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Barg-e-Tulsi (*Ocimum sanctum* Linn.) in Unani Medicine: Bridging Classical Therapeutics with Contemporary Pharmacological Evidence

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Abstract

In the Unani System of Medicine (USM), Barg-e-Tulsi *(*Ocimum sanctum *Linn.), commonly known as Tulsi or Holy Basil, is a highly valued medicinal herb that has been extensively used for centuries in the prevention and treatment of various ailments. It occupies an important place in traditional Unani therapeutics due to its broad spectrum of medicinal properties and its effectiveness in managing respiratory, gastrointestinal, neurological, and infectious disorders. Classical Unani scholars described Tulsi as possessing several pharmacological actions, including Munaffis-e-Balgham (expectorant), which facilitates the expulsion of phlegm from the respiratory tract, Muqawwi Dimagh (brain tonic), which strengthens cognitive and nervous functions and Daf-e-Humma (antipyretic), which helps reduce fever and associated symptoms. In addition, it has been traditionally prescribed for cough, asthma, indigestion, headache, and febrile conditions. Recent scientific research has provided substantial evidence supporting many of these traditional claims. Phytochemical investigations have identified a variety of bioactive constituents in Tulsi, including eugenol, ursolic acid, Rosmarinic acid, flavonoids, and essential oils, which contribute to its therapeutic effects. Experimental and clinical studies have demonstrated that Tulsi exhibits significant anti-inflammatory, antioxidant, antimicrobial, immunomodulatory, adaptogenic, cardioprotective, and neuroprotective activities. These pharmacological properties not only validate its traditional uses but also suggest its potential role in the prevention and management of chronic diseases associated with oxidative stress, inflammation, and immune dysfunction. The growing body of scientific evidence highlights the importance of Tulsi as an evidence-based herbal medicine and supports its integration into contemporary healthcare practices. This review aims to examine the relationship between classical Unani concepts and modern scientific findings, emphasizing the therapeutic significance of Tulsi and its potential for future research, drug development, and integrative healthcare applications.*

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INTRODUCTION

Humoral theory and temperament (*Mizaj*) constitute the fundamental principles of traditional medical systems, particularly the Unani System of Medicine. According to Unani philosophy, health is maintained through the equilibrium of the four humors (*Akhlat*) – Dam (blood), Balgham (phlegm), Safra (yellow bile), and Sauda (black bile) – while disease results from their imbalance. Medicinal substances are prescribed based on their inherent temperament and their ability to restore

humoral balance. *Barg-e-Tulsi* (*Ocimum sanctum* Linn.), commonly known as Tulsi or Holy Basil, is classified as Haar Yabis (hot and dry) in temperament and is, therefore, widely employed in the treatment of disorders associated with excessive coldness and phlegm (*Barid Ratab* conditions) [1]. Its hot and dry qualities are believed to dissolve excessive phlegm, improve circulation, strengthen vital organs, and enhance the body's natural resistance against disease [1].

Prominent Unani scholars, such as Ibn Sina (Avicenna) and Zakariya Razi (Rhazes), described the therapeutic utility of Tulsi in the management of fever, respiratory ailments, neurological disorders, and digestive complaints. They recognized its actions as *Munaffis-e-Balgham* (expectorant), *Daf-e-Humma* (antipyretic), and *Muqawwi Dimagh* (brain tonic), making it a valuable remedy for cough, asthma, catarrhal conditions, headache, and febrile illnesses [2]. The herb was also traditionally recommended for strengthening the nervous system, improving mental alertness, and promoting overall well-being.

Modern pharmacological investigations have provided scientific evidence supporting many of these classical claims. Phytochemical studies have revealed the presence of numerous bioactive constituents, including eugenol, ursolic acid, Rosmarinic acid, linalool, Apigenin, and various flavonoids, which contribute to its therapeutic properties. Experimental and clinical studies have demonstrated that Tulsi possesses anti-inflammatory, antioxidant, antimicrobial, antiviral, immunomodulatory, adaptogenic, cardioprotective, hepatoprotective, and neuroprotective activities [3, 4] these pharmacological effects validate its traditional applications and suggest its potential as a multi-target therapeutic agent for both acute and chronic diseases. Furthermore, increasing scientific interest in Tulsi highlights its importance in integrative medicine, where traditional knowledge and modern biomedical research can be combined to develop safe, effective, and evidence-based healthcare interventions [5, 6].

