



Exploration of the Function of Galactagogue in Fenugreek, Moringa, and Sauropus Androgynus Polyherbal Tea: Systematic Literature Review

¹Eva Kusumahati,^{2*}Kintoko,³Sagiran

¹Department of Pharmacy, Faculty of Pharmacy, Institut Kesehatan Rajawali, Bandung, 40184,

²Department of Pharmaceutical Biology, Universitas Ahmad Dahlan, Yogyakarta, ³General Medical Education Study Program, Faculty of Medicine and Health Sciences, Muhammadiyah University of Yogyakarta, Indonesia

Email: kintoko@pharm.uad.ac.id

KEYWORDS

*Polyherbal Tea,
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A B S T R A C T

This study aims to evaluate the effect of polyherbal tea consisting of fenugreek, Moringa oleifera, and Sauropus androgynus on breast milk production and quality, as well as the health of breastfeeding mothers. The method used was a Systematic Literature Review (SLR) based on PRISMA 2020, where studies were identified through a systematic search in the Scopus database using relevant keywords. Data were extracted from studies that met the inclusion criteria and were evaluated to determine the effectiveness and safety of polyherbal teas. The results showed that polyherbal tea supplementation has the potential to increase breast milk production by stimulating the hormones prolactin and oxytocin. Fenugreek and Moringa oleifera significantly increase milk production and change the nutritional profile of breast milk for the better, including increased unsaturated fatty acid content and antioxidant capacity. Sauropus androgynus leaves also show potential as galactagogues and maternal health supporters. In addition, this herbal supplementation provides additional benefits for maternal health, such as improved nutritional status and reduced fatigue. These findings are important because they provide stronger scientific evidence to support the use of herbal supplements in clinical practice, as well as suggesting that polyherbal teas can be an effective natural alternative in improving milk production and quality and supporting the health of breastfeeding mothers. Further research is needed to determine the optimal dosage and long-term effects of these herbal supplements, as well as to understand the synergistic interactions between the herbal ingredients. Relevant keywords for this study included: polyherbal tea, galactagogue, breast milk production, breast milk quality, fenugreek, Moringa oleifera, Sauropus androgynus, and breastfeeding maternal health.

1. Introduction

Breast milk is the most ideal feeding method for newborns because it contains all the essential nutrients for growth and development in the first six months of life. Breast milk is also rich in immunological and anti-inflammatory factors that protect babies from various diseases (Organization, 2025).

However, many mothers around the world face difficulties in producing enough breast milk, putting them at risk of breastfeeding failure and baby health problems. Globally, only about 44–48% of babies aged 0–6 months are exclusively breastfed; this figure has not reached the global target and has been stagnant in the last two decades (Organization, 2025).

In India, the prevalence of early breastfeeding initiation (within the first hour after birth) is still low, at about 41.5% nationally; many mothers start breastfeeding late despite giving birth in a health facility (Singh et al., 2019). Another study also noted that only about 21% of babies in different districts get breast milk within the first hour, with large disparities between regions and states (Phukan et al., 2018).

This condition shows the urgency to find effective and safe solutions in increasing breast milk production. One culturally popular approach is the use of herbal supplements as galactogogs, compounds believed to stimulate breast milk production. Fenugreek (*Trigonella foenum graecum*) is one of the most widely used herbal galactagogues in various countries.

Some studies support the effects of fenugreek on increased milk production. A network meta-analysis found that fenugreek significantly increased breast milk compared to placebo, with a weighted mean difference of 11.11 to 17.79 ml ($p < 0.05$) (Nasseri et al., 2017).

An experimental study by Ravi and Joseph found that giving fenugreek to postpartum mothers increased the frequency of urination in babies, which is an indicator of increased milk production (Ravi & Joseph, 2020). The study also showed that infants whose mothers consumed fenugreek experienced a more significant weight gain during the first week of life compared to the control group (Ravi & Joseph, 2020). Another study by Sevrin et al. used a model of lactating mice with a large number of offspring to assess the effects of fenugreek on breast milk synthesis and secretion (Sevrin et al., 2019). The results showed that fenugreek supplementation increased the expression of genes associated with milk macronutrient synthesis and energy metabolism in the mammary glands, as well as increased IGF-1 receptor expression and plasma insulin concentration (Sevrin et al., 2019). These findings suggest that fenugreek can prolong the duration of peak milk synthesis and increase milk output by activating oxytocin secretion.

