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Review Article

Herbal Remedies for Lactating Mothers

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lactation, including fenugreek (*Trigonella foenum-graecum*), Fennel (*Foeniculum vulgare*), Cumin seeds, Shatavari, Carom seeds, Moringa, garlic, ginger, among others.

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ABSTRACT

The breastfeeding (lactation) in mothers is important for both mother and infant health which also raise bond between the maternal and infant. The herbal plants have been used from the ancient time across the world to promote the breast milk production, known as galactagogues. The galactagogues may be both synthetic and herbal medication which are used for increasing milk production in postnatal mothers. The article reviews the various herbal drugs which are used for lactation, including fenugreek (*Trigonella foenum-graecum*), Fennel (*Foeniculum vulgare*), Cumin seeds, Shatavari, Carom seeds, Moringa, garlic, ginger, among others. These all herbs are considered to arouse prolactin secretion, enhance milk flow and promote overall maternal health. The mechanism of action of these herbal plants involves the phytoestrogen and other bioactive phytoconstituent that interact with hormonal pathway in humans. The clinical studies indicate the effectiveness and safety of many herbs which evince the positive outcomes in enhancing milk quantity and the infant growth with the less side effects. So, therefore there is a need for more large-scale clinical trials with effectively to understand their pharmacological properties and adverse effect. These review highlights the importance of promoting the traditional herbal practices from ancient period with modern scientific research to develop the safe and effective support for increasing lactation strategies and these studies are useful for investigation of standardised dosages and long-term impact on both mother and infant and to promote the treasure gain from our ancestor.

INTRODUCTION

Drug Remedies on Lactating Women.

Formula feeding poses risks of otitis media, respiratory infections of the tract, gastroenteritis, Breastfeeding is the best type of nutrition for infants, but there are some problems in promoting,

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enhancing and supporting it. Especially in early weeks of life. For milk production, galactagogues are medication which are believed to stimulate initiation and maintenance. Formula feeding infants lags behind breastfeeding in numerous aspects. necrotizing enteritis, sudden infant death syndrome, atopic dermatitis, inflammatory bowel disease, type 2 diabetes mellitus, leukemia, and obesity in infants. These distinctions hold for infants in developing and developed nations¹. The nursing mother also benefits from breastfeeding, including quicker uterine involution, decreased postpartum hemorrhage, reduction in fertility, and decreased risks of premenopausal breast and ovarian cancer, type 1 and 2 diabetes mellitus, cardiovascular disease, and possibly osteoporosis and hip fracture in later life. Failure to breastfeed or premature termination of breastfeeding also yields increased risk of maternal postpartum depression. Breastmilk is the best nutrient for your baby and has many health benefits for both you and your baby. You should be very careful about what herbal and traditional medicines you use while breastfeeding, especially when your baby is a newborn, or if your baby was born prematurely². In some mothers, it is studies that there is less development of breast at puberty and/or had not experience any changes in breast during pregnancy. These signs can be considered for low supply due to condition known as Mammary Hypoplasia or Insufficient Glandular Tissues (IGT). Statistics seen that the 70% of infants in developing countries can be saved from various diseases using breastmilk. The WHO assessment the worldwide rate of EBF as 37-38% and by 2025

the World Health Assembly (WHA) has set a global goal to increase Exclusive Breastfeeding (EBF) to 50%³. If parents adopting a baby or in female couples to support their partner with breastfeeding can use the galactagogue and it is possible to induce lactation without giving birth. The galactagogues may also helpful to transgender parents in producing milk supply for their baby.⁴ And for increasing lactation is known as galactagogues and they may be herbal plants, foods, chemical substances and pharmaceutical drugs. Many cultures have recommended a specific food that are used for enhancing milk production in mothers. And some of them are not scientifically evaluated but are used traditionally with less side effects⁵. Herbal medicines are obtained from the plants which are used traditionally and belong to complementary and alternative medicines and also include massage, acupuncture, dietary supplements. In developed and developing countries there is a rapid growth in herbal medicines due to natural and less side effects. The herbal medicines have been used to increase in milk production in worldwide⁶. The use of herbal phytochemical obtained from plants to stimulate the milk production goes millennium back years. Hippocrates narrates that if the milk dries up, the mother should drink boiled fennel root and fruit. The several herbal medicines have been mentioned for increasing milk supply like Fenugreek, Fennel, Cumin seeds, Shatavari, Ginger and many more. ^{2,6}



Figure No. 1: - Herbal Drugs

2. Herbal Galactagogues: -

The herbal galactagogue used for lactation:

