

## Effectiveness of Papaya (*Carica papaya*) Leaf Extract Pills to Increase Breast Milk Production among Breastfeeding Women at Private Practice Midwife M Palangka Raya

Sofia Mawaddah<sup>1\*</sup>

<sup>1</sup>Health Polytechnic of Palangka Raya, Indonesia

### ARTICLE INFORMATION

Received: 6, April, 2022

Revised: 30, October 2022

Accepted: 1, November 2022

### KEYWORDS

Breast Milk Production; Papaya Leaf Extract; Breastfeeding Women

*Produksi ASI; Ekstrak Daun Pepaya; Ibu Menyusui*

### CORRESPONDING AUTHOR

Sofia Mawaddah  
Jalan G.obos IX  
[sofizline@gmail.com](mailto:sofizline@gmail.com)  
0821-4853-0101

### DOI

<https://doi.org/10.36456/embrio.v14i2.5386>

### ABSTRACT

Breast milk contains substances that are important and sufficient for the growth and development of infants. One of the efforts that can be performed to increase the rate of secretion and production of breast milk is through various types of (processed) food made from papaya leaves (*Carica papaya*). Papaya plants are widely grown throughout the tropics which contain the quercetin compound as a breast milk stimulant. This study aims to determine the effectiveness of papaya (*Carica papaya*) leaf extract pills to increase breast milk production among breastfeeding women. This was a pre-experimental study with One Group Pre-Test and Post-Test design. The population involved all women who exclusively breastfed infants aged 0-6 months at Private Practice Midwife Made, Palangka Raya City. The study samples consisted of 33 respondents who were selected using purposive sampling technique. Data were analyzed using the Paired sample T Test. The study results obtained z-statistics value of -5.011 with a probability of 0.000. Such findings showed that the probability value was < level of significance ( $\alpha=5\%$ ). Thus, it can be concluded that there was a significant difference in infant weight before and after administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding women.

*ASI mengandung zat yang penting untuk tumbuh kembang bayi dan sesuai dengan kebutuhannya. Salah satu upaya yang dapat dilakukan untuk meningkatkan laju sekresi dan produksi ASI adalah melalui berbagai jenis makanan (olahan) asal daun pepaya (*Carica papaya*). Daun pepaya adalah tumbuhan yang banyak ditanam diseluruh daerah tropis yang mempunyai kandungan senyawa quercetin sebagai pelancar ASI. Tujuan dari penelitian ini adalah untuk mengetahui efektivitas Pil ekstrak daun pepaya (*carica papaya*) terhadap peningkatan produksi ASI ibu menyusui. Penelitian ini merupakan penelitian Pre eksperimental, dengan menggunakan desain One Group Pre-Test and Post – Test. Populasi seluruh ibu yang menyusui bayi usia 0-6 bulan secara eksklusif di Praktik Mandiri Bidan Made Kota Palangka Raya. Jumlah sampel 33 reponden dengan teknik pengambilan sampel Purposive Sampling. Uji analisis data menggunakan Uji Paired sample T Test. Hasil: Didapatkan hasil z - statistics yang dihasilkan sebesar -5.011 dengan probabilitas sebesar 0.000 Hal ini berarti probabilitas < level of significance ( $\alpha=5\%$ ). Hasil penelitian menyatakan terdapat perbedaan yang signifikan berat badan bayi sebelum dan sesudah pemberian pil daun pepaya (*carica papaya* bahwa) pada ibu menyusui.*

© 2022 The Author(s)

### Introduction

Based on Government Regulation Number 33 of 2012 concerning Exclusive Breastfeeding, exclusive breastfeeding refers to breastfeeding infants for the first six months without any

additional/complementary food or other liquids except minerals, vitamins and drugs (Ministry of Health of the Republic of Indonesia, 2018).

