

THERAPEUTIC POTENTIAL OF TUDRI ZARD (*LEPIDIUM IBERIS*) IN QILLAT-E-LABAN (HYPOGALACTORRHOEA): EVIDENCE FROM AN OPEN-LABEL CLINICAL STUDY

**Dr. Maryam Bano Baberali Shaikh^{*1}, Dr. Asma Rafi Ahmed Chaudhry²,
Dr. Rafi Ahmed Chaudhry³, Dr. Khan Tamseen Jabbar⁴, Dr. Mohd. Danish⁵,
Dr. Pathan Hafeez Kha Nawaz Kha⁶**

^{1,4}P.G. Scholar, Dept. of Ilmul Qabalat Wa Amraze Niswan (Obstetrics & Gynecology) Z.V.M. Unani Medical College & Hospital, Pune (MH) India.

²Professor, Dept. of Ilmul Qabalat Wa Amraz-E-Niswan (Obstetrics & Gynecology) Z.V.M. Unani Medical College & Hospital, Pune (MH) India.

³Associate Professor & HOD. Dept. of Ilmul Qabalat Wa Amraz-E-Niswan (Obstetrics & Gynecology) Z.V.M. Unani Medical College & Hospital, Pune (MH) India.

^{5,6}P.G. Scholar, Dept. of Moalajat (Medicine): Z.V.M. Unani Medical College & Hospital, Pune (MH) India.

Article Received on 05 July 2026,
Article Revised on 25 July 2026,
Article Published on 01 August 2026,
<https://doi.org/10.5281/zenodo.22767003>

*Corresponding Author

Dr. Maryam Bano Baberali Shaikh

P.G. Scholar, Dept. of Ilmul Qabalat Wa Amraze Niswan (Obstetrics & Gynecology) Z.V.M. Unani Medical College & Hospital, Pune (MH) India.



How to cite this Article: Dr. Maryam Bano Baberali Shaikh^{*1}, Dr. Asma Rafi Ahmed Chaudhry², Dr. Rafi Ahmed Chaudhry³, Dr. Khan Tamseen Jabbar⁴, Dr. Mohd. Danish⁵, Dr. Pathan Hafeez Kha Nawaz Kha⁶ (2026). Therapeutic Potential Of Tudri Zard (*Lepidium Iberis*) In Qillat-E-Laban (Hypogalactorrhoea): Evidence From An Open-Label Clinical Study. World Journal of Pharmaceutical Research, 15(15), 2494–2518.

This work is licensed under Creative Commons Attribution 4.0 International license.

ABSTRACT

Qillat-e-Laban (hypogalactorrhoea) is characterized by inadequate breast milk production to meet the nutritional requirements of the infant. In Unani medicine, *Tudri Zard* (*Lepidium iberis*) is traditionally recognized as a *Moallid-e-Laban* (galactagogue). However, clinical evidence regarding its efficacy in *Qillat-e-Laban* is limited. To evaluate the efficacy of *Tudri Zard* (*Lepidium iberis*) in the management of *Qillat-e-Laban* (hypogalactorrhoea) and assess its effects on infant weight gain, supplemental milk requirement, and maternal and infant-related breastfeeding outcomes. An open-label, prospective, single-arm clinical study was conducted among 30 lactating mothers diagnosed with *Qillat-e-Laban*. The participants received powdered *Tudri Zard* (*Lepidium iberis*) at a dose of 5 g twice daily with milk for 30 days. Assessments were performed at baseline, Day 15, and Day 30. Objective outcomes included infant weight and daily volume of supplemental milk, while subjective outcomes included breast fullness, contralateral milk ejection, infant satisfaction with

breastfeeding, and maternal perception of increased milk production. Statistical analysis was performed using Repeated Measures ANOVA and Wilcoxon's signed-rank test, with $p < 0.05$ considered statistically significant. Mean infant weight increased progressively from 2650.0 ± 433.71 g at baseline to 3023.33 ± 474.66 g on Day 15 and 3416.67 ± 559.61 g on Day 30, with highly significant improvement ($p = 0.001$). Mean supplemental milk intake decreased from 269.0 ± 67.6 ml/day at baseline to 172.3 ± 74.9 ml/day on Day 15 and 90.0 ± 80.9 ml/day on Day 30 ($p = 0.001$). Significant improvement was also observed in breast fullness, contralateral milk ejection, and infant satisfaction with breastfeeding ($p = 0.001$). No adverse drug reactions were observed during the treatment period. The findings indicate that *Tudri Zard* (*Lepidium iberis*) was associated with significant improvement in objective and subjective indicators of lactation over the 30-day study period. The reduction in supplemental milk requirement and improvement in infant weight, breast fullness, milk ejection, and breastfeeding satisfaction support its potential role as a traditional Unani galactagogue. Further controlled clinical studies with larger sample sizes are warranted to establish its efficacy and safety.

KEYWORDS: *Tudri Zard*; *Lepidium iberis*; *Qillat-e-Laban*; Hypogalactorrhoea; Galactagogue; Breast Milk Production; Lactation; Unani Medicine; Infant Weight Gain.

I. INTRODUCTION OF QILLAT-E-LABAN (HYPOGALACTORRHOEA)

Qillat-e-Laban (hypogalactorrhoea) is a condition characterized by inadequate breast milk production to meet an infant's nutritional requirements. It is an important maternal and infant health concern because insufficient lactation may lead to early supplementary or formula feeding and may increase the risk of adverse infant health outcomes.^[1-5]

Breastfeeding is essential for infant survival, growth, and development. WHO and UNICEF recommend initiation of breastfeeding within the first hour after birth, exclusive breastfeeding for the first six months, followed by appropriate complementary feeding with continued breastfeeding. Inadequate breastfeeding is associated with increased risks of diarrhoeal and respiratory infections and other preventable illnesses.^[6-10]

In Unani medicine, *Qillat-e-Laban* has traditionally been managed with *Muwallid-e-Laban* (galactagogue) drugs and formulations. *Tudri Zard* (*Lepidium iberis*) is traditionally recognized for its potential lactation-promoting activity. However, systematic clinical evidence regarding its efficacy in hypogalactorrhoea remains limited. Therefore, clinical

evaluation of *Tudri Zard* may help provide scientific evidence for its traditional use and contribute to the evidence-based development of Unani approaches for the management of *Qillat-e-Laban*.^[1-10]

Despite breastfeeding being a natural physiological process, many mothers experience concerns regarding insufficient milk production. Perceived insufficient milk (PIM) is one of the major reasons for early discontinuation of breastfeeding and has been reported in approximately 23–63% of mothers during the first four months postpartum.^[12] Several factors, including maternal anxiety, inadequate breastfeeding support, poor maternal nutrition, and certain medical conditions, may contribute to perceived or actual reduction in milk production.^[13]

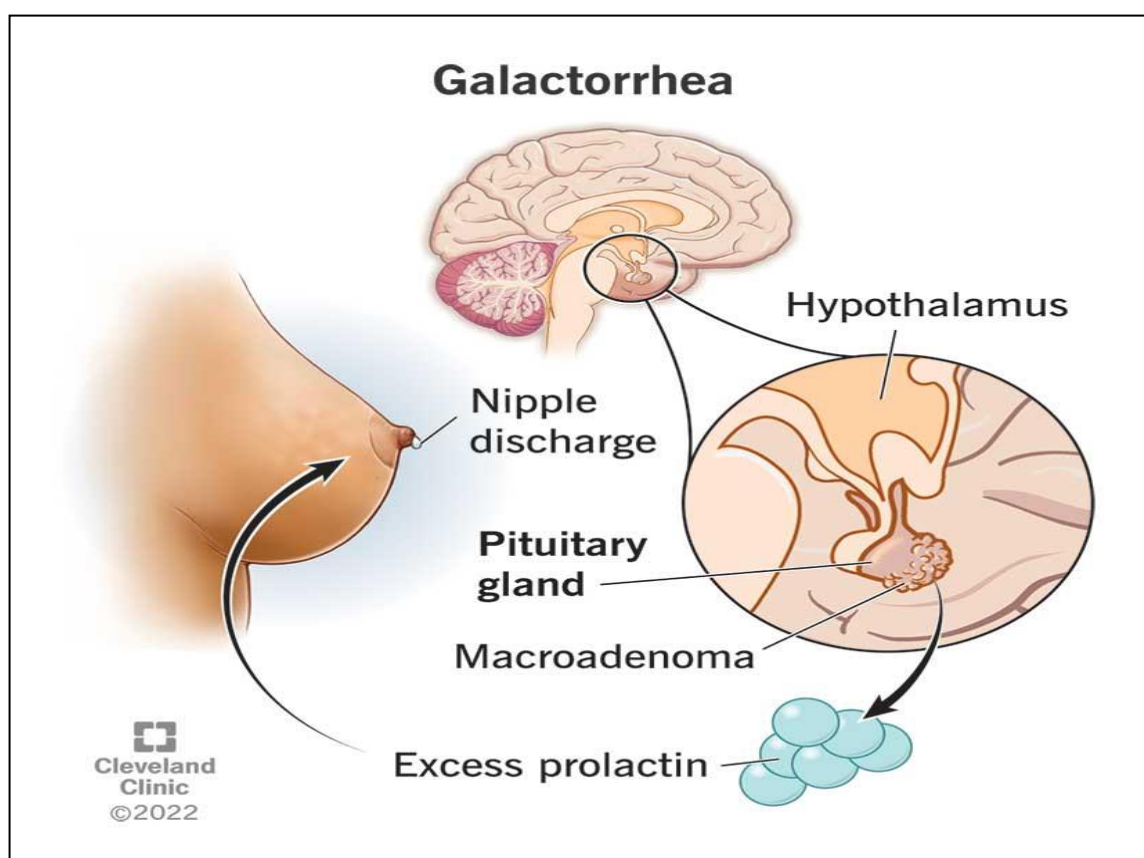


Fig. 01: Anatomy physiology of Galactorrhea in female.

