


The Effect of Edamame Decoction on Breast Milk Production in Breastfeeding Mothers from 2 Days to 1 Week with Insufficient Milk Flow in Kertonegoro Village, Jember

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Article Info	ABSTRACT
<p>Keywords: Breastfeeding Mother, Breast Milk Production, Edamame,</p>	<p>Breast milk (ASI) is strongly recommended as the sole intake for infants during the first six months of life. It serves as the primary and optimal source of nutrition for babies. Consuming additional nutritious foods is crucial during the breastfeeding period, as it can support breast milk production. Edamame has the potential to be a nutritional source that supports maternal health due to its phytosterol content, which contributes to additional nutrition and can help increase breast milk volume. This study aims to identify the contribution of edamame decoction in supporting breast milk production in breastfeeding mothers from the second day to the first week postpartum with insufficient milk flow in Kertonegoro Village, Jember. The research design used was a pre-experimental approach with a one-group pre-test and post-test design. The sample was selected using purposive sampling, involving 15 breastfeeding mothers between days 2 to 7 postpartum. The study was conducted over a two-week period and employed the Wilcoxon statistical test for analysis. The results showed a p-value of 0.001, indicating that there is a significant effect of edamame decoction on breast milk production in breastfeeding mothers on days 2–7 in Kertonegoro Village, Jember. Health workers are expected to provide education about adequate nutrition for postpartum mothers during the breastfeeding period, as it can support the achievement of government programs aimed at increasing the coverage of exclusive breastfeeding.</p>
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INTRODUCTION

Breast milk (ASI) becomes the primary nutritional need for infants who are not yet ready to receive complementary foods, such as complementary feeding to breast milk. Breastfeeding is recommended until the child reaches the age of two years or even longer, depending on their needs, as breast milk is the best natural source of nutrition and highly effective for infants. Breast milk also provides all the nutrients required by infants during the first few months of life. The absence of breast milk in lactating women can become a crucial issue that must be addressed by breastfeeding mothers. When there is no breast milk production,

mothers often choose to provide formula milk as an intake for the baby to avoid fussiness caused by the baby's thirst.

Exclusively breastfeeding infants without any additional intake during the first six months of life is recommended by WHO and UNICEF as a form of optimal nutrition fulfillment for infants. Breast milk is the main nutritional source that is highly essential and beneficial in supporting infant growth and development (Hayati et al., 2021). Both organizations recommend that breast milk be the only intake for infants without any additional nutrients for approximately the first six months, and that the breastfeeding process should continue until the child is two years old (WHO, 2018). Exclusive breastfeeding for the first six months, as recommended by global organizations such as UNICEF and WHO, plays a significant role in child health because it helps reduce the risk of illness and mortality in infants. Furthermore, breastfeeding can continue until the child reaches two years of age, along with the introduction of complementary foods besides breast milk (Istianingsih, 2018).

Although awareness of the crucial benefits of breastfeeding for infant and maternal health is relatively good, various obstacles still exist in its practice, both from the mother's and the baby's side. One common problem faced by breastfeeding mothers is low breast milk supply, which may occur due to the mother not fully understanding proper breastfeeding techniques, the baby being given formula milk through relactation, having been given sugar water or dextrose as prelacteal feeding, or having received formula milk from the early days of birth. These factors contribute to the failure to achieve the goal of increasing breastfeeding coverage to 50%, which is WHO's main target by 2025.

In Indonesia, the percentage of babies receiving exclusive breastfeeding has only reached 29.5%. This number has not yet met the target set in the Strategic Plan of the Ministry of Health 2015–2019, which aimed for half of all six-month-old babies to receive exclusive breastfeeding (Hayati et al., 2021). Mothers are advised to increase their intake of essential nutritional energy such as protein, calcium, iron, folate, and various other vitamins and minerals to meet nutritional needs during lactation. Consuming additional nutritious intake is very important during the breastfeeding period, as it can support breast milk production up to around one liter per day. If these additional intakes are not met, breast milk production is at risk of decreasing (Fauzia S, 2016).

The type of vegetable soybean (*Glycine max* L. Merrill), commonly known as edamame, referred to as edamame in Japan and Mau Doudi in China, is a type of legume categorized as a green vegetable. This plant is one of the important vegetables in Asian countries such as Japan, Taiwan, China, and Korea, making edamame an essential crop. It is classified as a tropical plant used for healthy food sources. Its nutritional content is very high, including protein compounds, calcium minerals, and iron, as well as essential vitamins A, B1, and C. In addition, vegetable soybeans also contain potassium, ascorbic acid, and vitamin E. Edamame is an easily accessible food source in society and has the potential as a nutritional source for breastfeeding mothers because it contains phytosterols. Moreover, it contains a significant amount of vitamin A, around 95 IU, which contributes to increased breast milk production (Febriani Ade, 2020).