Previous study found that infants who were breastfed for a duration of 6 months or more had a survival of 33.3 times better than infants who were breastfed for less than 4 months (Nurmiati and Besral, 2008). Longer duration of breastfeeding will avoid the risk of infectious diseases, such as gastrointestinal infections (diarrhea), respiratory tract infections, ear infections, as well as non-infectious diseases, such as allergies, obesity, and malnutrition (Yuliarti, 2015). Exclusive breastfed infants have a 1.62 times chance of experiencing normal growth than that of non-exclusive breastfed babies. On the other hand, infants who do not receive exclusive breastfeeding have a 21.0 times chance of experiencing growth disorders compared to infants who receive exclusive breastfeeding (Al Rahmad, 2017).

Breast milk contains substances that are important and sufficient for infant's growth and development. Many factors can affect breast milk production. Two hormones, prolactin and oxytocin, have an impact on the secretion and production of breast milk. Oxytocin has an effect on the process of producing breast milk, while prolactin has an effect on the amount of milk produced. Prolactin is related to maternal nutrition, the better the nutritional intake, the more production of breast milk (Zakaria, 2017). One of the efforts that can be performed to increase the rate of secretion and production of breast milk is through various types of (processed) food made from papaya (*Carica papaya*) leaves. Papaya plants are widely grown throughout the tropics and the leaf is one of the galactagogues that contains quercetin, which can help increase breast milk production by activating the hormone prolactin.. 100 grams of papaya (*Carica papaya*) leaves contain 18250 SI of Vitamin A, 0.15 milligrams of Vitamin B1, 140 milligrams of Vitamin C, 79 calories, 8.0 grams of protein, 2.0 grams of fat 11.9 grams of carbohydrates, 353 milligrams of calcium and 75.4 grams of water (Khasanah. et al, 2021). Therefore, researchers are interested in observing and conducting a study on the Effectiveness of Papaya (*Carica papaya*) Leaf Extract Pills to Increase Breast Milk Production among Breastfeeding Women.

## Methods

This was a pre-experimental study with one group pre-test and post-test design (Hidayat,2010). This study was conducted at Private Practice Midwife M in Palangka Raya in March-June 2021. The population in this study involved all women who exclusively breastfed infants aged 0-6 month at Private Practice Midwife Made in Palangka Raya City, totaling 65 respondents. The number of samples was 33 respondents who were selected through purposive sampling technique. Researcher provided intervention to the treatment group by giving papaya leaf extract in capsule form with a dose per 1 capsule contained 500 mg, which was taken 2 times a day in the morning and night for 7 days. Before giving the treatment, the researcher first weighed the infant using a baby scale. Then on day 8 the researcher weighed the baby for the second time. The indicator of the increase in breast milk production in this study was the infant weight. Data were analyzed using the Paired sample T Test.

## Results

**Tabel 1.** Maternal Eating Pattern

Maternal Eating Pattern	Frequency	Percentage
> 3 times	11	33.3%
3 times	22	66.7%
Total	33	100.0%

Based on the table 1, that 11 out of 33 (33.3%) infants involved in this study had mothers with eating pattern of more than 3 times a day. Meanwhile, the remaining 66.7% had mothers with eating pattern of 3 times a day. Thus, it can be said that most of women involved in this study had an eating pattern of 3 times a day.

**Tabel 2.** Breastfeeding Frequency

Breastfeeding Frequency	Frequency	Percentage
> 2 hours	10	30.3%
2 hours	23	69.7%
Total	33	100.0%

Based on the table 2, that 10 out of 33 (30.3%) infants involved in this study had mothers with breastfeeding frequency of more than 2 hours. Meanwhile, the remaining 69.7% had mothers with a breastfeeding frequency of 2 hours. Thus, it can be said that most of women involved in this study had a breastfeeding frequency of 2 hours.

