

# The influence of giving Mung beans essence on postpartum mothers with breast milk production in Bengkulu City in 2018

## Abstract

Mung beans essence was kinds of drinks containing Laktagogum which is a nutrient to increase and expedite milk production for mother. The purpose of this study was to determine the difference of breastfeeding production in postpartum mothers given mung beans essence with not given mung beans essence in the city of Bengkulu 2018. The design of this research was *quasy experiment* using *pretest and posttest nonequivalent control group*. The sample in this study was mothers on first day of postpartum in Bengkulu city amounted to 30 respondents taken by *accidental sampling*. The research was conducted in the Independent Midwife Practice of Bengkulu city starts from May 15 to June 26, 2018 by using *Independent Sample T test* for analysis.

The result of this study showed that the average breastfeeding production in postpartum mothers given by mung beans essence was 9,53. The average breastfeeding production in postpartum mothers who not given mung beans essence was 6,93. The difference of breast milk average both groups was 2,60 with *p value* = 0,000 ( $p < 0,05$ ) there were difference of milk produ breastfeeding production in postpartum mother who given mung beans essence with not given mung beans essence in the city of Bengkulu 2018. It was hoped that other researchers to conduct further research by taking other types of vegetables or fruits that may affect breast milk production.

**Keywords:** mung beans essence, breast milk production

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## Introduction

Infant Mortality Rate (IMR) in Indonesia is still quite high. Based on the Indonesian Demographic Health Survey (IDHS) in 2010 child morbidity were 411 per 1,000 populations, (27.04%) including infants and toddlers. One of the factors that trigger the high IMR in Indonesia is the low level of breastfeeding. A total of (31.36%) children experience pain where the cause is not given ASI (MOH, 2010).<sup>1</sup>

Mother's Milk (ASI) is the single most perfect single food for babies in the first 6 months of growth, without any additional drinks or food (Simamora, 2015). The impact caused if not breastfeeding the baby is mostly related to nutritional factors that is equal to (53%). Some diseases that arise due to malnutrition include pneumonia (20%), diarrhea (15%), and perinatal (23%) (Ministry of Health, 2013).<sup>2</sup> Another impact caused is that it can cause obesity in infants. The prevalence of obesity in children under five according to Basic Health Research (Riskesdas, 2013) is equal to (11.8%).

According to the *United Nations Childrens Fund* (UNICEF) (2012)<sup>3</sup> the 2011 world children's report is that of 136.7 million babies born worldwide only (32.6%) were given ASI in the first 6 months. Whereas exclusive breastfeeding for 6 months was associated with a decrease in diarrhea (53.0%) and ARI (27.0%).

Exclusive breastfeeding in Indonesia is still very concerning, referring to the 2016 national target of (42%) (Ministry of Health, 2016).<sup>4</sup> According to Bengkulu Province Health Profile data in 2016 babies who were given exclusive breastfeeding aged 0-6 months only (32.2%). Bengkulu City Health Profile Data mentions the coverage of exclusive breastfeeding in 2016 for 0-6 month old babies amounting to (61.4%) or 874 babies, this figure is smaller than in 2015 which reached (77.9%) or 2,573 babies (Bengkulu Health Office, 2017).

The low level of exclusive breastfeeding is caused by a problem that is often caused by breastfeeding mothers, which is not optimal breastfeeding (Iriani, 2017).<sup>5</sup>

Breast milk production is the result of breast stimulation by the hormone prolactin. When the baby starts sucking of breast milk, there will be two reflexes that will cause breast milk to come out.<sup>6</sup> One of the factors that can affect breast milk production is the nutrition of breastfeeding mothers. If the food that you consume does not meet adequate nutritional intake, then the glands that make milk in the mother's breast will not work perfectly and will ultimately affect the production of breast milk.<sup>7</sup> One of the efforts to increase the breast milk is by increasing the quality of food that directly affects milk production, such as katuk leaves (Suwanti, 2015),<sup>8</sup> stone heart bananas (Wahyuni & Sumiati, 2012) and green beans (Wakhida, 2016).<sup>9</sup>

The results of research conducted by (Suwanti, 2015) there is an effect of giving katuk leaf extract to breast milk production (53.3%). Then the research from (Wahyuni & Sumiati, 2012) there was an effect of giving stone banana heart to breast milk production by 0,793 times. According to the study (Wakhida, 2016)<sup>9</sup> stated that there was an increase in breast milk production after consuming green beans, which was equal to (75%). From the results of the study, the nutritional composition of green beans was higher than that of katuk leaves and the heart of banana stone.