According to Unani medicine, *Qillat-e-Laban* may occur due to psychological disturbances (*Awarizat-e-Nafsaniya*): derangement of temperament (*Sue Mizaj*): disorders of the breasts or other bodily organs, and excessive loss of blood. Blood loss may result from postpartum haemorrhage, menstruation, venesection (*Fasd*): or chronic diseases.^[2] Treatment of *Qillat-e-*

Laban focuses on correcting the underlying causes while enhancing breast milk production through *Mudirr-e-Laban* (galactagogue) drugs. Galactagogues are substances used to stimulate, maintain, or increase breast milk secretion, particularly in hypogalactorrhoea, relactation, and induced lactation.^[22-23] Although metoclopramide and domperidone may increase lactation, their use is restricted due to uncertain effectiveness and possible adverse effects. Therefore, herbal galactagogues are being explored as safer alternatives. Unani herbs such as *Satavar* (*Asparagus racemosus*): *Saunf* (*Foeniculum vulgare*): *Zeera Safaid* (*Cuminum cyminum*): and *Hulba* (*Trigonella foenum-graecum*) have shown promising lactation-promoting effects.^[3]

Tudri Zard (*Lepidium iberis*) is traditionally recognized in Unani medicine as a galactagogue (*Moallid-e-Sheer*) and as a general and reproductive tonic. However, despite its longstanding traditional use, clinical evidence confirming its lactation-promoting efficacy remains limited.^[29-30]

The study evaluated the efficacy of *Tudri Zard* (*Lepidium iberis*) as a herbal galactagogue in lactating women with *Qillat-e-Laban* (hypogalactorrhoea). An open-label, single-arm clinical study was conducted on 30 lactating mothers, who received 5 g of *Tudri Zard* daily in divided doses with milk for one month. Efficacy was assessed through reduction in supplementary feeding, infant weight gain, maternal breast fullness, milk ejection, infant satisfaction, and perceived improvement in milk production. Statistical analysis used Student's *t*-test and Chi-square / Fisher's exact test, with $p < 0.05$ considered significant. The study aimed to provide clinical evidence supporting the traditional use of *Tudri Zard* as a potential herbal galactagogue.

II. *Qillat-e-Laban* (Hypogalactorrhoea) in the Unani System of Medicine

In the **Unani system of medicine**, *Qillat-e-Laban* refers to insufficient production of breast milk during lactation. The condition is characterized by inadequate milk secretion to meet the nutritional requirements of the infant. Although the exact modern term “hypogalactorrhoea” is not necessarily used in classical texts, the concept of deficient breast-milk production is discussed in relation to disorders of lactation and disturbances of *Mizaj* (temperament) and *Quwwat-e-Mudabbira-e-Badan* (body's regulatory faculty).

According to Unani principles, the production of breast milk (*Laban*) is closely related to the proper functioning of the digestive and nutritive processes. The nutrients derived from food

are transformed through the stages of digestion and ultimately contribute to the formation of body fluids and humours. A portion of the nutritive material is directed toward the mammary glands for milk formation. Therefore, weakness of digestion, inadequate nutrition, disturbed temperament, excessive physical or emotional stress, and weakness of the mother may adversely affect milk production.

III. Unani Concept and Possible Causes

Important factors that may contribute to *Qillat-e-Laban* include.

- ***Su'-e-Mizaj* (disturbance of temperament)** of the mother
- Weakness of ***Quwwat-e-Hazima*** (digestive power)
- Poor nutritional status and inadequate intake of nourishing foods
- Physical weakness and excessive exertion
- Psychological stress, anxiety, sadness, or lack of sleep
- Excessive loss of bodily fluids
- Disorders affecting the mammary glands
- Inadequate or infrequent breastfeeding and milk removal

From the Unani perspective, correction of the underlying ***Mizaj*** and **general bodily strength** is therefore important in the management of deficient lactation. Management generally follows the principles of ***Islah-e-Mizaj*** (correction of temperament): strengthening the mother, improving digestion and nutrition, and promoting milk secretion. Dietary measures, appropriate regimens, and medicinal substances possessing ***Moallid-e-Laban*** (galactagogue) properties may be employed. Several traditional Unani medicines and herbs have been used to promote lactation, including.

- *Tudri Zard* (*Lepidium iberis*)
- *Satavar* (*Asparagus racemosus*)
- *Hulba* (*Trigonella foenum-graecum*)
- *Saunf* (*Foeniculum vulgare*)
- *Zeera Safaid* (*Cuminum cyminum*)

Tudri Zard is traditionally described as ***Moallid-e-Sheer* / *Moallid-e-Laban***, indicating its use for promoting breast-milk production. It is also traditionally regarded as a tonic that may support maternal strength and reproductive functions. In contemporary medicine, hypogalactorrhoea is understood as perceived or objectively inadequate breast-milk production. Assessment should first identify correctable factors such as ineffective latch,

inadequate feeding frequency, poor milk removal, maternal nutritional problems, medications, hormonal disorders, or breast pathology. Unani approaches such as dietary correction, restoration of maternal strength, and use of traditional galactagogues may be studied as complementary approaches, but their efficacy and safety should be established through well-designed clinical studies.

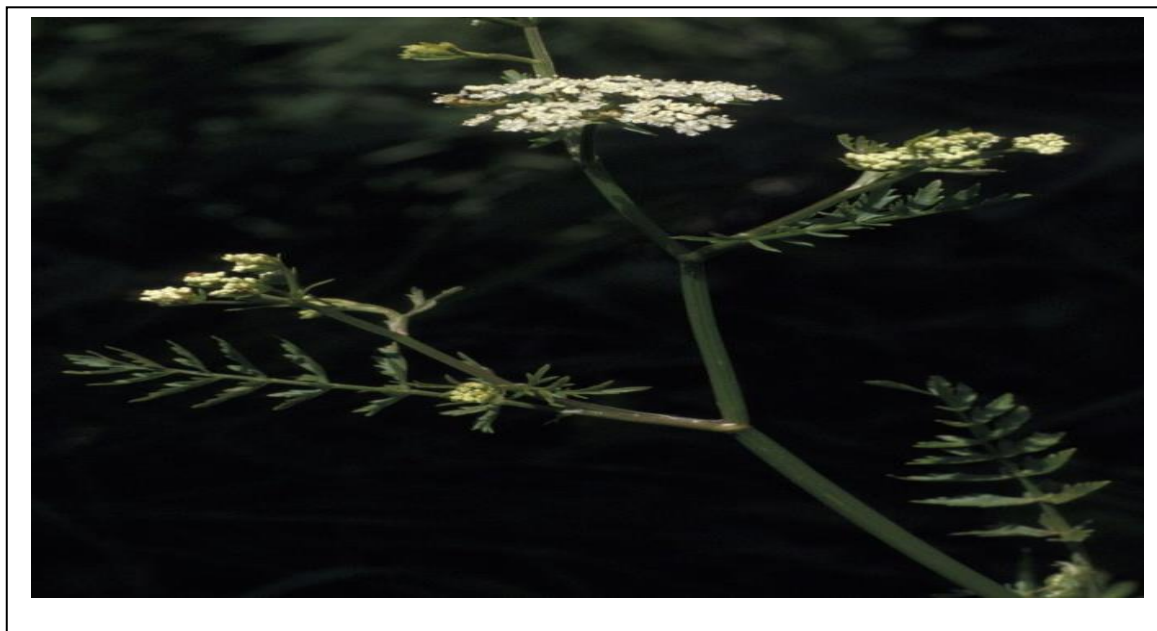


Fig. 02 Pharmacognosy of Tudri Zard (*Lepidium iberis*)

IV. Pharmacognosy of Tudri Zard (*Lepidium iberis*)

Tudri Zard is a medicinal seed drug described in Unani literature and is traditionally used particularly in conditions associated with lactation and other disorders. Pharmacognostically, the drug can be described through its biological source, family, morphology, microscopy, physicochemical characteristics, and phytochemical constituents.

