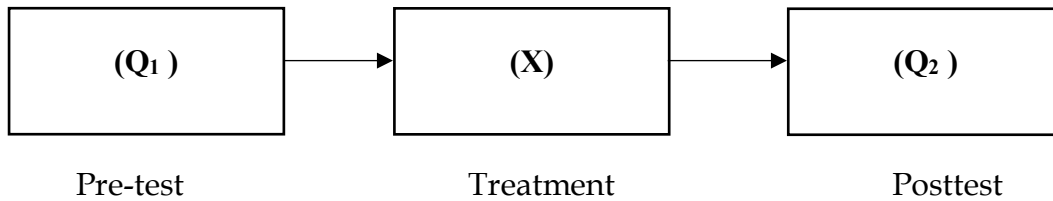
To overcome the problem of insufficient breast milk, there are simple options, such as preparing ingredients traditionally. Previous research shows that papaya leaves are considered one of the herbal ingredients that can increase breast milk production (Astutti, 2017). Papaya leaves contain various types of vitamins that are important for the growth and development of babies and the health of mothers, making them a very potential source of nutrition. Papaya leaves contain many types of protein, vitamins, calcium (Ca), and iron (Fe), which can help increase hemoglobin production in the blood. This can increase oxygen levels in the blood and improve the body's metabolism, which in turn allows brain cells to function normally. (Tri Handayani et al., 2022)

Research conducted by Nara Lintan in 2021 found that before mothers were given papaya leaves as an intervention, all respondents (100%) experienced 16 cases of poor breast milk production, and after being given papaya leaves, the majority of respondents reported that 12 (75%) had improved breast milk production. (Puspita et al., 2021). Papaya leaves contain lactagogues, substances that have the ability to increase and facilitate breast milk production. Compared to katuk and bitter melon leaves, papaya leaves are considered a traditional herbal supplement that can increase breast milk production. (Amalia, 2023b)

Based on preliminary studies at the Pasirkuda Community Health Center, interviews with 10 postpartum mothers revealed complaints of insufficient milk production, with milk coming out in small amounts, causing the babies to become fussy. Ultimately, the mothers and their families decided to supplement with formula because they felt that the mothers' milk was not sufficient to meet the babies' needs. Based on the above explanation, the author is interested in conducting a study entitled "The Effect of Papaya Leaf Decoction on Increasing Breast Milk Production in Postpartum Mothers at the Pasirkuda Community Health Center in Cianjur Regency in 2025."

II. RESEARCH METHOD

This study used a quasi-experimental research design with a *one-group pre-test and post-test* approach, where the researcher conducted the first observation (*pre-test*) and the second observation after the treatment (*post-test*) (Sugiono, 2019). In this study, the aim was to determine the effect of papaya leaf decoction on increasing breast milk production in postpartum mothers at the Pasirkuda Health Center in Cianjur Regency in 2025.



Data collection was conducted by collecting primary data obtained from observations of postpartum mothers during the month of July 2025. In this study, the researcher administered papaya leaf decoction to observe an increase in breast milk production. Additionally, primary data was also obtained from pretest and posttest results. Secondary data is research data obtained through intermediaries or indirectly in the form of journals, books, notes, existing evidence, or archives, both published and unpublished. The data analysis performed was univariate data analysis and bivariate data analysis.

III. RESULTS AND DISCUSSION

Based on the results of research conducted at the Pasirkuda Community Health Center in Cianjur Regency, there were 30 respondents. The variables studied included the effect of papaya leaf decoction on increasing breast milk production in postpartum mothers at the Pasirkuda Community Health Center in Cianjur Regency. The following are the results of univariate and bivariate data analysis obtained in tabular form.

Univariate Analysis Results

1. Average breast milk production in postpartum mothers before consuming papaya leaf decoction

Table 1
Average breast milk production in postpartum mothers before consuming papaya leaf decoction

Papaya Leaf Decoction	N	Mean	Min	Max
High Breast Milk Production	30	67.03	60	80

Source: SPSS *Software* Version 27

Based on Table 1, the average breast milk production in postpartum mothers before consuming papaya leaf decoction was obtained from 30 respondents with an average breast milk output of 67.03 ml, a minimum output of 60 ml, and a maximum output of 80 ml.

2. Average breast milk production in postpartum mothers after consuming papaya leaf decoction

Table 2
Average breast milk production in postpartum mothers after consuming papaya leaf decoction

Papaya Leaf Decoction	N	Mean	Min	Max
High Breast Milk Production	30	130.63	70	180

Source: SPSS *Software* Version 27

Based on Table 2, the average breast milk production in postpartum mothers after consuming papaya leaf decoction was obtained from 30 respondents with an average breast milk output of 130.63 ml, the lowest output of 70 ml, and the highest output of 180 ml.

