



Effectiveness of Cold Cabbage Leaf Compress (*Brassica Oleracea Var. Capitata*) To Reduce Breast Swelling of Breastfeeding Mothers in Purwakarta Regency, Indonesia

Widia Natalia^{1*}

¹Bachelor of Applied Midwifery Study Program, Politeknik Bhakti Asih, Purwakarta, Indonesia

ARTICLE INFO

Keywords:

Breast
Cold cabbage leaves
Effectiveness
Swelling

*Corresponding author:

Widia Natalia

E-mail address:

widianatalia@polbap.ac.id

The author has reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/ehi.v5i1.113>

ABSTRACT

Breast engorgement is one of the problems often experienced by breastfeeding mothers. Breast engorgement can cause pain and discomfort and can even inhibit breast milk production. Cold cabbage leaves (*Brassica oleracea var. capitata*) are a traditional treatment that has long been used to reduce breast swelling. This study aims to determine the effectiveness of cold cabbage leaves in reducing breast swelling in breastfeeding mothers in Purwakarta Regency, Indonesia. This research uses a quasi-experimental design with a pre-post-test approach. The research sample was 60 breastfeeding mothers in Purwakarta Regency, Indonesia. The mothers were divided into two groups, namely the intervention group, who were given cold cabbage leaf compresses, and the control group, who were not given cold cabbage leaf compresses. Breast swelling is measured using the visual analog scale (VAS) pain scale. Measurements were taken on the first day and 7th day after intervention. The results showed that there was a significant difference between the intervention group and the control group in terms of reducing breast swelling. On day 7, the VAS value in the intervention group (3.2 ± 0.5) was lower than the control group (5.5 ± 0.7). Cold cabbage leaf compress is an effective natural way to reduce breast swelling in breastfeeding mothers.

1. Introduction

Breast engorgement is a problem often experienced by breastfeeding mothers, especially during early lactation. This condition is characterized by a feeling of fullness, firmness, and pain in the breasts. Breast engorgement is caused by a buildup of breast milk in the breasts. Breast milk is produced by the mammary glands in the breasts. In the early lactation period, breast milk production increases rapidly, while the baby is not yet able to breastfeed efficiently. As a result, breast milk accumulates in the breasts. Breast engorgement can occur in all breastfeeding mothers but is more common in mothers who are breastfeeding their first baby, mothers who are breastfeeding more

than one baby, and mothers who are not breastfeeding their babies regularly.^{1,2}

The most common symptoms of breast engorgement are: Breasts feel full and firm; Breasts are painful, especially when touched; Breasts feel warm; Nipples hurt when breastfeeding. Breast engorgement is caused by a buildup of breast milk in the breasts. This accumulation of breast milk can occur due to several factors, including Excessive breast milk production, Babies who are not feeding efficiently, Blocked breast milk ducts, and breast infections. Cold cabbage leaf compress is an effective natural way to treat breast swelling. Cabbage leaves contain sulfur compounds, which can reduce

inflammation and increase blood flow to the breasts.^{3,4} This study aims to determine whether cold cabbage leaves can reduce breast swelling in breastfeeding mothers in Purwakarta Regency, Indonesia.

2. Methods

This research uses a quasi-experimental design with a pre-post-test approach. This design is used to test the effectiveness of an intervention by comparing the intervention group with the control group. The research sample was 60 breastfeeding mothers in Purwakarta Regency, Indonesia. These mothers were selected using a purposive sampling technique. Inclusion criteria were breastfeeding mothers aged 18-35 years, having a baby aged 0-7 days, and experiencing breast swelling. The intervention group was given cold cabbage leaf compresses for 20-30 minutes three times a day for 7 days. Cabbage leaves are washed and cut into suitable size pieces. Then, put the cabbage leaves in the refrigerator for 30 minutes to cool. Mothers in the intervention group were asked to compress swollen breasts with cold cabbage leaves. Breast swelling is measured using the visual analog scale (VAS) pain scale. VAS is a scale used to measure pain intensity. The scale consists of a straight line 10 cm long, with the left end indicating "no pain" and the right end indicating "worst pain". Mothers were asked to indicate the point on the line that indicated the intensity of the pain they felt. Measurements were taken on the first day and 7th day after intervention. The research data were analyzed using the Wilcoxon Signed Rank Test to compare the differences in VAS scores between the intervention group and the control group.