Mung beans (*Phaseolus radiatus*) are one of the plants that can grow in almost every place in Indonesia (Astawan, 2009).<sup>10</sup> Inside mung beans contains natural vitamin B complex which can improve the health of breastfeeding mothers and help increase milk production. Mung beans also help meet protein and energy needs in mothers who are breastfeeding (Shohib, 2006). Giving 300 grams of mung beans which have been processed into 220 ml of mung bean essence with

a dose of 2x a day can increase breast milk production in nursing mothers. This is in line with the research conducted by Wulandari & Jannah (2015)<sup>11</sup> which states that there is an effect of mung bean essence on the smooth production of breast milk in breastfeeding mothers. Similarly, research conducted by Wakhida (2016)<sup>9</sup> and Iriani (2017)<sup>5</sup> states that there is an effect of increasing milk production in breastfeeding mothers after consuming mung bean essence.

The results of the preliminary survey conducted by researchers on December 18, 2017 on 10 breastfeeding mothers in the BPM S and BPM R of Bengkulu City, there were 6 babies (60%) given exclusive breastfeeding while 4 other babies (40%) did not receive exclusive breastfeeding because less milk production, causing baby to be given formula milk. Based on the background above, to provide evidence of the efficacy of mung bean seeds as laktagogum (smoothing milk secretion) the researchers were interested in conducting research entitled "The Influence Of Giving Mung Beans Essence On Postpartum Mothers With Breast Milk Production In Bengkulu City In 2018".

### Materials and work methods

This type of research was a *quasy experiment* using *pretest and posttest nonequivalent control group*. The independent variable was giving mung beans essence while the dependent variable was the breast milk production. Mung beans essence was given for 7 days as much as 220ml with a dose of 2 times a day. The population in this study was all normal postpartum mothers on first day in Bengkulu City in 2018. Samplel in this study amounted to 30 respondents consisting of 15 respondents as the experimental group and 15 respondents as the control group. The sampling technique was using by *accidental sampling*, that is by taking the case or respondent who happens to be available in accordaing to the context of the study, with the sample inclusion criteria were: postpartum mother the first day is not yet breastfed, normal and vaginal delivery mother, aged mother ≥20 years, Willing to be a respondent, Mother who has a husband, Mother with good nipple condition (no problem), Mother with sleep ≥8 hours, Baby does IMD, Baby's body weight is ≥2500grams with sucking and swallowing reflexes good.

Data collection techniques are using breast milk production observation sheets. Measurements were made before and after treatment both in the experimental group and in the control group so that they got a difference. Then the data that has been obtained, processed and analyzed using Univariate Analysis, Bivariate Analysis, with thestatistical *Independent Samples T-Test*.

### Results

#### Univariate analysis

Based on Table 1, it appears that in the experimental group almost all (93.3% ) aged 21-35 years, most (66.7%) had high school education, most (80.0%) were mothers who did not work and most (53.3%) included multiparous parity, while in the control group entirely (100.0%) aged 21-35 years, most (60%) have a high school

education, most (66.7%) are mothers who do not work and most (53.3%) are included in primipara parity.

Based on Table 2, shows that in the experimental group when *pre-test* the average milk production was 4.47 with a minimum of 3 and maximum 6 and a standard deviation of 1.060. While at the time of posttest the average milk production was 9.53 with a minimum of 6 and maximum 12 and a standard deviation of 1,885.