Edamame is also rich in nutritional value; every 100 grams contains 582 calories, 11.5 grams of protein, 7.4 grams of carbohydrates, 6.5 grams of fat, 100 milligrams of vitamin A, 27% of B complex vitamins, and various minerals, including 150 mg of phosphorus, 70 mg of calcium, 1.7 mg of iron, and 145 mg of calcium (Ca). Furthermore, edamame is low in saturated fat and is a rich source of fiber, folate, vitamins C and B, calcium, iron, magnesium, and contains nine essential amino acids needed by the body. Edamame is also cholesterol-free (Ariyantini, 2017).

Findings from direct discussions with fifteen postpartum mothers revealed that eight of them experienced low breast milk production, and none of the respondents were aware of the benefits of edamame. Based on these findings, the author was interested in researching the effect of edamame decoction intake on breast milk production in breastfeeding mothers from two days to one week postpartum with insufficient milk flow in Kertonegoro Village – Jember.

RESEARCH METHOD

This study employed a pre-experimental design with a one-group pretest and posttest approach, in which breast milk secretion by mothers was measured before and after consuming edamame decoction. The research was conducted in Kertonegoro Village, Jember, in 2025. The subjects of this study were postpartum mothers on days 2 to 7 who were breastfeeding with insufficient milk flow, totaling 15 participants. Respondents were selected purposively, based on predetermined inclusion criteria, namely breastfeeding mothers from day 2 to day 7 who were willing to participate as respondents. The findings from the univariate analysis presented the mothers' profiles based on age, childbirth experience (parity), education level, and employment status. Meanwhile, bivariate analysis was conducted to determine the difference between the conditions before and after the consumption of edamame decoction. The reason for using the non-parametric Wilcoxon test was that the data did not follow a normal distribution.

RESULT AND DISCUSSION

Result

Respondent Characteristics

Table 1. Distribution of Age, Parity, Education, and Occupation of Breastfeeding Mothers

No	Mother's Characteristics	Amount	
		F	%
Ages			
1.	<20 years	0	0,0
	20-35 years	13	86,7
	>35 years	2	13,3
Gravida			
2.	Primigravida	5	33,3

	Multigravida	9	60
	Grandemulti	1	6,7
Education			
	Primary School	2	13,3
3.	Junior High School	1	6,7
	Senior High School	11	73,3
	Higher Education	1	6,7
Occupation			
4.	Unemployed	14	93,3
	Employed	1	6,7

According to the available data, the results show that the majority, 13 participants (86.7%), were aged between 20 and 35 years; most were multigravida; the majority, 9 participants (60%), had a high school education, with 11 participants (73.3%) falling into this category; and most of the mothers, 14 participants (93.3%), were unemployed.

Specific Research Data

Table 2. Frequency of Results Before and After Treatment

Breast Milk Production	Pre-test		Post-test	
	F	%	F	%
Good	0	0,0	8	53,3
Sufficient	7	46,7	7	46,7
Poor	8	53,3	0	0.0

Based on the data above, it was found that before the intervention with edamame decoction, 8 respondents (53.3%) were in the "low" category, indicating a smaller amount of breast milk produced. After the intervention, there was an increase in breast milk production in 8 respondents (53.3%).

Wilcoxon Statistical Test Results

Table 3. Comparative Analysis of Breast Milk Volume Before and After in Breastfeeding

Variable	Mothers		
	N	Z	P-value
<i>Pre-post test</i>	15	-3.358	0.001

Referring to the data, the application of the Wilcoxon test indicated that among the 15 breastfeeding mothers on days two to seven, the analysis before and after the intervention yielded a z-value of -3.358. From the table, the p-value was obtained as 0.001, which is less than $\alpha = 0.005$. Therefore, the acceptance of the alternative hypothesis (H_a) and rejection of the null hypothesis (H_0) indicate a significant effect of consuming edamame decoction on the

amount of breast milk in mothers breastfeeding from 2 days to 1 week who experienced insufficient milk production in Kertonegoro Village, Jember.

Discussion

Breast Milk Production in Breastfeeding Mothers from 2 Days to 1 Week Before and After Consuming Edamame Decoction

This study showed that the amount of breast milk produced by mothers before being given edamame decoction was low in 8 participants (53.3%) and sufficient in 7 participants (46.7%), with no respondents producing a good amount of milk prior to the intervention. After being given edamame decoction, it was found that the number of breastfeeding mothers who experienced an increase in breast milk production reached 8 respondents (53.3%) in the “good” category, and 7 respondents (46.7%) recorded an increase in milk production in the “sufficient” category. Thus, it can be said that after consuming edamame decoction, a change occurred in the amount of breast milk produced. In this study, respondents consumed the edamame decoction for 2 weeks, in the morning and evening. The edamame beans were favored by respondents because of their delicious taste, especially after being boiled with added salt to taste. In addition, edamame is easy to find in markets and has a fairly affordable price.

These findings are in line with a study by Siagian (2022), in which 10 respondents were assessed before being given edamame. It was found that the average number of mothers experiencing low breast milk production was 9 respondents (90%). After being given edamame, the majority showed improvement, with 8 respondents (80%) experiencing increased production. In other words, the amount of breast milk increased after consuming edamame.

