



INNOVATION IN MAKING KATUK LEAF BISCUITS AS A BREAST MILK BOOSTER: ENTREPRENEURSHIP DEVELOPMENT PROGRAM

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Abstract

Background: The exclusive breastfeeding rate in Indonesia remains low (52.5%), far below the national target of 80%. One major cause is the perception of insufficient breast milk production. Katuk leaf (*Sauropus androgynus*) contains natural galactagogues that stimulate prolactin secretion. Previous research in 2015 showed that katuk leaf biscuits can increase serum prolactin levels in breastfeeding mothers.

Objectives: This community empowerment program aimed to improve alumni and Micro, Small, and Medium Enterprises (MSME) partners' skills in producing and developing Katuk Leaf Biscuits as a functional food innovation supporting exclusive breastfeeding.

Method: The Entrepreneurship Development Program was implemented in collaboration between midwifery lecturers, alumni, and MSME partners. Activities included training on product formulation, biscuit production, packaging design, and PIRT licensing process. Partners were evaluated for skill improvement and production readiness.

Results: Partners successfully produced standardized Katuk Leaf Biscuits, developed appropriate packaging, and obtained PIRT permits. Knowledge and practical skills of partners improved, and the innovation encouraged sustainable entrepreneurship based on local food potential. The product was promoted as a healthy, practical, and culturally acceptable galactagogue food.

Conclusion: Katuk Leaf Biscuits serve as a sustainable innovation that supports exclusive breastfeeding, empowers mothers, and strengthens MSME-based entrepreneurship. Community empowerment through health-based product innovation can simultaneously improve public health and economic resilience.

Keywords: katuk leaf, breastfeeding, entrepreneurship, community empowerment, innovation

BACKGROUND

Breastfeeding is crucial for a child's survival and health. Breast milk is a safe, natural, and nutritious source of nutrition.¹ Exclusive breastfeeding is recognized as one of the most effective public health interventions to reduce infant morbidity, prevent stunting, and improve child survival globally. The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life, followed by continued breastfeeding alongside complementary foods for at least two years.² Only 27% of newborns are breastfed within the first hour of life and one in five babies are given food or fluids other than breast milk in the first three days.³ Exclusive breastfeeding coverage in Indonesia reaches around 74.54% - 74.73% and in West Java it reaches 76.40% but this figure is still below the national target (80%).⁴

One of the most persistent barriers is maternal perception of insufficient milk production (perceived low milk supply), which remains a leading cause of early breastfeeding cessation Brown A. Maternal perception of insufficient milk supply: risk factors and clinical outcomes.⁵ Studies have shown that concerns about low milk supply often arise in the first weeks postpartum and strongly influence mothers' confidence in breastfeeding, ultimately affecting exclusive breastfeeding outcomes.⁶ To address this issue, various galactagogues—substances that stimulate breast milk production—have been traditionally used in different cultures. In Indonesia, katuk leaf (*Sauropus androgynus*) has long been recognized as a natural galactagogue and is widely consumed by breastfeeding mothers. Katuk contains bioactive compounds such as fitosterol and papaverine, which are believed to enhance prolactin release and stimulate milk production.⁷ Beyond traditional preparations like soups or boiled leaves, recent innovations have focused on developing functional foods that are more practical, standardized, and acceptable for modern consumers. A study conducted in 2015 demonstrated that Katuk Leaf Biscuits significantly increased serum prolactin levels in breastfeeding mothers, confirming their potential as an effective and convenient galactagogue-based food product.⁸

Building upon these scientific findings, the innovation was further developed through a community empowerment program involving local entrepreneurs and midwifery alumni. The program not only aimed to produce a health-promoting functional food but also served as a platform to enhance entrepreneurial skills, create economic opportunities, and support sustainable community-based health initiatives. This community-driven approach ensures that the product is not only beneficial for breastfeeding mothers but also contributes to economic empowerment and capacity building among midwifery graduates.

METHODS

This program was conducted through an Entrepreneurship Development Scheme involving collaboration between lecturers, alumni, and MSME partners. The method applied a participatory approach consisting of several stages: situation analysis, partner training, production practice, packaging and branding development, licensing facilitation, and evaluation. Participants were alumni of the Midwifery Department working in maternal and child health services across Bandung districts. Training sessions focused on formulation techniques, food safety, nutritional labeling, and marketing strategies. Evaluation was carried out through pre- and post-activity assessments to measure knowledge, production ability, and business readiness.