Tudri Zard is traditionally identified with the seeds of *Lepidium iberis*. The drug consists mainly of the dried mature seeds used in crude-drug form. **Family:** *Brassicaceae* (*Cruciferae*). Species of *Lepidium* are generally herbaceous plants occurring in temperate and Mediterranean regions. They are cultivated or collected as medicinal plants in different geographical regions. The seeds constitute the principal medicinal part.

V. Tudri Zard (*Lepidium iberis*) in the Unani System of Medicine

In Unani literature, *Tudri Zard* is particularly valued for its actions on the **breast and lactation**, and it is traditionally used in *Qillat-e-Laban* (hypogalactorrhoea). It is also

described as having medicinal applications related to the respiratory, digestive and genitourinary systems.

A. *Mizaj* (Temperament)

According to Unani principles, the therapeutic properties of a drug are closely related to its *Mizaj*. *Tudri Zard* is generally described in Unani materia medica as possessing a hot and dry temperament, although the exact grading may vary among classical sources.

The hot and dry temperament is considered relevant to its traditional actions, particularly where correction of excessive coldness and accumulation of unwanted moisture (*rutubat*) is indicated.

B. *Afa'al-e-Advia* (Pharmacological Actions)

The principal traditional actions attributed to *Tudri Zard* include.

- *Mudir-e-Baul* – diuretic
- *Mudir-e-Hayd* – emmenagogue
- *Mudir-e-Laban* – galactagogue/lactation-promoting
- *Muhallil* – resolving inflammatory or accumulated pathological material
- *Mufattih* – deobstruent/opening obstruction
- *Munzij* – promoting maturation of morbid material
- *Muqawwi* – tonic/strengthening action
- *Dafi'-e-Riyah* – carminative

The exact terminology and attribution of actions may differ between classical Unani references.

VI. Therapeutic Uses in Unani Medicine

A. *Qillat-e-Laban* (Hypogalactorrhoea)

One of the important traditional applications of *Tudri Zard* is in *Qillat-e-Laban*, a condition characterised by inadequate production or secretion of breast milk. In Unani understanding, impaired lactation may be associated with weakness of the organs involved in milk formation, disturbances of temperament, inadequate nutrition and other systemic factors. *Tudri Zard* is traditionally considered *Mudir-e-Laban* and is therefore used to support milk production. This traditional use provides the rationale for investigating *Tudri Zard* as a potential herbal intervention in lactating women with reduced milk secretion.

B. Respiratory Disorders

The drug has traditionally been used in some respiratory complaints, particularly those associated with accumulated mucus and difficulty in expectoration. Its *Muhallil and Mufattih* properties are considered relevant in the Unani therapeutic framework.

C. Digestive Disorders

Tudri Zard is traditionally used in certain digestive complaints, particularly conditions associated with flatulence and impaired digestion. Its carminative action is considered useful for relieving abdominal discomfort caused by gas.

D. Genitourinary Applications

Traditional Unani descriptions also associate the drug with diuretic and emmenagogue actions, leading to its use in selected urinary and menstrual disorders.

For your clinical-study topic, the following Unani rationale can be used.

Tudri Zard (Lepidium iberis) is a traditional Unani medicinal seed possessing *Mudir-e-Laban* (galactagogue) activity. In the management of *Qillat-e-Laban*, it is considered to promote the formation and secretion of breast milk by supporting the functional activity of the organs involved in lactation. Its traditional use as a lactation-promoting drug provides a basis for evaluating its efficacy in women suffering from inadequate milk secretion.

VII. Aim and Objectives: To Evaluate the efficacy of *Tudri zard (Lepidium iberis)* in the management of *Qillat-e-Laban* (Hypogalactorrhoea). The study aimed to evaluate the efficacy of *Tudri Zard (Lepidium iberis)* in managing ***Qillat-e-Laban*** (hypogalactorrhoea) and to provide clinical evidence for its traditional Unani use. The objectives included assessing breast milk production, infant weight gain, reduction in supplemental milk requirements, and maternal satisfaction. It also sought to identify the dominant ***mizaj*** among affected mothers, validate the galactagogue claim of *Tudri Zard*, and develop a comprehensive understanding of *Qillat-e-Laban* through authentic Unani and modern literature.

VIII. Management included^[23-30]

Galactagogue	Mechanism of Action	Reported Dose / Regimen	Evidence / Effect on Lactation	Major Limitations / Adverse Effects
Metoclopramide	Dopamine receptor antagonist → increases prolactin secretion	10 mg orally, 3 times daily for 1–2 weeks	Increases serum prolactin and may improve milk production; response generally within 2–5 days	Extrapyramidal effects such as tremor, bradykinesia and dystonia; may alter milk protein and electrolyte composition
Domperidone	Peripheral dopamine antagonist → increases prolactin	10–30 mg, 3 times daily	Studies report increased prolactin and milk production; 10 mg TID for 7 days showed significant improvement in one trial	Cardiac safety concerns; effectiveness may be limited when prolactin is normal or glandular tissue is insufficient
Sulpiride	Dopamine antagonist → stimulates prolactin secretion	50 mg, 2–3 times daily	50 mg TID for 2 weeks increased milk production and serum prolactin compared with placebo	Extrapyramidal reactions, tremor, bradykinesia, acute dystonia and weight gain
Thyrotrophin-Releasing Hormone	Stimulates prolactin secretion	Intranasal 1 mg, 4 times daily for 10 days	Increased milk production significantly in women with inadequate lactation	Limited clinical evidence; requires further evaluation for routine use
Oxytocin	Facilitates milk-ejection reflex	Intranasal administration before milk expression	Reported to increase milk output, particularly in mothers of premature infants	Mainly facilitates milk ejection rather than directly increasing milk synthesis; limited current clinical use
Chlorpromazine	Dopamine antagonist → increases prolactin secretion	Not specified in the provided text	Has been used to promote lactation through increased prolactin	Potential adverse effects associated with antipsychotic therapy; limited evidence for routine use
Growth Hormone	May enhance mammary gland function and lactation	Recombinant human growth hormone during days 3–9 postpartum	Randomized trial showed significantly greater milk volume than placebo after 7 days	Insufficient evidence regarding routine efficacy and safety during breastfeeding

Management of lactation failure primarily involves frequent and effective breast stimulation. In complete lactation failure, nipple stimulation, frequent suckling, milk expression techniques, and nursing supplementation may be used. Partial lactation failure can be managed through maternal education, support, frequent breastfeeding, and gradual reduction of supplementary feeds.

Relactation refers to re-establishing milk production after cessation of breastfeeding. Successful relactation is indicated by the return of milk secretion, reduced supplementary feeding, exclusive breastfeeding, and adequate infant weight gain.

When milk production is inadequate, breastfeeding practices should first be corrected by ensuring proper latch, frequent feeding, use of both breasts, adequate breast emptying, balanced nutrition, hydration, and sufficient rest. In Unani medicine, several herbs are traditionally used as galactagogues, including fenugreek, fennel, cumin, anise, and *Tudri Zard*. Fenugreek is widely used, although its mechanism remains uncertain. Silymarin from *Silybum marianum* has also been investigated for lactation enhancement, possibly through its phytoestrogenic activity. However, clinical evidence for many herbal galactagogues remains limited.^[12-23]

IX. MATERIAL AND METHOD

An open-label, prospective, single-arm clinical study was conducted to evaluate the efficacy of *Tudri Zard* (*Lepidium iberis*) in the management of *Qillat-e-Laban* (hypogalactorrhoea). Ethical approval and written informed consent were obtained from all participants.

A. Study Design and Duration

Thirty lactating mothers were enrolled and received *Tudri Zard* for 30 days, with follow-up every 15 days. The total study duration was 18 months. A pre- and post-treatment assessment was performed.

- **Inclusion Criteria:** Term lactating mothers with inadequate milk production, whose infants had a birth weight ≥ 2000 g and was 20–180 days old.
- **Exclusion Criteria:** Women with major chronic or hormonal disorders, breast diseases, previous breast surgery, epilepsy or psychological disorders, alcohol addiction, complete lactation failure, or mothers of premature infants or infants with inborn metabolic disorders were excluded.
- **Withdrawal Criteria:** Participants were withdrawn for protocol non-compliance, serious adverse effects, or initiation of other lactation-enhancing treatment.

B. Data Collection

A total of 30 lactating mothers attending routine PNC and immunization services were screened and enrolled based on clinical diagnosis and subjective and objective assessment. *Qillat-e-Laban* (hypogalactorrhoea) was identified mainly through maternal reports of low

milk supply, delayed milk production, inadequate infant satisfaction after feeding, or reduced/ceased milk flow. Demographic and socioeconomic details were recorded using a case record form and Kuppuswamy's Socioeconomic Scale.

