



THE DIFFERENCES IN ACUPUNCTURE THERAPY AND KATUK LEAF EXTRACT ON BREAST MILK PRODUCTION IN BREASTFEEDING MOTHERS IN DUWETAN NGUNUT JUMANTONO KARANGANYAR

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ABSTRACT

Background: Suboptimal breastfeeding accounts for 45% of deaths. Various treatments can be done to increase the amount of breast milk production, both pharmacological and non-pharmacological. One of the efforts that can be done to increase the rate of secretion and production of breast milk is through the use of traditional herbal medicines such as katuk extract (*Sauropus androgynus*). Acupuncture significantly improves exclusive breastfeeding. Acupuncture therapy can be done to increase the hormone prolactin in breastfeeding.

Objective: To determine the difference between acupuncture therapy and katuk leaf extract on increasing breast milk production in breastfeeding mothers in Duwetan, Ngunut, Jumantono, Karanganyar. Time and Place: April-May 2021, at Duwetan, Ngunut, Jumantono, Karanganyar. Subjects: The research sample taken was 40 mothers who were in the breastfeeding phase in Duwetan, Ngunut, Jumantono, Karanganyar.

Methods: This study is an experimental study with a Pretest-Posttest Control Group design. Statistical test using univariate analysis and bivariate analysis using independent t-test

Results: After the intervention, milk production (based on baby's weight) in the acupuncture group was higher (Mean= 4.029,50; SD= 392,33) than in the katuk leaf extract group (Mean= 3.450,50; SD= 405,08). There was a difference in breast milk production in the acupuncture group and the katuk leaf extract group ($p < 0,001$). The administration of acupuncture increased milk production significantly with an effect value (ES = 1,45) compared to the administration of katuk leaf extract.

Conclusion: There is a difference between acupuncture therapy and katuk leaf extract on breast milk production in breastfeeding mothers.

Keywords: Acupuncture, katuk leaf extract, Breast Milk Production

INTRODUCTION

Suboptimal breastfeeding was accounted for 45% of deaths due to neonatal infectious diseases, 30% of deaths due to diarrhea, and 18% of deaths due to acute respiratory disorders in children under five. The death of 30,000 children in Indonesia every year can be prevented by exclusive breastfeeding (Air Susu Ibu) which can reduce infant mortality by 13%^[1].

Breast milk is one of the perfect and best foods for babies because it contains the nutritional elements needed by babies for optimal growth and development.²The government's follow-up to increase the coverage of exclusive breastfeeding with Government Regulation (PP) number 33 of 2012 regarding exclusive breastfeeding is contained in article 6 which reads that "Each mother gives birth to exclusive breast milk for 6 months"^[3].

Various treatments can be done to increase the amount of breast milk production, both pharmacological and non-pharmacological.⁴One of the efforts that can be done to increase the rate of secretion and production of breast milk is through the use of traditional herbal medicines such as katuk leaf extract (*Sauropus androgynus*). Katuk leaf (*Saoropus androgynus*) has been known in traditional medicine in South and Southeast Asia as a medicine to increase breast milk. Katuk leaves can be consumed easily, katuk leaves can be boiled and produced as phytopharmaca which is efficacious to launch breast milk.⁵

Acupuncture significantly increases exclusive breastfeeding, besides acupuncture is a method that can be used to reduce breast engorgement in mothers.⁶ Acupuncture therapy helps smooth energy, blood circulation, lymph flow and nervous system so that it can affect the mechanism of action of

hormones. Acupuncture therapy can be done to increase the hormone prolactin in breastfeeding^[7].

This study aims to determine the difference between groups given acupuncture therapy and groups given katuk leaf extract to increase milk production in breastfeeding mothers in Duwetan, Ngunut, Jumantono, Karanganyar.

METHODS

This research design is a quantitative research using experimental design with Pretest-Posttest Control Group design. This research was conducted pre-test to determine the initial state of the subject under study (before being given the intervention) and post-test (after being given the intervention) whose results can be compared or seen the changes. The independent variables were acupuncture therapy and katuk leaf extract.

The population in this study were breastfeeding mothers in Duwetan, Ngunut, Jumantono, Karanganyar. The sampling technique was *purposive sampling* with 40 respondents with inclusion criteria, namely exclusive breastfeeding mothers who had babies aged 0-6 months. Data collection was carried out in April-May 2021. Data collection using observation sheets consisted of 1) intervention of acupuncture therapy at point *CV 17 Danzhong* (location: on the medialis sagitalis line, between the two mammae papillae as high as between ribs IV), *SP 6 Sanyinjiao* (location: 3 cun proximal prominens maleolus medialis, right on the posterior edge of the os tibia), *ST 18 Rugen* (location: on the rib gap V, 2 fingers under the mammary papila), 2) the intervention of giving katuk leaf extract. Each research subject was observed for three weeks.