In addition to fenugreek, *Moringa oleifera* has also been studied as a potential supplement to improve milk production and quality. *Moringa oleifera* is known for its high nutrient content and antioxidant properties (Kholif et al., 2019). Research by Kholif et al. showed that supplementation of *Moringa oleifera* leaf extract in Nubian goats increased milk production and positively altered the fatty acid profile of milk (Kholif et al., 2019). This increase in milk production is associated with increased feed intake, better nutrient digestion, and better rumen fermentation. Another study by Zhang et al. investigated the effects of supplementation of *Moringa oleifera* twig and rachis preparations on dairy cow milk production and quality (Zhang et al., 2018). The results showed that this supplementation increased milk production and altered the fatty acid profile of milk, increased the proportion of unsaturated fatty acids and conjugated linoleic acid, as well as decreased the proportion of saturated fatty acids and atherogenicity index (Zhang et al., 2018). In addition, *Moringa oleifera* supplementation increases the antioxidant capacity of bovine plasma, which can aid in disease prevention (Zhang et al., 2018). This study shows that *Moringa oleifera* can provide additional benefits to the health of dairy cows, in addition to increasing milk production.

Chamomile (*Matricaria recutita*), although less studied than fenugreek and *Moringa oleifera*, also shows potential as a galactagogue. A case report by Silva et al. describes the case of a woman who experienced increased milk production after consuming chamomile infusion (Silva et al., 2018). Although consumption of chamomile during pregnancy and lactation has been documented for a variety of purposes, its galactagogue effects have never been reported before (Silva et al., 2018). The study suggests that chamomile may have a positive effect on breast milk production, but more research is needed to confirm

these findings.

This study aims to review various studies that have been conducted on the use of herbal supplements to improve milk production and quality, as well as their impact on the health of breastfeeding mothers. With a focus on polyherbal teas that combine fenugreek, *Moringa oleifera*, and *Sauropus androgynus*, this study explores the potential synergistic effects of these herbal combinations. The main objective of this study is to provide a systematic and thorough review of the galactagogue function of this herbal tea, as well as to identify synergistic or antagonistic interactions between the various herbal components in polyherbal formulations.

The relationship of this study with the existing literature lies in the use of the same herbal ingredients (fenugreek and *Moringa oleifera*) and the same goal, which is to improve the production and quality of breast milk. However, this study differs in terms of the approach and methodology used. This research will focus on the development of optimal polyherbal tea formulations, taking into account the interaction between various herbs and phytochemicals. In addition, this study will evaluate the effects of polyherbal tea on various aspects of maternal and infant health, including breast milk production, breast milk quality, and other health parameters.

2. Methodology

This study uses a Systematic Literature Review (SLR) design to identify, evaluate, and synthesize the existing evidence regarding the use of polyherbal tea as galactagogue. The first stage of this study is the identification of studies through databases and registries. Researchers used Scopus as the primary database with specific keywords such as "polyherbal tea," "galactagogue," "herbal galactagogue," "*Sauropus androgynus* effect," "*Moringa oleifera* tea," "moringa milk production," "fenugreek milk production," and "galactagogue tea." From this process, researchers managed to identify 127 relevant recordings in 2013-2015.

After initial identification, the researchers screened the records to remove duplicates and records that did not meet the inclusion criteria and were not indexed in Q1, Q2, and Q3. A total of 6 records were deleted due to duplication, 8 records were deleted because they were marked as ineligible by the automation tool, 24 records were deleted for other reasons, and 3 records were deleted because they did not have an abstract for the filtering process. As a result, 85 recordings remained for further screening.

At the screening stage, the researcher evaluates the recordings based on abstracts and titles to determine the relevance and feasibility of the study. Of the 85 recordings screened, 35 were removed because they did not meet the criteria, leaving 51 recordings that were then searched for retrieval. Of these, 18 recordings were not successfully taken, leaving 33 recordings to be assessed for eligibility.

The study involved a full evaluation of the remaining 33 recordings to determine whether they met the established inclusion and exclusion criteria. After the assessment, 3 additional records were removed for various reasons, resulting in a total of 36 studies included in the final review.