**Tabel 3.** Infant Weight

	Min	Max	Mean	Std. Deviation
Day -0	2400.00	3500.00	2869.697	308.712
Day -8	2550.00	3680.00	3048.182	287.480

Based on the table 3, that the infant weight on the 3rd day was the lowest of 2400.00 grams and the highest was 3500.00 grams. Mean infant weight on the third day was 2869,697 grams with a standard deviation of 308,712 grams. The study findings indicated that the infant weight on the 3rd day was centered at  $2869.697 \pm 3048.712$  grams.

**Tabel 4.** Differences in Infant Weight Before and After administration of Papaya (*Carica Papaya*) Leaf Extract Pills among Breastfeeding Women

	Mean	Z statistics	Probability
Weight before intervention	2869.697		
Weight after intervention	3048.182	-5.011	0.000

Based on the test results listed in the table above, it can be seen that the resulting t statistics was -5.011 with a probability of 0.000. Such findings showed that the probability value was < level of significance ( $\alpha=5\%$ ). Thus, it can be concluded that there was a significant difference in infant weight before and after administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding women. The mean body weight after administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding mothers was higher than the mean weight before administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding women.

## Discussion

The study results showed that there was a significant difference in infant weight before and after

administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding women. The mean body weight after administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding mothers was higher than the mean weight before administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding women.

Phytochemical analysis of papaya leaves showed that papaya leaves contain alkaloids, phenols, flavonoids, saponins. In previous studies, it was found that administration of papaya leaf extract with a dose of 800 mg, for 7 days had an effect on the production of breast milk. This is due to the polyphenols and flavonoids contained in papaya leaf capsules which have a role in stimulate the oxytocin hormone to stimulate breast milk production and releasing prolactin to produce breast milk (Astutik, 2017). The calcium content in papaya leaves also affects the production of breast milk. The higher the calcium level, the more the prolactin secretion. Calcium is required by women for increasing breast milk secretion and production. (Pratiwi, 2017).

According to Entin (2016), a woman after childbirth is willing to consume a lot of papaya leaves is due an intention to increase milk production. Papaya leaves are very good for consumption for breastfeeding women because of the content of various substances including vitamins A, B1, calories, carbohydrate, fat, calcium, protein, phosphorus, water and iron. Vitamin B1 or thiamine is known as food hormone and plays a crucial role in the oxidation of carbohydrates for energy conversion. The body will have trouble breaking down carbohydrates if it does not have B1. Pregnant and lactating women need adequate intake of vitamin B1 and more than normal women because of the vitamin content B1 in breast milk is very dependent on the presence or absence of this vitamin in the food consumed (Amin, 2017).

The results of this study are in line with a study conducted by Endah Tri Wahyuni (2015), who observed the effectiveness of *Carica papaya* L on breast milk production at Private Practice Midwife Utami, in Ngagalik, Sleman, Yogyakarta. It was found that the mean breast milk production before consuming *Carica papaya* L was 56.50 with a standard deviation of 5.07020 and the mean production after consuming *Carica papaya* L was 59.43 with a standard deviation of 4.01440 with a significance of  $0.000 < 0.05$ . Thus, it was concluded that there was a significant difference in the mean breast milk production before and after consuming *Carica papaya* L. Thus, *Carica papaya* L could increase the secretion and production of breast milk. The additional food consumed by the mother also has a significant effect on the amount of breast milk produced. Additional food can be obtained from katuk leaves, Moringa leaves and also papaya leaves (Nuning, 2015). Women can get additional nutrition in the form of an extra drink of papaya leaves. Such drink contains compounds that can increase breast milk production. It should be given for 4 days from the 4th to 7th day postpartum, with the recommended consumption of 2x of 1 capsule which contains 550 mg (Suharti, 2017). Furthermore, supporting factors for the increase in the volume of breast milk is the good content of papaya leaves. One of the nutrients found in papaya leaves is protein. Protein is required by women during breastfeeding and can increase the secretion of milk because the nutritional content, especially the protein containing amino acids so as to stimulate the secretion of breast milk (Tory, 2016).