METHODS

This review was conducted to evaluate the scientific evidence supporting the traditional and evidence supported uses of Barg-e-Tulsi (*Ocimum sanctum* Linn.) described in Unani medicine. A comprehensive literature search was performed using electronic databases including PubMed, Scopus, Web of Science, Google Scholar, and Science Direct.

Search Strategy

The search was conducted using combinations of the following keywords and Boolean operators: ("*Ocimum sanctum*" OR "Tulsi" OR "Holy Basil") AND ("Unani medicine" OR "traditional medicine") AND ("pharmacology" OR "phytochemistry" OR "therapeutic uses" OR "antioxidant" OR "anti-inflammatory" OR "immunomodulatory").

Literature published between January 2000, and March 2025 was considered. Classical Unani texts were also consulted to identify traditional indications and therapeutic concepts associated with Barg-e-Tulsi [7].

Inclusion Criteria

- Peer-reviewed research articles and review articles.
- Studies reporting pharmacological, phytochemical, toxicological, or therapeutic properties of *Ocimum sanctum*.
- Articles published in English.
- Classical Unani literature describing traditional uses of Barg-e-Tulsi [8].

Exclusion Criteria

- Non-English publications.
- Conference abstracts without full text.
- Duplicate publications.
- Studies lacking scientific relevance to the objectives of the review [9].

Study Selection

A comprehensive literature search was conducted across PubMed, Scopus, Web of Science, Google Scholar, and Science Direct databases. A total of 186 records were initially identified through database searching. After removal of duplicate records, 152 articles remained for title and abstract screening. Following screening, 74 full-text articles were assessed for eligibility. Articles that did not meet the inclusion criteria, including non-English publications, duplicate reports, conference abstracts, and studies lacking relevance to the objectives of this review, were excluded. Finally, 18 studies along with relevant classical Unani literature sources were included in the qualitative synthesis and evidence-based review [10].

Data Extraction and Synthesis

Information regarding phytochemical constituents, pharmacological activities, therapeutic applications, and correlations with Unani concepts was extracted and synthesized narratively. The findings were categorized according to major pharmacological actions and traditional Unani indications.

PHARMACOLOGICAL ACTIONS OF *BARG-E-TULSI* (*OCIMUM SANCTUM* LINN.)

Barg-e-Tulsi's rich phytochemical composition, which includes flavonoids, Ursolic acid, eugenol, and Rosmarinic acid, gives it a broad pharmacological profile. These components support its extensive therapeutic usage in Unani medicine by acting on several cellular processes [2, 3].

- *Anti-Inflammatory Activity:* Strong anti-inflammatory properties of Tulsi are demonstrated by: decreasing pro-inflammatory cytokines including TNF-α and IL-6 and blocking the lipoxygenase and cyclooxygenase (COX) pathways. This confirms that it can be used to treat inflammatory disorders as indicated in Unani medicine [4, 5].
- *Antioxidant Activity:* Tulsi has potent antioxidant properties. Scavenging free radicals. By boosting antioxidant enzymes, like catalase and superoxide dismutase, these characteristics aid in the prevention of illnesses linked to oxidative stress [3, 6].
- *Antimicrobial Activity:* Tulsi has antibacterial action that is broad-spectrum. Antimicrobial (such as *E. coli* and *Staphylococcus aureus*). antifungal and antiviral properties. This validates its conventional application in infectious illnesses [7, 8].
- *Immunomodulatory Activity:* Tulsi's function as a general tonic is explained by the fact that it stimulates T-cell-mediated immunity and increases antibody formation (Muqawwi Badan) [8, 9].
- *Adaptogenic (Anti-Stress) Activity:* Tulsi acts as an Adaptogen, reduces cortisol levels, improves stress tolerance, this aligns with the In line with the Unani idea of preserving humoral equilibrium, Tulsi functions as an Adaptogen, lowers cortisol levels, and increases stress tolerance Unani concept of maintaining humoral balance [3, 10].
- *Respiratory (Bronchodilator & Expectorant) Action:* Tulsi is used as Munaffis-e-Balgham in respiratory illnesses because it relaxes bronchial smooth muscles, promotes mucus evacuation, and lowers airway inflammation [11].
- *Antipyretic Activity:* Tulsi's use as Daf-e-Humma is justified because it lowers fever by regulating inflammatory mediators and preventing prostaglandin formation [4].
- *Gastro protective Activity:* Tulsi exhibits anti-ulcer properties, lowers gastric acid production, and protects the stomach mucosa. These results validate its use to gastrointestinal problems [12].
- *Cardioprotective Activity:* Tulsi lessens oxidative stress in heart tissues and decreases lipids and cholesterol. This confirms that it has cardioprotective properties [13].
- *Antidiabetic Activity:* Tulsi enhances insulin secretion, improves glucose metabolism. It is useful in managing diabetes mellitus [13, 14].
- *Neuroprotective Activity:* Tulsi improves memory and cognition, reduces anxiety and depression, protects neurons from oxidative damage. This supports its traditional use as *Muqawwi Dimagh* [10, 11].
- *Analgesic Activity:* Tulsi exhibits analgesic effects by acting on central and peripheral pain pathways, reducing inflammation-associated pain. This supports its use in pain-related conditions [4].

