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The Effect of Katuk Vegetable Feeding on Breast Milk Production at TPMB Mimik Suwarminingsih, Mumbulsari District, Jember Regency

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ABSTRACT

Suboptimal exclusive breastfeeding coverage remains a significant health challenge. Non-pharmacological interventions are needed to support lactation. Katuk (Sauropus androgynus) leaves are traditionally known as a natural galactagogue due to their bioactive compounds that stimulate prolactin and oxytocin, but empirical evidence on their efficacy during the critical early postpartum period is limited. Objective: This study aimed to analyze the effect of katuk leaf consumption on breast milk production in postpartum mothers, measured through infant weight gain. This study utilized a one-group pre-experimental design with a pretest-posttest approach. A total of 16 postpartum mothers were recruited through purposive sampling. The intervention consisted of consuming 200 grams of steamed katuk leaves daily for seven consecutive days. Infant weight was measured before the intervention (Day 4) and after (Day 8) to assess breast milk production adequacy. Data were analyzed using the Wilcoxon Signed-Rank Test. Results: The findings revealed a statistically significant increase in infant weight gain post-intervention. The median infant weight gain rose from 110g at pretest to 190g at posttest. The Wilcoxon Signed-Rank Test confirmed that this improvement was significant (Z = -3.527, p = 0.001). The consumption of katuk leaves is significantly associated with increased breast milk production among postpartum mothers. This supports its potential as an accessible and non-pharmacological intervention to enhance lactation. However, due to the study's pre-experimental design without a control group, these findings should be interpreted with caution. Further research using randomized controlled trials is recommended to establish causality.
Keywords: *Sauropus androgynus; Lactation; Postpartum Mothers; Infant Weight Gain.*

ABSTRAK

Cakupan Air Susu Ibu (ASI) eksklusif yang suboptimal masih menjadi tantangan kesehatan yang signifikan. Intervensi non-farmakologis diperlukan untuk mendukung proses laktasi. Daun katuk (Sauropus androgynus) secara tradisional dikenal sebagai galactagogue alami karena kandungan senyawa bioaktifnya seperti polifenol dan steroid yang dapat merangsang hormon prolaktin dan oksitosin. Namun, bukti empiris mengenai efikasinya selama periode kritis awal pascapersalinan masih terbatas. Penelitian ini bertujuan untuk menganalisis pengaruh konsumsi daun katuk terhadap produksi ASI pada ibu pascapersalinan, yang diukur melalui kenaikan berat badan bayi. Penelitian ini menggunakan desain pra-eksperimental satu kelompok dengan pendekatan pretest-posttest. Sebanyak 16 ibu pascapersalinan direkrut melalui teknik purposive sampling. Intervensi berupa konsumsi 200 gram daun katuk yang dikukus setiap hari selama tujuh hari berturut-turut. Produksi ASI diukur secara tidak langsung melalui kenaikan berat badan bayi yang dinilai sebelum intervensi (Hari ke-4) dan sesudah (Hari ke-8). Data dianalisis menggunakan Uji Wilcoxon Signed-Rank. Hasil penelitian menunjukkan adanya peningkatan kenaikan berat badan bayi yang signifikan secara statistik setelah intervensi. Median kenaikan berat badan bayi meningkat dari 110 gram pada pretest menjadi 190 gram pada posttest. Uji Wilcoxon Signed-Rank mengonfirmasi bahwa peningkatan ini signifikan (Z = -3.527, p = 0,001). Konsumsi daun katuk berhubungan secara signifikan dengan peningkatan produksi ASI pada ibu pascapersalinan. Hal ini mendukung potensi daun katuk sebagai intervensi non-farmakologis yang mudah diakses untuk meningkatkan laktasi. Namun, karena desain penelitian pra-eksperimental tanpa kelompok kontrol, temuan ini harus diinterpretasikan dengan hati-hati. Penelitian lebih lanjut yang menggunakan desain randomized controlled trial (RCT) direkomendasikan untuk menetapkan hubungan sebab-akibat.
Kata Kunci: *Sauropus androgynus; Laktasi; Ibu Pascapersalinan; Kenaikan Berat Badan Bayi*