2.1 Fenugreek: -

The fenugreek is most used herbal galactagogue in many countries. It has been used traditionally used by mothers in India; they chew the seeds and make tea. In some countries they are taken in capsule and tincture. The fenugreek seeds stimulate hormone precursor which leads to increase in the milk

production. In some studies, it suggested that the increase in breast milk could be due the presence of diosgenin and phytoestrogens present in fenugreek⁷ Fenugreek belongs to the pea family and mostly used as an herbal galactagogue in whole world. These is enlisted in FDA'S list of herbs and are totally safe, fenugreek is a potent stimulator of lactation that appears safe for both baby and mother. It is very easy to obtained and inexpensive and requires no major preparations.⁸



Figure No. 2 Fenugreek seeds

Mechanism of action: -

The mechanism action of fenugreek for increasing breast milk production (lactation). Green arrows indicate positive activation, bold and thin arrows indicate the main and secondary activity pathway of fenugreek, respectively. Dotted lines indicate

the hypothetical pathway of action. Dark and light green boxes denote the significant increase of gene expression or plasma concentration overall for upper box and at each lactation period for lower boxes. White boxes represent the lack of modulation by fenugreek.9

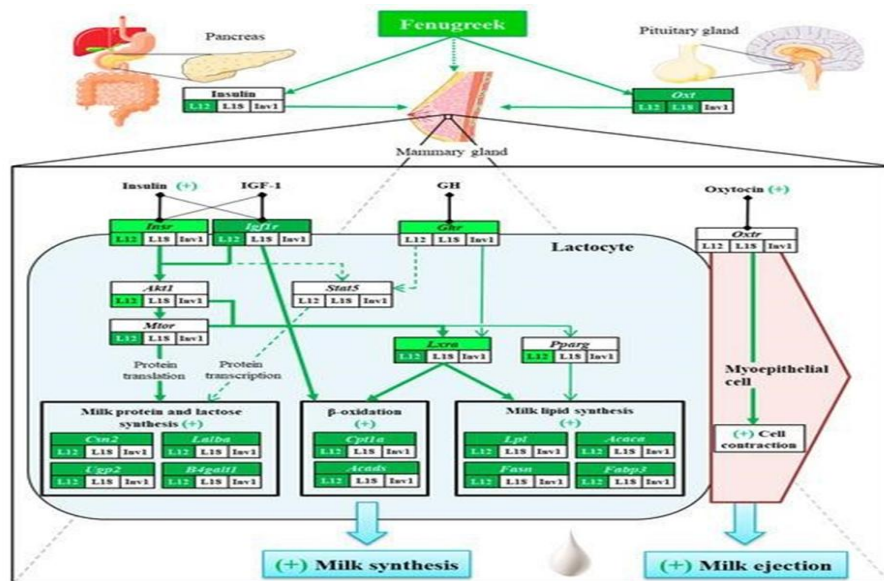


Figure No. 3: Mechanism of Action of Fenugreek9

Preparation: -

The fenugreek herbal tea can be simply made by adding 1teaspoon of fenugreek seeds in a cup of

boiling water for 10-15 minutes and take for 2-3times a day. The fenugreek capsule supplements show its action rapidly and made with high concentration. Dose is usually taken as 2-3

capsules (580-610mg per capsule) 3-4times a day. The capsule works fast and increases milk production in 24 to72 hours and sometimes it take more days. 10 **Side Effects:** -

There is mostly no adverse side effect of fenugreek and are totally safe for both baby and mother.

The potential common side effects may be :11

- Nausea
- Vomiting
- Gas
- Diarrhoea

To whom should fenugreek be administered with caution?

-Pregnant women: Fenugreek can be used by the mother while nursing, but it should be avoided during pregnancy as it may cause miscarriage or an early birth. Those suffering from hormone

cancer; fenugreek causes sensitivity by acting in the body as estrogen.

- Patient with blood pressure: People with high blood sugar should consult a doctor due to fenugreek lowers blood sugar level. Those who suffer from certain allergies may experience an allergic reaction to fenugreek. You may become hypersensitive to fenugreek if you have a peanut allergy.

