



## Bioscientia Medicina: Journal of Biomedicine & Translational Research

Journal Homepage: [www.bioscmed.com](http://www.bioscmed.com)

# The Effect of Unripe Papaya Consumption on the Smooth Production of Breast Milk in Ciandam Village, Mande District, Cianjur, Indonesia

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### ARTICLE INFO

#### Keywords:

Breast milk production  
Lactagogum  
Unripe papaya

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All authors have reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/bsm.v7i4.812>

### ABSTRACT

**Background:** Consumption of unripe papaya is one of the local wisdom which is believed to be useful in increasing the breast milk production of breastfeeding mothers. Hereditary unripe papaya has been consumed in public areas to increase milk production. This study is one of the first studies to provide scientific evidence of the effects of the unripe papaya on breast milk production in Ciandam Village, Mande District, Cianjur, Indonesia.

**Methods:** This study was an experimental study, where as many as 30 subjects participated in this study. Data analysis was carried out using SPSS 25 in a bivariate manner to determine the effect of unripe papaya consumption on breast milk production. **Results:** After consumption of fruit papaya on the first day, there was increased production of Breast milk in the intervention group compared to before consumption of unripe papaya  $p=0.02$  ( $p<0.05$ ). Likewise, after the consumption of unripe papaya on the second to the seventh day, an increase in milk production was found in the intervention group compared to before the consumption of unripe papaya,  $p < 0.05$ . **Conclusion:** There is an influence of unripe papaya consumption on the smooth breast milk of breastfeeding mothers in Ciandam village, Mande District, Cianjur, Indonesia.

### 1. Introduction

Breast milk is milk that is produced naturally by a mother's breasts after giving birth. Breast milk contains nutrients that are essential for the growth and development of babies and has many health benefits for both mother and baby. Breast milk contains complete nutrients and is easily digested by babies. The content of breast milk includes proteins, fats, carbohydrates, vitamins, and minerals, as well as immune substances such as antibodies that help protect babies from infection and disease. Breast milk also contains enzymes and growth factors that support the baby's digestive system and brain development. Breastfeeding is recommended by various health organizations such as the World Health Organization (WHO), the American Academy of Pediatrics (AAP), and

UNICEF WHO recommends exclusive breastfeeding (no other food or drink) for the first six months of a baby's life, and continuing breastfeeding with appropriate complementary foods for at least two years. The rate of exclusive breastfeeding varies in different countries, but globally, on average, only about 41% of babies receive exclusive breastfeeding. The prevalence of exclusive breastfeeding in Indonesia is still quite low compared to the global average, where exclusive breastfeeding in Indonesia is only 38%.<sup>1-5</sup>

One of the problems causing the low prevalence of exclusive breastfeeding is the difficulty for mothers to produce breast milk. This prompted a massive lactagogum campaign to be carried out. However, lactagogums that have been circulating in the market are processed products that are quite expensive. Of

course, this further reduces the interest of breastfeeding mothers in consuming it. Efforts to explore alternative lactagogues have become urgent. Efforts to explore lactagogum are carried out by taking into account local wisdom. Cianjur is a region in Indonesia that has a habit of consuming fruit and vegetables. Local people must consume vegetables and fruit every day. Unripe papaya is one wisdom local that is believed to be beneficial in increasing the production of breast milk for breastfeeding mothers. Hereditary unripe papaya has been consumed in public areas to increase milk production.<sup>6-10</sup> However, the scientific basis of fruit consumption of unripe papaya as a lactagogum is still very minimal. This study is one of the first studies to provide scientific evidence of the effects of unripe papaya on breast milk production in Ciandam Village, Mande District, Cianjur, Indonesia.

## 2. Methods

This study was an experimental study with a pre and post-test approach with a control group and used primary data obtained from residents of Ciandam Village, Mande District, Cianjur, Indonesia. A total of 30 research subjects participated in this study, where the research subjects met the inclusion criteria. The inclusion criteria in this study were mothers who breastfed babies aged 0-6 months in Ciandam Village, Mande District, Cianjur, Indonesia, and were willing to participate in this study, which was marked by signing informed consent. The research subjects were grouped into two groups, namely the intervention group and the control group. This study was approved by the medical and health research ethics committee.