According to the Table 3, visible that in the control group when *pre-test* the average milk production was 4.07 with a minimum of 3 and maximum 6 and a standard deviation of 1,100. While at the time of posttest the average milk production was 6.93 with a minimum of 5 and maximum 10 and a standard deviation of 1,534.

**Table 1** Frequency distribution of characteristics (age, education, employment, parity) of postpartum mothers in Bengkulu City BPM in 2018

Characteristics	Group of experiment		Group of control	
	F	%	F	%
<b>Age</b>				
<21 Years	1	6.7	0	0
21-35 Years	14	93.3	15	100
> 35 Years	0	0	0	0
<b>Education</b>				
SMP	2	13.3	2	13.3
SMA	10	66.7	9	60
D3 / SI	3	20	4	26.7
<b>Work</b>				
Work	3	20,0	5	33.3
Not Working	12	80	10	66.7
<b>Parity</b>				
Primipara	7	46.7	8	53.3
Multipara	8	53.3	7	46.7

**Table 2** The average breast milk production pre and post giving mung beans essence in experimental groups in Bengkulu City in 2018

Group	N	Mean	Min	Max	Standard deviation
Pre test	15	4.47	3	6	1,060
Post test	15	9.53	6	12	1,885

**Table 3** The average breast milk production pre and post giving mung beans essence on control group in Bengkulu City in 2018

Group	N	Mean	Min	Max	Standard deviation
Pre test	15	4.07	3	6	1.1
Post test	15	6.93	5	10	1.534

Based on Table 4, analysis results *Independent Samples T-Test* showed that the mean difference between the experimental and control groups was 2.60 which means that the average breastmilk production in the experimental group was much greater than the average breastmilk production in the control group. And obtained *p value* of 0,000 ( $p < 0,05$ ). These results indicate that  $H_{a is}$  accepted and  $H_{0 is}$  rejected, meaning that the hypothesis states that there is a difference in breastmilk production between the groups given mung beans essence and those not given mung beans essence.

**Table 4** The influence of giving mung beans essence on postpartum mothers with breast milk production in Bengkulu City in 2018

Group	N	Mean	Min	Max	Different mean	Standard deviation	P Value
Experiment	15	9.53	6	12	2.6	1,885	0,000
Control	15	6.93	5	10		1,534	

## Discussion

### The influence of giving mung beans essence on postpartum mothers with breastmilk production in Bengkulu City in 2018

The results of statistical tests showed that there were differences in breastmilk production among postpartum mothers who consumed mung beans essence with postpartum mothers who did not consume mung beans essence, this was indicated by the differences in the average ASI production in the experimental group and the control group. In postpartum mothers who were given mung beans essence showed that the average breastmilk production was 9.53, while the group of mothers who were not given mung beans essence showed that the average milk production was 6.93.

Table 4 analysis results obtained  $p$  value = 0.000 ( $p < 0.05$ ) which means that there is a significant influence between mung beans essence to breast milk production in postpartum mothers in Bengkulu City in 2018.

Based on the results of research on the experimental group and control that on the day the first partially puerperal (100%) has not yet occurred breast milk expenditure. This is because the respondents who were taken were also the first day postpartum mothers who had not yet breast milk. Not yet the release of breast milk causes no baby to feed as much as  $\geq 8$  times a day so that milk production has not been said to be maximal.

Various factors that can affect breast milk production include psychological conditions such as anxiety that trigger stress. When the postpartum mother experiences stress, the cortisol hormone will increase. The increase in the hormone cortisol will damage all the functions of the body's organs including inhibiting the production of oxytocin (a hormone that functions to produce breast milk). This inhibition of oxytocin production is the cause of reduced milk production.

After being given mung beans essence for 7 days with a dose of 2x daily as much as 220ml/glass, the results showed that the difference in the average breast milk production in the experimental and control group was 2.60. In the experimental group, breast milk expenditures had occurred since the first day of mung beans essence, whereas in the control group the average breast milk expenditure occurred on the 2nd and 3rd day of postpartum.

