



Research Article

# Effect Of Cowpea Powder (*Vigna Unguiculata*) On The Smooth Production Of Breast Milk In Breastfeeding Mothers In Kediri City

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## ABSTRACT

Breastfeeding is giving breast milk to babies. Breast milk is needed by babies for their growth, besides that breast milk also contains complete nutrients needed by babies according to their age stages. The purpose of this study is to analyze the effect of Cowpea powder (*Vigna unguiculata*) on the smooth production of breast milk in breastfeeding mothers in Kediri City in 2022. This research design is a quasi-experimental study, with Two Group Pretest and Post Test design. In this study, the study population was all postpartum mothers who breastfeed on day 4 in July - August 2022. This study used accidental sampling technique. The statistic test to test the effect was using the Wilcoxon test and the test for the difference test was the Mann whitney test. The results of the study in the intervention group obtained p value of 0.003 and  $\alpha$  of 0.05 ( $P\_value < \alpha: 0.05$ ) were obtained, which means that there was an effect of giving Cowpea powder (*Vigna unguiculata*) on the smooth production of breast milk and in the control group obtained p value of 0.046 and  $\alpha$  of 0.05 ( $P\_value < \alpha: 0.05$ ) were obtained, which means that there was an effect of giving cowpea powder (*Vigna unguiculata*) on the smooth production of breast milk. The results of the different tests found that P Value: 0.024 and  $\alpha: 0.05$  ( $P\_value < \alpha: 0.05$ ) which means that there is a difference in the smoothness of breast milk production after receiving intervention in giving cowpea powder (*Vigna unguiculata*). With the influence of cowpea powder (*Vigna unguiculata*) on the smooth production of breast milk, it is hoped that cowpea can be used as an additional food that can support breastfeeding mothers in producing breast milk.

**Keywords:** Breastfeeding, breast milk, cowpea

## INTRODUCTION

Breastfeeding is giving breast milk to babies. Breast milk is needed by babies for their growth, besides that breast milk also contains complete nutrients needed by babies according to their age stage (WHO, 2011). Based on the East Java Health Profile in 2021, it is stated that based on data from regencies/cities, it is known that the coverage of babies who received exclusive breastfeeding in East Java in 2020 was 61.0%. The coverage has decreased compared to 2019



(68.2%) (Dinkes Jatim, 2021). Data from Kediri City was obtained from 2424 babies who received exclusive breastfeeding of 1629 (67.2%).

The results of survey in the working area of the Mrican Health Center from 20 postpartum mothers, 8 mothers produced breast milk smoothly and 12 mothers experienced uneven milk production. This shows that there is still a high number of mothers who experience uneven milk production where if from the beginning of breastfeeding the milk production is not smooth, it is prone to failure in exclusive breastfeeding. There are many ways to facilitate breast milk production, one of which is by providing physical and psychological support. One of the physical supports to facilitate breast milk production is to provide sufficient nutrition to be used for the needs of the nursing mother's body and for the production of breast milk given to her baby (Carpenito, 2009). Cowpea contain 22.9 grams of protein, 1.1 grams of fat, 61.6 grams of carbohydrates and 77.0 milligrams of calcium. Calories 342 kcal, phosphorus 449 mg, iron 6.5mg, vitamin A 30 SI and vitamin B1 2 mg<sup>4</sup> where these nutrients are nutrients that need to be added when breastfeeding in accordance with the nutritional adequacy figures in breastfeeding mothers. With this background, researchers are interested in conducting research on the effect of Cowpea powder (*Vigna unguiculata*) on the smooth production of breast milk in breastfeeding mothers in Kediri City in 2022. This research is in line with the RIRN 2017-2045 with technology developed in the form of technology about health independence.

From the statement above, researchers are interested in researching the effect of Cowpea powder (*Vigna unguiculata*) on the smooth production of breast milk in breastfeeding mothers in Kediri City.

## **MATERIAL AND METHODS**

This research design is a quasi-experimental study, with Two Group Pretest and Post Test design. The place of this study was in the Mrican Public Health Center Working Area in Kediri City This research was conducted in July - August 2022. Population in this study was all postpartum mothers who breastfeed day 4 in July - August 2022. The sample in this study was a postpartum mother who breastfed day 4 in July - August 2022. This study used accidental sampling technique. The free variable (Independent) is Cowpea powder. The dependent variable is the smooth production of breast milk. This study gave 100 grams of Cowpea then made into powder consumed for 7 days divided a day 3 times. This research has also passed the ethical test Number 016/02/VII/EC/KEP/UNIK/2022 at the Research Ethics Commission of Kadiri University. The statistic test used to test the effect using the Wilcoxon test and the test used for the difference test was the Mann whitney test.