The intervention group was the research subject who received the fruit consumption intervention unripe papaya 3 times a day, as much as 600 grams for 7 days. At the same time, the control group is a research subject that does not get fruit intervention, young papaya fruit. Assess the smooth production of breast milk is done by using a questionnaire assessment of the fluency of ASI production, where a

score of fluency of ASI will be obtained. The higher the score, the smoother the ASI. This study also assessed the sociodemographic aspects and the fluency of the research subject's milk production. Data analysis was carried out using SPSS software version 25. Univariate analysis was performed to assess the frequency distribution of each data variable test. Bivariate analysis was performed to assess the effect of each test variable, with a p-value <0.05.

## 3. Results

Table 1 presents the effect of unripe papaya on milk production. After consumption of papaya fruit on the first day, there was increased production of breast milk in the intervention group compared to before consumption of young papaya fruit,  $p=0.02$  ( $p<0.05$ ). Likewise, after the consumption of unripe papaya on the second to the seventh day, an increase in milk production was found in the intervention group compared to before the consumption of unripe papaya,  $p < 0.05$ .

Papaya fruit contains the enzyme papain, which can increase milk production. In addition, papaya fruit also contains iron which is useful for helping milk production. In addition, papaya fruit also contains various vitamins and minerals that can help increase milk production. Eating papaya fruit regularly can also help increase the immune system of breastfeeding mothers. In addition, papaya fruit can also improve the quality of breast milk produced. Papaya fruit is also useful for breastfeeding mothers to overcome the problem of fatigue and lack of energy.

## 4. Discussion

Papaya fruit can help reduce the risk of complications due to nutritional deficiencies. Papaya fruit also contains antioxidant compounds that can help boost the immune system of breastfeeding mothers. Papaya fruit also contains folic acid, which can help minimize the risk of damage to the baby's cells.<sup>11-13</sup>

Table 1. The effect of unripe papaya on breast milk.

Variable	Papaya consumption day	Group	Mean rank	SD	95%CI	p-value*
Milk production	Day 1	Control	2.00	1.2345	3.59-5.08	0.083
		Intervention	5.50	0.845	3.53-4.47	0.02
Milk production	Day 2	Control	2.50	1.014	3.64-4.76	0.317
		Intervention	6.00	1.014	3.64-4.76	0.02
Milk production	Day 3	Control	2.50	1.404	3.62-5.18	0.046
		Intervention	7.00	1.047	4.09-5.25	0.01
Milk production	Day 4	Control	3.50	1.447	3.87-5.47	0.023
		Intervention	8.00	0.743	4.72-5.54	0.00
Milk production	Day 5	Control	3.50	1.407	4.09-5.65	0.020
		Intervention	8.00	0.640	5.11-5.82	0.00
Milk production	Day 6	Control	3.50	1.438	4.14-5.73	0.010
		Intervention	8.00	0.488	5.40-5.69	0.00
Milk production	Day 7	Control	4.50	0.915	5.03-6.04	0.002
		Intervention	8.00	0.488	5.40-5.94	0.00

\*Wilcoxon test; pre-post test;  $p < 0.05$ .

In addition, papaya fruit also contains minerals that can help breastfeeding mothers get the intake they need. Minerals such as calcium, copper, and magnesium, which are contained in papaya fruit, can help increase milk production and maintain the health of breastfeeding mothers. Papaya fruit also contains vitamin A and vitamin C, which can help strengthen the immune system of breastfeeding mothers. Papaya fruit also contains enzymes that help digest food and increase the absorption of nutrients. It also contains antioxidants which are important for fighting free radicals that cause oxidative stress. Papaya is also rich in fiber which is important for maintaining a healthy digestive tract. Papaya fiber content can also help breastfeeding mothers overcome constipation which is common when breastfeeding. Papaya also has low-calorie content, so it can help breastfeeding mothers control their weight.<sup>14-17</sup>

Besides that, the antioxidants contained in papaya also help protect body cells from damage caused by free radicals and reduce oxidative stress. High papaya fiber helps breastfeeding mothers maintain digestive tract health and prevent constipation that often occurs when breastfeeding. The low-calorie content of papaya is also beneficial for breastfeeding mothers in controlling their weight. Papaya also contains important nutrients such as vitamins A, C, E, and K,

which help boost the immune system of both mother and baby. Papaya also contains folic acid, which plays an important role in the formation of red blood cells. In addition, papaya also contains potassium which helps regulate blood pressure and heart and kidney health.<sup>18-20</sup>

## 5. Conclusion

There is an effect of unripe papaya consumption on the smoothness of breast milk in breastfeeding mothers in Ciandem Village, Mande District Cianjur, Indonesia.

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