The steps for giving acupuncture therapy are cleaning the puncture area with 70% alcohol cotton, performing stabbing

at the points CV-17, SP-6, and ST-18, then cleaning again with alcohol cotton. The step of giving katuk leaf extract is to give 10 grains of katuk leaf extract taken 3 times a week.

This research was conducted with univariate analysis, Shapiro-Wilk, and independent t-test analysis.

RESULTS

The results of this study can be seen in the following table:

Table 1. Characteristics of Research Subjects

Characteristics	n	Mean	SD	Min.	Maks.
Mother's age (years)	40	24,70	4,35	18	37
Infant's age (months)	40	2,63	0,70	2	4
Baby's weight before intervention (grams)	40	3.177,50	354,31	2.520	3.800
Baby's weight after intervention (grams)	40	3.740,00	490,80	2.950	4.700
Infant's weight gain (grams)	40	562,50	294,50	150	1.100

Table 1 shows that the study sample had an average age of 25 years and an average infant of 3 months. The results of the measurement of breast milk production were based on the

average baby weight before the intervention was 3,177.50 grams, the average baby weight after the intervention was 3,740 grams, and the average baby weight gain for three weeks was 562.50 grams.

Table 2. The difference in the average milk production based on the baby's weight in the acupuncture and katuk leaf extract groups

Variabel	n	Mean	SD	p	Effect Size
Before intervention (grams)					
Acupuncture	20	3.227,50	344,21	0,379	0,28
Katuk leaf extract	20	3.127,50	365,97		
After intervention (grams)					
Acupuncture	20	4.029,50	392,33	<0,001	1,45
Katuk leaf extract	20	3.450,50	405,08		

Table 2 shows that there is no statistically significant difference in the volume of breast milk production before intervention (p= 0.379). The findings showed that randomization was successful in making the two groups comparable in volume of breast milk production before the intervention. By randomization, each nursing mother had an equal chance of being selected into the acupuncture group and the katuk leaf extract group. After the intervention, the average milk production (based on baby's weight) in the acupuncture group was higher (Mean=4,029; SD= 392,33) than the katuk

leaf extract group (Mean= 3,450.50; SD= 405.08). These results showed that there were differences in breast milk production after acupuncture intervention and katuk leaf extract were statistically significant (p < 0.001). The table above also shows that giving acupuncture therapy increased milk production in nursing mothers with an effect value (ES = 1.45) compared to giving katuk leaf extract.

DISCUSSION

These results indicate that there is an increase in the average volume of breast milk production before and after the

intervention in the acupuncture group and the katuk leaf extract group. The average milk production (baby weight) before the intervention in the acupuncture group was 3,227.50 grams, then increased to 4,029.50 grams after being given acupuncture intervention. The average milk production (baby weight) before the intervention in the katuk leaf extract group was 3,127.50 grams, then increased to 3,450.50 grams after being given the katuk leaf extract intervention.

Katuk leaves have a high iron content and are rich in vitamins (A, B1, and C), protein, fat, and minerals. Katuk leaves also contain tannins, saponins, flavonoids, and papaverine alkaloids, so they have the potential to be used as traditional medicinal ingredients. The compound in katuk leaves that plays a role in promoting breast milk is sesquiterpene acid [8]. The production and expenditure of breast milk is influenced by 2 hormones, namely prolactin and oxytocin. Prolactin affects the amount of milk production, while oxytocin affects the process of expulsion of breast milk. Prolactin is related to maternal nutrition, the better the nutritional intake, the more milk production [9].

Katuk leaves also contain polyphenols and steroids which play a role in increasing prolactin or stimulating the alveoli to produce breast milk, as well as stimulating the hormone oxytocin to stimulate milk production. Katuk leaves also contain several aliphatic compounds. The efficacy of katuk leaves as an increase in breast milk production is thought to come from the hormonal effects of sterol chemical compounds which are estrogenic [10].

Previous research by Sa'roni et al, (2004) explained that giving katuk leaf extract to the group of mothers giving birth and breastfeeding at a dose of 3x300 mg/day for 15 days starting from day 3 after giving birth can increase milk production 50.7% more compared to mothers giving birth and breastfeeding

their babies who were not given katuk leaf extract, giving katuk leaf extract could reduce the number of subjects with less milk production by 12.5% [5].

According to the principles of Traditional Chinese Medicine (TCM), postpartum hypogalactia is mainly caused by *qi* and blood deficiency or liver *qi* stagnation. Deficiency of *qi* and blood leads to insufficient milk production and liver *qi* stagnation causes coagulation or blockage of breast milk. A systematic review concluded that acupuncture and acupressure were effective in increasing breast milk volume [11]. The results of this study are also in line with Neri *et al.*, (2011) which states that acupuncture techniques are effective in increasing breast milk production. Breast milk production is the volume of breast milk measured for 7 days using a measuring cup. The average volume of milk production per day has increased [12].