The mother's *Mizaj* (temperament) was assessed using a validated temperamental scale based on the *Alamāt-e-Ajnās-e-Ashra* described in classical Unani literature.

- **Informed Consent:** Eligible mothers were given detailed information about the study and medication, allowed to clarify doubts, and enrolled only after providing written informed consent.
- **Investigation:** Complete Blood Count (CBC) was performed.
- **Intervention:** *Tudri Zard* (*Lepidium iberis*) was selected based on its traditional Unani use as a *Moallid-e-Sheer* (galactagogue): *Muqawwi-e-Bah* and *Musammin-e-Badan*. The drug was obtained from the authentic institute pharmacy, authenticated by an expert botanist, and prepared according to methods described in classical Unani literature. It was administered **orally** to the study participants.

C. Method of Preparation, Route of Administration and Dosage

- **Drug Preparation:** *Tudri Zard* was cleaned, dried, and finely powdered into *Safoof*.
- **Dose and Duration:** 5 g of *Safoof Tudri Zard* twice daily with milk for 30 days.
- **Storage:** Stored in a cool, dry, dark place away from moisture, sunlight, and direct heat.

Type	Parameters
Subjective	Breast fullness/tingling, contralateral milk ejection, infant satisfaction after feeding, and maternal perception of increased milk production
Objective	Infant weight gain and daily volume of supplementary milk

Subjective outcomes were assessed using a 5-point scale ranging from 1 (very unsatisfied) to 5 (highly satisfied).

D. Outcome Measures

- **Primary outcomes:** Reduction or complete discontinuation of supplementary feeds and infant weight gain.
- **Secondary outcomes:** Maternal satisfaction, breast fullness during feeding, contralateral milk ejection, and perceived improvement in milk production.

E. Study Duration & Follow-up

The study lasted **30 days**, with assessments at Day 0, Day 15, and Day 30.

- **Efficacy Assessment:** Milk production, reduction/discontinuation of supplementary feeds, lactogenesis, and infant weight gain were assessed at baseline and after treatment. Concomitant lactation treatments were not permitted.
- **Withdrawal:** Participants were withdrawn for protocol non-compliance or occurrence of adverse drug reactions.
- **Statistical Analysis:** Categorical data were expressed as frequency and percentage [n (%)], while continuous data were presented as Mean $\pm$ SD. Changes across visits were assessed using Wilcoxon's signed-rank test and Repeated Measures ANOVA. Significant results were followed by Bonferroni-adjusted pairwise comparisons. A two-tailed $p < 0.05$ was considered statistically significant. Analysis was performed using SPSS version 25.0.
- **Study Duration & Follow-up:** The study lasted **30 days**, with assessments at Day 0, Day 15, and Day 30.
- **Efficacy Assessment:** Milk production, reduction/discontinuation of supplementary feeds, lactogenesis, and infant weight gain were assessed at baseline and after treatment. Concomitant lactation treatments were not permitted.
- **Adverse Effects:** No adverse drug reactions were observed during or after the treatment period.
- **Withdrawal:** Participants were withdrawn for protocol non-compliance or occurrence of adverse drug reactions.
- **Documentation:** All study records were completed and submitted to the concerned department after study completion.
- **Statistical Analysis:** Categorical data were expressed as frequency and percentage [n (%)], while continuous data were presented as **Mean $\pm$ SD**. Changes across visits were assessed using Wilcoxon's signed-rank test and Repeated Measures ANOVA. Significant results were followed by Bonferroni-adjusted pairwise comparisons. A two-tailed $p < 0.05$ was considered statistically significant. Analysis was performed using SPSS version 25.0.

OBSERVATION AND RESULTS

An open-label, single-arm clinical study was conducted to evaluate the efficacy of *Tudri Zard* (*Lepidium iberis*) in managing *Qillat-e-Laban* (hypogalactorrhoea). A total of 40 diagnosed cases were initially enrolled considering possible dropouts, while **30** participants were included in the final statistical analysis. Participants were recruited from the OPD of *Ilmul*

Qabalat wa Amraz-e-Niswa of the concerned hospital and selected according to predefined inclusion and exclusion criteria.

Table No. 01: The distribution of type of *mizaj* (temperament) of the cases studied (n=30).

Type of <i>Mizaj</i>	No. of cases	% of cases
<i>Safrawi</i>	4	13.3
<i>Damwi</i>	3	10.0
<i>Saudawi</i>	14	46.7
<i>Balghami</i>	9	30.0
Total	30	100.0

Comments: Among the 30 cases studied, *Saudawi mizaj* was the most common, observed in 46.7% (n=14) of participants. *Balghami mizaj* was seen in 30.0% (n=9) of cases, followed by *Safrawi mizaj* in 13.3% (n=4) and *Damwi mizaj* in 10.0% (n=3). Thus, nearly half of the study population had *Saudawi* temperament, and a total of 76.7% (n=23) had either *Saudawi mizaj* or *Blghami mizaj*.

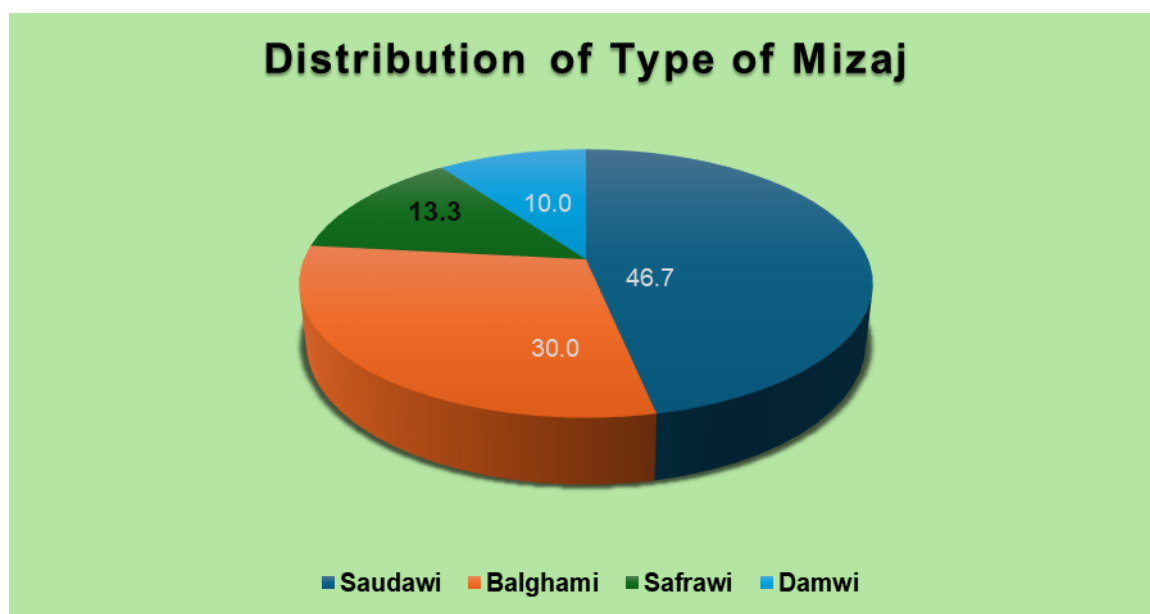


Figure 03: The distribution of type of *Mizaj* (temperament) of the cases studied (n=30).

Table 1a) Distribution of improvement in Objective parameters (Mean Infant's weight) (n=30).

	Visit 1 (n=30)		Visit 2 (n=30)		Visit 3 (n=30)	
	Mean	SD	Mean	SD	Mean	SD
Infant's weight (gm)	2650.0	433.71	3023.33	474.66	3416.67	559.61
Visit 1 (Day 0): Visit 2 (Day 15): Visit 3 (Day 30).						
Values are Means and SD						

Table 1b) The statistical comparison of improvement in Objective parameters (Mean Infant's weight) (n=30).

Comparisons (Pair-wise)	P-value	Significance
Visit 1 v Visit 2	0.001***	Highly Significant
Visit 1 v Visit 3	0.001***	Highly Significant
P-values by Repeated Measures Analysis of Variance (RMANOVA). P-value<0.05 is considered to be statistically significant. ***P-value<0.001.		

Comments: There was a progressive increase in the mean infant's weight over the 3 visits. At Visit 1 (Day 0): the mean weight was 2650.0 ± 433.71 gm.

This increased to 3023.33 ± 474.66 gm at Visit 2 (Day 15) and further to 3416.67 ± 559.61 gm at Visit 3 (Day 30). The difference between Visit 1 and Visit 2 ($p = 0.001$) and between Visit 1 and Visit 3 ($p = 0.001$) was highly significant. This indicates a significant improvement in infant's weight over the study period.