## **RESULTS AND DISCUSSION**

### **Result**

Table 1 shows that almost all maternal age (93.8%) was aged 20-35 years consisting of 15 respondents (46.9%) in the intervention group and from 15 respondents (46.9%) in the control group. The characteristics of respondents based on education were obtained by most (87.5%) respondents having secondary education, consisting of 14 respondents (43.8%) in the intervention group and from 14 respondents (43.8%) in the control group.

The characteristics of respondents based on maternal work were obtained by most (78.1%) respondents having a job as a housewife consisting of 13 respondents (40.6%) in the intervention group and from 12 respondents (37.5%) in the control group.

The characteristics of respondents based on parity were obtained by most (81.3%) respondents having multipara parity consisting of 12 respondents (37.5%) in the intervention group and from 14 respondents (43.8%) in the control group.

**Table 1. Distribution of Respondents Characteristics at the Mrican Public Health Center, Kediri City**

Category	Intervention		Control		Total		
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	
Mother's age	<20	0	0.0%	1	3.1%	1	3.1%
	20-35	15	46.9%	15	46.9%	30	93.8%
	>35	1	3.1%	0	0.0%	1	3.1%
Education	Midle	14	43.8%	14	43.8%	28	87.5%
	High	2	6.3%	2	6.3%	4	12.5%
Mother's type of work	Housewife	13	40.6%	12	37.5%	25	78.1%
	Private	3	9.4%	4	12.5%	7	21.9%
Parity	Primipara	4	12.5%	2	6.3%	6	18.8%
	Multipara	12	37.5%	14	43.8%	26	81.3%
Type of delivery	Normal	11	34.4%	12	37.5%	23	71.9%
	Sectio	5	15.6%	4	12.5%	9	28.1%
	Caesar						
Nutritional status	Excessive Nutrition	1	3.1%	2	6.3%	3	9.4%
	Normal Nutrition	15	46.9%	14	43.8%	29	90.6%

The characteristics of respondents based on the type of parity delivery were obtained by most (71.9%) respondents having a normal type of delivery consisting of 11 respondents (34.4%) in the intervention group and from 12 respondents (37.5%) in the control group. The characteristics of respondents based on nutritional status were obtained by most (90.6%) respondents having a normal nutritional status consisting of 15 respondents (46.9%) in the intervention group and from 14 respondents (43.8%) in the control group.

**Table 2. Breast Milk Production Before Intervention Cowpea Powder (*Vigna Unguiculata*)**

No	Category	Group				Total	
		Intervention		Control		Frequency	Percentage (%)
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Not Smooth	11	34.4%	12	37.5%	23	71.9%
2.	Smooth	5	15.6%	4	12.5%	9	28.1%
	Total	16	50.0%	16	50.0%	32	100.0%

Based on the table 2, it was found that most (71.9%) breast milk production was uneven, consisting of 11 (34.4%) respondents in the intervention group and 12 (37.5%) respondents in the control group.

Based on the table 3, it was found that most (68.8%) of breast milk production was smooth, consisting of 14 (43.8%) respondents in the intervention group and 8 (25%) respondents in the control group.

**Table 3. Breast Milk Production After Intervention Cowpea Powder (*Vigna Unguiculata*)**

No	Category	Group				Total	
		Intervention		Control		Frequency	Percentage (%)
		Frequency	Percentage (%)	Frequency	Percentage (%)		
1.	Not Smooth	2	6.3%	8	25.0%	10	31.3%
2.	Smooth	14	43.8%	8	25.0%	22	68.8%
Total		16	50.0%	16	50.0%	32	100.0%

Based on the table 4, a p value of 0.003 and  $\alpha$  of 0.05 ( $P\_value < \alpha: 0.05$ ) were obtained, which means that there was an effect of giving Cowpea powder (*Vigna Unguiculata*) on the smooth production of breast milk in the treatment group, obtained Positive Rank 9 and Ties: 7.