2.2 Fennel: -

The fennel (*Foeniculum vulgare*) seed consists of volatile oil and largely composed of anethole, which is phytoestrogens, as well as fenchone, estragole, 1,8-cincole (eucalyptol), and other constituents. Fennel galactagogue has been used from decades back for increasing breast milk. In some studies, it found that there is an increase in fat content, milk volume and infant weight gain by using fennel galactagogue.12



Figure No. 4 Fennel

The U.S Food and Drug and Administration have recognised that fennel oil is generally safe and effective and mostly used by adults. The fennel is used alone or with combination for colic treatment so in small dose safe to use by mothers for lactation.11 According to two short investigations,

fennel galactagogue therapy increased several indicators like milk volume, fat content, and newborn weight gain. However, using fennel during nursing has not been linked to an increase in blood prolactin levels.13

What Role Does Fennel Play in Boosting Breastmilk Production?

A galactagogue is a medication or meal that helps nursing moms produce more milk. Fennel is regarded as one because it contains phytoestrogens, which are comparable to the estrogens hormone that the human body naturally produces, and most of them have seen benefits.¹⁴ How to use the preparation? Fennel can be used in a variety of ways to address breastfeeding issues. It is recommended that you take it in moderation, though. Fennel can be incorporated into your breastfeeding diet.¹⁵ --Side Effects of Fennel: When eaten orally: Fennel is frequently found in food. When taken as medication at the right dosages for a brief amount of time, it might be safe. The safety of long-term use of fennel is unknown due to a lack of trustworthy information.¹⁶ Seizures and upset stomach are uncommon but possible side effects.

When Should Nursing Mothers Steer Clear of Fennel?

In some situations, fennel should be avoided even though it increases the production of breastmilk. Fennel should not be consumed by a nursing mother in the following circumstances.

i. Seizures or Epilepsy:

Fennel should not be used if you have epilepsy or any other seizures related disorder. This is because it raises your risk of experiencing a seizure or epileptic fit.

Avoiding it is particularly crucial if you are still taking medicines.¹⁶

ii. Diabetes or low blood sugar:

While there are some documented benefits to fennel for women with diabetes, they must exercise caution when breastfeeding. The risk of hypoglycemia rises if you have diabetes. Given that fennel lowers blood levels.¹⁶

2.3 Cumin seeds:

Cumin aldehyde and other aldehydes are present in the volatile oil found in cumin (*Cuminum cyminum*) seeds, which also include a variety of flavonoids and terpenes. In India and Turkey, cumin has been used as a galactagogue with some literature backing it up. Galactagogues should never take the place of assessment and guidance about variables that can be changed to influence milk output.¹⁷



Figure No 5: Cumin seeds

Preparation of cumin seeds:

Iron-rich cumin or jeera seeds might boost energy levels after giving birth. Milk production is stimulated when whole cumin seeds are consumed. To enhance lactation, soak some cumin seeds in a glass of water and consume it first thing in the morning. "Jeera" encourages moms to produce more milk. It has been discovered that cumin seeds enhance digestion and aid in the treatment of bloating, acidity, and constipation. A staple in many Indian recipes, cumin seeds are high in calcium and vitamin B2. Every day, add jeera to curds, salads, stuffed roti, buttermilk and oatmeal.¹⁸ Side Effects:

- a) When taken orally: cumin is frequently found in food. Cumin essential oil and powder may be safe to use as medications. Some people may experience upset stomachs after consuming cumin. Additionally, some people may have a cumin allergy.¹⁹
- b) During Pregnancy and lactation: Cumin is frequently added to food. The safety of using cumin as a medication when pregnant or nursing is unknown due to lack of trustworthy information. Cumin may worsen bleeding conditions by slowing blood coagulation.¹⁹
- c) Surgery: cumin may decrease blood coagulation and lower blood sugar levels. It may worsen bleeding during and after surgery and interfere with blood sugar regulation.

Give up cumin for at least two weeks before surgery.

Interactions:

→ Cumin interacts with diabetes mellitus (antidiabetic medication):

Blood sugar level may be lowered by cumin. Cumin may cause blood sugar level to go too low when taken with diabetes medicines. Keep a careful eye on your blood sugar levels.

→ Cumin interacts with anticoagulant and antiplatelet medications, which reduce blood clotting:

Blood clotting may be slowed by cumin. Bruising and bleeding may become more likely if cumin is taken with drugs that also inhibit blood coagulation.