RESULT AND DISCUSSION

Partners demonstrated improved competence in processing katuk leaves into biscuits, including maintaining nutritional quality and ensuring standard hygiene. All partner groups succeeded in producing prototypes with consistent quality and sensory acceptance. Each group developed their product packaging, which met labeling and marketing standards.

Furthermore, all groups were guided to apply for and obtain PIRT certification, allowing their products to be marketed legally.

A community service program with an entrepreneurship development scheme has been implemented with partners, including alumni of the midwifery professional education program and MSME partners. Activities included partner recruitment, community service program outreach, workshops providing material on biscuit manufacturing concepts, biscuit quality, katuk leaf biscuit production, standardized product packaging concepts, training in katuk leaf biscuit production, and the development of NIB (National Product Registration Certificate) and PIRT (Product Registration Certificate). Partners demonstrated competency in processing katuk leaf flour into biscuits, including maintaining nutritional quality and ensuring hygiene throughout the biscuit-making process. All partner groups successfully produced katuk leaf biscuits according to the standard formula, with consistent quality and good sensory acceptance. Partners also developed product packaging designs that meet labeling and marketing standards. Furthermore, partners received assistance in obtaining a Business License (NIB) and a PIRT (Product Registration Certificate) number P-IRT, allowing the products to be marketed legally. Obtaining a Business Identification Number (NIB) and a Home Industry Food Production Certificate (P-IRT) ensures that the products meet regulatory standards and can be legally marketed in Indonesia. These licenses also strengthen consumer trust by demonstrating that the production process complies with safety and quality requirements.^{10,11}

Table 1. Summary of Community Empowerment Activities

Activity Component	Description	Output
Training	Katuk leaf biscuit formulation and production technique	Improved partner skills
Packaging	Design and labeling development	Attractive, marketable packaging
Licensing	PIRT registration guidance	PIRT-certified product
Entrepreneurship	Business management mentoring	Sustainable MSME collaboration

The partners demonstrated high enthusiasm in participating in this program, as it offered practical competencies that extend beyond the conventional scope of midwifery practice. The introduction of Katuk Leaf Biscuit production gave participants access to evidence-based functional food innovation while simultaneously strengthening their entrepreneurial capacity. This innovation represents an important step in translating scientific evidence into community-based entrepreneurship. The innovation of Katuk Leaf Biscuits integrates scientific findings into community entrepreneurship.⁹ Katuk leaf (*Sauropus androgynus*), widely recognized for its galactagogue properties, has been shown to enhance milk production and support maternal nutrition, making it highly relevant for maternal child health initiatives.^{7,8} By integrating this evidence into a marketable product, the program offers a dual impact: economic empowerment for women and improved health outcomes for mothers and infants. Economic empowerment through entrepreneurship not only increases women's control over household income and decision-making but is also associated with better maternal nutrition and reductions in risks such as low birth weight and undernutrition in children.¹² Such community-focused innovations align closely with the Sustainable Development Goals (SDGs), especially SDG 3: Good Health and Well-being, which promotes optimal maternal and child health, and SDG 8: Decent Work and Economic Growth, which emphasizes entrepreneurship and economic resilience.¹³

The core message of this initiative is empowering mothers, nurturing life naturally captures the comprehensive benefits of the program, reflecting improvements in maternal

confidence, nutritional independence, and sustainable community productivity. Community empowerment interventions targeting maternal nutrition and caregiving not only improve maternal and child health outcomes such as enhanced knowledge and behaviors related to nutrition but also strengthen mothers' confidence and decision-making abilities, contributing to greater nutritional independence and community productivity. This aligns with findings that community-based nutrition education and empowerment programs enhance mothers' nutrition practices and support local economic development through skills building and use of local food resources.^{14,15}

CONCLUSION

Katuk Leaf Biscuits (*Sauropus androgynus*) represent a functional food innovation that supports exclusive breastfeeding while empowering women and small businesses. Through community empowerment, participants gained technical and entrepreneurial skills, enabling sustainable production and commercialization. The program highlights how local resources can be transformed into high-value health products that promote both public health and economic resilience.

COMPETING INTERESTS

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AUTHOR'S CONTRIBUTION

Diyan Indrayani conceived the project, supervised the program, and prepared the manuscript. Ferina and Chris Sriyanti contributed to training design and partner mentoring. The student team (Dita Melia, Mayra Ar Rasyid, Khallista Nurul Pasya, Rahmatika, and Revalina Septyani) assisted in field implementation, data documentation, and product promotion. All authors reviewed and approved the final manuscript.

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