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From Traditional Knowledge to Scientific Evidence: Unani Galactagogues (Adwiya-e-Mudirr-e-Laban) in the Management of Oligogalactia

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ABSTRACT:
The WHO recommends exclusive breastfeeding for the six months of life as the standard method of infant feeding and considered "gold standard" of infant nutrition. Breast milk provides the essential nutrients, energy, water, antibodies, and other bioactive substances required for the growth and development of a healthy infant. Exclusive breastfeeding means that the infant receives only breast milk, including expressed breast milk, with no other food or drink, not even water, except oral rehydration solution, vitamins, minerals, or medicines when indicated. Breastfeeding should be initiated within the first hour after birth, continued exclusively for six months, and maintained alongside appropriate complementary foods from six months up to two years of age or beyond.
In the first few days of neonatal life in exclusively breastfed infants, excessive weight loss and late birth weight catch-up are emerging problems. Lactation failure due to poor breastfeeding technique and insufficient breast milk production can cause several medical conditions in infants such as dehydration, hypernatremia, and hyperbilirubinemia, jaundice and poor weight gain. Synthetic drugs have significant adverse effects in both mother and infant.
Mudirr-i-Laban (galactagogue) is the medication in Unani medicine that could help in increasing milk production to overcome the insufficient lactation. Many herbs are used to increase breast milk production can easily and safely be added to the everyday diet. This review expands the concept of Mudirr-i-Laban (galactagogue) mentioned in Unani system of medicine and some common natural herbal galactagogue used in the management of Qilla al-Laban (oligogalactia).

Keywords: Qilla al-Laban, Mudir-e-laban, Unani medicine, Galactogogue

INTRODUCTION

Mother's breast milk is the best possible source of nutrition for babies. As stated by WHO, exclusive breastfeeding should be started within one hour after birth until a baby is six months old [1]. Breast milk

is clearly the ideal milk for human infants. In addition to it, helps to secure the intense psychological attachment of a mother for her baby and provides intimate close contacts and develops the immunity of the individual.[2]

Prolactin stimulates the mammary glands to initiate lactation. It is associated with numerous physiological processes in addition to lactation. Oxytocin is necessary for „milk ejection reflex" or 'let-down' to occur. These two hormones must be present for lactation to become established. Neither hormone determines the amount of milk produced in a lactating breast; rather, this is a feedback mechanism depends upon the quantity of milk removed from the breast, and the frequency of milk removal [2].

Emotional management, combined with oxytocin massage and breast care, offers a comprehensive approach to boost prolactin release, enhance milk production, and improve breastfeeding outcomes. The effectiveness of combining emotional management with oxytocin massage and breast care in increasing oxytocin and prolactin hormone levels to address oligogalactia in working postpartum mothers.[3]

Perceived insufficient milk supply is common among postpartum women and is a major reason for early weaning. Studies indicates a significantly higher incidence of insufficient milk supply in women who undergo cesarean section as compared with women who undergo vaginal delivery [4]

Several factors contribute to reduced breastfeeding rates, including maternal psychological factors, employment status, limited knowledge, and socio-cultural influences. Additionally, inadequate breast care may impair the stimulation of key hormones, such as prolactin and oxytocin, which are essential for milk production. Early return to work postpartum can delay lactogenesis, often resulting in early supplementation with alternative fluids. Furthermore, insufficient breast care may further compromise hormonal stimulation, exacerbating challenges in milk production [5].

Primary lactation insufficiency

Five percent of mothers may have a primary inability to lactate due to inadequate glandular tissue resulting from hypoplastic breasts, breast surgery such as mastectomy, breast reduction, or cyst removal (5-7). Breast surgery, including nipple piercing, can disrupt the ductal and neurological pathways. Additional causes of primary inability to lactate are severe illnesses such as postpartum hemorrhage with Sheehan's syndrome, infection, or hypertension.

Secondary lactation insufficiency

To establish a diagnosis of secondary lactation insufficiency, the first step should be an objective measurement of the mother's milk production (4).