→ Cumin interacts with Rifampin:

The amount of rifampin that the body absorbs may be increased by cumin. Combining cumin with rifampin may intensify its effect and adverse consequences.¹⁹

Dosing:

Adults have most frequently taken 25-75mg of cumin essential oil orally every day for up to six months as a medication. For up to six months, the most common dosage of cumin powder has been 1.5-3gm taken orally every day. To learn what kind of product and dosage would be ideal for a certain illness, consult a healthcare professional.¹⁹

2.4 Moringa oleifera:

For up to six months, adults have most commonly taken 25-75mg of cumin essential oil orally daily as a medicine. The most popular dosage of cumin powder has been 1.5-3grams taken orally daily for up to 6 months. Speak with a healthcare provider to find out what product and dose might be best for a particular condition. The leaves of Moringa oleifera boost the volume of breastfeeding by supplying vital nutrients and prolactin.²⁰ The effects of Moringa oleifera take around 24 hours to manifest after consumption. Aqueous leaf extracts



were used in a number of animal safety investigations, and the findings showed a high level of safety. In human research, no negative effects were documented. Few research, nevertheless, have assessed Moringa oleiferous effects on nursing. According to one study, eating Moringa cookies improved the quality of breast milk, particularly its protein content. According to different study, moms who gave birth to preterm babies produced more breast milk on postpartum

days four and five after taking Moringa oleifera leaves. In moms of preterm infants, they discovered that moringa oleifera leaves enhanced the volume of breast milk on postpartum days four and five. This discrepancy may result from the various

ethnic groups and the newborn gestational age at delivery.²⁰



Figure No 6: - Moringa Oleifera

Preparation of Moringa Oleifera for increasing Breast milk:

The Moringa oleifera can be used for enhancing the breast milk by taking the moringa capsules, drinks of Moringa, and also the Moringa cookies are used for increasing the lactation. According to one study, eating moringa cookies improved the quality of breast milk, particularly its protein content. According to another study, moms who gave birth to preterm babies produced more breastmilk on postpartum days four to five after taking Moringa oleifera leaves.²¹

2.5 Shatavari: -

Known as “wild asparagus”, this plant is indigenous to the Indian subcontinent and is utilised in Ayurvedic treatment. In India, it has long been used as a galactagogue, and the official ayurvedic pharmacopoeia lists it as such. Steroid saponins, which are present in the roots of *A. racemases*, are its main active ingredients.²² It is abundant in folic acid, vitamins A, C and K, as well as phytoestrogens, which have a hormonal action similar to that of estrogen in the formation of milk. Additionally, it contains tryptophan, a necessary amino acid that may enhance the production of prolactin and thus, milk.²³



Figure No. 07 Shatavari

Shatavari comes in a variety of forms, including powder, granules, capsules and more. But in order to cover up Shatavari's bitter flavour, a lot of these formulas use a lot of sugar. Shatavari is particularly helpful for nursing moms who struggle with insufficient breast milk production. Because of its Sayantani (increase breast milk production) properties, shatavari has long been utilised in Ayurvedic treatments to help nursing women produce more breast milk.²⁴

CONCLUSION: -

In conclusion, the use of herbal galactagogue has a long history of supporting lactation and promoting maternal and infant health. Traditional herbs such as Fenugreek, Fennel, Shatavari and others have been found to play a significant role in enhancing milk production through their bioactive compounds, which interact with hormonal pathways in the body. Clinical studies suggest that these herbal remedies are effective and generally safe, offering a natural alternative to synthetic medications with fewer side effects. However, there is a need for further large-scale clinical trials to better understand the pharmacological

properties, optimal dosages and potential long-term effects of these herbs. Integrating traditional herbal practices with modern scientific research can provide a robust foundation for developing safe and effective lactation strategies, benefiting both mothers and infant globally. As such, these studies highlight the importance of preserving and promoting ancestral knowledge while ensuring evidence-based approaches for future generations

Formulation process of Dispersible Tablet

Formulation process of Dispersible tablets: During formulation we need to take extra precaution and whole process to be performed as per the evaluated process with care. After formulation it should confirmed the therapeutic effect properly. There few process to formulate Dispersible tablets. Each process has its own advantages and disadvantages. Below is the one technique of formulating Dispersible tablets. Dispersible tablets prepared by direct compression method according to the formula all the ingredients are passed through mesh sieves separately. The drug and microcrystalline cellulose were mixed by small portion each time of both, blending it to get a

uniform mixture and kept side. Then the ingredients were weighted and mixed in geometrical order and tablets were compressed of sizes flat type punch to get tablet using Compression Machine. Mechanism of Dispersible tablet: This type of dosage forms decays quickly and dissolve to release the drug when they come in contact with the saliva, so there is no need for water during administration, a feature that makes them very suitable for pediatric and geriatric patients. Dispersible tablet formulated for dissolving in mouth quickly without water or a little bit water required. When intake this dispersible tablet it gets swelling when it comes in contact of water they dispersed immediately and break it contents.

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