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I. INTRODUCTION

Breastfeeding plays a vital role in the first 1,000 days of life and is widely recognized as one of the most effective interventions to improve the nutritional status, immunity, and survival of infants. The World Health Organization has emphasized the importance of exclusive breastfeeding in reducing infant

morbidity and mortality, aligning with the Sustainable Development Goals (SDGs) that aim to lower the global infant mortality rate to 12 per 1,000 live births by 2030.[1] Despite this, exclusive breastfeeding coverage remains suboptimal. Globally, and in Indonesia—including Jember Regency—exclusive breastfeeding coverage was reported at only 79% as of 2020, indicating room for improvement in breastfeeding practices.[2]

Breastfeeding mothers require adequate nutritional intake to support both their own health and sufficient breast milk production. Key nutrients such as provitamin A, vitamin C, iron, and phosphorus are essential, along with bioactive compounds like polyphenols and steroids that can enhance the prolactin reflex and stimulate milk production by the alveolar cells in the breast.[3] Additionally, oxytocin—a hormone that facilitates milk ejection—is also influenced by these compounds. Lactagogues, substances that stimulate or increase milk secretion, are increasingly being explored as part of nutritional interventions for lactation support.[4]

Non-pharmacological approaches using natural galactagogues have gained attention due to their accessibility, safety, and cultural acceptance. Several green vegetables, such as Sauropus androgynus (katuk), Moringa oleifera, sweet potatoes, and papaya leaves, are traditionally used in Indonesia to promote lactation.[5,6]. Among these, katuk leaves are rich in polyphenols and plant steroids, making them promising candidates for stimulating both prolactin and oxytocin release, and thereby supporting both the production and flow of breast milk.[7]

Previous studies have suggested the potential of katuk as a lactagogue; however, few have rigorously assessed its effect using pretest-posttest experimental designs within the critical postpartum window. Moreover, limited data exist on its short-term impact between days 3 to 7 postpartum—a period when mothers often experience challenges in establishing lactation.[8] This gap in research highlights the need for empirical evidence on the efficacy of katuk leaves in early lactation support.

Therefore, this study aimed to assess breast milk production before and after the consumption of katuk leaves, and to analyze the effect of katuk leaf consumption on the quantity of breast milk among postpartum mothers.

II. METHODOLOGY

This study employed a quantitative approach using a one-group pretest-posttest pre-experimental design. The population consisted of 20 postpartum mothers who were breastfeeding at a selected community health center in Jember. Purposive sampling was used to recruit participants based on specific inclusion and exclusion criteria. A total of 16 mothers met the eligibility criteria, while 4 were excluded due to one or more of the following reasons: (1) taking other lactation-enhancing supplements, (2) having infants with low birth weight (<2,500 g), or (3) having medical conditions affecting lactation such as mastitis or postpartum hemorrhage. The independent variable was the administration of katuk leaf vegetables (Sauropus androgynus), and the dependent variable was breast milk production, which was measured indirectly through the infant's body weight gain. The operational definition of breast milk production in this study referred to the difference in infant weight between pretest (Day 4 postpartum) and posttest (Day 8 postpartum). Infant weight was measured using a digital infant scale, calibrated before use, with all infants weighed in dry clothing before the first morning feed by trained health workers. Each participant received 200 grams of steamed katuk leaves once daily for seven consecutive days. Data were analyzed using the Wilcoxon Signed-Rank Test, appropriate for small samples with non-parametric distribution, to determine the significance of changes in infant weight before and after the intervention.

III. RESULTS AND DISCUSSION

Table 1. Age Distribution of Respondents

Age Group	Frequency (n)	Percentage (%)
<20 or >35	6	37.5%
20–35	10	62.5%
Total	16	100.0%

Most of the respondents (62.5%) were aged 20–35 years, which is considered the optimal reproductive age. This age range is physiologically associated with better hormonal balance and lactation capacity, aligning with previous findings that reproductive maturity influences maternal readiness for exclusive breastfeeding.

Table 2. Educational Background of Respondents

Education Level	Frequency (n)	Percentage (%)
Elementary–Junior High (SD–SMP)	10	62.5%
High School–Higher Education (SMA–PT)	6	37.5%
Total	16	100.0%

A majority of mothers (62.5%) had only elementary or junior high education. Lower educational levels have been associated with limited knowledge of breastfeeding techniques and awareness of proper nutrition during lactation.