Mechanism of Lactation:

In early pregnancy, secretion of estrogen and progesterone from the ovary is stimulated by chorionic gonadotropin secreted by trophoblasts of the developing placenta. By the second trimester, estrogen and placental lactogen are secreted by the syncytiotrophoblasts in the developing placenta. These hormones along with placental lactogen stimulate growth and differentiation of milk secreting structures. The epithelial bilayer structure is maintained throughout development including both the luminal cells, which will become the milk secreting cells, and the basal cells, which will become the myoepithelium responsible for milk ejection. The syncytiotrophoblasts in the placenta also secrete human placental lactogen, a GH-like molecule that promotes secretory differentiation probably along with prolactin (PRL) from the pituitary whose secretion increases throughout pregnancy. PRL secretion is maintained at high levels in the early period after birth. While a colostrum-like secretion can be detected in the alveolar lumens, full secretion of milk is inhibited by the high concentration of progesterone present in late pregnancy.[8]

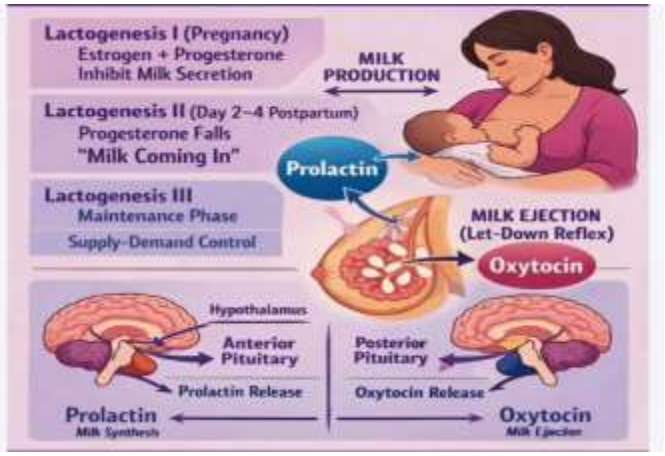
Pathophysiology:

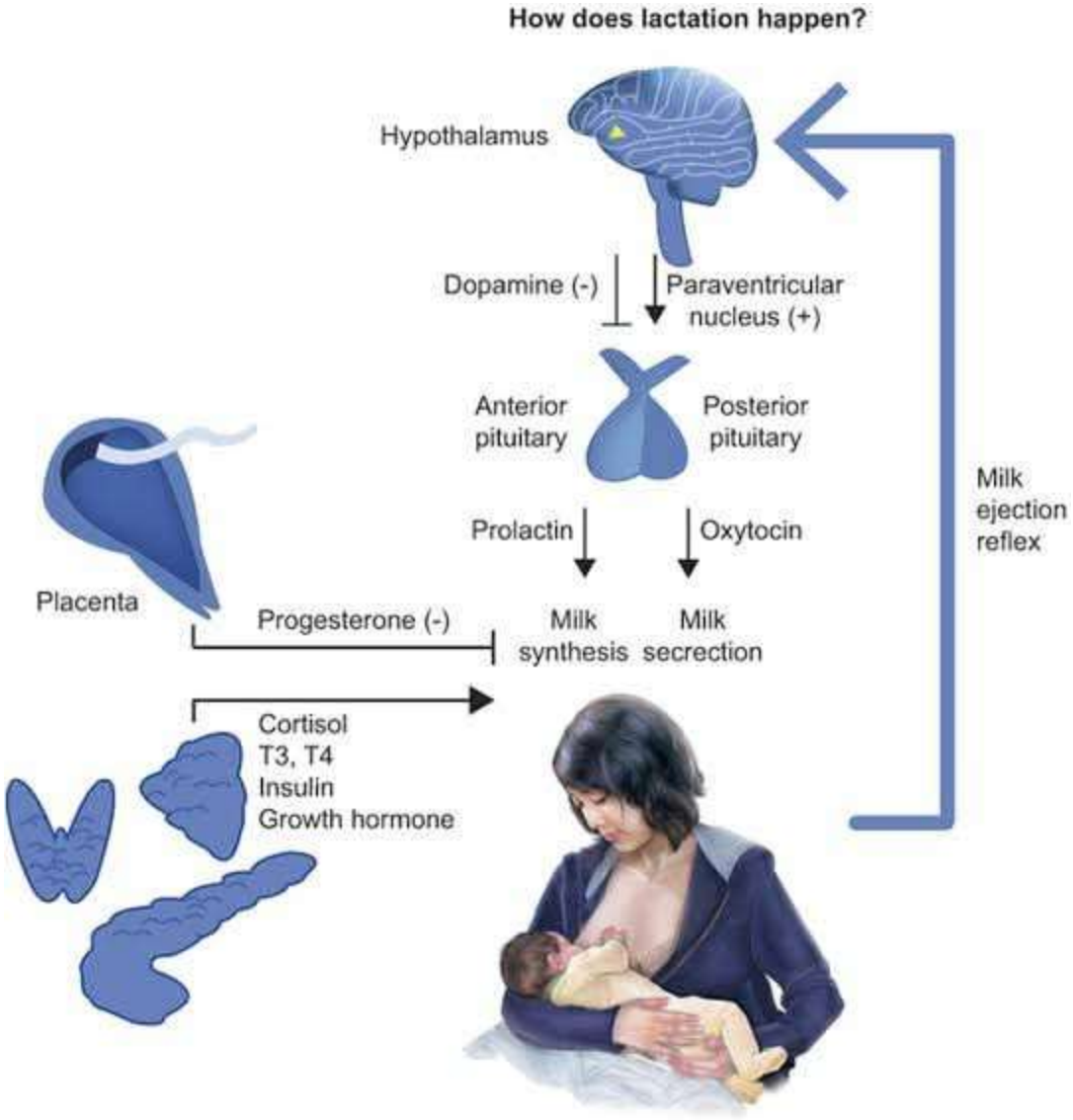
Lactation is influenced by a complex hormonal milieu including reproductive hormones (estrogen, progesterone, placental lactogen, prolactin, and oxytocin) and metabolic hormones (glucocorticoids, insulin, growth hormone, and thyroid). The reproductive hormones act directly on the mammary gland, whereas the metabolic hormones act indirectly by altering endocrine response and nutrient flux to the mammary gland. Ductal growth is primarily regulated by estrogen and growth hormone, and alveolar development requires progesterone, prolactin, and possibly placental lactogen. During pregnancy, the high levels of circulating progesterone inhibit the secretory process of the mammary gland. Once the placenta is expelled after birth, progesterone levels decline rapidly and increasing prolactin levels trigger the beginning of lactogenesis II, which is the onset of copious milk secretion (9).