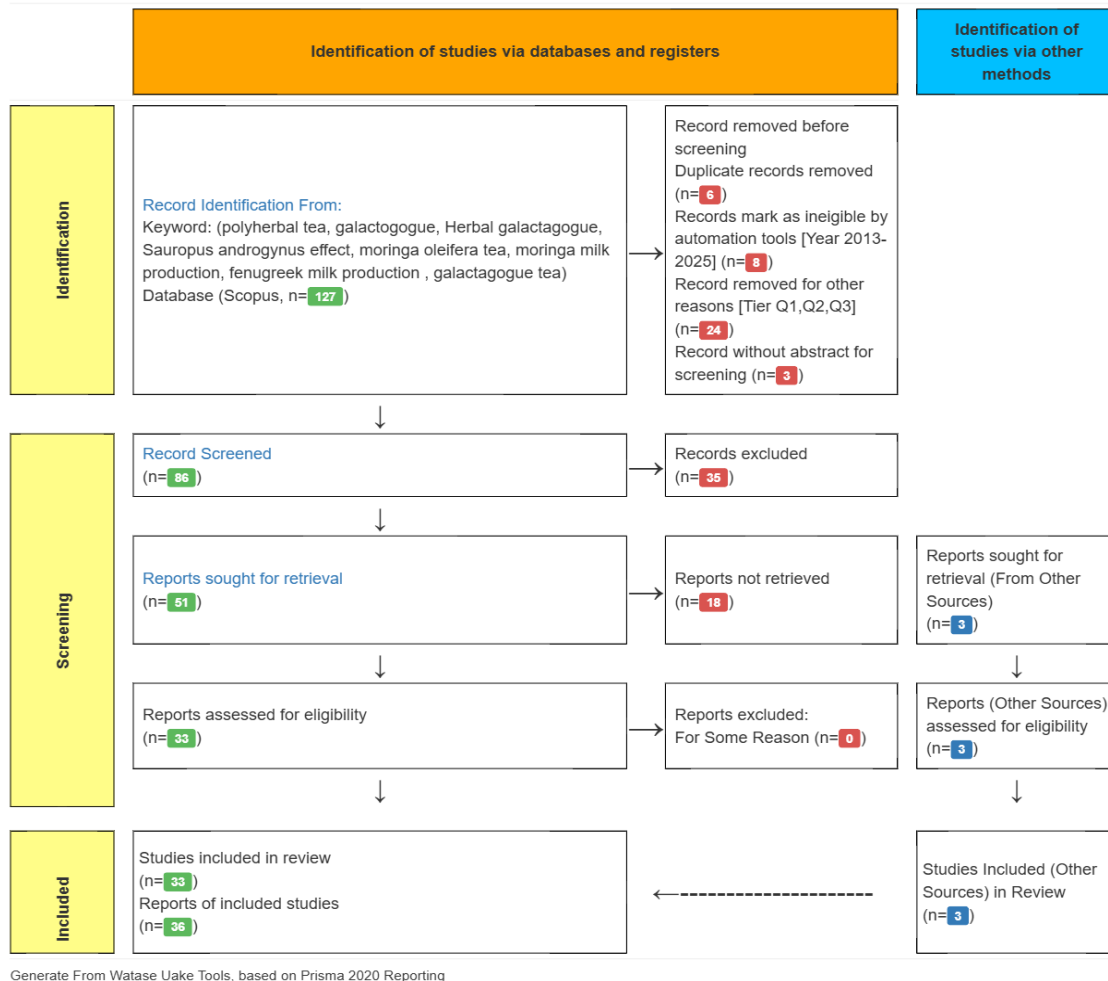


Figure 1. Flowchart of the Articles Selection Process Using the PRISMA Method

The research instruments used include data extraction forms developed by researchers to collect important information from each included study. The data extracted included study details such as author, year of publication, research design, sample/subject, methods, results, and limitations. The sample/subject of this study consisted of breastfeeding mothers who consumed polyherbal tea as a supplement to increase breast milk production.

The data collection procedure involves the systematic extraction of information from the included studies using a data extraction form. The collected data is then analyzed qualitatively and quantitatively to identify patterns, similarities, and differences in the research results. The analysis methods used include narrative synthesis and meta-analysis where possible, to provide a comprehensive picture of the effectiveness of polyherbal tea as a galactagogue.

The study also considered the safety and tolerability aspects of polyherbal tea, as well as possible side effects. The results of the study are expected to provide strong scientific evidence to support the use of polyherbal tea as a natural alternative to increase breast milk production in breastfeeding mothers.

3. Result and Discussion

Fenugreek (*Trigonella foenum-graecum*)

Effects on Breast Milk Production: Fenugreek has been shown to be effective in increasing milk production by stimulating the hormones prolactin and oxytocin). An experimental study by Ravi and Joseph found that giving fenugreek to postpartum mothers increased the frequency of urination in babies, which is an indicator of increased milk production (Ravi & Joseph, 2020). The study also showed that babies whose mothers consumed fenugreek experienced a more significant weight gain during the first week of life compared to the control group.

Effects on Breast Milk Synthesis and Secretion: Research by Sevrin et al. used a model of lactating mice with large numbers of offspring to assess the effects of fenugreek on breast milk synthesis and secretion (Sevrin et al., 2019). The results showed that fenugreek supplementation increased the expression of genes associated with milk macronutrient synthesis and energy metabolism in the mammary glands, as well as increased IGF-1 receptor expression and plasma insulin concentration.