**Table 4. The Effect of Cowpea Powder on the Smooth Production of Mother's Milk in the Intervention Group**

No	Category	Breast Milk Production in the Intervention Group				Total	
		Not Smooth		Smooth		Frequency	Percentage (%)
		Frequency	Percentage (%)	Frequency	Percentage (%)		
1.	Not Smooth	2	12.5%	9	56.3%	11	68.8%
2.	Smooth	0	0.0%	5	31.3%	5	31.3%
Total		2	12.5%	14	87.5%	16	100.0%

P Value: 0,003  
 Negative Ranks: 0  
 Positive Ranks: 9  
 Ties: 7

Based on the table 5, p value of 0.046 and  $\alpha$  of 0.05 ( $P\_value < \alpha: 0.05$ ) were obtained, which means that there was an effect of giving Cowpea powder (*Vigna Unguiculata*) on the smooth production of breast milk in the control group, obtained Positive Rank 9 and Ties: 7. Table 6 shows that  $P\_Value: 0.024$  and  $\alpha: 0.05$  ( $P\_value < \alpha: 0.05$ ) which means that there is a difference in the smoothness of breast milk production after receiving intervention in giving Cowpea powder (*Vigna Unguiculata*).

**Table 5. The Effect of Cowpea Powder on the Smooth Production of Mother's Milk in the Control Group**

No	Category	Breast Milk Production in the Control Group				Total	
		Not Smooth		Smooth		Frequency	Percentage (%)
		Frequency	Percentage (%)	Frequency	Percentage (%)		
1.	Not Smooth	8	50%	4	25%	12	75%
2.	Smooth	0	0.0%	4	25%	4	25%
Total		8	50%	8	50%	16	100.0%

P Value: 0,046  
 Negative Ranks: 0  
 Positive Ranks: 4  
 Ties: 12

## Discussion

### 1. The Effect of Cowpea Powder on the Smooth Production of Mother's Milk in the Intervention Group

Based on the table 4, a p value of 0.003 and  $\alpha$  of 0.05 ( $P\_value < \alpha: 0.05$ ) were obtained, which means that there was an effect of giving Cowpea powder (*Vigna Unguiculata*) on the smooth production of breast milk in the treatment group, obtained Positive Rank 9 and Ties: 7.

Exclusive Breastfeeding is breastfeeding without any food additives (WHO, 2011), in breastfeeding, nutrients are needed to facilitate breast milk production, according to the nutritional adequacy figures in 2019 there are additional needs for energy, vitamins and minerals in breastfeeding mothers (Kemenkes RI, 2019). One alternative that can be used to facilitate breast milk production is to consume Cowpea powder because it contains energy, vitamins and minerals where the nutrients contained in Cowpea can meet the nutritional adequacy rate in breastfeeding mothers which is expected if the nutrition of the nursing mother is sufficient, the production of breast milk will be smooth (Sari et al., 2017), this is supported by the statement that Cowpea powder is a nutrient-rich food, namely per 100 grams of Cowpea contains 22.9 grams of protein, 1.1 grams of fat, 61.6 grams of carbohydrates and 77.0 milligrams of calcium. Calories 342 kcal, phosphorus 449 mg, iron 6.5mg, vitamin A 30 SI and vitamin B1 2 mg (Poedjadi, 20212). According to other sources say Cowpea contain a lot of nutritional content, even in 100 grams of Cowpea ingredients, it contains 24.4 g of protein, 56.6 g of carbohydrates, 1.9 g of fat, 481 mg of calcium, 399 mg of phosphorus, 481 mg of calcium, essential fatty acids and phytic acid of 2.68 gram (Safitri et al., 2016). This can meet the nutritional needs of breastfeeding mothers where breastfeeding mothers are recommended to increase the intake of calories, protein, calcium, iron, folic acid and other vitamins and minerals to meet the needs of nutrients when breastfeeding (Keikha, 2021).

Breastfeeding mothers need an additional energy of 800 kcal, which is 600 kcal for breast milk production and 200 kcal is used for activities during breastfeeding. Additional protein is also needed in breast milk production, therefore energy intake must be curated according to the Nutritional Adequacy Rate (Simanjuntak, 2011). According to the 2019 nutritional adequacy figures stated that breastfeeding mothers require additional protein as much as 20 grams and according to Ismayanti et al in 2015 stated that the protein content of Cowpea is in arrears of 24.4 grams, It can be concluded that the protein content in peanuts is not able to meet the protein needs of nursing mothers. In a study by Saputro et al in 2015 stated that Cowpea have a high protein content <sup>15</sup> which consists of 24-26% crude protein and is rich in glutamic acid, aspartic acid and lysine, but low in sulfuric amino acid, this is also supported by Andriani's statement that fat and protein are important nutrients for breastfeeding mothers.