Two similar but independent mechanisms are involved in the establishment of successful lactation (lactogenesis); the first mechanism causes the release of prolactin and the second induces the release of oxytocin, to induce milk ejection reflex. Although these two mechanisms are similar in that they can both be activated by suckling, they are mediated through two entirely different neuroendocrinological pathways. The key event in lactogenesis is suckling, and the sensitivity of the breast accommodates itself to this important activity.

During pregnancy the skin of the areola is relatively insensitive to tactile stimuli but becomes much more sensitive immediately after delivery. This is an ingenious physiological adaptation that ensures there is an adequate stream of different neurological stimuli from the nipple to the hypothalamus to initiate and maintain the release of prolactin and oxytocin, both of which are required for successful lactation. Any maternal or infant factor that restricts the emptying of the breasts may reduce breast milk synthesis by mechanical and chemical inhibition. The continuous removal of feedback inhibitor of lactation (FIL) from the milk guarantees the total restoration of the removed milk (10).

Women suffering from a PPH may experience a transient hypotensive insult and pituitary ischemia and/or infarction resulting in inhibition of the hormonal triggering of lactogenesis Stage II by prolactin. In rare cases, women who bleed severely during childbirth may develop Sheehan's syndrome, or ischemic necrosis of the pituitary gland, in particular of the anterior lobe, secondary to hypoperfusion. Failure to lactate or difficulties with lactation, due to absent or deficient prolactin secretion, are common initial symptoms of Sheehan's syndrome. In addition, elevated cortisol levels following such stressful labor and delivery may also adversely affect lactogenesis Stage II. Delayed early contact between mother and baby following a complicated birth with PPH may also impact on a mother's ability to successfully establish and maintain breast-feeding.[11]





Unani literature on Qille al-Laban

"IBN Sina" In his book "AL QANOON" Mentioned the anatomy of the breast which are designed for feeding. Breast is an organ developed to produce milk and provide nutrition to the infants till the organs of infants are efficient to perform their function properly. It is remarkably adapted to the requirements of infant and provides the best start in life. The Mizaaj of the milk is "HAAR" and "RATAB". The blood in mother's breast is converted into milk. This is beneficial to the infant and more attractive and acceptable to its constitution. The volume of the breast milk is different according to the age, diet, temperament, digestive faculty of the women.