Normality Test

Normality test using the Shapiro-Wilk test with 30 respondents in the papaya leaf decoction intervention

Table 3
Data Normality Test Results

	Statistics	df	Sig	Description
Pretest	0.934	30	0.063	Normally Distributed
Posttest	0.936	30	0.074	Normal Distribution

Source: SPSS *Software* Version 27

Based on Table 3, it is known that the significant value (sig) in the pretest is 0.063 and in the posttest is 0.074. Because both significant values are greater than 0.05, it can be concluded that the breast milk production data in postpartum mothers, both before and after giving papaya leaf decoction, is normally distributed. Therefore, further data analysis can be continued using the paired sample t-test to determine the difference in the average breast milk production before and after the intervention.

Paired Sample t-Test

Table 4
Effect of consuming papaya leaf decoction before and after on breast milk production in postpartum mothers

Breast milk output	N	Mean	Min	Max	P Value
Pretest	30	67.03	60	80	0.000
Posttest	30	130.63	70	180	

Source: SPSS *Software* Version 27

Based on Table 4, the results of data analysis using statistical tests (Paired Sample T-Test) show that the average breast milk production of postpartum mothers before being given papaya leaf decoction intervention was 67.03 ml with a minimum value of 60 ml and a maximum value of 80 ml. After being given the papaya leaf decoction intervention, the average breast milk production increased to 130.63 ml with a minimum value of 70 ml and a maximum value of 180 ml.

The statistical test results showed a p-value of 0.000 (< 0.05), which means that there was a significant difference between the breast milk production of postpartum mothers before and after consuming papaya leaf decoction. Thus, it can be concluded that papaya leaf decoction has an effect on increasing breast milk production in postpartum mothers.

Distribution of average breast milk production in postpartum mothers before consuming papaya leaf decoction

The results showed that the average breast milk production in postpartum mothers before being given papaya leaf decoction was 67.03 ml, with a minimum output of 60 ml and a maximum output of 80 ml.

This average value indicates that, in general, postpartum mothers are able to produce sufficient breast milk for their babies' needs, although there are variations in production between individuals. These differences can be influenced by physiological, psychological, and environmental factors. Physiological factors include breast condition, prolactin and oxytocin hormone balance, and the mother's nutritional status. Psychological factors include feelings of calmness, stress, and family support. Meanwhile, environmental factors can include breastfeeding frequency, pumping techniques, and the mother's rest patterns.

Low breast milk production (60 ml/day) indicates that some postpartum mothers experience obstacles in the lactation process, potentially preventing them from optimally meeting their babies' needs. Conversely, respondents with higher breast milk production (up to 80 ml/day) indicate that the lactation mechanism is functioning well and that mothers are able to maintain breast milk production volume according to their needs. Overall, these data illustrate that although most postpartum mothers already have sufficient milk production, efforts to increase it through specific interventions are

still needed, one of which is by administering papaya leaf decoction, which is traditionally believed to increase milk production.

According to Utami's theory, milk production is greatly influenced by the hormones prolactin and oxytocin. Prolactin stimulates the alveolar cells in the breast to produce milk, while oxytocin plays a role in the process of milk ejection through the let-down reflex mechanism. In the early postpartum period, breast milk production usually increases gradually with the frequency of breastfeeding and stimulation of the breasts (Utami, 2020).

This study is in line with the research by Wulandari et al. (2020) in their study of 32 postpartum mothers, which found that the average breast milk production before herbal intervention was around 420 ml per day, and increased significantly to 540 ml per day after intervention. This study shows that herbal-based interventions can improve breast milk production that was previously limited (Wulandari, 2020)

Wulandari's research also shows that the average breast milk production in postpartum mothers before a specific intervention was 400–500 ml per day. This indicates that the range of breast milk production found in this study is still in line with the literature and previous studies. Additionally, a study conducted by Dewi (2019) states that variations in breast milk production in breastfeeding mothers can be caused by psychological factors such as stress and fatigue, as well as physiological factors such as nutrition and breastfeeding frequency (Wulandari, 2022)

Sari & Nugraheni (2022) investigated serum prolactin levels in postpartum mothers given papaya leaf extract. The results showed a significant increase in prolactin levels from an average of 78 ng/ml to 103 ng/ml after the intervention, which was directly proportional to the increase in breast milk volume. This proves that the effect of papaya leaves on breast milk production does occur through hormonal mechanisms (Sari, M., & Nugraheni, 2022)

According to the researchers, before the intervention with papaya leaf decoction, breast milk production in postpartum mothers was already occurring naturally. This is evident from the average of 67.03 ml per day obtained from the respondents. The researchers assumed that this figure reflects the postpartum mother's body's ability to perform its physiological functions without additional external assistance.