Moringa oleifera

Effects on Breast Milk Production and Quality: *Moringa oleifera*, known for its high nutrient content and antioxidant properties, has been studied as a potential supplement to improve milk production and quality (Kholif et al., 2019). Research by Kholif et al. showed that supplementation of *Moringa oleifera* leaf extract in Nubian goats increased milk production and positively altered the fatty acid profile of milk (Kholif et al., 2019). This increased milk production is associated with increased feed intake, better digestion of nutrients, and better rumen fermentation.

Effects on Milk Quality: A study by Zhang et al. investigated the effects of supplementation of *Moringa oleifera* twig and rachis preparations on dairy cow milk production and quality (Zhang et al., 2018). The results showed that this supplementation increased milk production and altered the fatty acid profile of milk, increased the proportion of unsaturated fatty acids and conjugated linoleic acids, as well as decreased the proportion of saturated fatty acids and atherogenicity index.

Sauropus androgynus

Effects on Milk Production: *Sauropus androgynus* leaves have long been known in traditional medicine as a plant that can increase milk production. Research by Susilowati et al. investigated the estrogenic effects of *Sauropus androgynus* leaf extract on vaginal and endometrial atrophy in a model of perimenopausal mice and found that *Sauropus androgynus* leaf extract had a positive effect on reproductive tissue (Susilowati et al., 2020). Although the study did not directly measure breast milk production, these findings suggest that *Sauropus androgynus* leaves may have a positive effect on reproductive physiology, which may support breast milk production.

Effects on Maternal Health: Another study by Suparmi et al. showed that chlorophyll from *Sauropus androgynus* leaves had hypoglycemic and antianemia effects in mice, suggesting potential additional benefits for the health of breastfeeding mothers (Suparmi et al., 2021).

Another Plants

Effects on Breast Milk Production: Chamomile has been reported to have a strong galactagogue effect, although this has not been widely studied (Silva et al., 2018). A case report by Silva et al. describes the case of a woman who experienced increased milk production and high breast tension after consuming chamomile infusion (Silva et al., 2018).

Effects on Breast Milk Production: Research by Djati et al. investigated the combined effects of *Elephantopus scaber* L. and *Sauropus androgynus* L. Merr extracts on prolactin production and erythropoiesis in pregnant mice infected with typhus (Djati et al., 2017). The results showed that this combined extract significantly increased prolactin levels and erythrocyte counts, thus favoring the pregnancy of mice with a typhus model.

Tabel 1. Efficacy Profile of Plants as Galactagogues

No.	Research Title	Author Name	Year of Publication	Research Results
1	Mitigation of doxorubicin-induced liver toxicity in mice breast cancer model by green tea and <i>Moringa oleifera</i> combination	Laftah et al.	2025	The combination of extracts increases antioxidant activity, reduces oxidative stress, lowers pro-inflammatory cytokines, regulates the expression of apoptosis-related genes, and repairs liver damage.
2	<i>Sauropus androgynus</i> chlorophyll ameliorates the hazardous effect of sodium nitrite-induced oxidative stress in adult female rats	Suparmi et al.	2025	Chlorophyll exhibits a protective effect by increasing hematological parameters and reducing MDA levels.
3	Identification of the best plant ratios for a polyherbal tea mix to obtain optimum antioxidant, antidiabetic, and -glucuronidase inhibition activities	Dias et al.	2024	Mixtures with a certain ratio showed optimal activity, with synergistic effects on the antioxidant activity of the combination of <i>Phyllanthus debilis</i> and <i>Osbeckia octrandra</i> .



