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## Effectiveness of Aloe Vera and Cabbage Leaf Compress on Breast Swelling Pain in Post-Partners in Bogor Barat District, Bogor City

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## Abstract

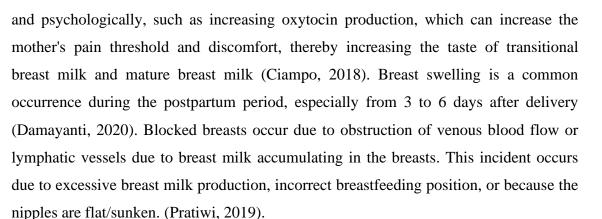
ASEAN data in 2022 stated that 76,543 postpartum mothers experienced breast engorgement. 17.2 million postpartum mothers worldwide experience breast pain problems while breastfeeding. In Indonesia, the incidence of breastfeeding mothers experiencing breast engorgement reached the highest figure of 37.2% and 16% of working breastfeeding mothers experienced breast engorgement. Breast engorgement is interpreted as increased venous and lymph flow in the breasts to prepare for lactation. This is due to overdistension of the lactation ducts, causing breast swelling pain, and breast engorgement accompanied by an increase in body temperature. The study used a quasi-experimental design with a pretest-posttest two-group design. The sample consisted of 30 postpartum mothers who experienced breast engorgement pain and were divided into 2 intervention groups, namely aloe vera compresses and cabbage compresses, the intervention was carried out for 14 days. The instrument used was the Visual Analogue Scale (VAS). Data were analyzed using the Paired T-Test and Independent T-Test. In the Independent Sample T-Test, the p-value of the VAS scale for the aloe vera group was 0.019 < 0.05 with an average score of 2.0 and the VAS scale for the cabbage group was 0.037 < 0.05 with an average score of 1.87.

Keywords: Aloe Vera, Postpartum Mother, Cabbage, Breast Swelling.

## Introduction

Breast milk (ASI) is a fluid that comes out of a mother's mammary glands which has various nutritional substances that are crucial in supporting the development and growth of toddlers (Fadlliyyah, 2019). Breastfeeding also helps mothers physically

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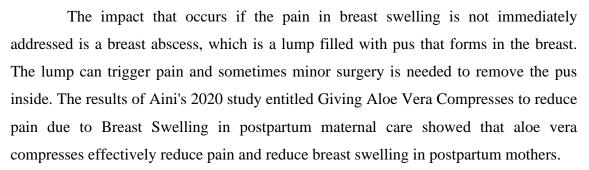


Worldwide, the incidence of breast swelling is 1:8000. The results of a study at the Niloufer Hospital for Women and Children in India found that 11% of 250,151 mothers experienced breast swelling, which varied from 20% to 77%. Data from the Association of Southeast Asian Nations in 2022 concluded that cases of breast milk engorgement in postpartum mothers were recorded at 76,543 people (WHO, 2020). According to the Ministry of Health in 2020, mothers who experienced breast milk engorgement were (71.10%) with the highest number occurring in Indonesia (37.12%).

Breast pain is caused by breast swelling. Breastfeeding mothers on average experience pain in swelling with a severe pain scale (6-8) and a moderate pain scale (3-5). Increased venous and lymph flow can cause breast pain due to the narrowing of the lactiferous ducts or because the glands are not completely emptied (Pratiwi, 2019). There are various ways to deal with breast swelling, one of which is by intervening with aloe vera and cabbage compresses. Scientifically, Cabbage leaf compresses (Brassica Oleracea Var. Capitata) can be used to treat swelling. Cabbage contains the amino acid methionine, which functions as an antibiotic, along with other ingredients such as sinigrin (Allylisothiocyanate), mustard oil, magnesium, and Oxylate Heterosides. Research conducted by Widia, Lidia, and Pangestu in 2020 found that after being given a cabbage leaf compress intervention, 91% of postpartum mothers did not experience swelling, but 9% of postpartum mothers still experienced breast swelling. Aloe vera contains anthraquinone, which contains aloin and emodin, which function as analgesics, so it can be used to treat breast pain. (Rohmah, 2019).

In measuring the scale of breast swelling pain, a Visual Analog Scale can be used, which is a straight or horizontal line 10 cm long, which represents the intensity of continuous pain and verbal descriptors at each end (Potter, 2020).

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Research shows that aloe vera increases biological activity and helps the absorption of vitamin C. Aloe vera also contains vitamin E, also known as an antioxidant. With the help of conductors (polysaccharides), aloe vera orchestra has beneficial biological effects. In addition to water-soluble substances, aloe vera can also dissolve lipid-soluble substances (Emilda, 2020).

#### Method

The type of quantitative research with a pre-experimental method with a PreTest Postt Test Two Group Design design where there are two groups selected randomly, then given a pretest and posttest to determine the effect of the intervention results. The population in this study were all postpartum mothers in West Bogor District, Bogor City who experienced breast swelling pain. The population number was 33 postpartum mothers on April 1 - July 1, 2024.