According to Susanti (2015),<sup>8</sup> breast milk production is influenced by maternal age, parity, occupation, nutrition and fluid intake, resting patterns, labor effects, maternal psychology, breast care, nipple shape and condition and mothers who smoke and consume alcohol, besides also influenced by factors from the baby that is the implementation of early breastfeeding initiation, the weight of the baby at birth, the frequency of breastfeeding and baby suction. Breast milk production is also influenced by social support both from family support and from health services.

The results showed that almost all respondents in the experimental group (93.3%) and the control group (100%) were respondent's aged  $\geq 20$ -35 years. The ideal age range for reproduction including producing breast milk is 20-35 years old, but at the age of 20-25 years including young people whose psychological maturity is still lacking so many mothers show a response of fear, confusion, and nervousness when the baby cries. The uneasiness of the mother's psychological response can affect breast milk production. At the age of 25 years,

emotional maturity has been achieved and usually the mother has had various experiences in breastfeeding both from herself and others.

Most respondents in the experimental group (53.3%) and the control group (46.7%) were *multigravida*. Mothers who feed more than once (*multigravida*) breast milk production after giving birth are higher than mothers who have given birth for the first time (*primigravida*). This is because the first time giving birth is a very difficult period for every mother so it will have an impact on the postpartum period of a mother. Mothers will experience changes in mood, anxiety, unable to concentrate, dizzy, and sad so that it affects the production of breast milk.

Most mothers who give birth for the first time experience anxiety which can eventually lead to stress, anxiety and not concentrate so that the psychological state of the mother becomes unbalanced. This unbalanced psychological state can affect the two hormones involved in the breastfeeding process, namely the prolactin and oxytocin hormones, when the levels of the hormone prolactin are small, breast milk production will be small, on the contrary when the hormone oxytocin is also small it will affect the small muscles of the breast to squeeze milk comes out.

Most of the respondents in the experimental group had high school education (66.7%) and did not work (80.0%) while the majority of respondents in the control group were high school (60.0%) and did not work (66.7%). This is because the education of respondents is still low, so that it affects the work they have. Respondents spend a lot of time at home without being tied to work outside the home, so they have plenty of opportunities to care for and provide breast milk to their babies. These factors affect the production of breast milk.

Good breast milk production is also due to mothers being able to fulfill nutrition and nutrition every day, by drinking mung beans essence which is rich in nutrients and nutrients, influencing the work of the hormone prolactin and oxytocin in producing breast milk properly so that mothers can exclusively breastfeed, besides B1 content in the mung beans essence is also useful to maximize the work of the nerves so that it is easy to concentrate and more excited.

Based on research by Rahayu and Maharani (2012) stated that there is an influence between the factors of food with breast milk production. The food consumed must contain nutrients and nutrients that are balanced and needed by the body, because the glands that make breast milk (alveoli) cannot work perfectly without adequate food, nutrition that are not able to meet the needs of mothers every day, causing breast milk production not to smooth because in the process of producing breast milk, good nutrition is needed to get the amount of milk needed by the baby.

One way to facilitate milk production is by consuming mung beans essence, because it contains various nutritional compositions, including protein, iron and vitamin B1. Protein is useful in helping the formation of muscle cells, accelerating recovery, increasing endurance and making full longer. As well as the B1 content contained in mung beans essence can change a person's feelings to be happy and easier to concentrate so that the production and expenditure of breast milk becomes a lot and smooth.

The results of this study are in line with the research conducted by Wulandari and Jannah (2015)<sup>11</sup> which states that there is a relationship between giving mung beans essence to breast milk production in postpartum mothers. According to Shohib (2007) in Gatot (2014) states that the content of beans can help the process of fetal growth in pregnant women and is able to optimize breastmilk expenditure and color density of breast milk in nursing mothers.

The results of this study are in accordance with Wakhida's study (2016) which states that there is an effect of consumption of mung beans with milk production in breastfeeding mothers. In addition, it is also in line with Iriani's research (2017)<sup>5</sup> which states that there is an effect of consumption of mung beans essence with increased milk production in breastfeeding mothers. This can be seen from *p value* = 0.007 ( $p < 0.05$ ), which means that statistically there is an effect of consumption of mung beans essence on breast milk production. The content of B1 contained in mung beans essence can change a person's feelings to be calmer, happier and easier to concentrate so that the production and expenditure of breast milk becomes smooth.