No.	Research Title	Author Name	Year of Publication	Research Results
4	Effects of a blend extract of <i>Sauropus androgynus</i> , <i>Moringa oleifera</i> , and <i>Coleus amboinicus</i> on milk production in lactating rats	Intan et al.	2024	Moringa leaf supplementation improved hemoglobin levels, vitamin A status, and body mass index in humans, as well as increased milk production in animals in some studies.
5	The impact of <i>Moringa oleifera</i> leaf supplementation on human and animal nutrition, growth, and milk production	Brar et al.	2022	The addition of moringa leaves increases the content of alkaloids, amino acids, lipids, organic acids, and quinins, but decreases flavonoids and polyphenols. The microbiota in the modified tea is also different.
6	Revealing the effects of <i>Moringa oleifera</i> Lam. leaves addition on Fuzhuan Brick Tea by metabolomic and microbiota analysis	Li et al.	2022	The addition of moringa leaves increases the content of alkaloids, amino acids, lipids, organic acids, and quinins, but decreases flavonoids and polyphenols. The microbiota in the modified tea is also different.
7	Early Breast Milk Volumes and Response to Galactagogue Treatment	Asztalos & Kiss	2022	CSA showed a hypoglycemic effect in DM rats, although histological analysis showed higher organ damage than normal groups. CSA also shows restorative effects on serum Hb, iron, and ferritin levels. The weight of the fetus in the CSA and commercial chlorophyll groups was similar to that of the normal group.
8	GC-MS-Olfactometric Characterization of Volatile and Key Odorants in Moringa (<i>Moringa oleifera</i>) and Kinkeliba (<i>Combretum micranthum</i> G. Don) Herbal Tea Infusions Prepared from Cold and Hot Brewing	Oussou et al.	2023	Total volatile compounds are higher in cold-brewed tea, but total phenolic content and antioxidant potential are higher in hot-brewed tea.
9	Hypoglycemic and Antianemia Effects of Chlorophyll from <i>Sauropus androgynus</i> (L) Merr Leaves in Rats	Suparmi et al..	2021	CSA showed a hypoglycemic effect in DM rats, although histological analysis showed higher organ damage than normal groups. CSA also shows restorative effects on serum Hb, iron, and ferritin levels. The weight of the fetus in the CSA and commercial chlorophyll groups was similar to that of the normal group.

No.	Research Title	Author Name	Year of Publication	Research Results
10	Oral galactagogues (natural therapies or drugs) for increasing breast milk production in mothers of non hospitalised term infants (Review)	Foong et al.	2020	Evidence suggests that pharmacological galactagogue may increase breast milk volume, but evidence on its effects on breastfeeding duration and side effects is still very limited. Natural galactagogue shows some benefits on infant weight and breast milk volume, but the effects are inconsistent.
11	Periparturient antioxidant enzymes, haematological profile and milk production of dairy cows supplemented with <i>Moringa oleifera</i> leaf meal	Kekana et al.	2019	Moringa supplementation increases white and red blood cell levels, as well as the activity of antioxidant enzymes such as SOD and STAC in the highest dose group. Although milk production is not significantly affected, the quality of milk (fat and protein content) is improved.
12	Effect of fenugreek on breast milk production and weight gain among Infants in the first week of life	Ravi & Joseph	2018	The fenugreek-fed group showed improvements in signs of breast adequacy and higher infant weight gain than the control group.
13	Determination of the Total Antioxidant and Oxidant Status of Some Galactagogue and Herbal Teas	Ağagündüz	2020	Some teas show high antioxidant activity, while others show high oxidant activity. The addition of vitamins to tea improves the balance between antioxidant and oxidant activity.
14	Effect of Steam Blanching, Dehydration Temperature & Time, on the Sensory and Nutritional Properties of a Herbal Tea Developed from <i>Moringa oleifera</i> Leaves	Wickramasinghe et al.	2020	Steam blanching increases the content of carbohydrates, fats, Mn, Fe, vitamin A, vitamin E, and DPPH activity, while reducing protein, fiber, Na, K, Ca, and total phenols.
15	Fenugreek Stimulates the Expression of Genes Involved in Milk Synthesis and Milk Flow through Modulation of Insulin/GH/IGF-1 Axis and Oxytocin Secretion	Sevrin et al.	2020	Fenugreek increases the expression of genes related to milk macronutrient synthesis and energy metabolism, as well as increases the expression of IGF-1 receptors and oxytocin secretion.
16	Effects of galactagogue herbal tea containing <i>Chrysanthemum indicum</i> as the main component on milk production in postpartum rats	Choi et al.	2020	Herbal tea increases milk production by 9.2% and increases the thickness of the alveoli epithelium and the size of the mammary gland lobes.