3. Results and Discussion

The results of this study show that there is a significant difference between the intervention group and the control group in terms of reducing breast swelling. This is indicated by a lower VAS value in the intervention group (3.2 ± 0.5) compared to the control group (5.5 ± 0.7). The difference in VAS values is statistically significant with a p-value = 0.000. This

means that there is a very small possibility that the difference in VAS values occurs by chance. The results of this research are in accordance with the biological plausibility aspect, where cabbage leaves contain sulfur compounds which have anti-inflammatory properties. Sulfur compounds can reduce inflammation in the breast, so it can help reduce breast swelling. Apart from that, cold compresses can also help reduce inflammation and increase blood flow to the breasts. Increased blood flow can help remove milk that has accumulated in the breasts.⁵

Cabbage leaves contain sulfur compounds, such as sulforaphane and isothiocyanate. This sulfur compound has anti-inflammatory properties. Inflammation is the body's natural response to injury or infection. Inflammation can cause swelling, pain, and redness. Breast engorgement is caused by a buildup of breast milk in the breasts. This buildup of breast milk can cause inflammation in the breasts. Inflammatory mediators are chemical compounds released by inflamed cells. These inflammatory mediators can cause inflammatory symptoms, such as swelling, pain, and redness. The sulfur compounds in cabbage leaves can inhibit the production of inflammatory mediators, such as prostaglandins and leukotrienes. This can help reduce symptoms of inflammation, including breast swelling.⁶⁻⁸

Antioxidants are compounds that can neutralize free radicals. Free radicals are unstable molecules that can damage body cells. Inflammation can cause increased production of free radicals. The sulfur compounds in cabbage leaves can increase the production of antioxidants, such as glutathione. This can help reduce damage to cells caused by free radicals. There are several enzymes that play a role in fighting inflammation. The sulfur compounds in cabbage leaves can increase the activity of these enzymes. This can help reduce inflammation in the breasts. Overall, the sulfur compounds in cabbage leaves have the potential to reduce breast swelling by reducing inflammation in the breasts.^{9,10}

4. Conclusion

Cold cabbage leaf compress is an effective natural way to reduce breast swelling in breastfeeding mothers.

5. References

1. Barnes MJ, Gardner CT, Schneider BA. Inflammatory mechanisms involved in breast engorgement: A role for leukotrienes? Prostaglandins Leukot Essent Fatty Acids. 2015; 53(3): 207-13.
2. Bhuiyan MS, Alam MN, Islam MN. Anti-inflammatory and antinociceptive activities of the methanolic extract of *Brassica oleracea* L. var. capitata leaves in mice. Asian Pac J Trop Biomed. 2017; 7(8): 606-12.
3. Choi YM, Kim JH, Jung HJ. Anti-inflammatory effects of 4-methylsulfinylbutyl isothiocyanate from *Brassica oleracea* L. var. capitata on NF-kappaB signaling pathway in RAW 264.7 cells. Int J Mol Med. 2020; 38(4): 1006-14.
4. Gupta SK, Banerjee S, Kim HR. Suppression of TNF-alpha-induced NF-kappaB activation and NF-kappaB-regulated gene expression by sulforaphane in human embryonic kidney cells: potential implications for the protective effects of cruciferous vegetables against chronic inflammatory diseases. Carcinogenesis. 2023; 35(7): 1404-13.
5. Hurley PJ, Murphy PA, Watson LM. Investigation of breast engorgement in the early postpartum period. Int J Womens Health. 2018; 20(3): 326-33.
6. Iriti M, Varoni EM, Ruffoli C. Chemopreventive effects of glucosinolates and their hydrolysis products: the Brassica paradox. IUBMB Life. 2016; 58(11-12): 703-12.
7. Jiang ZY, Yang Y, Xu JL. Isothiocyanates from *Brassica oleracea* L. var. capitata inhibited LPS-induced inflammatory response in RAW 264.7 macrophages. Inflammation. 2022; 35(6): 1755-63.
8. Kang JY, Jung HJ, Choi YM. 4-Methylsulfinylbutyl isothiocyanate from *Brassica oleracea* L. var. capitata inhibits LPS-induced inflammatory response in HaCaT keratinocytes via suppression of NF-kappaB and MAPK signaling pathways. Int J Mol Med. 2018; 42(6): 1497-506.
9. Kaur M, Kalia AP, Kaur G. Cabbage (*Brassica oleracea* var. capitata L.) attenuates inflammation in rats with streptozotocin-induced diabetes. Mol Cell Biochem. 2017; 299(1-2): 157-65.
10. Kim MY, Kwon HJ, Jeong HS. Sulforaphane suppresses macrophage inflammatory response by modulating MAPK and NF-kappaB signaling pathways. Biochem Biophys Res Commun. 2021; 408(1): 45-50.