The number of samples in this study was 30 people. Which was divided into 2 groups, 15 for intervention group 1 and 15 for intervention group 2. In this study, sampling with non-probability sampling with a purposive sampling technique is one technique where researchers determine sampling by determining special characteristics that are by the research objectives so that they are expected to answer research problems (Anwar, 2021). Where the sample of this study was postpartum mothers in West Bogor District, Bogor City who met the inclusion and exclusion criteria by the research objectives.

The number of samples in this study was 30 respondents who had a high VAS pain scale for breast swelling, 15 people would be given cabbage intervention and 15 people would be given aloe vera intervention.



#### Results

Breast Engorgement Pain Scale				
Aloe Vera Compress Group	Mean	Mean Difference	Min	Max
Pretest	7,06	2,00	2	10
Posttest	5,06	_ `	2	8

# Table 1 Breast Swelling Pain Scale Analysis of Aloe Vera Compress Group

Table 1 shows the difference in the scale of breast swelling pain in the pretest aloe vera compress group with a minimum score of 2, a maximum score of 10, and an average score of 7.06, in the posttest aloe vera compress group with a minimum score of 2, a maximum score of 8, and an average score of 5.06. The average difference in the scale of breast swelling pain in the aloe vera compress group was 2.00.

#### Table 2

#### Breast Swelling Pain Scale Analysis of Cabbage Compress Group

Breast Engorgement Pain Scale				
<i></i>		Mean		
Cabbage Compress Group	Mean	Difference	Min	Max
Pretest	7,33		2	10
		1,87	-	
Posttest	5,46		2	10

Table 2 shows the difference in the breast swelling pain scale in the cabbage compress pretest group with a minimum score of 2, a maximum score of 10, and an average score of 7.33; in the cabbage compress posttest group with a minimum score of 2, a maximum score of 10, and an average score of 5.46. The average difference in the breast swelling pain scale in the cabbage compress group was 1.87.

Variable	Scale Pain	Shapiro Wilk	Interpretation
	Pretest	0,091	Normal
Aloe Vera	Posttest	0,061	Normal
Cabbage	Pretest	0.069	Normal
	Posttest	0.262	Normal

#### **Table 3 Data Normality Test**

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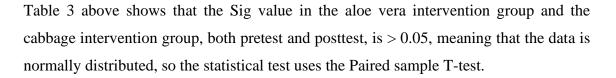


 Table 4 Differences in the average VAS pain scale for breast swelling in postpartum mothers before

 and after aloe vera and cabbage compresses

~		Mean			
Group			Difference Mean	P-Value	
	Before	After			
Aloe Vera	7,06	5,06	2,00	0,001	
Cabbage	7,33	5,46	1,87	0,016	

Table 4 shows the P-Value of the aloe vera compress intervention group pretest and posttest <0.05, so it can be said that there is an influence between the pre-test variable and the post-test variable. Because  $H_0$  is rejected and Ha fails to be rejected. It can be concluded that there is an influence of giving aloe vera compresses on breast swelling pain. It is known that the P-Value of the cabbage compress intervention group pretest and posttest <0.05, so it can be said that there is an influence between the pre-test variable and the post-test variable. Because  $H_0$  is rejected and Ha fails to be rejected. It can be said that there is an influence between the pre-test variable and the post-test variable. Because  $H_0$  is rejected and Ha fails to be rejected. It can be concluded that there is an influence of giving cabbage compresses on breast swelling pain.

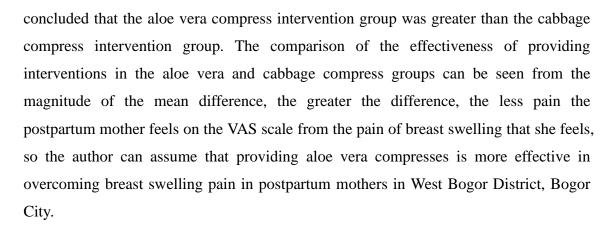
#### Table 5

Comparison of Aloe Vera and Cabbage Compresses on Postpartum Breast Swelling Pain

Intervention	Before			After		
Group	Mean	SD	P-Value	Mean	SD	P- Value
Aloe Vera	7,06	2.374		5,06	2.350	
Cabbage	7,33	1.980	0,760	5,46	2.325	0,016

Table 5 shows that the aloe vera compress intervention group had a pretest mean of 7.06; a posttest mean of 5.06; mean difference of 2.0. The cabbage compress intervention group had a pretest mean of 7.33; a posttest mean of 5.46; mean difference of 1.87. The p-value of the aloe vera and cabbage posttest groups was 0.016 (p < 0.05) so it can be concluded that there was a significant decrease in the scale of breast swelling pain in both intervention groups after being given aloe vera compress and cabbage compress. However, from the results of the two mean differences, it can be

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#### Discussion

In the univariate analysis, the average value of the breast swelling pain scale in the aloe vera compress group before being given aloe vera compress was 7.06 and after being given aloe vera compress was 5.06, so there was a decrease in the pain scale of 2.00 in the aloe vera compress intervention. In the cabbage compress group, the average value of the breast swelling pain scale in the cabbage compress group before being given a cabbage compress was 7.33 and after being given a cabbage compress was 5.46, so there was a decrease in the pain scale of 1.87 in the cabbage compress intervention. So, from the results of the univariate analysis, there was a decrease in the breast swelling pain scale in both intervention groups, both aloe vera compress and cabbage compress. This is in line with research conducted by Widia & Delia (2020) explaining that

respondents who were given cabbage leaf compresses almost all showed very good results where breast swelling was reduced. This study is in line with previous studies, namely that there was a change in the level of

