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# The Design of Breastfeeding Program Improvement Using a Combination of Nigella Sativa and Lactation Massage on the Levels of Oxytocin Hormone

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**Abstract:** ***Introduction: Breast milk is the first food, the main and the best for babies that are natural. Lactation is a symbiotic process and the cause of breast milk problems can be from the mother, baby or both. Most mothers stop breastfeeding due to reduced milk production. Efforts to overcome non-pharmacological milk production by giving balck cumin (Nigella Sativa) and lactation massage. Balck cumin (Nigella Sativa) has lactagogue active compounds and lactation massage can stimulate prolactin and oxytocin hormones. Methods: A Quasy experiment with a non-randomized controlled trial design of the pretest-posttest control group. The sample consisted of 40 respondents. Data analysis used Mann-Whitney and Wilcoxon. Results: there was a significant increase in the intervention group and the control group with a value of 0.001. In the intervention group, there was an average increase in oxytocin levels of 30.43ng / ml and in the control group 6.72ng / ml. Conclusion: there was a significant increase in oxytocin hormone levels in postpartum mothers after being given a combination of balck cumin (Nigella Sativa) and lactation massage.***

**Keywords:** black cumin (nigella sativa), lactation massage, oxytocin

## 1. Introduction

The relevance of this study relates to the production of breast milk and the smoothness of breastfeeding. Breast milk is the baby's main food. Breast milk production and breastfeeding smoothness can be measured through defecation, infant urination, the volume of breast milk and baby's weight. Most mothers stop breastfeeding because milk production decreases. Breast milk also influences the nutritional needs of infants.

## 2. Literature Survey

Breast milk is the first food, the main and best for babies that are natural. ASI contains various substances needed in the process of growth, baby development, health and immunity of the baby. Breast milk produced in the first days of birth contains colostrum which can protect babies from disease.[1] Lactation is a symbiotic process and the cause of breastfeeding problems can be from the mother, baby or both.[2] The two most common problems faced by breastfeeding mothers are nipple and breast pain and low milk production. The results of Colin's research and Scot in Australia, explained 29% of mothers did not give their babies exclusive breastfeeding or stopped breastfeeding in the second week due to reduced milk production.[3]

The main factors inhibiting breastfeeding are lack of milk production and the lack of stimulation to the mother. Nutrition and nutritional status of the mother during pregnancy and breastfeeding is one of the factors that cause a lack of milk production. Efforts to defeat the problem of breast milk production can be given pharmacological or non-pharmacological therapy. One of the non-pharmacological efforts is by giving balck cumin (Nigella Sativa) and lactation massage.

Balck cumin (Nigella Sativa)is one of the galactagogue herbs. Balck cumin (Nigella Sativa) contains lipid elements and hormonal structures in which this active compound plays an active role in the production of milk because it shows a galactagogue effect.[4] Based on the research conducted by Abed et al, the results showed that balck cumin (Nigella Sativa) seeds affected the increase in prolactin hormone levels of 274.7% and mammography and lactogenic activity, allowing lactation.[5]

Lactation massage is a massage in the breast and maternal backbone. Through massage or stimulation in the spine, the neurotransmitter will stimulate the medulla oblongata to immediately send a message to the hypothalamus to the posterior pituitary to secrete oxytocin.6 Research conducted by Umesh Patel proved that massage in the back region effectively increases breast milk.[6]

## 3. Methods/Approach

This type of research used a quasi-experimental design with the non-randomized controlled trial design of the pretest-posttest control group design. The number of samples of 40 respondents divided into intervention groups with the combination of 3 x 400 mg daily cumin and lactation massage which was done twice with a duration of 30 minutes, and a control group with breast care and education provided for 14 days.

In this research,research ethics includes inform consent, anonymity, confidentiality and veracity.[7] The ethical approval has been obtained from the Health Research Ethics Committee of Health Polytechnic Semarang.

## 4. Results and Discussion

### 4.1 Characteristics of respondents

**Table 1:** Description the characteristics of age, education, employment

| Variable | Group | | *p-value**** |
|---|---|---|---|
| | Intervention | Control | |
| Age<br>mean±SD<br>min±max | 23.55±2.724<br>20±28 | 24.44±2.724<br>20±29 | 0.788 |
| Level of education<br>Basic<br>Middle<br>High | 5%<br>55%<br>40% | 30%<br>70%<br>0% | 0.156 |
| Employment<br>Work<br>Does not work Bekerja | 55%<br>45% | 60%<br>40% | 0.555 |

Table 1 illustrates the susceptibility of the age of this study is 20-29 years. In the intervention group, the average age of respondents was 23 years, while in the control group the average age of respondents was 24 years. Age 20-35 years is the safest age for pregnancy, childbirth and breastfeeding. At this age, the reproductive organs are ready or mature to carry out the reproductive process in relation to breastfeeding, besides that it is also supported by psychological and mental maturity.[8]

The level of education in the intervention group was middle by 55% and high by 40%. Whereas in the control group, basic education is 30%, medium 70%. The level of education generally pertains to the level of knowledge the community has. The higher the level of education, the easier it will be to absorb information, especially about breastfeeding and nutritional needs in infants.[9]

Respondents' work in the intervention group as much as 55% of respondents worked and the control group showed that 60% of respondents worked.Working mothers can affect the production of breast milk even though breastfeeding has been given education, many working mothers stop give breast milk in infants for various reasons. Previous research states that there is a relationship between infant work and exclusive breastfeeding.[10]