### 2. The Effect of Cowpea Powder on the Smooth Production of Mother's Milk in the Control Group

Based on the table 5, p value of 0.046 and a  $\alpha$  of 0.05 ( $P\_value < \alpha: 0.05$ ) were obtained, which means that there was an effect of giving Cowpea powder (*Vigna Unguiculata*) on the smooth production of breast milk in the control group, obtained Positive Rank 9 and Ties: 7.

In the nutritional needs control group, it remains the same as the intervention group, namely breastfeeding mothers need additional energy of 800 kcal, namely 600 kcal for breast milk production and 200 kcal used for activities during breastfeeding (Sari et al., 2017). Additional protein is also needed in breast milk production, therefore energy intake must be curated according to the Nutritional Adequacy Rate. However, in the administration of different treatments, in the

intervention group, it was clear that the nutritional needs of both vitamin and mineral protein energy were more sufficient than the control group who were not given Cowpea powder.

In the control and intervention group, the same thing as consuming daily food but different from the mothers in the control group who were not given Cowpea powder. The influence on the control group can be obtained from other supporting factors such as nutritional status. The characteristics of respondents based on nutritional status were obtained by most (90.6%) respondents having a normal nutritional status consisting of 14 respondents (43.8%) in the control group. Good nutritional status can be used as a source of producing breast milk. This is in line with Pujiastuti's research which states that the status of gisi also affects breast milk, so that it was found that mothers with good nutritional status were able to use the glycogen reserves in their bodies to be converted into energy to produce breast milk. So even though the control group was not given Cowpea powder, there was still an energy reserve from the body of the nursing mother to be used as energy to produce breast milk which was used for her baby.

### **3. Differences In Smooth Milk Production After Being Given The Intervention Of Giving Cowpea Powder (*Vigna Unguiculata*) In The Control And Intervention Groups**

Table 6 shows that P Value: 0.024 and  $\alpha$ : 0.05 (P\_value  $<$   $\alpha$ : 0.05) which means that there is a difference in the smoothness of breast milk production after receiving intervention in giving Cowpea powder (*Vigna Unguiculata*).

There was a difference in the administration of Cowpea powder between the control group and the intervention group because the intervention group (which was given Cowpea powder) consumed higher energy than those who were not given Cowpea powder, this is in line with the research of Saputro et al in 2015 stated that Cowpeas have a high protein content which consists of 24-26% crude protein and is rich in glutamic acid, aspartic acid and lysine, but low in sulfuric amino acids, this is also supported by Andriani's statement that fat and protein are important nutrients for breastfeeding mothers. So if the protein needs are met, the production of breast milk becomes smooth.

In the control and intervention group, the same thing as consuming daily food but different from the mothers in the control group who were not given Cowpea powder, in giving different treatments in the intervention group, it was clear that the nutritional needs of both vitamin and mineral protein energy were more adequate than in the control group who were not given Cowpea powder. This research is also in line with research in 2018 which stated that Cowpeas are rich in bioactive compounds such as peptides, resistant starch, fiber foods, phytochemicals, antioxidants and several types of vitamins and minerals that have special properties that are beneficial to human health. Cowpea protein, peptides and protease inhibitors in Cowpeas may also improve lipid profile

19

This research is also in line with research conducted in 2019 which states that Cowpeas are recommended to be given to malnutrition, so if it is deemed suitable, it is given to breastfeeding mothers who really need additional nutrition (Gondwe, 2019).

According to researchers, the difference between those who were given the intervention and in the control group was indeed because the Cowpea bubu had the nutritional content of mineral vitamins and energy needed to produce breast milk even though most of the nutritional status of the mother was the same but when given Cowpea powder, breastfeeding mothers were more smooth in breast milk production because the administration of Cowpea powder was easy to consume so that in the intervention group smoother production of breast milk.

## CONCLUSION AND SUGGESTION

There is an effect of Cowpea powder on the smooth production of breast milk in breastfeeding mothers, it is hoped that Cowpea powder can be used as a cheap and highly nutritious food to facilitate breast milk production.

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