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Therapeutic Potential of Mazu (Quercus Infectoria) in Unani System of Medicine: A Comprehensive Review

Dr Saba Anjum Quadri*, Prof. Aisha Anjum. A, Dr Shaik Sameena Zameer*, Dr Sara Mujeer*, Dr Shafiya Roohi***

P.G. Scholars*, Professor & HOD **, Dept. of Ilmul Qabalat wa Amraze Niswan (OBG), Govt. Unani Medical College & Hospital, Bengaluru, India.

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ABSTRACT

Background: *Mazū* (*Quercus infectoria* Olivier) is a well-established Unani drug traditionally employed in the management of various gynaecological disorders, particularly *Kathrat-i-Ḥayḍ* (heavy menstrual bleeding). Owing to its potent *Qābiḍ* (astringent) and *Hābis-i-Dam* (haemostatic) properties, *Mazū* has been widely prescribed both as a single drug and as an essential component of several Unani compound formulations aimed at controlling excessive uterine bleeding.**Objective:** This review aims to critically appraise the traditional Unani concepts related to the use of Mazū in heavy menstrual bleeding and to evaluate the available scientific evidence supporting its pharmacological activities.**Methods:** A comprehensive literature search was conducted using electronic databases such as PubMed, Google Scholar, ScienceDirect, and SCOPUS, employing keywords including "Mazū," "*Quercus infectoria*," "oak galls," "menorrhagia," "heavy menstrual bleeding," "phytochemical studies," and "pharmacological studies." Classical Unani texts—*Muḥīt-e-Aʿẓam*, *Khazāʾin-ul-Advia*, *Makhzan-ul-Mufradāt*, and *Jāmiʿ-ul-Advia wa-al-Aghziya*—were reviewed to document traditional indications and therapeutic rationale. Additional information was sourced from the *Unani Pharmacopoeia of India*, *Standardisation of Unani Drugs*, and relevant ethnobotanical and research publications.**Results:** Classical Unani literature consistently recognises *Mazū* as an effective remedy for excessive uterine bleeding due to its strong astringent, haemostatic, and uterine-tonic actions. Modern pharmacological studies report antioxidant, anti-inflammatory, antimicrobial, haemostatic, and tissue-contracting activities, supporting its traditional use.**Conclusion:** *Mazū* holds a significant position in Unani gynaecological therapeutics for heavy menstrual bleeding. However, well-designed experimental and clinical studies integrating Unani principles with modern scientific methods are needed to further validate its efficacy and safety.

Keywords:*Mazū*; *Quercus infectoria* Olivier; *Kathrat-i-Ḥayḍ*; Heavy menstrual bleeding; Unani medicine, Pharmacological activity

BOTANICAL NAME: *Quercus infectoria* oliv[1,2,3,4]

INTRODUCTION:

Quercus infectoria oliv, commonly known as *mazoo* or aleppo oak, galls in local speech mean swelling, kobak, growth, or gallnut. Quercus sp. (Fagaceae family) is a forest tree with over 200 species worldwide, dispersed throughout several geographical zones of the Northern Hemisphere.[5] The morphology of plants in this genus (Quercus sp.) varies depending on the species. Some species of Quercus are massive trees, while others are little trees or shrubs.[5]

One important member of this genus is *Quercus*, which has two important medicinal parts, including galls and fruit hulls, with traditional names of Mazo and *Jaft-e-Baloot,* respectively. Mazo or round-shaped galls are formed on leaves, buds and young branches of *Quercus* species, especially on different parts of *Quercus infectoria* oliv.[4,5]

Jaft-e-Baloot is the thin, dark brown colour of the inner woody hulls of *Quercus infectoria* fruits. Indeed, after picking the *Quercus infectoria* olives in the fall and removing their shells, the second skin of the fruits is known as *Jaft-e-Baloot.*[5,6]

The galls, known as 'manjakani' in Malaysia and 'majuphal' or 'machakai' in India, have been used for ages as a traditional medicine to treat various ailments. galls have also been used in Thai traditional medicine for treating stomach ache, while in India, the galls extract has been used for oral care as mouthwash, dental powders and for the treatment of toothache. The galls are rich with tannins,

the phenolic compounds, which are thought to have an astringent effect and have also been used in topical therapies for skin lesions and inflammation in Chinese medicinal herbs.[5,6,7]

Materials and Methods

A comprehensive literature search was conducted using electronic databases including PubMed, Google Scholar, ScienceDirect, and SCOPUS. Relevant publications were retrieved using keywords such as *"Māzū," "Quercus infectoria," "oak galls," "majuphal," "phytochemical studies,"* and *"pharmacological studies."* Traditional descriptions and therapeutic uses were explored through classical Unani literature, including *Muḥīṭ-e-Aʿẓam, Khazāʾin-ul-Advia, Makhzan-ul-Mufradāt, Bustān-ul-Mufradāt, Mufradāt-e-ʿAzīzī,* and *Jāmiʿ-ul-Advia wa-al-Aghziya.* Ethnobotanical and drug-standardisation information was consulted from authoritative sources such as *Indian Materia Medica, The Unani Pharmacopoeia of India,* and *Standardisation of Unani Drugs,* along with relevant Urdu and English research reports and original scientific articles on *Quercus infectoria.*