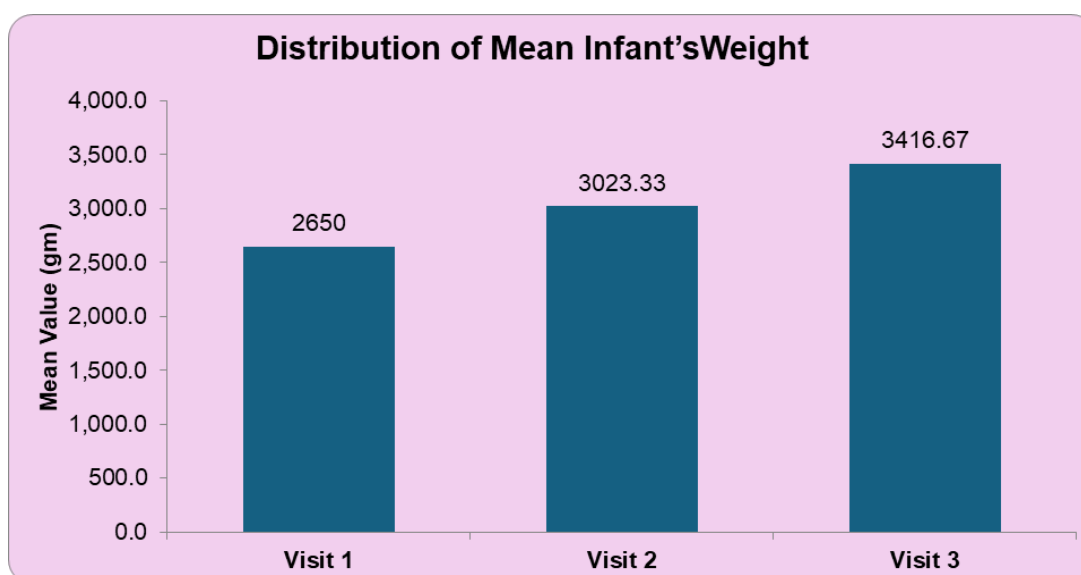


Fig. No. 04: Distribution of improvement in Objective parameters (Mean Bab's weight) (n=30).

Table No 2 a) Distribution of improvement in Objective parameters (n=30).

	Visit 1 (n=30)		Visit 2 (n=30)		Visit 3 (n=30)	
	Mean	SD	Mean	SD	Mean	SD
Volume of supplemental milk (ml/day)	269.0	67.6	172.3	74.9	90.0	80.9
Visit 1 (Day 0): Visit 2 (Day 15): Visit 3 (Day 30).						
Values are Means and SD						

Table No. 02: b) The statistical comparison of improvement in Objective parameters (Mean Volume of supplemental milk) (n=30).

Comparisons (Pair-wise)	P-value	Significance
Visit 1 v Visit 2	0.001***	Highly Significant
Visit 1 v Visit 3	0.001***	Highly Significant
P-values by Repeated Measures Analysis of Variance (RMANOVA). P-value<0.05 is considered to be statistically significant. ***P-value<0.001.		

Comments: There was a progressive decrease in the mean volume of supplemental milk required over the study period. At Visit 1 (Day 0): the mean supplemental milk intake was 269.0 ± 67.6 ml/day. This reduced to 172.3 ± 74.9 ml/day at Visit 2 (Day 15) and further to 90.0 ± 80.9 ml/day at Visit 3 (Day 30). Thus, the mean reduction in supplemental milk from Day 0 to Day 30 was 179.0 ml/day. The difference between Visit 1 and Visit 2 ($p = 0.001$) and between Visit 1 and Visit 3 ($p = 0.001$) was highly significant. This indicates a significant decrease in dependence on supplemental milk over the 30-day study period.

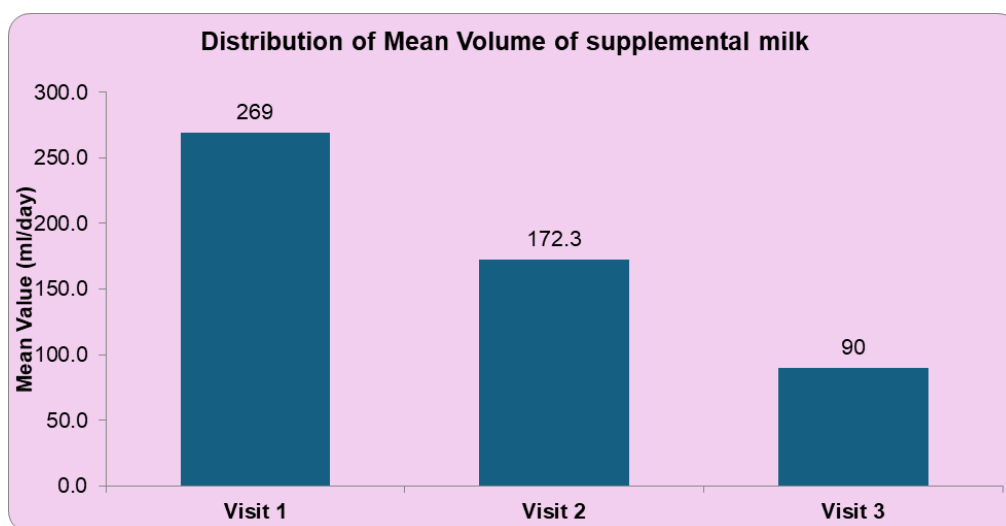


Figure No. 05: Distribution of improvement in Objective parameters (n=30).

Table No. 03: a) Distribution of improvement in subjective parameters. studied (n=30).

Parameter	Visit 1 (n=30)		Visit 2 (n=30)		Visit 3 (n=30)	
Feeling of fullness in breast before feeding	n	%	n	%	n	%
Very unsatisfied [1]	6	20.0	0	0.0	0	0.0
Unsatisfied [2]	22	73.3	10	33.3	0	0.0
Neutral [3]	2	6.7	18	60.0	12	40.0
Satisfied 4]	0	0.0	2	6.7	17	56.7
Highly Satisfied [5]	0	0.0	0	0.0	1	3.3
Total	30	100.0	30	100.0	30	100.0
Visit 1 (Day 0): Visit 2 (Day 15): Visit 3 (Day 30).						
Values are n (% of cases).						

Table No. 03: b) The statistical comparison of improvement in subjective studied (n=30).

Comparisons (Pair-wise)	P-value	Significance
Visit 1 v Visit 2	0.001***	Highly Significant
Visit 1 v Visit 3	0.001***	Highly Significant
P-values by Wilcoxon's signed rank test. P-value<0.05 is considered to be statistically significant. ***P-value<0.001.		

Comments: There was a progressive improvement in the mother's perception of breast fullness before feeding over the study period. At Visit 1 (Day 0): 93.3% (n=28) of mothers reported dissatisfaction, with 20.0% (n=6) being "Very unsatisfied" and 73.3% (n=22) "Unsatisfied". Only 6.7% (n=2) felt "Neutral". By Visit 2 (Day 15): dissatisfaction reduced markedly. 33.3% (n=10) were "Unsatisfied", 60.0% (n=18) were "Neutral" and 6.7% (n=2) were "Satisfied". No mother was "Very unsatisfied". At Visit 3 (Day 30): 60.0% (n=18) reported satisfaction, with 56.7% (n=17) "Satisfied" and 3.3% (n=1) "Highly Satisfied". 40.0% (n=12) were "Neutral". No mother reported "Unsatisfied" or "Very unsatisfied". The difference between Visit 1 and Visit 2 ($p = 0.001$) and between Visit 1 and Visit 3 ($p = 0.001$) was highly significant. This indicates a significant improvement in subjective perception of breast fullness over the 30-day study period.

