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The Impact of Herbal Medicine on Breast Milk Production: An Overview of Systematic Reviews

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Abstract

Background: Insufficient milk production can lead to stress and discomfort for mothers. As a result, some mothers turn to herbal medicine to enhance milk production. This study aims to review the impact of herbal medicine on breast milk production based on existing scientific literature

Materials and Methods: In this overview, online databases such as Medline, EMBASE, Web of Science, Scopus, CINAHL, CIVILICA, and the Google search engine were searched for studies on the impact of herbal medicine on increasing milk production published up to February 2023. Two independent authors conducted the screening, selection, and quality assessment of the selected research using the CONSORT Statement.

Results: Five systematic reviews, encompassing a total of studies, were included in this overview. One review, which analyzed nine experimental studies, found that torbangun leaves, young papayas, moringa leaves, katuk leaves, and banana buds contain chemical compounds that can enhance the production and secretion of breast milk. Two reviews, based on eight experimental studies, indicated that the consumption of fenugreek and milk thistle significantly increased breast milk production compared to the control group, although the studies exhibited high heterogeneity. Another systematic review, which included 41 experimental studies, reported increased milk volume in 13 studies involving Bu Xue Sheng Ru, Chanbao, Cui Ru, banana flower, fenugreek, ginger, a mix of fenugreek and ginger with turmeric, ixbut, mixed botanical tea, Sheng Ru He Ji, silymarin, Xian Tong Ru, and palm dates. However, a meta-analysis was not feasible due to high heterogeneity.

Conclusion: There is evidence that certain herbal medicines may increase milk production in mothers. However, the magnitude of these effects remains uncertain due to substantial heterogeneity among the studies, imprecision in measurements, and incomplete reporting. High-quality randomized controlled trials (RCTs) are needed to assess the efficacy and safety of galactagogues.

Key Words: Breast milk production, Impact, Herbal medicine, Medical plants.

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1- INTRODUCTION

Feeding an infant with breast milk is a public health priority and provides the best start in life for every child (1, 2). The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) regard breast milk as the gold standard of infant nutrition, recommending it as the sole food for infants up to two years of age in most cases (3). The national program for the promotion of breastfeeding (2013) emphasizes that breastfeeding is an integral part of the reproductive process, highlighting its importance in ensuring proper nutrition, growth, development, and health for both the child and the mother (4).

The absence of breastfeeding increases the risk of respiratory tract infections, allergies, digestive problems, malnutrition, diabetes, obesity, and cancer in both childhood and adulthood (5). Statistics indicate that in developing countries, 70% of child deaths could have been prevented through breastfeeding (6). Olang et al. report that the primary reasons for stopping breastfeeding before six months include doctors' recommendations (54%) and insufficient breast milk (28%). After six months, the reasons shift to insufficient breast milk (45%), maternal illness and drug use (10%), the child's illness (6%), and the demands of working mothers (3%) (7). Despite national breastfeeding initiatives, recent experiences suggest unfavorable breastfeeding outcomes among mothers (8). Meanwhile, the WHO estimates the global rate of exclusive breastfeeding (EBF) at 37-38% (9), and the World Health Assembly (WHA) has set a global goal to increase EBF to 50% by 2025 (10).

The recommended diet for human infants during the first six months of life is exclusively breast milk. No other natural or artificial formulation can match this gold standard. However, mothers who attempt to pursue exclusive breastfeeding often encounter numerous nutritional and non-nutritional challenges, primarily resulting in insufficient milk production (hypogalactia) or its complete absence (agalactia). Therefore, it is imperative to explore effective galactagogues (11-13).

Various approaches exist to improve the breastfeeding experience for mothers. Many studies have investigated the effects of chemical and herbal medicines on increasing the quality and quantity of breast milk; however, chemical medications are less preferred due to potential side effects such as nausea and headache (14-16). Substances that promote the secretion and flow of breast milk are known as galactagogues and can include foods, herbal remedies, and pharmaceutical drugs. Many cultures have specific food recommendations believed to enhance milk production. While most of these substances have not been scientifically evaluated, traditional use suggests that many are safe, and some may also be effective (17, 18).

Herbal medicines are derived from plants and are primarily based on traditional knowledge. They fall under the category of complementary and alternative medicines (CAMs), which also encompass therapeutic methods such as acupuncture, dietary supplements, massage, aromatherapy, homeopathy, and relaxation therapy (19, 20). Today, the use of medicinal plants is rapidly increasing in both developed and developing countries (21, 22).

In many parts of the world, herbal medicines have been used to increase breast milk production after childbirth, with preferred plants varying by region according to cultural beliefs (23). The use of plant compounds to stimulate milk production dates back thousands of years; for instance, Hippocrates noted that if a mother's milk dries up, she should drink boiled fennel root and fruit (24). In

traditional Iranian medicine, several medicinal plants are recognized for their fertility-enhancing properties, including dill, celery, cumin, carrot, parsley, and fennel (25).