No.	Research Title	Author Name	Year of Publication	Research Results
17	Estrogenic Effect of the Leaves from <i>Sauropus androgynus</i> (<i>Sauropus androgynus</i> L. Merr) on Vaginal and Endometrial Atrophy in Perimenopausal Mice	Susilowati et al.	2020	<i>Sauropus androgynus</i> leaf extract at a dose of 30 mg/kg BW increases the maturity index and thickness of the vaginal and endometrial epithelium.
18	Preparation optimization and characterization of chitosan tripolyphosphate microcapsules for the encapsulation of herbal galactagogue extract	Yousefi et al.	2019	The optimal conditions for encapsulation were chitosan concentration of 1.19%, extract 2.69%, and TPP 2.08% with an encapsulation efficiency of 83.054%. The microcapsules show controlled release in simulated gastric and intestinal fluids.
19	Milk production and hormonal profile as affected by Fenugreek supplementation in lactating goats of Kashmir valley	Hasin et al.	2021	Fenugreek supplementation significantly increases milk production and changes the hormonal profile, but does not affect the composition of the milk.
20	Impact of Fenugreek on Milk Production in Rodent Models of Lactation Challenge	Sevrin et al.	2019	Fenugreek increased milk production by 16% in the litter size increase challenge, but had no effect on the parent protein restriction challenge.
21	Extract of <i>Moringa oleifera</i> leaves increases milk production and enhances milk fatty acid profile of Nubian goats	Kholif et al.	2019	Administration of <i>Moringa oleifera</i> extract increases milk production and corrected milk energy (ECM) linearly with increased dose. Milk Composition: Fat, protein, lactose, and milk ash levels are increased with <i>Moringa oleifera</i> extract supplementation. Fatty Acid Profile: The proportion of unsaturated fatty acids and conjugated linoleic acid increases.
22	Which Benefits and Harms of Using Fenugreek as a Galactagogue Need to Be Discussed during Clinical Consultations? A Delphi Study among Breastfeeding Women, Gynecologists, Pediatricians, Family Physicians, Lactation Consultants, and Pharmacists	Shawahna et al.	2018	Consensus was reached on 21 potential risks and 14 potential benefits that needed to be discussed. Risks: Includes anticoagulant effects, increased risk of abortion, effects on blood pressure, effects on blood sugar levels, and other side effects.

No.	Research Title	Author Name	Year of Publication	Research Results
23	Effect of a Galactagogue Herbal Tea on Breast Milk Production and Prolactin Secretion by Mothers of Preterm Babies	Özalkaya et al.	2018	The increase in milk production is more pronounced in mothers who use herbal tea. Infant Weight: There was no statistically significant difference in infant weight gain between the two groups.
24	Effects of feeding a <i>Moringa oleifera</i> rachis and twig preparation to dairy cows on their milk production and fatty acid composition, and plasma antioxidants	Zhang et al.	2018	The concentration of milk fat increases with the addition of moringa supplements. Fatty Acid Profile: The percentage of total unsaturated, mono-unsaturated, and poly-unsaturated fatty acids including poly-unsaturated n-3 fatty acids increased in the milk of cows supplemented with moringa.
25	Nutritional Characterization of Leaves and Herbal Tea of <i>Moringa oleifera</i> Cultivated in Greece	Lalas et al.	2017	The leaves have a high protein content (26.3%), including all essential amino acids. Total Phenols and Flavonols: The leaves contain 4512.2 mg of GAE/100 g DM of total phenol and are rich in flavonols. Lipids: The lipid content of the leaves is 5.6%. Minerals: Leaves are rich in Ca, K, Mg, and P, while other minerals are found in lower concentrations.
26	Chamomile reveals to be a potent galactagogue: the unexpected effect	Silva et al.	2018	The mother experienced a strong feeling of breast tension and increased breast size 4-6 hours after taking chamomile infusion. Prolactin Levels: The mother reported an increase in milk production from 60 mL to 90 mL after taking chamomile infusion.
27	Breastfeeding: A Review of Its Physiology and Galactagogue Plants in View of Traditional Persian Medicine	Javan et al.	2017	<i>Foeniculum vulgare</i> , <i>Anethum graveolens</i> , <i>Pimpinella anisum</i> , <i>Nigella sativa</i> , and <i>Vitex agnus-castus</i> are among the most effective TPM plants as galactagogue.
28	Synergistic effect of <i>Elephantopus scaber</i> L and <i>Sauropus androgynus</i> L merr extracts in modulating prolactin hormone and erythropoiesis in pregnant typhoid mice	Djati et al..	2017	Prolactin: <i>Salmonella typhi</i> infection in pregnant mice reduced prolactin and TER19+ cell levels ($p < 0.05$). The T7 formulation increases prolactin levels on the 8th and 12th days after infection. Erythropoiesis: T3, T5, and T7 formulations may have increased the number of TER11 19+ cells compared to the control group.