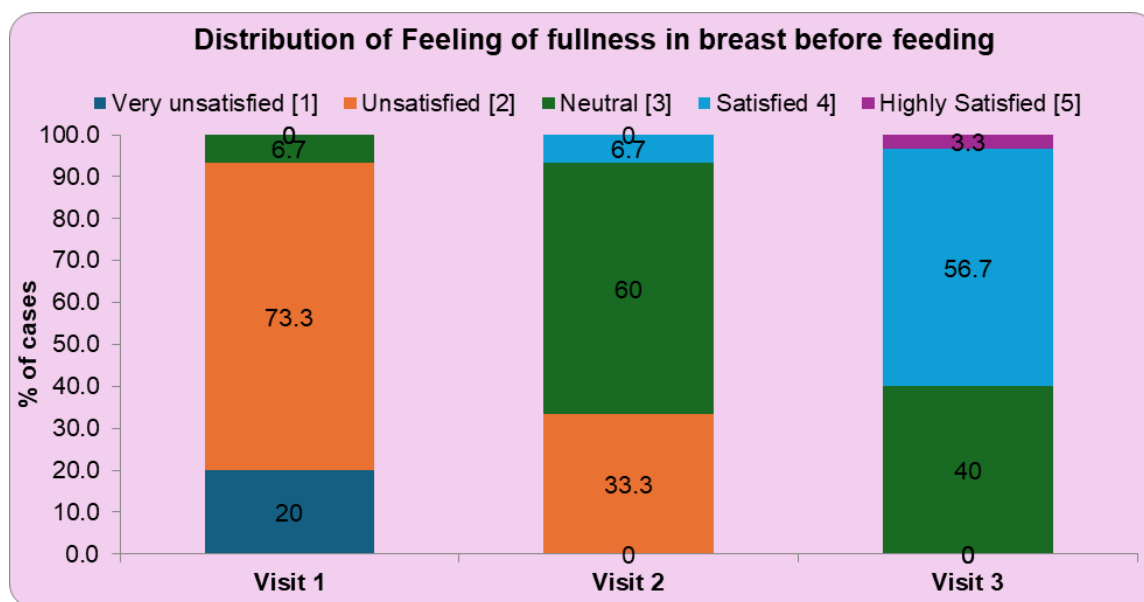
**Figure No. 06 Distribution of improvement in subjective parameters) studied (n=30).**

Table No 04: a) Distribution of improvement in subjective studied (n=30).

Parameter	Visit 1 (n=30)		Visit 2 (n=30)		Visit 3 (n=30)	
	n	%	n	%	n	%
Contra lateral ejection of milk flow during feeding						
Very unsatisfied [1]	4	13.3	1	3.3	0	0.0
Unsatisfied [2]	17	56.7	4	13.3	3	10.0
Neutral [3]	9	30.0	19	63.3	9	30.0
Satisfied 4]	0	0.0	5	16.7	14	46.7
Highly Satisfied [5]	0	0.0	1	3.3	4	13.3
Total	30	100.0	30	100.0	30	100.0
Visit 1 (Day 0): Visit 2 (Day 15): Visit 3 (Day 30).						
Values are n (% of cases).						

Table No. 04 b) The statistical comparison of improvement in subjective parameters studied (n=30).

Comparisons (Pair-wise)	P-value	Significance
Visit 1 v Visit 2	0.001***	Highly Significant
Visit 1 v Visit 3	0.001***	Highly Significant
P-values by Wilcoxon's signed rank test. P-value<0.05 is considered to be statistically significant. ***P-value<0.001.		

Comments: There was a progressive improvement in contra lateral ejection of milk flow during feeding over the 3 visits. At Visit 1 (Day 0): 70.0% (n=21) of mothers reported dissatisfaction, with 13.3% (n=4) "Very unsatisfied" and 56.7% (n=17) "Unsatisfied". 30.0% (n=9) felt "Neutral". None were satisfied. By Visit 2 (Day 15): dissatisfaction decreased. 3.3% (n=1) were "Very unsatisfied" and 13.3% (n=4) were "Unsatisfied". The majority, 63.3% (n=19): were "Neutral". 16.7% (n=5) were "Satisfied" and 3.3% (n=1) were "Highly Satisfied". At Visit 3 (Day 30): 60.0% (n=18) reported satisfaction, with 46.7% (n=14) "Satisfied" and 13.3% (n=4) "Highly Satisfied". 30.0% (n=9) were "Neutral" and only 10.0% (n=3) remained "Unsatisfied". No mother was "Very unsatisfied". On pair-wise comparison using Wilcoxon's signed rank test, the improvement in contra lateral ejection of milk flow was statistically highly significant. The difference between Visit 1 and Visit 2 ($p = 0.001$) and between Visit 1 and Visit 3 ($p = 0.001$) was highly significant. This indicates a significant improvement in subjective perception of contra lateral milk ejection during feeding over the 30-day study period.

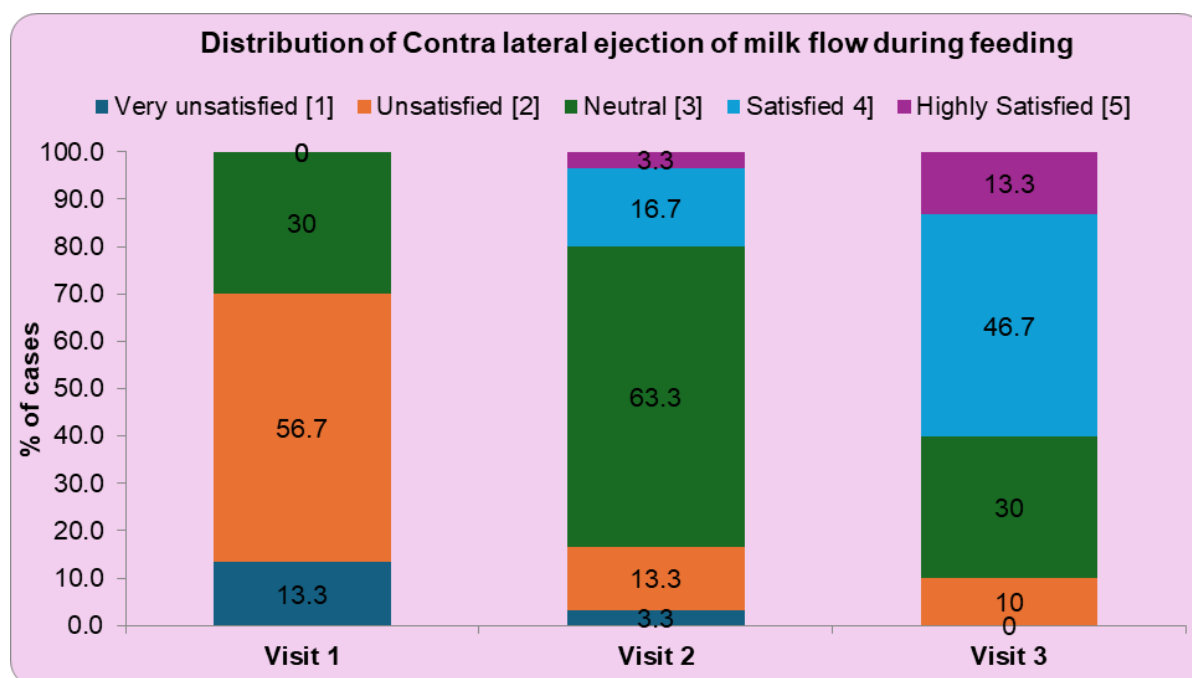


Figure No. 07 Distribution of improvement in subjective parameters studied (n=30).

Table No. 05 a) Distribution of improvement in subjective parameters studied (n=30).

Parameter	Visit 1 (n=30)		Visit 2 (n=30)		Visit 3 (n=30)	
	n	%	n	%	n	%
Satisfaction of baby with Breastfeeding						
Very unsatisfied [1]	4	13.3	0	0.0	0	0.0
Unsatisfied [2]	10	33.3	6	20.0	1	3.3
Neutral [3]	16	53.3	12	40.0	7	23.3
Satisfied 4]	0	0.0	12	40.0	13	43.3
Highly Satisfied [5]	0	0.0	0	0.0	9	30.0
Total	30	100.0	30	100.0	30	100.0
Visit 1 (Day 0): Visit 2 (Day 15): Visit 3 (Day 30).						
Values are n (% of cases).						

Table No.05 b) The statistical comparison of improvement in subjective parameters studied (n=30).

Comparisons (Pair-wise)	P-value	Significance
Visit 1 v Visit 2	0.001***	Highly Significant
Visit 1 v Visit 3	0.001***	Highly Significant
P-values by Wilcoxon's signed rank test. P-value<0.05 is considered to be statistically significant. ***P-value<0.001.		

Comments: There was a progressive improvement in satisfaction of the baby with Breast feeding over the study period. At Visit 1 (Day 0): 46.6% (n=14) of mothers reported dissatisfaction, with 13.3% (n=4) "Very unsatisfied" and 33.3% (n=10) "Unsatisfied". 53.3% (n=16) were "Neutral". No mother reported satisfaction. At Visit 2 (Day 15): dissatisfaction

reduced to 20.0% (n=6) "Unsatisfied". 40.0% (n=12) were "Neutral" and 40.0% (n=12) were "Satisfied". No mother was "Very unsatisfied" or "Highly satisfied". By Visit 3 (Day 30): 73.3% (n=22) reported satisfaction, with 43.3% (n=13) "Satisfied" and 30.0% (n=9) "Highly Satisfied". 23.3% (n=7) were "Neutral" and only 3.3% (n=1) remained "Unsatisfied". No mother was "Very unsatisfied".

On pair-wise comparison using Wilcoxon's signed rank test, the improvement in satisfaction of baby with Breastfeeding was statistically highly significant. The difference between Visit 1 and Visit 2 ($p = 0.001$) and between Visit 1 and Visit 3 ($p = 0.001$) was highly significant. This indicates a significant improvement in subjective assessment of infant's satisfaction with Breastfeeding over the 30-day study period.