There is considerable information regarding the safety and effectiveness of some complementary and alternative medicines while breastfeeding; however, for others, limited information exists due to a lack of research (26). As previously mentioned, although global initiatives aim to increase access to breast milk and prolong the duration of exclusive breastfeeding, various challenges compel mothers to discontinue exclusive breastfeeding. Among these challenges, low breast milk volume is one of the most common reasons for stopping breastfeeding and a significant concern for mothers. This issue can be addressed by identifying effective and natural compounds that do not have harmful side effects and can enhance breast milk production, particularly during the early stages of breastfeeding. By doing so, mothers can gain increased self-confidence and security, allowing them to establish a closer and healthier bond with their babies and extend their breastfeeding duration. Despite the popularity of medicinal plants, there have been limited studies on the mechanisms and effectiveness of these compounds in relation to breastfeeding. This overview aims to review the impact of herbal medicine on breast milk production based on the existing scientific literature.

2- MATERIALS AND METHODS

In this overview, all systematic reviews and meta-analyses, as well as quasi-experimental studies available in full in Persian or English, were considered for inclusion. The search included articles from the inception of each database up to February 20, 2023. The databases searched included Scopus, EMBASE, Web of Science, CIVILICA, CINAHL, Medline (via PubMed), and the Google search engine. This overview focused on the use of herbal medicine to increase breast milk production among breastfeeding mothers. Two independent researchers conducted the search process, and a supervisor resolved any discrepancies.

The following steps were taken to develop this review: (1) identifying the research question; (2) identifying relevant studies; (3) selecting studies; and (4) summarizing and reporting the data. The CONSORT-2010 checklist was used to evaluate each trial for potential sources of bias in design and reporting (27). This checklist contains 25 items that assess six main components of clinical trial studies: title and abstract, introduction, methods, results, discussion, and other information. In this study, a total of 25 items were examined across these six sections. Each article received a score of one if it included the items specified in the checklist and zero otherwise. Thus, the maximum score for each article was 25, while the minimum score was zero (28-30). The reviewers conducted the quality assessment independently and in duplicate, with a third reviewer resolving any discrepancies. Approval from a research ethics committee was not necessary because this study analyzed only publicly available articles. The research adhered to ethical standards by respecting copyright laws and ensuring transparency in methods and sources.

3- RESULTS

A total of five systematic reviews, involving 64 studies published between 2012 and 2022, were selected. The combined results of the included studies provided evidence that natural galactagogues may benefit infant weight and milk volume in mothers with healthy, full-term infants. However, the substantial heterogeneity among the studies, imprecision in measurements, and

incomplete reporting prevented an accurate estimation of the effect's magnitude. According to the CONSORT-2010 checklist, the minimum and maximum quality scores of the reviewed articles ranged from 14 to 26, indicating medium to low quality. The main characteristics of the selected studies are summarized as follows:

1. A systematic review, which included 41 trials and 27 studies comparing natural oral galactagogues, aimed to assess the effect of these galactagogues on increasing milk production in non-hospitalized breastfeeding mother/full-term infant pairs. One study examining Mother's Milk Tea investigated breastfeeding rates at six months, concluding that there was "no significant difference" (very low-certainty evidence). Thirteen studies involving Bu Xue Sheng Ru, Chanbao, Cui Ru, banana flower, fenugreek, ginger, moringa, a mix of fenugreek, ginger, and turmeric, ixbut, mixed botanical tea, Sheng Ru He Ji, silymarin, Xian Tong Ru, and palm dates (with a total of 962 participants) reported on milk volume; however, a meta-analysis was not feasible due to substantial heterogeneity ($I^2 = 99\%$). While there is some evidence that natural galactagogues may benefit infant weight and milk volume in mothers with healthy, full-term infants, the magnitude of this effect remains uncertain due to the substantial heterogeneity of the studies, imprecision in measurements, and incomplete reporting (31).

2. A systematic review that included six randomized controlled trials (RCTs) aimed to explore the clinical literature regarding the use of herbal medicine in lactation. The most commonly studied herbs were St. John’s wort (Hypericum perforatum L.), known for its potential mood-enhancing properties; garlic (Allium sativum L.), which is often associated with various health benefits; and senna (Cassia senna L.), traditionally used as a laxative. The studies varied significantly in their design, types of herbal interventions, and outcome measures assessed, leading to high heterogeneity. Additionally, the overall methodological quality of the studies was found to be poor, raising concerns about the reliability of their findings and conclusions (32).

3. A systematic review that included four studies aimed to evaluate the results of clinical trials on the effect of milk thistle (Silybum marianum) on increasing breast milk volume. The findings indicated that all studies demonstrated a positive effect of milk thistle on the main biochemical characteristics of breast milk, including proteins, sugars, lipids, and water content. The amount of milk thistle used in the studies varied from 252 mg to 5 g. Given the critical importance of breastfeeding for the growth and development of premature infants, most studies focused on mothers with premature babies. All studies, except one, reported a significant increase in breast milk volume between the intervention and control groups following the consumption of milk thistle ($p < 0.05$). Importantly, none of the studies reported serious side effects associated with the use of milk thistle (33).