No.	Research Title	Author Name	Year of Publication	Research Results
29	Effect of feeding lactating cows with ensiled mixture of <i>Moringa oleifera</i> , wheat hay and molasses, on digestibility and efficiency of milk production	Cohen-Zinder et al.	2016	Cows fed MO produced more milk and 4% fat-corrected milk (FCM) by 1.91% and 4.26%, respectively. Milk Composition: The fat content of milk is higher and the protein content of milk is lower in cows fed MO compared to controls. Milk Production Efficiency: Cows fed MO had 2.37% higher milk-corrected energy (ECM) and 3.27% increased production efficiency (kg ECM/kg DM consumption) compared to controls.
30	Efficacy of a galactagogue containing silymarin-phosphatidylserin and galega in mothers of preterm infants: a randomized controlled trial	Zecca et al.	2016	Total milk production during the study period was significantly higher in GG (65235298 mL vs 41364093 mL; $P<0.02$). Milk Production Target: At the end of the study, 45 mothers from GG were able to achieve the milk supply target of 200 mL/day compared to 25 mothers from PG ($P<0.01$).
31	Botanicals and Their Bioactive Phytochemicals for Women's Health	Dietz et al.	2016	Ginger is used to relieve nausea during pregnancy. Trigonella foenum-graecum (fenugreek) and Silybum marianum (milk thistle) are used as natural galactagogues, but research on their safety and effectiveness is still limited.
32	An Herbal Galactagogue Mixture Increases Milk Production and Aquaporin Protein Expression in the Mammary Glands of Lactating Rats	Liu et al.	2015	The levels of the proteins AQP-3 and AQP-5 increased significantly during breastfeeding compared to the virgin stage, and herbal decoction further improved their expression ($P<0.05$). AQP-1 is primarily expressed in capillaries, while AQP-3 and AQP-5 are primarily detected in epithelial cells and mammary gland ducts.
33	Evaluation of the galactagogue effect of silymarin on mothers of preterm newborns (<32 weeks)	Peila et al.	2015	There was no difference in milk production profile between silymarin and placebo.

No.	Research Title	Author Name	Year of Publication	Research Results
34	Cardiac safety concerns for domperidone, an antiemetic and prokinetic, and galactagogue medicine	Doggrell & Hancox	2014	Data from preclinical studies suggest that domperidone may cause QT interval prolongation and ventricular arrhythmias at clinically relevant concentrations. Several clinical cases have reported QT prolongation and ventricular arrhythmias associated with domperidone use, including torsades de pointes and sudden cardiac death.
35	The effect of galactagogue herbal tea on oxidant and anti-oxidant status of human milk	Kavurt et al.	2013	The herbal teas and placebo groups had similar TAC, TOS and OSI values on the 1st day sample. The TAC, TOS and OSI in breast milk samples taken on days 7-10 were also similar. OSI increased significantly in breast milk samples on days 7-10 compared to day 1 in each group, while TAC and TOS levels were not different.
36	Effect of polyherbal galactagogue supplementation on milk yield and quality as well as general health of Surti buffaloes of south Gujarat	Patel et al.	2013	Experiments with two groups: control and treatment (11 cows in each group). Treatment: Cows in the treatment group were given two polyherbal galactagogue biscuits daily for the first 10 days of each month for three months.

Relationship with Previous Literature

This study aims to explore the effect of polyherbal tea consisting of fenugreek, *Moringa oleifera*, and *Sauropus androgynus* on the production and quality of breast milk as well as the health of breastfeeding mothers. The results of the study show that this herbal supplementation has the potential to increase milk production and quality, as well as provide health benefits for breastfeeding mothers. These findings are consistent with previous studies that have shown that fenugreek, *Moringa oleifera*, and *Sauropus androgynus* have positive effects on milk production and quality.

Research by Ravi and Joseph found that fenugreek increases breast milk production by stimulating the hormones prolactin and oxytocin, which is similar to the findings in this study (Ravi & Joseph, 2020). In addition, research by Sevrin et al. showed that fenugreek increases the expression of genes associated with milk macronutrient synthesis and energy metabolism in the mammary glands, as well as increases IGF-1 receptor expression and plasma insulin concentration (Sevrin et al., 2020). These findings are also supported by this study, which suggests that fenugreek supplementation can extend the duration of peak milk synthesis and increase milk production.

Moringa oleifera has also been studied as a potential supplement to improve milk production and quality. Research by Kholif et al. showed that supplementation of *Moringa oleifera* leaf extract in Nubian goats increased milk production and positively altered the fatty acid profile of milk (Kholif et al., 2019). The study also found that *Moringa oleifera* supplementation improved milk quality by increasing the content of unsaturated fatty acids and antioxidant capacity, which is similar to the study's findings.

Sauropus androgynus has long been known in traditional medicine as a plant that can increase milk production. Research by Susilowati et al. investigated the estrogenic effects of *Sauropus androgynus* leaf extract on vaginal and endometrial atrophy in a model of perimenopausal mice and found that *Sauropus androgynus* leaf extract had a positive effect on reproductive tissue (Susilowati et al., 2020). Although the study did not directly measure breast milk production, these findings suggest that *Sauropus androgynus* leaves may have a positive effect on reproductive physiology, which may support breast milk production. Another study by Suparmi et al. showed that chlorophyll from *Sauropus androgynus* leaves has hypoglycemic and antianemia effects in mice, which suggests potential additional benefits for the health of breastfeeding mothers (Suparmi et al., 2025).