THERAPEUTIC USES OF *BARG-E-TULSI* (*OCIMUM SANCTUM* LINN.)

Ocimum sanctum leaves, or Barg-e-Tulsi, are widely utilized in Unani and other traditional medical systems to treat a variety of illnesses. Many of these applications have been confirmed by contemporary scientific research because of its various pharmacological characteristics, including antibacterial, anti-inflammatory, adaptogenic, and immunomodulatory effects [2, 15].

- *Respiratory Disorders:* Many people use Tulsi to treat ailments like asthma, bronchitis, colds, and coughs. It facilitates mucus clearance and eases breathing by acting as an expectorant and bronchodilator. Additionally, it works well against respiratory infections [15, 16].
- *Fever (Antipyretic Use):* Fever, including malarial fever, has long been treated with Tulsi leaves. Its capacity to alter inflammatory mediators and lower body temperature is what gives it its antipyretic effect [16, 17].
- *Gastrointestinal Disorders:* For digestive issues such indigestion, diarrhea, dysentery, and stomach ulcers, Tulsi is helpful. It lessens gastric acidity, enhances digestion, and shields the stomach's mucosal barrier [15, 18].
- *Infectious Diseases:* Tulsi is used to treat bacterial, viral, and fungal diseases because of its potent antibacterial properties. Additionally, it is used to treat bug bites, wounds, and skin diseases [15, 19].
- *Cardiovascular Disorders:* By lowering blood pressure, cholesterol, and oxidative stress on cardiac tissues, Tulsi contributes to the maintenance of cardiovascular health [2, 19].
- *Diabetes Mellitus:* Tulsi is used to treat diabetes because of its strong hypoglycemic properties. It increases insulin activity and glucose metabolism [19].
- *Nervous System Disorders:* In Unani medicine, Tulsi is utilized as a brain tonic (Muqawwi Dimagh). It enhances memory and cognitive abilities while lowering stress, anxiety, and depression [2].
- *Skin Disorders:* Acne, eczema, ringworm, and wounds are among the dermatological diseases for which Tulsi is used. Healing is aided by its anti-inflammatory and antibacterial qualities [15].
- *Anti-Inflammatory and Analgesic Uses:* Tulsi's anti-inflammatory and analgesic qualities are used to reduce pain and inflammation in ailments like arthritis and joint diseases [16, 18].
- *Immunity Booster and General Tonic:* Tulsi boosts resistance to illnesses and strengthens the immune system. It is frequently used as a preventative medication and general health tonic [2].
- *Anticancer and Chemo Protective Uses:* Tulsi's antioxidant and free radical scavenging characteristics may give it Chemoprotective and anticancer effects, according to recent research [19].
- *Hepatoprotective Uses:* Tulsi protects the liver against toxins and improves liver function, making it useful in hepatic disorders (Tables 1 and 2) [15, 18].

SCIENTIFIC BASIS FOR THE INNOVATIVE USES OF *BARG-E-TULSI* (*OCIMUM SANCTUM* LINN.)

Empirical observations are the foundation of the creative applications of Barg-e-Tulsi that Unani scholars have outlined. By discovering its bioactive constituents and pharmacological activities, contemporary scientific study has verified many of these uses. The rational foundation of Unani's therapeutic applications is highlighted by the relationship between its concepts and modern biomedical science (Tables 3 and 4).

There is substantial scientific evidence to validate the creative applications of Barg-e-Tulsi as described in Unani medicine. Because of its varied phytochemical makeup, which produces multi-target pharmacological activities, it is effective against a variety of illnesses.