Researchers also assume that variations in breast milk production among respondents who produce 60 ml to 80 ml are influenced by individual conditions. Some mothers may be physically fitter, have better nutritional intake, or receive strong psychological support, resulting in higher production. Conversely, there are also mothers who experience fatigue, stress, or lack of nutritional intake, resulting in relatively low breast milk production.

Based on these observations, researchers believe that although most postpartum mothers are able to produce sufficient breast milk for their babies' needs, there are still groups of respondents who require additional intervention. Therefore, papaya leaf

decoction is considered relevant to be tested as an alternative measure to increase breast milk production in postpartum mothers with low production.

Average distribution of breast milk production in postpartum mothers after consuming papaya leaf decoction

The results showed that after being given papaya leaf decoction, the average breast milk production in postpartum mothers increased to 130.63 ml, with a minimum output of 70 ml and a maximum output of 180 ml from 30 respondents. This figure shows a significant increase compared to the condition before the intervention, where the average milk production was only 67.03 ml per 1x pumping per day.

In addition to the increase in breast milk volume, respondents also experienced changes in pumping frequency. Previously, pumping was done an average of five times per day, but after the intervention, most respondents felt that their breasts filled up more quickly, so they pumped more often, averaging 6–8 times per day. This is in line with the physiological principle that the more often the breasts are emptied, the stronger the stimulation of the hormones prolactin and oxytocin, which will ultimately maintain and even increase milk production.

This increase is thought to be related to the bioactive content in papaya leaves, such as flavonoids, saponins, and alkaloids, which play a role in increasing the work of the prolactin hormone and facilitating blood flow to the breast tissue. With smooth blood circulation, the milk secretion process becomes more optimal.

These findings are in line with Handayani's (2021) research, which states that consuming herbal remedies made from papaya leaves can significantly increase breast milk volume in postpartum mothers. Similarly, Nugraheni's (2020) study found that phytoestrogen compounds in certain plants can stimulate the hormonal system that supports the lactation process.

Papaya leaves contain bioactive compounds such as flavonoids, alkaloids, saponins, and papain enzymes. Flavonoids are known to stimulate prolactin hormone secretion, thereby increasing breast milk production. In addition, the vitamin A, C, B complex, calcium, and iron content in papaya leaves supports the health of mothers while improving the quality of breast milk (Sari, D., & Wahyuni, 2021)

Breast milk production is influenced by the work of two main hormones, namely prolactin and oxytocin. Prolactin stimulates the alveoli cells in the breasts to produce breast milk, while oxytocin plays a role in the process of breast milk release through the let-down reflex mechanism. When these two hormones work optimally, breast milk production and release will increase. Papaya leaves are known to contain several active compounds, including flavonoids, saponins, and alkaloids. Flavonoids have the ability to stimulate an increase in prolactin activity by increasing the sensitivity of prolactin receptors in the mammary glands. Meanwhile, saponins and alkaloids can strengthen hormonal function so that more breast milk is produced. Thus, regular consumption of

papaya leaf decoction can help increase breast milk production through these physiological mechanisms (Suryani, T., 2020).

Rahmawati studied the effect of papaya leaf decoction on breast milk production in postpartum mothers at a community health center. The results showed a significant increase in breast milk volume after mothers regularly consumed papaya leaf decoction for 7 consecutive days. This study confirmed that the group given the intervention experienced a faster increase in breast milk production compared to the control group. This is in line with the results of the current study, where the average breast milk production increased to 787 ml after consuming papaya leaf decoction (Rahmawati, 2020).

In line with Handayani and Putri's research, which examined the effectiveness of herbal interventions, including papaya leaves, in supporting lactation. Their research found that the use of herbs was preferred by postpartum mothers because they are safe, inexpensive, and have minimal side effects. Their study results showed that papaya leaves were proven to increase lactation success and breast milk volume in postpartum mothers. This is consistent with the results of this study, which showed an increase in average breast milk production after papaya leaf decoction intervention. (Handayani, E., & Putri, 2022)

From the results of this study, it can be assumed that the increase in breast milk production in postpartum mothers after consuming papaya leaf decoction is not only influenced by the bioactive compounds in papaya leaves that stimulate prolactin hormones but also by the mothers' psychological factors. Postpartum mothers who receive attention and intervention tend to feel more confident, calm, and motivated. This emotional state supports the work of the oxytocin hormone, making the breast milk production process smoother. Thus, papaya leaf decoction has a dual effect: the biological effect of its active compounds and the psychological effect of the postpartum mother's sense of comfort.