A study by Kardina (2021) also reported similar findings, stating that mothers who had insufficient milk production in the working area of Bidan Putri Tanjung Clinic, East Kisaran City Subdistrict, in 2021 experienced an increase in breast milk production after consuming edamame.

Mothers in normal conditions are generally capable of producing approximately 550 to 1000 ml of breast milk per day. Nutritious food intake plays an important role in supporting breast milk production. If the nutritional needs of the mother are not met during the breastfeeding period, it can affect the performance of the glands that produce breast milk. These glands will function optimally only when the mother's nutritional requirements are adequately fulfilled (Ambarwati E., 2018).

Nutritional adequacy in breastfeeding mothers is closely related to the amount of breast milk produced. Breast milk plays an important role for infants because it supports normal and optimal growth and development. Therefore, the caloric intake of breastfeeding mothers needs to be adjusted proportionally. The number of calories needed during breastfeeding should be proportional to the volume of breast milk produced and even higher than the caloric needs during pregnancy. In general, the energy content in breast milk produced by mothers with optimal nutritional status is about 70 calories per 100 milliliters (Safitri R., 2018).

Evaluation of the Effects Before and After Consuming Edamame Decoction on Breast Milk Production in Breastfeeding Mothers from Day 2 to 1 Week

The results of the Wilcoxon test analysis showed a difference between pretest and posttest values after the administration of edamame decoction, which contributed to an increase in the amount of breast milk in breastfeeding mothers who experienced low production in Kertonegoro Village, Jember, in 2025. The test yielded a significance value (p) of 0.001. This finding indicates that the p -value is less than 0.05, which means it can be concluded that there is an effect of edamame decoction on the mothers' capacity to produce breast milk postpartum.

The findings showed that there was an increase in breast milk production in mothers breastfeeding from day 2 to 1 week. This is consistent with the results of a previous study conducted by Rani Safitri (2018) entitled "The Effect of Edamame Consumption in Increasing Breast Milk Production in Breastfeeding Mothers." That study used an experimental design with a one-group pre-test post-test approach. Based on the analysis results, a significance value (p -value) of 0.009 was obtained, indicating that H_0 was rejected and H_a was accepted, and thus it was concluded that edamame had a significant impact on increasing breast milk production in postpartum mothers.

This finding is also in line with the research conducted by Wiwit Fetrisiadkk (2020), which showed a p -value of 0.000, concluding that there is an effect of edamame (soybean) consumption on breast milk volume in postpartum mothers. Edamame is a rich source of nutrition and calcium. Edamame contains protein content reaching 16%, almost twice as much as the protein found in green beans. Every 100 ml of edamame consumption provides about 85 calories of energy. Additionally, edamame contains high-quality complete protein that exceeds that of other plants, complemented by essential amino acids in proportions ideal for the body's needs. In terms of nutritional content, edamame is equivalent to cow's milk and even surpasses beef (Safitri R., 2018).

One of the advantages of edamame beans is their large size, soft chewable texture, and sweet taste. Edamame also serves as an important plant-based protein alternative for the community's nutritional needs. This type of bean has characteristics that distinguish it from regular soybeans (Wulan R., 2015). In addition to the previously mentioned contents, edamame contains various vitamins, including B-complex vitamins. Its iron content is nearly equivalent to the amount of iron found in 4 ounces of chicken breast. Edamame is also rich in protein and essential organic compounds such as folate, manganese, isoflavones, beta-carotene, and sucrose (Pambudi S., 2017).

The researcher assumes that the intervention of edamame decoction consumption is highly effective in stimulating the increase of breast milk production in postpartum mothers with insufficient lactation. This finding is consistent with the results of research conducted by other scholars. In this study, the researcher found that most postpartum mothers showed an increase in breast milk production. Based on the research results, it was noted that some mothers did not consume the edamame decoction regularly as the other respondents did. Evidence of this is seen in the data collected by the researcher, where out of 15 breastfeeding

mothers, 8 experienced an increase in breast milk production in the “good” category, and 7 mothers experienced an increase in the “sufficient” category. This increase occurred as a result of regular consumption of edamame decoction.

CONCLUSION

The frequency of increased breast milk production experienced by breastfeeding mothers from days two to seven with insufficient milk flow showed that, before consuming edamame beans, 53.3% or 8 mothers had low milk production, indicating a significant improvement, while 46.7% or 7 mothers were in the sufficient category. None of the respondents had good milk production before being given the edamame decoction. After consuming the edamame decoction, the frequency of increased breast milk production among postpartum mothers showed that the majority 8 mothers (53.3%) fell into the good category, and there were no longer any respondents in the low production category. Based on the Wilcoxon statistical test at a significance level of $\alpha = 0.05$, the p-value obtained was $0.001 < 0.05$, with a Z-value of -3.358, indicating a significant difference before and after the consumption of edamame decoction in supporting increased breast milk production among breastfeeding mothers from 2 days to 1 week postpartum with insufficient milk flow in Kertonegoro Village, Jember, in 2025.

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