Tulsi thus acts as a link between traditional knowledge and contemporary medicine, highlighting the significance of combining Unani principles with current scientific investigations (Table 5 and Figure 1).

Table 1. Pharmacological actions of Barg-e-Tulsi L.

S.N.	Pharmacological action	Description/mechanism	Therapeutic relevance (Unani concept)	References
1	Anti-inflammatory	Inhibits COX and LOX pathways; reduces cytokines (TNF-α, IL-6)	Used in *Warm-e-Mafasil* (inflammation, arthritis).	[1, 3]
2	Antioxidant	Scavenges free radicals; enhances SOD, catalase activity	Prevents oxidative stress and aging disorders.	[1, 2]
3	Antimicrobial	Active against bacteria, viruses, and fungi	Used in infections and epidemics.	[1, 4]
4	Immunomodulatory	Enhances humoral and cell-mediated immunity	Acts as *Muqawwi Badan* (general tonic).	[4, 5]
5	Adaptogenic (Anti-stress)	Reduces cortisol; improves stress tolerance	Maintains *Tadeel-e-Akhlat* (humoral balance).	[2, 6]
6	Bronchodilator & Expectorant	Relaxes bronchial muscles; clears mucus	*Munaffis-e-Balgham* (respiratory disorders).	[7]
7	Antipyretic	Inhibits prostaglandin synthesis; reduces fever	*Daf-e-Humma* (fever management).	[3]
8	Gastro protective	Reduces gastric acid; protects mucosa	Used in indigestion, ulcers.	[8]
9	Cardioprotective	Lowers cholesterol; reduces oxidative stress	Acts as heart tonic (*Muqawwi Qalb*).	[5, 9]
10	Antidiabetic	Improves insulin secretion and glucose metabolism	Used in diabetes management.	[9, 10]
11	Neuroprotective	Enhances cognition; reduces anxiety and depression	*Muqawwi Dimagh* (brain tonic).	[2, 6]
12	Analgesic	Reduces pain via central and peripheral mechanisms	Used in pain and inflammatory conditions.	[3]
13	Hepatoprotective	Protects liver from toxins; improves liver function	Used in hepatic disorders.	[8]
14	Anticancer	Induces apoptosis; antioxidant effect	Used in chemoprevention.	[9]

Table 2. Therapeutic uses of Barg-e-Tulsi.

S.N.	Ailment/disease	Therapeutic use	Mechanism/pharmacological basis	Unani description	References
1	Respiratory disorders (cough, asthma, bronchitis)	Expectorant, relieves breathlessness	Bronchodilator, anti-inflammatory, antimicrobial	*Munaffis-e-Balgham*	[2, 3]
2	Fever (including malarial fever)	Reduces body temperature	Antipyretic, inhibits prostaglandins	*Daf-e-Humma*	[4]
3	Gastrointestinal disorders (indigestion, ulcers)	Improves digestion, relieves acidity	Anti-ulcer, gastro protective	*Muqawwi Meda*	[4]
4	Infectious diseases	Treats bacterial, viral, fungal infections	Broad-spectrum antimicrobial	*Daf-e-Adviya Samoomiya*	[2, 20]
5	Cardiovascular disorders	Reduces cholesterol, supports heart health	Hypolipidemic, antioxidant	*Muqawwi Qalb*	[19]
6	Diabetes mellitus	Controls blood glucose levels	Hypoglycemic, improves insulin function	–	[14, 19]
7	Nervous disorders (stress, anxiety)	Improves mental health and cognition	Adaptogenic, neuroprotective	*Muqawwi Dimagh*	[3, 10]
8	Skin disorders (acne, wounds, infections)	Promotes wound healing, treats infections	Antimicrobial, anti-inflammatory	–	[2, 20]
9	Inflammatory conditions (arthritis, pain)	Reduces pain and swelling	Anti-inflammatory, analgesic	–	[4]
10	Immunity enhancement	Boosts body resistance	Immunomodulatory	*Muqawwi Badan*	[8, 20]
11	Liver disorders	Protects liver, improves function	Hepatoprotective, antioxidant	–	[12]
12	Cancer prevention	Reduces risk of cancer	Antioxidant, induces apoptosis	–	[19]
13	Insect bites & poisoning	Neutralizes toxins, reduces inflammation	Detoxifying, anti-inflammatory	*Daf-e-Samoom*	[2, 12]

Table 3. Innovative uses of Barg-e-tulsi.