Chamomile, although less studied than fenugreek, *Moringa oleifera*, and *Sauropus androgynus*, also shows potential

as a galactagogue. A case report by Silva et al. described the case of a woman who experienced increased milk production after consuming chamomile infusion (Silva et al., 2018). The study also suggests that chamomile may have a positive effect on breast milk production, but more research is needed to confirm these findings.

Significance of Research Results

The results of this study are important because they provide stronger scientific evidence to support the use of *Trigonella foenum-graecum* (fenugreek) as a herbal supplement in improving breast milk production and potentially its quality. These findings may help address the problem of low milk production often faced by breastfeeding mothers, which can lead to breastfeeding failure and pose greater health risks to the baby (Organization, 2025).

In addition, the results indicate that fenugreek supplementation may offer additional benefits for breastfeeding mothers, including stimulation of prolactin and oxytocin secretion, improved milk let-down reflex, and possible enhancement of maternal nutritional status, which could help reduce fatigue during the lactation period (Sevrin et al., 2019).

The study also highlights the importance of further research to elucidate the mechanisms underlying the effects of fenugreek on milk synthesis and ejection. Future investigations could focus on identifying the specific bioactive compounds in fenugreek responsible for its galactagogue properties, as well as exploring the synergistic interactions between fenugreek and other phytochemicals to determine the most effective formulations (Phukan et al., 2018). In particular, controlled clinical trials with larger sample sizes and standardized fenugreek preparations are needed to validate its safety, efficacy, and optimal dosage for lactating mothers.

Research Implications

This research has several important implications for clinical practice and health policy. First, the results of this study can be used to develop clinical guidelines that recommend the use of herbal supplements as a natural alternative to improve milk production and quality. Second, this study may encourage further research to develop standard formulations and research protocols that can provide stronger evidence to support the use of herbal supplements in clinical practice.

In addition, this research also has implications for health policy. Governments and health organizations can use the findings of this study to develop programs and policies that support the use of herbal supplements as part of a holistic approach to improving breast milk production and quality. For example, an outreach campaign can highlight the benefits of *Sauropus androgynus* leaves as part of the diet of breastfeeding mothers, in addition to the use of polyherbal teas that combine a variety of herbal ingredients.

Research Limitations

This research has several limitations that need to be considered. First, this study uses a Systematic Literature Review (SLR) design that relies on existing studies, so the quality of the research results is highly dependent on the quality of the studies included. Second, this study did not evaluate the long-term effects of herbal supplementation on breastfeeding mothers and their babies, so more research is needed to assess the safety and long-term effectiveness of these herbal supplements.

In addition, the study also did not consider variations in the formulation and dosage of herbal supplements, which could affect the results of the study. Therefore, more research is needed to determine the optimal combination of herbs and the right dosage to maximize the effect of increasing milk production. In particular, research on *Sauropus androgynus* leaves needs to be done in more depth to understand the effective dosage and potential interactions with other herbal ingredients in polyherbal tea.

Overall, this research provides a solid foundation for further research and development of herbal products that can support breastfeeding mothers in improving their milk production and quality.

4. Conclusion

This study has investigated the effect of polyherbal teas consisting of fenugreek, *Moringa oleifera*, and *Sauropus androgynus* on the production and quality of breast milk as well as the health of breastfeeding mothers. Key findings suggest that this herbal supplementation has the potential to increase milk production by stimulating the hormones prolactin and oxytocin, as well as improving breast milk quality through increased nutrient content and antioxidant capacity. In addition, this study also shows that herbal supplementation can provide additional benefits for the health of breastfeeding mothers, such as improving nutritional status and reducing fatigue.

Specifically, fenugreek has been shown to be effective in increasing milk production by stimulating hormones that are important in the lactation process. *Moringa oleifera* not only increases milk production but also improves its quality by changing the fatty acid profile and increasing antioxidant capacity. *Sauropus androgynus* leaves, although less researched than the other two herbs, show potential as a galactagogue and support for maternal overall health, especially in terms of estrogenic effects and high nutrient content.

This research makes an important contribution to the field of lactation science and maternal health by providing

stronger scientific evidence on the effectiveness of herbal supplements in improving milk production and quality. These findings support the use of polyherbal teas as a natural alternative that can be integrated into clinical practice to help breastfeeding mothers who face challenges in breast milk production. In addition, the study also highlights the importance of a holistic approach in improving the health of breastfeeding mothers, considering a combination of nutrition, herbal supplementation, and psychological support.

5. References

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