This study is in line with previous studies, namely that there was a change in the level of breast swelling pain after being given cabbage leaf compress therapy for 3 days in postpartum mothers to reduce the level of breast swelling pain in Waysuluh Village, namely before the cabbage leaf compress was given, both subjects had moderate pain intensity, scale 6 (moderate) in Mrs. L and scale 5 (moderate) in Mrs. S. After the cabbage leaf compress was given, both subjects experienced a decrease in the pain scale, to scale 1 (mild) (Aini, 2020). Based on the results of the bivariate analysis study with the Independent T-Test, there was a difference in the scale of breast swelling pain in the pretest and posttest of the aloe vera compress intervention group. Before being given aloe vera compress, the average scale of breast swelling pain was 7.06 and after being



given it decreased to 5.06. The average difference in breast swelling pain was 2.00. This shows that there was a significant decrease in the scale of breast swelling pain after being given an aloe vera compress. According to Sari's 2019 research, the benefits of aloe vera for breastfeeding mothers and found that aloe vera gel can not only help reduce breast swelling but can also treat cracks and sores on the nipples. According to a literature search conducted in various literatures, some ingredients can treat inflammation in aloe vera leaves, or aloe vera.

In line with the results of the study by Aini et al. (2020), the application of aloe vera compresses to reduce breast swelling in postpartum nursing care. A preliminary study explained that aloe vera compresses have been shown to reduce pain in areas of the body that are swollen. because of the high content of amino acids, minerals, and polysaccharides in aloe vera leaves, a reduction in the size of breast swelling pain occurs after the application of aloe vera compresses, which reduce swelling pain and inflammation in the breasts.

Researchers assume that the decrease in the scale of breast swelling in respondents who were compressed by aloe vera is because aloe vera contains anthraquinone, aloe emodin, bradykinase enzymes, carboxypeptidase, salicylate, tannin, and saponin, each of which has the ability as an anti-pain and anti-inflammatory. Reduction of pain and pain occurs through stimulation of the immune system and a decrease in prostaglandins which are responsible for reducing breast pain. The positive effect of increasing the immune system in reducing inflammation, aloe vera has an inhibitory system that blocks pain and a stimulation system that increases wound healing, so that the absorption of aloe vera compresses will be better.

Based on the results of the bivariate analysis study with the Independent T-Test, there was a difference in the scale of breast swelling pain in the pretest and posttest of the cabbage compress intervention group. Before being given a cabbage compress, the average breast swelling pain scale was 7.33 and after being given it decreased to 5.46. The average difference in breast swelling pain was 1.87. This shows that there was a significant decrease in the scale of breast swelling pain after being given a cabbage compress. According to research conducted by Lorentz in 2022, this study showed that cabbage leaf compresses were more effective than warm compresses in treating breast swelling, with a p-value of 0.023. This shows that cabbage leaf compresses are more



effective than warm compresses.

The results of the Kusumasti study in 2023 also support this study: there was a significant difference in breast swelling scores before and after treatment between the experimental and control groups. The average value of the experimental group was 10.60, while the average value of the control group was 20.40. There was a difference in breast swelling scores between the experimental and control groups, with a p-value of 0.001 and a Z value of -3.306. According to theory, cabbage leaf compresses can reduce tissue swelling by opening capillary blood vessels, which can increase blood flow in and out. Fluid trapped in the breasts of cabbage leaf compresses (Brassica Oleracea Var. Capitata) is one example. If the breast skin is not injured and the mother is not allergic to sulfa, the compress can be applied to the swollen breasts within 1-2 hours. This allows postpartum mothers to breastfeed exclusively and increase their confidence during the breastfeeding process (Rohmah et al., 2019).

Researchers assume that the decrease in breast swelling in respondents who were compressed by cabbage leaves is because cabbage contains the amino acid methionine which functions as an antibiotic and other ingredients such as sinigrin, mustard oil, magnesium, and sulfur. These ingredients can help widen the capillary blood vessels to increase blood flow in and out of the area, allowing the body to reabsorb the fluid that is blocked in the breast.

#### Conclusion

The average value of the breast swelling pain scale of postpartum mothers before being given aloe vera compress was 7.06 and after being given aloe vera compress was 5.06. The average value of the breast swelling pain scale of postpartum mothers before being given cabbage compress was 7.33 and after being given cabbage compress was 5.46.

The difference in the average value of the breast swelling pain scale before and after being given aloe vera compress was 2.00. The difference in the average value of the breast swelling pain scale before and after being given a cabbage compress was 1.87.

The decrease in the average value of the breast swelling pain scale before and after being given aloe vera compress was greater than that of cabbage compress so giving aloe vera compress was more effective in reducing the scale of breast swelling pain in



#### postpartum mothers.

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