Table 3. Parity of Respondents

Parity	Frequency (n)	Percentage (%)
Primipara	6	37.5%
Multipara	8	50.0%
Grandemultipara	2	12.5%
Total	16	100.0%

Half of the respondents were multiparous. Prior breastfeeding experience may influence lactation outcomes due to established breastfeeding skills and stronger prolactin reflex response.

Table 4. Infant Weight Gain Before and After Katuk Leaf Intervention

Time Point	Median Weight Gain (g)	Minimum–Maximum (g)
Pretest (Day 4)	110	80–135
Posttest (Day 8)	190	145–225

Based on Table 4, the median infant weight gain increased from 110g (range: 80–135g) at baseline to 190g (range: 145–225g) after 7 days of katuk leaf consumption. This increase suggests enhanced breast milk production among postpartum mothers.

Table 5. Wilcoxon Signed-Rank Test Results

Variable	Z-value	p-value
Weight Gain (g) Pre–Post	-3.527	0.001

The Wilcoxon Signed-Rank Test results (Table 5) showed a statistically significant difference ($Z = -3.527$, $p = 0.001$), supporting the conclusion that katuk leaf vegetable intake significantly improved infant weight gain, indicating improved lactation outcomes.

The findings of this study demonstrate a significant improvement in breast milk production among postpartum mothers following a 7-day intervention with katuk (Sauropus androgynus) leaf vegetable consumption. This improvement was reflected by the increase in infant weight gain, which served as a proxy indicator for lactation adequacy. The median infant weight gain increased from 110 grams (range: 80–135g) before the intervention to 190 grams (range: 145–225g) afterward. The Wilcoxon Signed-Rank Test yielded a p-value of 0.001, indicating that the increase was statistically significant.[7,9]

These findings align with previous studies that have identified katuk leaves as a potent natural galactagogue.[10] Katuk leaves contain polyphenols and steroids that are known to stimulate the secretion of prolactin and oxytocin—two key hormones involved in

milk production and ejection. The presence of sterol compounds in katuk also mimics estrogen activity, which may enhance the sensitivity of mammary glands to prolactin. This biochemical mechanism supports the observed increase in milk output in the present study.

In terms of maternal characteristics, most participants were between 20 and 35 years old, an age range associated with optimal reproductive health and psychological readiness for breastfeeding. Maternal age has been previously linked to lactation outcomes, with mothers under 20 or over 35 often experiencing physiological or psychological barriers to successful breastfeeding. The relatively ideal age range of the study population may have contributed to the positive response to the katuk intervention.[11]

Another contributing factor was parity. Half of the mothers in this study were multiparous, which has been associated with increased lactation success due to prior breastfeeding experience and established mammary gland development.[12] Education level also played a role; although the majority of participants had only completed primary or junior secondary education, the standardized guidance and daily consumption of katuk vegetables likely reduced the influence of individual knowledge levels on breastfeeding outcomes.[13,14]

It is important to note, however, that this study utilized a one-group pretest-posttest design, which limits causal inference. The observed weight gain in infants may be partly attributed to natural physiological growth that typically occurs during the first week of life. Without a control group, it is not possible to fully isolate the effect of katuk consumption from other potential confounding variables. Future studies employing randomized controlled designs are needed to confirm these findings.

In conclusion, katuk leaf vegetable consumption was associated with improved breast milk production, as evidenced by increased infant weight gain in postpartum mothers. This supports its potential as an accessible, non-pharmacological intervention for enhancing lactation, especially in low-resource settings. However, limitations in study design warrant cautious interpretation of the results.

IV. CONCLUSIONS

This study found that the consumption of katuk (Sauropus androgynus) leaf vegetables was associated with an increase in breast milk production among postpartum mothers at Sukorambi Public Health Center, as reflected by a statistically significant improvement in infant weight gain after a 7-day intervention. The proportion of mothers with insufficient milk production decreased from 81.2% to 0%, while those with increased production rose to 93.8%. Although the results suggest a potential benefit of katuk leaves in supporting lactation, these findings should be interpreted with caution due to the absence of a control group. The observed improvements may also be influenced by natural postpartum physiological changes. Therefore, further research using controlled experimental designs is recommended to establish the causal effect of katuk leaf consumption on breast milk production more definitively.

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