IBN SENA again quoted that breastfeeding should be given only two or three times a day and large feeding should be avoided during first few days. He mentioned that if the cause is abnormally hot temperament, it will be known from sign and symptoms. When the milk is scanty due to excessive heat in the breast, it will be known from their feel. The temperament of the diet should be hot and wet. If the cause is excessive exercise, then it should be decreased. If anemia is the cause of hemorrhage, like epistaxis, piles prevent it.[12].

"ISMAIL JURJANI" discussed in his book "ZAKHEERA KHWAZAM SHAHI" that production of mani (semen), blood and milk occur in different organs and looks dissimilar, but origin is similar. "QILLATE LABAN". Mainly caused by alteration in quality of blood due to Qilatul Dam, Ghalbae Safra or Balgam, Sue Mizaaj e Badan (Abnormal temperament) of body or breast. As the production of milk occurs from blood the quality and quantity of the diet should be normal for the formation of blood. The drugs which increase the semen are also used to increase milk [13].

"ALI IBN ABBAS MAJOOSI" in his book "KAMIL US SANA" discussed that pistan is an Azaa e murakab (compound organ) soft in consistency, white and made of fibro glandular tissue. It consists of numerous arteries, veins and nerves intertwined on each other and resembles the vessels of uterus. In between the glandular tissue of breast small space is present in which rutubat and blood enter and get converted into milk. The veins are connected with these spaces so that blood reaches in breast gets converted into milk.

The arteries help in transferring the hararat that helps information of the milk from blood and the breast are situated on the chest wall, so that it is nearer to the heart and hararat produce in the heart help in the formation of milk. Moreover, breasts also protect the chest wall from injury. Ali bin Abbas explains that the recoiling fashion and the arrangement of the structures in breast is specially designed for the synthesis of the milk.[14]

"ZAKARIYA RHAZI" in his book "KITAB UL HAWI" explains the cause of qillatul laban as anemia, change in the temperament of the breast. If phlegm, bile any of two mixes with the blood resulting in temperamental derangements for the synthesis of milk, the blood should have normal temperament and should not be thick Dry, and hotness leads to decrease production of milk. Milk is present in the breast even without pregnancy and intercourse and it occurs due to Amenorrhea. If Amenorrhea occurs in teenage girls, it should be treated, otherwise it would lead to inflammation of the breast.[15]

According to Hakeem Ajmal Khan: Decreased blood production in the body due to grief, anger, sorrow, or excessive loss of blood from the body; weakening of the breast's suction power; frequent sexual intercourse during breastfeeding; staying too close to the fire during the hot season; or lack of heartfelt love and affection for the nursing baby are the causes.[16]

According to Hakeem Ghulam Mohiddin Sahab: Qillat-e-Laban refers to a reduction in the quantity of breast milk produced by a lactating woman, resulting in insufficient milk for the infant.

Causes:

Nutritional deficiency: inadequate food intake or poor nutrition. Deficiency of blood due to piles, venesection, hijama, dominancy of fluids like yellow bile, phlegm, black bile.Maternal weakness: general debility after childbirth, menstrual blood loss, puerperium.Impaired milk production: reduced formation or secretion of milk, strenuous exercises, depression.[17]

UNANI MEDICINES HAVING GALACTAGOGUE PROPERTY

‘Ilaj bi’l-Ghidha’(Dietotheraphy):

Ibn Sina described that Diet and medicine with galactagogue property are Tudri (Cheiranthus cheiri), Tukhm-e-khashkhash (Papaver somniferum) and sheep meat (chest). Barley water, chana and matar (Bengal gram and chickpeas). Honey with ghee is used. Radish with wheat flour boil in alcohol and Tukhm-e-khashkhash are given. Honey water with kalonji is beneficial.

‘Ilaj bi’l-Dawa’(Pharmacotherapy):

In dominance of ghalba-e-safra(yellow bile), Maush Shaheer (barley water),Tukhm-e-khayar(Cucumis

sativus), Tukhm-e-kakri(Cucumis flexuosus), milk and brain of cow and goat, chick soup and Paneer prepared with milk.

In dominance of ghalba-e-balgham (phlegm), Carrot (Daucus carota), badiyan, shibit, karafs. Soup of ard-e-Gandum(wheat flour) with hulba ,badiyan.

In dominance of ghalba-e-sauda(black bile), Korma plant (Helichrysum italicum) , badyan, harira anjir (soup of fig),jawo, gandum (wheat) with rogan-e-badam (almond oil) are useful.