The results of this study are in accordance with Shohib's (2006) opinion which states that the content of nuts, especially mung beans can help the process of fetal growth in pregnant women and is able to optimize the release of breast milk and the color density of breast milk in breastfeeding mothers. This is because in mung beans there is a lactagogum content (a substance that can increase and expedite breast milk production) and it has been scientifically proven that mung beans contain natural vitamin B complex can help improve the health of breastfeeding mothers and help produce breast milk.

The results of this study are also consistent with the opinion of Aditya (2014) which states that some vegetables and fruits that are useful to increase breast milk production include katuk leaves, bitter melon, spinach, papaya and green beans. The content of vitamin B1, protein, phosphorus, thiamin, manganese, potassium, magnesium and folic acid in mung beans is very useful to help meet the protein and energy needs of breastfeeding mothers. The results of this study also agree with Rini and Susilo (2016) which states that nuts (such as mung beans or fried / boiled peanuts) are good for increasing breast milk production.

This is in accordance with the opinion of Ali Khomsan (2005) which states that if one of the nuts that can increase ASI production is mung beans, this type of bean has the main advantage of high vitamin E levels that are not found in other types of nuts, and the vitamins are not damaged during the heating process. The main content of mung beans is protein and vitamin B complex (B1, B6). Thiamine (B1) in mung bean seeds is found in the aleurone layer which is easily soluble in water, so that in the small intestine it is easily absorbed into the mucosal tissue.

Mung beans contain 20-25% protein. Protein in raw mung beans has around 77% digestibility. Digestion that is not too high is due to the presence of anti-nutrition substances such as antitrypsin and tannin (polyphenols) in mung beans. When the baby sucks on the mother's nipple, stimulation of the mother's nipple and areola occurs. This stimulation is passed to the *pituitary* via *nerfosvagus*, then to the *anterior lobe*. From this lobe will release the hormone prolactin and oxytocin, the increase in these two hormones is influenced by proteins, namely polyphenols and amino acids and vitamin B1 in mung beans. Polyphenols and amino acids affect the hormone prolactin which works to produce breast milk. After breast milk is produced, the hormone oxytocin makes cells around the alveoli contract, so milk is pushed towards the nipple. The hormone oxytocin can work well because it is influenced by the content of vitamin B1 in mung beans which can make the mother's feelings to be calm and happy. The increase in the hormone oxytocin will make breast milk flow faster than usual.<sup>12</sup>

Breastfeeding mothers who consume mung beans essence will directly add nutritional and nutritional needs every day. This means that the more consuming mung beans essence, the more milk production will be and the milk expenditure will be smoother. So

that breastfeeding mothers are encouraged to consume additional foods such as mung beans essence to be able to meet nutritional and nutritional needs every day.<sup>13-17</sup>

## Conclusion

Based on the results of the study and discussion of the effect of mung beans essence on postpartum mothers on breast milk production, the following conclusions were obtained: In the experimental group the average number of postpartum mother's milk production given mung beans essence was 9.53. In the control group the average breast milk production of postpartum mothers who were not given mung beans essence was 6.93. There is a difference in breast milk production between postpartum mothers who were given mung beans essence with postpartum mothers who were not given mung beans essence in Bengkulu City in 2018, which is 2.60.

Based on the results of the study, discussion and conclusions, it can be suggested to other researchers to conduct further research by taking other types of vegetables or fruits that can affect breast milk production and to the public, especially pregnant and postpartum women who are breastfeeding to maintain their nutritional intake, one of which can be consumed by mung beans which can be processed into mung beans essence, porridge, or mung beans juice regularly to increase milk production so that later the baby can grow and develop well because the nutritional intake is fulfilled properly.

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## Conflicts of interest

Authors declare that there is no conflict of interest.

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