## Conclusions

There was a significant difference in infant weight before and after administration of papaya (*Carica papaya*) leaf extract pills among breastfeeding women. Based in the study results, the mean body weight after administration of papaya (*Carica papaya*) leaf extract pills to breastfeeding women was higher than the mean weight before administration of papaya (*Carica papaya*) leaf extract pills to breastfeeding women.

## References

- Al Rahmad, A. H. 2017. Breastfeeding and complementary feeding on the growth of infants aged 6–24 months. *Syiah Kuala Medical Journal*, 17(1), 4-14.
- Amin, M., Rehana., Jaya, H. 2017. *The Effectiveness of Rolling (Back) Massage on Breast Milk Production in Mothers PostSurgery Sectio Caesarea at Muhammadiyah Hospital Palembang*. IJEMC. Volume 2. Number 1:1-8.
- Astutik., RY 2014. *Breast and Lactation*. Jakarta: Salemba Medika.
- Ministry of Health of the Republic of Indonesia, 2016. *Indonesia Health Profile 2015*. Available in <http://www.depkes.co.id> accessed on 18 September 2019.
- Entin, W. 2016. Kinetics of Fermeability of Katuk Leaves (*Sauropusandrogynus L, Merr.*) Pare Leaves (*Masiordicacharantia L.*) and Papaya Leaves (*Caricia papaya L.*) in Cow Rumen.
- Hidayat. 2010. *Research Methods: Quantitative, Qualitative, and Combined Research. Edition First*. Jakarta : Prenamedia Group.
- Khasanah, U., & Anwar, M. C. (2021). The Effectiveness Of Suplementation Of Papaya Leaf Nanoparticles (*Carica Papaya L*) As An Alternative To Midwife Services In Increasing The Production Of Breast Milk (ASI).
- Nuning. 2015. *Economic Level and Mother's Motivation in Exclusive Breastfeeding for Infants Age 0-6 Months at Private Practice Midwife (BPS) Ummi Latifah Argomulyo, Sedayu Yogyakarta*. *Journal of Indonesian Nurses and Midwifery*. Volume 3. Number 2:116-122.
- Nurmiati, B. (2008). Duration of Breastfeeding on Infant Survival in Indonesia. *Makara Health*, 12(2).
- Pratiwi, R. 2017. The Relationship Between Parity With Correct Breastfeeding Skills In Postpartum Mothers. *Journal of Midwifery*. Volume 6. Number 2:5.
- Suharti JF Mamagkey. 2017. *Relationship between Family Support and Exclusive Breastfeeding for babies at Ranotana Weru Health Center*. *e-Journal of Nursing (eKp)*. Volume 6. Number 1:1-6.
- Tory, Mulyatim Koeswo, and Sujianto. 2016. Factors Affecting Waiting Time for Health Services in Relation to Outpatient Satisfaction of Internal Medicine Clinic Dr. Isaac Tulungagung. Volume 29. Number 3:252-257.
- Wahyuni, E. T., & Noviyanti, R. (2022, September). The Effectiveness of Carica Papaya L on Breast Milk Production in Pmb Utami's Wife and PMB Tutik Purwani Ngaglik Sleman Yogyakarta. In *Proceedings of The Conference on Multidisciplinary Research in Health Science and Technology (Vol. 1, No. 1)*.
- Yuliarti, 2015. *The Effect of Giving Green Bean Extract to Postpartum Mothers with Smooth Breast Milk Production at Bpm Yuni Widaryanti, Amd. Keb Sumbermulyo Jogoroto Jombang*. *Edu Health Journal*. Volume 5. Number 2:148-153.
- Zakaria, Z., Hadju, V., As'ad, S., & Bahar, B. 2017. 2017. *The Effect of Giving Moringa Leaf Extract on the Quantity and Quality of Mother's Milk (ASI) in Breastfeeding Mothers of Infants 0-6 Months*. *Indonesian Public Health Media*. Volume 12. Number 3:161-169.