The effect of consuming papaya leaf decoction on breast milk production in postpartum mothers

Breast milk production in postpartum mothers showed a significant increase after the papaya leaf decoction intervention, both in terms of volume and frequency of production. The results of *the Paired Sample T-Test* reinforced this finding with a p-value = 0.000 ($p < 0.05$), which means that the difference before and after the intervention was proven to be significant. This condition indicates that consumption of papaya leaf decoction can provide physiological effects that support smooth lactation, making it worth considering as a non-pharmacological option to help postpartum mothers increase milk production.

Theoretically, the smoothness of breast milk production is influenced by the work of the hormone prolactin, which stimulates breast milk formation, and oxytocin, which triggers the reflex to release breast milk. The factor of stimulation through breast

emptying is also a major trigger. The active compounds in papaya leaves, such as flavonoids, alkaloids, and saponins, are thought to act as phytoestrogens that can strengthen these hormonal mechanisms, increase blood circulation to breast tissue, and improve the metabolism of postpartum mothers, thereby optimizing milk production.

These research findings are consistent with previous studies. Mawaddah (2022) found that administration of papaya leaf extract capsules significantly increased breast milk volume in breastfeeding mothers. Further research by Mawaddah (2024) even proved that the combination of papaya leaf extract capsules with moringa leaves was able to significantly increase prolactin hormone levels, so that the hormonal mechanisms that support lactation worked more optimally (Mawaddah, 2024).

Similar results were also reported by Besmaya et al. (2022) in the Bernung Community Health Center, Gedongtataan. In this study, postpartum mothers who were given papaya leaf extract for seven days showed a significant increase in breast milk production compared to the control group with a *p*-value of 0.002. These findings were reinforced by Novalis et al. (2022), who studied the effectiveness of papaya decoction at the Paringin Community Health Center in Balangan and found a significant difference in breast milk volume between the experimental and control groups with a *p*-value of 0.007 (Novalis, D., 2022).

Meanwhile, Felina & Lestari (2022) studied the effect of papaya leaf decoction on postpartum mothers with anemia in Agam Regency. The results showed an increase in average breast milk volume after seven days of intervention, with a *p*-value of 0.001. This indicates that papaya leaf decoction is not only beneficial for normal postpartum mothers but also for mothers with specific health conditions such as anemia (Felina, A., & Lestari, 2022)

Thus, it can be concluded that the results of this study align with lactation physiology theory and are consistent with previous research. The increase in breast milk production after the papaya leaf decoction intervention proves that this plant has great potential as a natural galactagogue that is safe, easily obtained, and affordable. Therefore, papaya leaf decoction can be used as a non-pharmacological strategy to support the success of exclusive breastfeeding programs, especially for postpartum mothers who experience breast milk production barriers.

According to the researchers, the increase in breast milk production after administering papaya leaf decoction occurred due to the influence of active compounds that stimulate lactation hormones, supported by the habit of mothers pumping more frequently after their breast milk supply increased. Additionally, the positive suggestions from postpartum mothers who believe in the benefits of papaya leaf decoction also help facilitate the breastfeeding process. Thus, researchers assume that papaya leaf decoction is effective in promoting smooth breast milk production when supported by physiological, psychological, and appropriate breastfeeding patterns.

IV. CONCLUSION

Based on the results of research conducted in September 2025 entitled "The Effect of Papaya Leaf Decoction on Increasing Breast Milk Production in Postpartum Mothers at the Psirkuda Community Health Center in Cianjur Regency in 2025," it can be concluded that:

1. The average breast milk production of postpartum mothers before consuming papaya leaf decoction was 67.03 ml, with a production range of 60-80 ml.
2. The average breast milk production of postpartum mothers after consuming papaya leaf decoction increased to 130.63 ml, with a production range of 70-180 ml.
3. There was a significant difference in breast milk production before and after consuming papaya leaf decoction with a p-value = 0.000 ($p < 0.05$). This indicates that papaya leaf decoction has a significant effect on increasing breast milk production in postpartum mothers.

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