S.N.	Basis	Scientific explanation	References
1	*Phytochemical Basis:* The leaves of Tulsi contain several active constituents such as: Eugenol Ursolic acid Rosmarinic acid Flavonoids and tannins	These compounds possess antioxidant, Anti-inflammatory, antimicrobial, and immunomodulatory properties, forming the biochemical basis of its therapeutic effects.	[1, 2, 6, 18]
2	*Basis of Use in Respiratory Disorders:* Unani scholars used Barg-e-Tulsi as *Munaffis-e-Balgham* (expectorant).	Bronchodilator activity relaxes airway smooth muscles. Anti-inflammatory action reduces airway inflammation. Antimicrobial effect combats respiratory pathogens.	[2, 3, 5]
3	*Basis of Antipyretic Use:* Barg-e-Tulsi is used as *Daf-e-Humma* (fever reducer).	Inhibits prostaglandin synthesis. Modulates inflammatory cytokines.	[3]
4	*Basis of Gastrointestinal Uses* Barg-e-Tulsi is prescribed for indigestion and ulcers.	Reduces gastric acid secretion. Enhances mucosal defense. Exhibits antimicrobial activity against gut pathogens.	[11]
5	*Basis of Nervous System Effects* Unani scholars considered Barg-e-Tulsi as *Muqawwi Dimagh* (brain tonic).	Adaptogenic effect reduces stress hormones. Neuroprotective action prevents neuronal damage. Improves cognition and memory.	[10]
6	*Basis of Cardiovascular and Metabolic Uses:* Barg-e-Tulsi is used as a heart tonic and blood purifier.	Reduces cholesterol and triglycerides. Exhibits antioxidant activity protecting cardiac tissue. Improves glucose metabolism.	[13]
7	*Basis of Antimicrobial and Immunomodulatory Use:* Barg-e-Tulsi is used in infections and epidemics. This explains its traditional use in infectious diseases	Broad-spectrum antibacterial, antiviral, and antifungal activity. Enhances immune response by stimulating immune cells.	[8]
8	*Basis of Anti-inflammatory and Analgesic Uses:* Barg-e-Tulsi is used for pain and inflammation.	*Scientific explanation:* Inhibits inflammatory mediators. Reduces pain via central and peripheral mechanisms.	[4, 5]
9	*Basis of Hepatoprotective and Detoxifying Uses:* Tulsi is used in liver disorders and poisoning.	*Scientific explanation:* Antioxidant activity protects liver cells. Enhances detoxification pathways.	[5]
10	*Basis of Anticancer and Chemoprotective Uses:* Barg-e-Tulsi is used for chronic diseases including tumors.	*Scientific explanation:* Induces apoptosis in cancer cells. Prevents DNA damage through antioxidant action.	[7]

Table 4. Conceptual correlation: Unani vs modern science.

S.N.	Unani concept	Scientific equivalent	References
1	Mizaj (temperament)	Pharmacodynamics profile.	[19]
2	Akhlat (humors)	Body fluid balance metabolism.	[19]
3	Tadeel-e-Akhlat	Homeostasis.	[20]
4	Muqawwi (tonic)	Adaptogen immunomodulator.	[21, 22]

Reported Pharmacologically Active Phyto-Constituents of *Barg-e-Tulsi* (*Ocimum sanctum* Linn.)

Numerous physiologically active phytoconstituents are responsible for Barg-e-Tulsi's therapeutic adaptability.