Several other studies described performing acupuncture at CV 17 (also referred to as Ren 17. Danzhong or Shanzong; located in the middle of the sternum), SI 1 (Shaoze; on the little finger), ST 18 (Rugen; lower breast margin), Zusanli (ST 36), and Taichong (LR 3) are beneficial for women with low milk production postpartum [13].

The two complementary treatments, namely acupuncture and katuk leaf extract were very effective in increasing breast milk production in nursing mothers, but in this study it was shown that there was a difference in breast milk production (baby weight) in the acupuncture group and the katuk leaf extract group ($p < 0.001$). Giving acupuncture therapy increased milk production significantly with an effect value ($ES = 1.45$) compared to giving katuk leaf extract.

This can be seen from the preparation for increasing breastfeeding, namely the condition of the mother, especially *self-efficacy*. *Self-efficacy* is the mother's belief in her ability to breastfeed

her baby. This affects the mother's response to infant feeding (effort and thought), which in turn affects breastfeeding initiation and maintaining positive breastfeeding behavior. Breastfeeding self-efficacy increases the coverage of exclusive breastfeeding. It shows that *self-efficacy* is an effective theory of social change to increase the rate of exclusive breastfeeding. Physiological responses/affective states such as anxiety, stress, depression, fatigue, and pain can affect a person's self-efficacy. Mothers who are relaxed and calm will have higher self-efficacy than mothers who are stressed, anxious or feeling sick^[14].

According to Jogde and Bhore (2013) that the smooth production and flow of breast milk (ASI) is often influenced by several factors such as stress, anxiety, fatigue, dehydration and nutrition^[15]. These conditions can be minimized by using acupuncture and relaxation acupressure. According to the Indonesian Ministry of Health, the Directorate of Traditional, Alternative and Complementary Health Services (2012) explains that one way to increase breast milk production is acupuncture, especially lactapuncture or maternal massage. Lactapuncture massage is one method that is still rarely used to stimulate the productivity of breast milk. Lactapuncture techniques can be applied as a complementary therapy to postpartum mothers, this therapy helps smooth energy flow, blood circulation, lymph flow and nervous system so that it can affect the workings of hormone metabolism. This therapy can be done as an effort to increase the hormone prolactin in the breastfeeding process^[12].

Some research statistics show that DU 14, ST 18, S 11, ST 36, LR 3 are the acupoints most often used to treat the lack of milk production. This explains that the use of acupuncture needles can stimulate Heche towards the back, can suppress the mother's vital *qi* smoothly and make the mother feel warm, relaxed, and

comfortable. Pressing through the carding meridians and collaterals, can increase pleasure, relieve pain, relieve tension, and indirectly promote milk secretion and excretion^[6].

Based on a previous study conducted by Andrew (2005), it was stated that the mechanism of a bio-chemical stimulus injected through an electrical acupoint at a meridian point would have a response four times faster by activating impulses to the brain, especially the neuro-hormonal complex of the pituitary-adrenocortical axis. Feedback from this mechanism is a relaxation response and lower cortisol production, which is one of the causes of hypogalactia. Relaxation is the result of the body's physiological response to acupoint stimuli, by increasing endorphins and serotonin transmission to the brain and other organs via nerves and meridians^[17].

This explanation is supported by a meta-analysis by Mangesi (2016) that women who received acupuncture were less likely to develop abscesses, had less severe symptoms on day five, and had lower rates of fever than women in the usual care group, evidence that suggests enough of the published trials to justify widespread implementation^[18].

The results of the above explanation can be concluded that the direct impact caused when giving acupuncture therapy is relaxation in the mother so as to increase the hormone prolactin that can launch and increase breast milk production compared to the administration of katuk leaf extract.

The limitation in the study is that researchers have not included confounding or confounding factors. Some of these factors, namely food consumption, stress levels (baby blues) and others can affect the amount of breast milk production in the mother and the baby's weight. The number of samples was still small (40 study subjects).

CONCLUSIONS

The results of this study showed that there were differences in breast milk production in the acupuncture group and the katuk leaf extract group ($p < 0,001$). Administration of acupuncture therapy increases breast milk production quite large with an Effect value ($ES = 1.45$) compared to the administration of katuk leaf extract. The community needs to add more knowledge about treatments to increase breast milk production, especially about acupuncture therapy, both looking for sources of information through books, mass media, internet media, and also to health care workers. Nursing mothers can do acupuncture therapy to relax which lead to increase breast milk production.

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