**Table 2:** Description of breastfeeding frequency characteristics and resting patterns

| Variable | Group | | *p-value* |
|---|---|---|---|
| | Intervention | control | |
| Breastfeeding frequency<br>Mean ± SD<br>Min ± Max | 9.9 ± 1.334<br>8 ± 12 | 9.45 ± 1.19<br>8 ± 12 | 0.879 |
| Rest Pattern<br>Mean ± SD<br>Min ± Max | 4.80±0.833<br>4.00±6.00 | 4.85±0.813<br>4.00±6.00 | 0.755 |

The mean frequency of breastfeeding in the intervention group was 10 times, while in the control group 9 times. After testing the homogeneity of both groups, it was obtained a p-value of 0.879, meaning that there were no significant differences in the frequency of breastfeeding of respondents in the intervention and control groups. Enough babies have a frequency of breastfeeding around 7-8 times per day for the first 2 weeks after giving birth because they are supported by sufficient milk production. The frequency of breastfeeding is related to the stimulation of prolactin and oxytocin hormones.

The average rest pattern in the intervention group was 4 hours, as well as the control group. After the homogeneity test for both groups was obtained, a p-value was 0.755, meaning that there were no significant differences in the respondents' break patterns in the intervention and control groups. If the mother lacks rest, the body will experience weakness in carrying out its functions so that it can affect the mother's health status and the expenditure of breast milk will be hampered.

### 4.2 Hormone levels of oxytocin

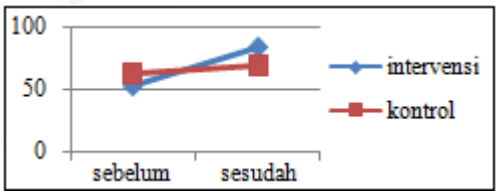


**Figure 1** Effect of Combination of Balck cumin (Nigella Sativa) and Lactation Massage on Oxytocin Levels

It can be concluded that there is a significant difference in the mean difference in the increase in oxytocin hormone between the intervention group and the control group. And the value of the hormone oxytocin between before and after treatment in the intervention group and group had significant differences.

During the lactation process there are several things that can be done to support the production of ASI secretion hormones, including maternal skin care with baby's skin, routine breastfeeding 12 times per day, lactation counseling, and relaxation techniques to help with breastfeeding and food intake There are two hormones to maintain the lactation process, namely the hormone prolactin to increase the secretion of ASI and the hormone oxytocin which causes ejection of breast milk.[11]

Lactation massage is a massage technique around the breast and the back or spine that will stimulate the production of oxytocin by the posterior pituitary gland. Through massage or stimulation of the spine, the neurotransmitter will stimulate the medulla oblongata to immediately send a message to the hypothalamus to the posterior pituitary to secrete oxytocin. Breast milk dripping or coming out is a sign of active oxytocin reflex.[12-14] Research conducted by Vera Morhenn showed that massage performed on the upper back with moderate pressure for 15 minutes in postpartum mothers could significantly increase the oxytocin hormone by 17%.[15]

Nutritional intake is also important in the production of ASI. One of them is by consuming balck cumin (Nigella Sativa). Balck cumin (Nigella Sativa) has a chemical content in the form of fats and vegetable oils (35%), carbohydrates (32%), proteins (21%), water, saponins, fatty acids. Besides that, it also contains calcium, sodium, potassium, magnesium, iron, and vitamins A, B, B2, B6, C and E. Balck cumin (Nigella Sativa) contains carbohydrates, proteins, and oils that are quite high and it is a source of high energy that can cause effects galactagogue.[16-18]Balck cumin (Nigella Sativa) consumed has elements of lipids, fat portions, hormonal structure, polyphenols which are active compounds to stimulate prolactin reflexes and stimulate the hormone oxytocin to stimulate expenditure and drain breast milk because it has galactagogue effect.[4]

The galactagogue effect affects the Prolactin Releasing Factor (PRF) to stimulate the hormone prolactin out, while also stimulating the oxytocin hormone to come out so that lactation occurs. This is in line with research conducted by Hossein et al., Obtained results of balck cumin (Nigella Sativa) administration on milk production. There was an increase in milk production around 37.6% compared to the control group.[4]

The combination of balck cumin (Nigella Sativa) and lactation massage has a positive effect because it goes through two lines of the body system simultaneously which is a combination of physical mechanical receptors through massage directly on the skin and through nutrient absorbs namely balck cumin (Nigella Sativa). Lactation massage is a food receptor directly on the skin, so it simultaneously stimulates afferent nerve impulses in the limbic system like vertebrates and costa and there is a breast area. The stimulation provides the return of the posterior pituitary gland so that oxytocin is secreted into the blood circulation system. Oxytocin that enters the blood, causes contraction of special cells namely myoepithelial cells that surround the mammary alveoli and lactaferial duct. At the same time, the galactagogue effect on balck cumin (Nigella Sativa) will stimulate the hypothalamus and anterior pituitary so that prolactin enters the blood and causes the acinus cells in the alveoli to produce ASI. The contraction of myoepithelial cells pushes the milk out of the alveolus through the lactoferial duct to the lactopherial sinus. When the condition relaxes the circulatory and hormonal systems are relatively smoother so the mother feels more comfortable in the process of breastfeeding.

## 5. Conclusion

The combination of balck cumin (Nigella Sativa) and lactation massage effective to increase oxytocin hormone levels with an increase of 63.8%.

## 6. Future Scope

Researchers cannot control the duration of breastfeeding and the strength of baby suction

## 7. Other recommendations

For further research, researchers can continue their research by researching the optimum dose of balck cumin (Nigella Sativa) to increase milk production (levels of the hormone prolactin and the hormone oxytocin)

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