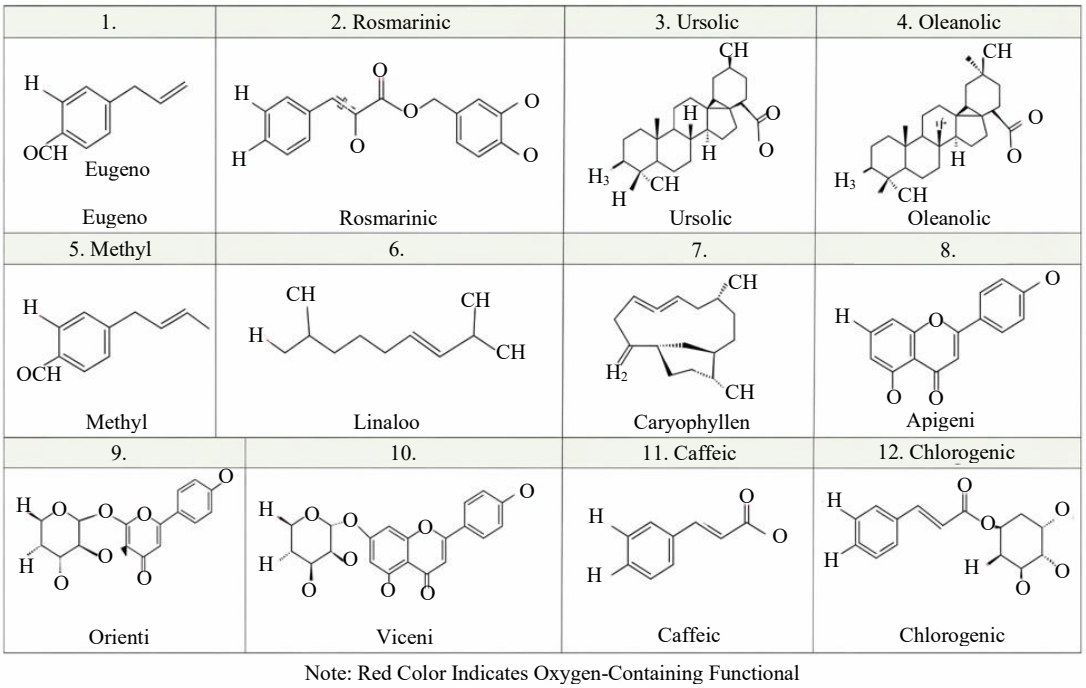
Table 5. Active Phyto-constituents of Barg-e-Tulsi and their action.

S.N.	Compound name and active constituent	Action	References
1	*Phenolic Compounds:* Eugenol Rosmarinic acid Caffeic acid Chlorogenic acid Phenolics are major contributors to antioxidant and anti-inflammatory activities. These compounds protect against oxidative stress and chronic diseases	Anti-inflammatory, analgesic, antimicrobial Antioxidant, antiviral, anti-inflammatory Antioxidant, immunomodulatory Antidiabetic, hepatoprotective	[2, 4, 6, 13]
2	*Flavonoids:* 1. Orientin 2. Vicenin 3. Apigenin 4. Luteolin Flavonoids are major contributors to the antioxidant, anti-inflammatory, cardioprotective, hepatoprotective, and neuroprotective activities of Barg-e-Tulsi. *Summary Statement:* Flavonoids present in *Ocimum sanctum* contribute significantly to its antioxidant, anti-inflammatory, neuroprotective, hepatoprotective, cardioprotective, and anticancer activities. These compounds play an important role in the therapeutic efficacy of Barg-e-Tulsi and support its traditional use in Unani medicine.	Anti-oxidant, Radio protective, Anti-inflammatory, neuroprotective. Anti-oxidant, Hepatoprotective, cardioprotective, Radio protective. Anticancer, neuroprotective, anti-inflammatory, antioxidant, anxiolytic. Anti-inflammatory, anti-oxidant, antimicrobial, neuroprotective	[3, 8, 10]
3	*Terpenoids and Essential Oil Constituents:* Linalool Caryophyllene Methyl eugenol These compounds are mainly present in volatile oil fractions, Responsible for Tulsi's aroma and respiratory benefits	Sedative, antimicrobial. Anti-inflammatory, analgesic, Antimicrobial, insecticidal	[4–6]
4	*Triterpenoids:* Ursolic acid Oleanolic acid – These compounds exhibit strong pharmacological actions, Important for metabolic and inflammatory disorders	Anti-inflammatory, anticancer, hepatoprotective Antidiabetic, cardioprotective	[3, 6, 9, 13]
5	*Glycosides and Saponins:* Various glycosides and saponins are present Glycoside and saponins present in Tulsi poses immuno modulator activity	They enhance immune function and contribute to cardioprotective effects	[6]
6	*Other Bioactive Compounds:* Tannins Alkaloids	Astringent, antimicrobial, Physiological regulatory effects	[3]
7	*Vitamins and Minerals:* Tulsi leaves contain: Vitamin A, Vitamin C Calcium, iron, zinc	These nutrients support immunity and overall health	[3]

Table 6. Overall therapeutic efficacy [3].