'Ilaj bi'l-Tadbir' (Physiotheraphy):

In kasrate dam (polycythemia), fa d (venesection) and ijāma (cupping) are done and fasad khoon (impurity of blood) is to be rectified.

Gentle dry cupping (ijāma) also given beneath the breasts

Regimental Theraphy:

Ointment of Breast: kunjad (Sesamum indicum),khalis sharab (Unadulterated alcohol) are used as zimad

Hakeem Ghulam Mohiddin mention in his book **Misbah-ul-Hikmat** that if the blood is deficient then hemoglobin syrup should be given. Strenuous exercises avoided and took a rest.

'Ilaj bi'l-Dawa'(Pharmacotheraphy):

In dominance of ghalba-e-safra(yellow bile), tamarind (Tamarindus indicus), aloo Bukhara (Prunus domestica), sheer kasht will be given followed by tukhm-e-kaddu, tukhm-e-khurfa, aab-e-anar, sikanjabeen. Diet: barley water, chick soup with tukm-e-kaddu, tukhm-e-kahu added.

In dominance of ghalba-e-balgham(phlegm), sufoof e badyan, or zeera safaid, or tukhm-e-turb, tukm-e-gazar, anisoon,in powder form or tukhm-e-shibit, badyan, anisoon, with honey is given. Barley water with honey is useful.

In dominance of ghalba-e-sauda(black bile), soup of gandum(wheat), barley, and almond oil is beneficial. Sikanjabeen buzoori (seeds vinegar) is useful. [22,23]

'Ilaj bi'l-Ghidha' (Dietotheraphy):

Milk, Rice, egg yolk, chick meat, milk with honey, animals' breast, fish, carrot, beet root, almonds, faluda, firni, is useful.

In **Ghina Muna** its mentioned that in case milk is not produced in the breasts, use those medicines which are of hot and dry temperament and have the property that they eliminate the thick blood and direct it towards the breasts, and produce thin blood.

Moosli Safed (White Musli), Tukhm-e-Kasoos:Take equal quantity of Moosli Safed and Tukhm-e-Kasoos and make a powder. Mix in milk and give for drinking. It is a very good medicine for removing obstruction and for increasing milk. It is more beneficial to give it in the form of Halwa (confection).[19]

Use things that produce good chymous are nutritious, like: Barley (Jao), Chatchata , (Brassica), Fenugreek seeds (Methi), Poppy seeds (Khashkhash), Fennel seeds (Saunf), Anisoon seeds, Lettuce seeds, etc. Chickpeas, Milk, Almonds. And eat well-cooked small meat of goat and lamb. And drink milk.[20]

Tibb e Akbar its mentioned that Open the vein [Fasd Kholein – Venesection] and use such things that will reduce the blood and will produce milk and will give strength to the Tabiyat and often intense fear, or great grief, or decreased affection for the child, or some other cause becomes the reason for deficiency [of milk]. And milk becomes less, but it remains pure, and its quantity appears to be somewhat less than adequate in the body, and this is a sign that the blood is deficient or corrupt and its causes become apparent.

Remove the cause [Sabab ka azala Karein] and give exhilarant and tonic medicines, so that the Tabiyat becomes inclined towards producing milk. *[Ilaj][Mufarrihat][Muqawwiyat][21]

In **Hakeem Mohd Akbar Arzani:**Milk, Egg yolk,meat is beneficial.[22]

Unani drugs for the management of galactagogues:

S.No.	Unani Name	Botanical Name	Part Used	Form and Quantity	References
1.	Ajwa ‘in	Trachyspermum ammi	Seeds	Powder 3 to 5gm	[25]
2.	Alsi	Linum usitatissimum Linn.	Seeds	Powder 3 to 5gm	[25]
3.	Asgand	With ania somniferous	Root	Powder 3 to 5gm	[25]
4.	Aspand	Peganum harmala Linn.	Seeds	Powder 3 to 5gm	[25]
5.	Akhrot	Juglans regia Linn.	Fruit	Powder 3 to 5gm	[25]
6.	Anisun	Pimpinella anisum Linn.	Seeds	Powder 3 to 5gm	[25]
7.	Anjir	Ficus carica Linn.	Fruit	Powder 3 to 5gm	[25]
8.	Badiyan	Foeniculum vulgare Linn.	Seeds	Powder 3 to 5gm	[24]
9.	Badam	Prunus Amygdalus	Fruit	Powder 3 to 5gm	[28]
10.	Boazidan	Pyrethrum indicum	Root	Powder 3 to 5gm	[28]
11.	Ash-e-jaw	Hordeum vulgare Linn.	Leaves	Powder 3 to 5gm	[25]
12.	Hulba	Trigonella foenumgraecum Linn	Seeds	Powder 3 to 5gm	[25]
13.	Kalonji	Nigella sativa Linn.	Seeds	Powder 3 to 5gm	[25]
14.	Kunjad	Sesamum indicum Linn.	Seeds	Powder 3 to 5gm	[25]
15.	Musli safaid	Chlorophytum arundinaceous Linn.	Root	Powder 3 to 5gm	[25]
16.	Musli Siyah	Curculigo orchioides.	Root	Powder 3 to 5gm	[25]
17.	Maghz-e-chilghoza	Pinus geradiana	Fruit	Powder 3 to 5gm	[25]
18.	Maghz-e-pista	Pistacia vera Linn.	Fruit	Powder 3 to 5gm	[25]
19.	Mughz-e-tukhm-e-kharpaza	Cucumis melo Linn.	Seeds	Powder 3 to 5gm	[27]

20.	Maghz-e-Narjil	Cocos nucifera	Fruit	Powder 3 to 5gm	[26]
21.	Maghz-e-tukhm-e-kaddu	Lagenaria siceraria	Seeds	Powder 3 to 5gm	[28]
22.	Nagar motha	Cyperus rotundus Linn.	Root	Powder 3 to 5gm	[24]
23.	Otangan	Blepharis edulis	Seeds	Powder 3 to 5gm	[25]
24.	Panbadana	Gossypium herbaceum	Seeds	Powder 3 to 5gm	[28]
25.	Satavar	Asparagus recemosus	Root	Powder 3 to 5gm	[24]
26.	Salab misri	Orchis latifolia Linn.	Root	Powder 3 to 5gm	[24,26]
27.	Sambhaloo	Vitex negundo Linn.	Seeds	Powder 3 to 5gm	[26]
28.	Singhada	Trapa bispinosa	Fruit	Powder 3 to 5gm	[26]
29.	Shiqaqul misri	Pastinaca sativa Linn.	Root	Powder 3 to 5gm	[27]
30.	Tukhm-e-Tarbuz	Citrullus Vulgaris Linn.	Seeds	Powder 3 to 5gm	[26]
31.	Tukhm-e-Gazar	Daucus carota Linn.	Seeds	Powder 3 to 5gm	[29]
32.	Tukhm-e-gandana	Allium ascalonicum	Seeds	Powder 3 to 5gm	[29]
33.	Tudri Surkh	Cheiranthus cheiri	Seeds	Powder 3 to 5gm	[24]
34.	Tudri zard	Lepidium iberis	Seeds	Powder 3 to 5gm	[24]
35.	Unnan	Ziziphus sativa	Fruit	Powder 3 to 5gm	[24]
36.	Zeera Safed	Cuminum cyminum Linn.	Seeds	Powder 3 to 5gm	[26]
37	Zeera Siyah	Carum cavri	Seeds	Powder 3 to 5gm	[26]
38.	Khurma (kajoor)	Phoenix dactlifera Linn.	Fruits	Powder 3 to 5gm	[28]

Conclusion:

In the current healthcare landscape, increasing emphasis is being placed on reproductive, maternal, and child health, along with the integration of traditional systems of medicine, including Unani medicine, with

conventional healthcare. Unani medicine offers valuable traditional knowledge regarding breastfeeding and the promotion of lactation, which aligns with the established importance of breast milk for the optimal growth, development, and immunological protection of infants.

Several medicinal plants described in classical Unani literature, including Badiyan(Foeniculum vulgare Linn.),Asgand (Withania somnifera),Badam(Prunus amygdalus), Hulba (Trigonella foenum-graecum), Zeera (Cuminum cyminum), Panbadana (Gossypium arboreum), and Kalonji (Nigella sativa), have shown potential galactagogue activity in pharmacological and clinical investigations.

These findings highlight the potential of Unani medicine as a source of promising therapeutic agents for the management of insufficient breast milk production. However, further well-designed, adequately powered randomized controlled trials are essential to establish their efficacy, safety, appropriate dosage, and possible adverse effects.

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