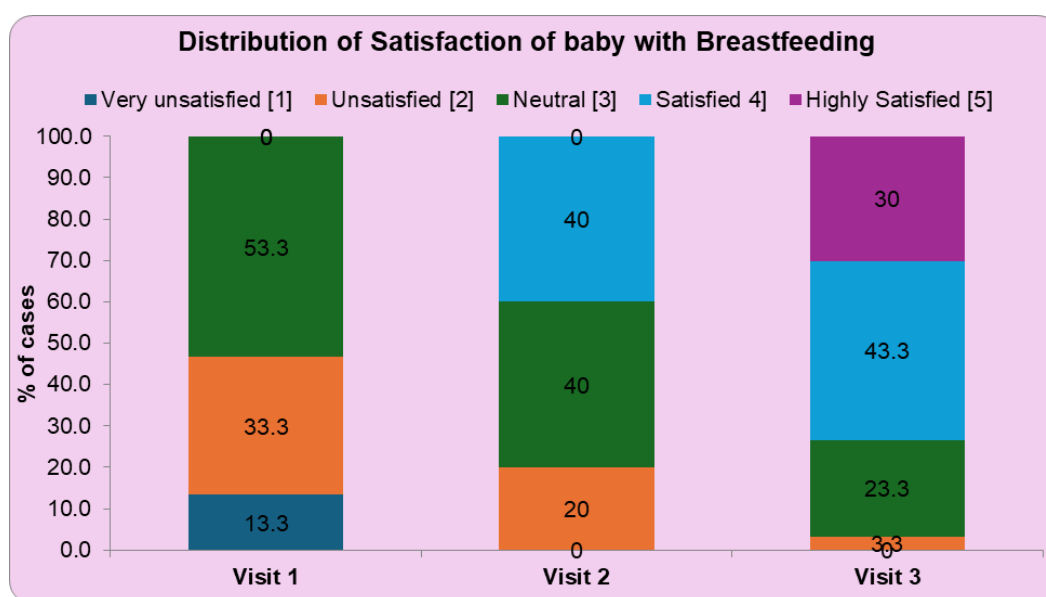


Figure No. 08: Distribution of improvement in subjective parameters studied (n=30).

DISCUSSION

The present open-label, prospective, single-arm clinical study was undertaken to evaluate the therapeutic potential of *Tudri Zard* (*Lepidium iberis*) in the management of *Qillat-e-Laban* (hypogalactorrhoea). A total of 30 lactating mothers were included in the final analysis and received *Safoof Tudri Zard* at a dose of 5 g twice daily with milk for 30 days. The efficacy of the intervention was assessed using objective parameters, including infant weight and volume of supplemental milk, as well as subjective parameters such as breast fullness, contralateral milk ejection, and infant satisfaction with breastfeeding. In the Unani system of medicine, *Qillat-e-Laban* is considered a condition of inadequate breast-milk production and may be associated with disturbances of *Mizaj*, weakness of *Quwwat-e-Hazima*, poor nutrition,

physical weakness, psychological stress, excessive loss of bodily fluids, disorders of the mammary glands, and inadequate breastfeeding or milk removal. Management therefore emphasizes *Islah-e-Mizaj*, strengthening the mother, improvement of digestion and nutrition, and promotion of milk secretion through *Moallid-e-Laban* drugs. *Tudri Zard* is traditionally described as *Moallid-e-Laban/Mudir-e-Laban* and is therefore considered appropriate for evaluation in this condition.

The study population showed variation in *Mizaj*. *Saudawi* temperament was the most frequently observed, accounting for 46.7% of cases, followed by *Balghami* (30.0%); *Safrawi* (13.3%); and *Damwi* (10.0%). Thus, *Saudawi* and *Balghami* temperaments together constituted 76.7% of the participants. This distribution provides an important descriptive observation regarding the temperamental profile of the study population; however, the present study design does not establish a causal relationship between *Mizaj* and response to treatment.

A progressive improvement was observed in the objective outcome of infant weight. The mean infant weight increased from 2650.0 ± 433.71 g at baseline to 3023.33 ± 474.66 g on Day 15 and 3416.67 ± 559.61 g on Day 30. The differences between baseline and Day 15 and between baseline and Day 30 were highly significant ($p = 0.001$). This increase in infant weight occurred alongside improvement in the other measures of lactation, suggesting an overall improvement in breastfeeding-related outcomes during the treatment period.

The volume of supplemental milk showed a marked progressive reduction during the study. Mean supplemental milk intake decreased from 269.0 ± 67.6 ml/day at baseline to 172.3 ± 74.9 ml/day on Day 15 and 90.0 ± 80.9 ml/day on Day 30. The mean reduction from Day 0 to Day 30 was 179.0 ml/day, and the differences between baseline and subsequent visits were highly significant ($p = 0.001$). Reduction in supplemental feeding was one of the primary outcomes of the study and therefore represents an important finding in relation to the intended therapeutic effect.

The subjective assessment of breast fullness also demonstrated progressive improvement. At baseline, 93.3% of mothers reported dissatisfaction with breast fullness before feeding, whereas by Day 30, 60.0% reported satisfaction and none remained unsatisfied or very unsatisfied. The change from baseline to Day 15 and Day 30 was statistically highly

significant ($p = 0.001$). This improvement in maternal perception was consistent with the observed reduction in supplemental milk requirement.

A similar pattern was observed for contralateral milk ejection during feeding. At baseline, 70.0% of mothers were dissatisfied with contralateral milk flow, whereas by Day 30, 60.0% reported satisfaction, including 13.3% who were highly satisfied. The difference between baseline and Day 15 and between baseline and Day 30 was highly significant ($p = 0.001$). These findings indicate an improvement in the subjective perception of milk ejection during breastfeeding over the treatment period.

Infant satisfaction with breastfeeding also improved progressively. At baseline, 46.6% of mothers reported that their infants were dissatisfied with breastfeeding and no participant reported satisfaction. By Day 30, 73.3% reported satisfaction, including 30.0% who reported that their infants were highly satisfied. Only 3.3% remained dissatisfied. The pair-wise comparison demonstrated a highly significant improvement ($p = 0.001$). This finding, together with the increase in infant weight and reduction in supplemental milk intake, indicates an overall improvement in breastfeeding-related outcomes during the study period.

The findings of the present study are consistent with the traditional Unani description of *Tudri Zard* as a *Moallid-e-Laban/Mudir-e-Laban* drug. The drug is traditionally considered to support milk formation and secretion and is also described as a *Muqawwi*, suggesting a strengthening action. Its traditional use in *Qillat-e-Laban* provided the rationale for evaluating its clinical effect in lactating women with inadequate milk production.

The study also needs to be interpreted in the context of the established management principles of lactation insufficiency. Adequate latch, frequent breastfeeding, effective breast emptying, appropriate nutrition, hydration, and sufficient rest are important components of management. The study did not permit concomitant lactation treatments, thereby reducing the possibility of simultaneous use of other lactation-enhancing medicines. Nevertheless, because the study was open-label and single-arm, improvement cannot be attributed exclusively to *Tudri Zard* with certainty. An additional important finding was the absence of adverse drug reactions during or after the 30-day treatment period. This observation suggests that *Tudri Zard* was well tolerated within the study population and treatment duration. However, the relatively small sample size, short follow-up period, and absence of a control group limit the strength of conclusions regarding comparative efficacy and long-term safety.

Overall, the study demonstrated statistically significant improvement in both objective and subjective parameters of lactation following administration of *Tudri Zard* for 30 days. The increase in infant weight, reduction in supplemental milk requirement, improvement in breast fullness and contralateral milk ejection, and greater infant satisfaction with breastfeeding collectively support the traditional Unani use of *Tudri Zard* as a potential galactagogue in *Qillat-e-Laban*. However, larger controlled clinical studies are required to confirm these findings and to establish the efficacy and safety of *Tudri Zard* more conclusively.

CONCLUSION

The present clinical study demonstrated that *Tudri Zard* (*Lepidium iberis*) may be effective in the management of *Qillat-e-Laban* (hypogalactorrhoea). Administration of *Safoof Tudri Zard* at a dose of 5 g twice daily for 30 days was associated with a significant increase in infant weight and a significant reduction in the requirement for supplemental milk. Significant improvement was also observed in subjective parameters, including breast fullness, contralateral milk ejection, and infant satisfaction with breastfeeding. The treatment was well tolerated, and no adverse drug reactions were reported during the study period. These findings support the traditional Unani description of *Tudri Zard* as a *Moallid-e-Laban* (galactagogue) and suggest its potential usefulness in lactation insufficiency. However, the study was limited by its small sample size, short duration, and single-arm open-label design. Therefore, larger, randomized, controlled clinical studies with longer follow-up are recommended to establish the efficacy, safety, and clinical applicability of *Tudri Zard* in *Qillat-e-Laban*.