Compound	Class	Major pharmacological activity	References
Eugenol	Phenolic	Anti-inflammatory, analgesic.	[3]
Rosmarinic acid	Phenolic	Antioxidant, antiviral.	[2]
Ursolic acid	Tri-terpenoids	Anti-inflammatory, anticancer.	[3, 5]
Oleanolic acid	Tri-terpenoids	Antidiabetic, cardio protective.	[8, 13]
Linalool	Terpenoids	Sedative, antimicrobial.	[14]
Caryophyllene	Terpenoids	Anti-inflammatory.	[3]
Orientin	Flavonoid	Antioxidant, radio protective.	[9]
Vicenin	Flavonoid	Hepatoprotective.	[15]
Apigenin	Flavonoid	Anticancer, neuroprotective.	[10, 18]
Chlorogenic acid	Phenolic	Antidiabetic.	[8]

These substances are from several chemical classes and have a variety of pharmacological properties, including adaptogenic, anti-inflammatory, antibacterial, and antioxidant actions (Table 6) [26].



Note: Red Color Indicates Oxygen-Containing Functional

Figure 1. Chemical structure of phytoconstituent of Barg-e-Tulsi (*Ocimum sanctum* Linn.) [21–25].

DISCUSSION

The present review demonstrates substantial concordance between traditional Unani descriptions of Barg-e-Tulsi (*Ocimum sanctum* Linn.) and contemporary pharmacological evidence. Classical Unani physicians described the herb as possessing actions such as Munaffis-e-Balgham, Muqawwi Dimagh, Muqawwi Badan, and Daf-e-Humma. Modern investigations have shown that these traditional attributes may be explained by the plant's anti-inflammatory, antimicrobial, immunomodulatory, adaptogenic, neuroprotective, and antipyretic properties.

The diverse phytochemical profile of Barg-e-Tulsi, particularly the presence of eugenol, ursolic acid, Rosmarinic acid, flavonoids, and terpenoids, contributes to its multi-target therapeutic actions. These findings support the holistic therapeutic approach emphasized in Unani medicine.

However, several limitations should be acknowledged. Most available evidence is derived from experimental, animal, or in vitro studies, while high-quality randomized clinical trials remain limited. Variations in plant varieties, extraction methods, dosage forms, and study designs also restrict direct comparison among studies. Therefore, additional well-designed clinical investigations are required to establish standardized therapeutic recommendations.

Despite these limitations, the accumulated evidence supports the continued exploration of Barg-e-Tulsi as a scientifically validated medicinal plant with significant relevance to integrative and evidence-based healthcare systems.

CONCLUSION

Barg-e-Tulsi (*Ocimum sanctum Linn.*) is an outstanding illustration of how traditional Unani knowledge and contemporary scientific confirmation can coexist. Based on the ideas of Mizaj and Tadeel-e-Akhlat, classical Unani scholars outlined its various medicinal uses for infectious, pulmonary,

gastrointestinal, and neurological conditions. Its rich phytochemical composition, which includes eugenol, Ursolic acid, Rosmarinic acid, flavonoids, and other bioactive chemicals, has been proven by modern research to support these uses.

Tulsi has a variety of biological actions, including anti-inflammatory, antioxidant, antibacterial, adaptogenic, immunomodulatory, cardioprotective, and neuroprotective properties, according to pharmacological research. Its "innovative uses" in Unani medicine have a scientific foundation, thanks to these multi-target activities, which also account for its effectiveness in treating a variety of illnesses.

Additionally, Tulsi supports the holistic approach of Unani therapy by functioning as a systemic regulator as opposed to single-target medication. Its function as a Muqawwi (tonic) and preventative agent is highlighted by its capacity to restore physiological balance (homeostasis), which is consistent with the Unani idea of humoral equilibrium.

To sum up, Barg-e-Tulsi is a medicinal plant with substantial therapeutic potential that has been verified by science. Incorporating ancient Unani knowledge with contemporary pharmacological research enhances its therapeutic relevance and creates new opportunities for evidence-based herbal therapy and medication development.

Limitation

Although substantial pharmacological evidence supports many traditional uses of Barg-e-Tulsi, further standardized clinical trials are required to confirm efficacy, establish optimal dosage regimens, and strengthen its integration into evidence-based healthcare practices.

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Conflict of Interest

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Ethical Clearance

As this work is based exclusively on a review and analysis of published literature and does not involve human participants, animals, clinical specimens, or identifiable personal data, ethical approval or clearance from an Institutional Ethics Committee was not required.

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