4. A systematic review that included nine experimental studies aimed to analyze the effect of herbal galactagogues on breast milk production. The results indicated that torbangun leaves, young papayas, moringa leaves, katuk leaves, and banana buds contained chemical compounds capable of stimulating the synthesis of prolactin and oxytocin, thereby increasing both the production and secretion of breast milk (34).

5. A systematic review and meta-analysis that included four studies aimed to evaluate the galactagogue effect of fenugreek compared to other interventions, including placebo, control, and other galactagogues, in lactating women. The results indicated that the consumption of

fenugreek significantly increased breast milk production compared to placebo and control groups. However, fenugreek showed no significant benefits when compared to other herbal galactagogues, such as C. amboinicus and palm dates (35).

4- DISCUSSION

This overview aimed to explore the impact of herbal medicine on breast milk production based on the existing scientific literature. The results of systematic reviews provided tentative evidence that herbal galactagogues can increase both milk production and volume. However, it remains uncertain whether one galactagogue is more effective than another.

Breastfeeding is the most effective way to protect maternal and child health. In addition to improving child survival and safeguarding against life-threatening and chronic illnesses, breastfeeding promotes healthy growth and enhances early childhood development. It plays a crucial role in healthy brain development and is associated with better performance on intelligence tests among children and adolescents across all income levels (3, 36, 37).

The American Academy of Pediatrics (AAP) advises that breast milk should be the exclusive source of nutrition for infants during the first six months of life (38). It also recommends continued breastfeeding until at least one year of age, or as long as both the mother and child desire it. According to the World Health Organization (WHO), approximately 31% of mothers are expected to exclusively breastfeed their babies for the first six months (39). Research indicates that a reduction in breastfeeding duration is a significant factor contributing to infant mortality, with the majority of these deaths resulting from respiratory infections and diarrhea (40).

Despite the numerous benefits of direct breastfeeding for the baby, the mother, and society, less than 50% of mothers succeed in breastfeeding exclusively. In many cases, mothers experience premature termination of breastfeeding (14, 41). Some studies indicate that one of the most significant reasons for discontinuing breastfeeding is insufficient breast milk supply (7, 8, 41-44). Consequently, one of the goals of global nutrition policies is to increase the rate of exclusive breastfeeding by at least 50% by 2025 (10).

Several studies have investigated chemical agents that may increase milk production, including chlorpromazine (45), sulpiride (46), and domperidone. However, these medications are not commonly used due to their numerous side effects, which can include dry mouth syndrome, digestive disorders, cardiac arrhythmias, and sedation (14-16, 47-49).

Herbal supplements represent another approach to increasing breast milk supply. Herbal medicines are substances derived from plants that are utilized with minimal or no industrial processing to treat ailments in local medical and therapeutic practices (50). The use of herbal products as a practical and widely accepted method in complementary and alternative medicine is growing globally (51-53). In many regions, herbal medicines have been employed to enhance breast milk production after childbirth (23, 54).

Women frequently use herbal remedies during pregnancy, while breastfeeding (to increase milk supply), and after giving birth (55-59). Galactagogues, whether synthetic or herbal, are substances used to produce, maintain, and enhance milk production. In the United States, it is estimated that 15% of lactating women use herbal galactagogues, while a study in Norway found this figure to be 43% (60-62).

The studies on the effectiveness of herbal medicines for increasing breast milk production have focused exclusively on mothers of full-term infants at various stages of breastfeeding. All these studies concluded that there is currently no recommendation for the use of herbs as galactagogues, and no clinical trials exist to provide evidence for their efficacy (63-66). According to the findings of current systematic reviews, there is low-certainty evidence suggesting that natural galactagogues may increase milk volume. This review concludes that further research is necessary to evaluate the efficacy and safety of commonly used herbs during breastfeeding (31-35, 66).

While reports indicate an increasing use of medicinal plants, it is important to recognize that, although many traditionally used herbal medicines can be beneficial, there are potentially harmful and unknown risks associated with these products that should never be overlooked (67). These substances may contain toxic or carcinogenic compounds (68), and their use alongside chemical medications can lead to drug interactions. Furthermore, the indiscriminate use of such products may result in delays in seeking medical attention, insufficient recognition of disease symptoms, and prolonged healing processes (69, 70). Additionally, there is insufficient scientific evidence regarding the safety of all herbal medicines for certain groups, including pregnant women, children, and the elderly (71).

5- CONCLUSION

There is some evidence that natural galactagogues—such as fenugreek, milk thistle, torbangun leaves, moringa, banana buds, and ginger—may positively impact infant weight and milk volume in mothers with healthy, full-term infants. However, due to substantial heterogeneity among the studies, imprecision in measurements, and incomplete reporting, the magnitude of this effect remains uncertain. Given the extremely limited and low-certainty evidence, it is unclear which galactagogues are more effective than others. Therefore, high-quality randomized controlled trials (RCTs) on the efficacy and safety of galactagogues are needed.

6- CONFLICT OF INTEREST: None.

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