REFERENCES

1. Zaidi, Z. (2021). Use of a classical Unani formulation in *Qillat-e-Laban* (hypogalactorrhoea). *World Journal of Pharmaceutical Research*, 10(7): 416–422. <https://doi.org/10.20959/wjpr20217-20775>
2. Gupta S. the editor. *The Short Textbook of Pediatrics*. New Delhi: Jaypee Brothers, 2004; p.113-7.
3. Weimer JP. *The Economic Benefits of Breastfeeding: A Review and Analysis*. Food Assistance and Nutrition Research Report No. 13. Washington (DC): U.S. Department of Agriculture, Economic Research Service; 2001. Available from: <https://doi.org/10.22004/ag.econ.33813>doi: 10.22004/ag.econ.33813.

4. Desai P, Malhotra N, Shah D, the editor. Principles and Practice of Obstetrics and Gynecology for Postgraduates. 3rd ed. New Delhi: Jaypee Brothers, 2008; p.373-5.
5. Gupta A, Dadhich JP, Faridi MMA. Breastfeeding and complementary feeding as a public health intervention for child survival in India. *Indian J Pediatr*, 2010; 77(4): 413-418 <https://pubmed.ncbi.nlm.nih.gov/20458639/>
6. Taneja DK, Misra A, Mathur NB. Infant feeding—an evaluation of text and taught. *Indian J Pediatr*, 2005; 72(2): 127-129. doi:10.1007/BF02760696. <https://pubmed.ncbi.nlm.nih.gov/15758534/>
7. Marquis GS. Breastfeeding and its impact on child psychosocial and emotional development: comments on Woodward and Liberty, Greiner, Pérez-Escamilla, and Lawrence. In: Tremblay RE, Boivin M, Peters RDeV, editors. *Encyclopedia on Early Childhood Development* [Internet]. Montreal (QC): Centre of Excellence for Early Childhood Development; 2008 [cited 2026 Jul 17]. <https://www.child-encyclopedia.com/breastfeeding/according-experts/breastfeeding-and-its-impact-child-psychosocial-and-emotional>
8. Mathur GP, Pandey PK, Mathur S, Sharma S, Agnihotri M, Bhalia M, et al. Breastfeeding in Babies Delivered by Cesarean Section. *Indian J Pediatr*, 1993; 30: 1285-90.
9. Rasania SK, Singh SK, Pathi S, Bhalla S, Sachdev TR. Breast-feeding practices in a maternal and child health centre in Delhi. *Health Popul Perspect Issues*, 2003; 26(3): 110115. https://www.researchgate.net/publication/286702166_Breast-feeding_practices_in_a_maternal_and_child_health_centre_in_Delhi
10. Parr RM. Trace elements in human milk. *IAEA Bull*, 1983; 25(2): 7-15. <https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull25-2/25205880715.pdf>
11. Singh G, Dasgupta E. Effect of antenatal expression of breast milk at term to improve lactational performance: a prospective study. *J Obstet Gynaecol India*, 2009; 59(4): 308-311. <https://jogi.co.in/storage/files/effect-of-antenatal-expression-of-breast-milk-at-term-to-improve-lactational-performance-a-prospective-study.pdf>
12. Mathur, G. P., Chitranshi, S., Mathur, S., Singh, S. B., & Bhalla, M. (1992). Lactation failure. *Indian Pediatrics*, 29(12): 1541–1544. <https://www.indianpediatrics.net/dec1992/1541.pdf> <https://pubmed.ncbi.nlm.nih.gov/1291500/>

13. Mathur, N. B., & Dhingra, D. (2009). Perceived breast milk insufficiency in mothers of neonates hospitalized in neonatal intensive care unit. *Indian Journal of Pediatrics*, 76(10): 1003–1006. <https://doi.org/10.1007/s12098-009-0204-0>
14. Segura-Millán, S., Dewey, K. G., & Pérez-Escamilla, R. (1994). Factors associated with perceived insufficient milk in a low-income urban population in Mexico. *The Journal of Nutrition*, 124(2): 202–212. <https://doi.org/10.1093/jn/124.2.202>The Journal of Nutrition article
15. Kent, J. C., Prime, D. K., & Garbin, C. P. (2012). Principles for maintaining or increasing breast milk production. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 41(1): 114–121. <https://doi.org/10.1111/j.1552-6909.2011.01313.x>
<https://doi.org/10.1111/j.1552-6909.2011.01313.x>
16. Razi ABZ. Kitabul Hawi. Vol. 7. New Delhi: Central Council of Research in Unani Medicine, 2001; p.9-13.
17. Jurjani AH. Tarjumae Zakheera Khawarzam Shahi (Urdu Trans: Khan HH). New Delhi: Idarae Kitabus Shifa, 2010; p.316-7.
18. Arzani MA. Tibbe Akbar. New Delhi: Idarae Kitabus Shifa; YNM: 362-364.
19. Sina 1. Al Qanoon fit Tib. (Trans: Kantoori GH.) Vol. 1. New Delhi: Idarae Kitabus Shifa, 2007; 367-9.
20. Arzani MA. Mizane Tib. New Delhi: Idarae Kitabus Shifa, 2002; p.128.
21. Lewis, P. J., Devenish, C., & Kahn, C. (1980). Controlled trial of metoclopramide in the initiation of Breastfeeding. *British Journal of Clinical Pharmacology*, 9(2): 217–219. <https://doi.org/10.1111/j.1365-2125.1980.tb05849.x>
22. Montgomery, A., & Wight, N. (2004, July 30). *Use of galactagogues in initiating or augmenting maternal milk supply* (Academy of Breastfeeding Medicine Clinical Protocol No. 9). Academy of Breastfeeding Medicine. (Sage Journals) <https://doi.org/10.1089/bfm.2011.9998> (pubmed.ncbi.nlm.nih.gov)
23. Gabay, M. P. (2002). Galactagogues: Medications that induce lactation. *Journal of Human Lactation*, 18(3): 274–279. <https://doi.org/10.1177/089033440201800311>DOI:<https://doi.org/10.1177/089033440201800311>
24. Zhou, H. Y., Li, L., Li, D., Li, X., Meng, H. J., Gao, X. M., Jiang, H. J., Cao, L. R., & Zhu, Y. L. (2009). Clinical observation on the treatment of post-cesarean hypogalactia by auricular points sticking-pressing. *Chinese Journal of Integrative Medicine*, 15(2):

- 117–120. <https://doi.org/10.1007/s11655-009-0117-9> (PubMed)DOI: <https://doi.org/10.1007/s11655-009-0117-9>
25. Brückner C. A survey on herbal galactagogues used in Europe. In: Schröder E, Balansard G, Cabalion P, Fleurentin J, Mazars G, editors. *Médicaments et aliments: l'approche ethnopharmacologique* (Proceedings of the 2nd European Symposium on Ethnopharmacology and the 11th International Conference on Ethnomedicine), 1993 Mar 24–27; Heidelberg, Germany. Paris: ORSTOM, 1993; p.140–145.: https://horizon.documentation.ird.fr/exl-doc/pleins_textes/pleins_textes_6/colloques2/010005528.pdf (pbsociety.org.pl)
26. Babu RV, Kim C, Kim S, Ahn C, Lee YI. Development of semi-interpenetrating carbohydrate polymeric hydrogels embedded with silver nanoparticles and their antibacterial activity against *Escherichia coli*. *Carbohydr Polym*, 2010; 81(2): 196–202. doi:10.1016/j.carbpol.2010.02.012DOI: <https://doi.org/10.1016/j.carbpol.2010.02.012>
27. Sharma S, Ramji S, Kumari S, Bapna JS. Randomized controlled trial of *Asparagus racemosus* (Shatavari) as a lactagogue in lactational inadequacy. *Indian Pediatr*, 1996; 33(8): 675–677. <https://www.indianpediatrics.net/aug1996/675.pdf>:<https://www.indianpediatrics.net/aug1996/675.pdf>
28. Gupta M, Shaw B. A double-blind randomized clinical trial for evaluation of galactagogue activity of *Asparagus racemosus* Willd. *Iran J Pharm Res*, 2011; 10(1): 167–172. https://ijpr.sbm.ac.ir/article_874.htmlarticlelink:https://ijpr.sbm.ac.ir/article_874.html
29. Swafford S, Berens P. Effect of fenugreek on breast milk production [abstract]. *Academy of Breastfeeding Medicine News and Views*, 2000; 6(3): ABM Galactagogues Annotated Bibliography (PDF).
30. Huggins K. *Fenugreek: One remedy for low milk production*. Rental Roundup, 1998; 15(1): 16–17. NCBI PMC review International Breastfeeding Journal article.