SCIENTIFIC CLASSIFICATION[1,3,8,9]

Kingdom	Plantae (Plants)
Division/Phylum:	Angiosperm
Class	Eudicots
Order	Fagales
Family	Fagaceae
Genus	*Quercus*
Species	*Infectoria*

Vernacular names[1,3,8,9]

English	Oak galls, turkey galls, dyer's oak, Aleppo galls
Arabic	Ufas
Hindi	*Mazu*, mazuphal
Gujarati	Mayaphal
Bengali	Majuphal
Telugu	Machikaya
Kannada	Machikai

Habitat

The tree that produces oak galls, commonly traded commercially, is native to regions including Greece, Asia Minor, Syria, Persia, Turkey, and Cyprus. It is also found in the forests of Kumaun, Garhwal, and Bijnor. The galls from this tree are imported into India. Originating in Iran, Iraq, and Turkey, various Quercus species are now widely distributed, particularly across Asia Minor, Europe, and North Africa.[3,6]

Images:

***Quercus infectoria* oliv**

***MAHIYAT:* (Botanical Description)**

The crude drug consists of hard, globose galls with a horny external surface, measuring approximately 1.4–2.3 cm in length and 1–1.5 cm in diameter. Externally, they range from greyish-brown to brownish-black, while the interior is dark brown to buff. The surface is smooth but bears numerous horny projections, imparting a rough texture and unpleasant odour. Microscopically, a broad zone of radially elongated parenchyma cells is present between the upper and lower epidermis, with vascular strands distributed throughout. Radially elongated sclereids extend to the lower epidermis.[9,10,11]

Blue (black) galls are hard, heavy, globular to pear-shaped, unperforated structures collected before insect emergence. They measure about ½–¾ inch in diameter, sink in water, and exhibit a tuberculated upper surface with 8–12 blunt projections, while the lower half is smooth with a basal stalk. Externally bluish-green, they appear yellowish to brownish-white internally and show a central cavity that may contain larval remnants. These galls are odourless but strongly bitter, astringent, slightly acidic, and mildly sweet.[3,9,10,11]

White galls, formed after insect exit, are paler, larger, lighter, perforated, and less astringent, and are therefore considered inferior. Olive-green galls are preferred, as tannins in white galls may undergo partial degradation.[3,9,10,11]

Histologically, the gall wall comprises 2–3 layers of suberized cells (3.5–6 mm thick). Surrounding the central cavity is starchy parenchyma that nourishes the larva, followed by a broad zone of thin-walled parenchyma containing tannin deposits, abundant starch grains (19–28 µm), calcium oxalate crystals, and lignified bodies. Toward the periphery, chlorophyll-containing cells transition into a compact, thick-walled protective rind.[9,10,11]

The outer parenchymatous region shows three distinct layers and contains scattered vascular strands with spiral-thickened tracheids. A continuous sclerenchymatous ring of 3–5 layers of lignified sclereids encircles the cavity. Overall, the gall exhibits a characteristic radiating cellular arrangement, while perforated galls contain insect debris within the cavity.[9,10,11]

***HISAA MUSTAMELA* (Parts Used)[1,3]**

Galls, Bark

***MIZĀJ* (Temperament): [12,13,14]**

Sard wa Khushk 2^0 (Cold and Dry 2^0)

***Istemal* (Uses)[12,13,14]**

- *Bawaseer* (Haemorrhoids)
- *Kathrat-i Ḥayḍ* (menorrhagia)
- *Lis'a-e-Damia* (Bleeding Gum)
- *Qai-u-Dam* (Hematemesis)
- *Bol-ud Dam* (Hematuria)
- *Rua'af* (Epistaxis)
- *Deedan-e-Ama* (Intestinal Worms)
- *Sailan-e-Rahim* (Leucorrhoea)
- *Qula-e-dahan* (stomatitis)
- *Qurūḥ al-am'a'* (Intestinal ulcers)
- *Khurūj-i Raḥim* (Uterine prolapse)

- *Bawāsīr- Dāmiya* (Bleeding pile)
- *Jarab al -'Ayn* (Trachoma).

***Afa'al* (Actions)[12,13,14]**

- *Ḥābis* (Styptic)
- *Habiz-e-haiz*
- *Dafa-e-tafun* (anti-inflammatory)
- *Mujaffif* (siccative)
- *Muqawii-e-dandan wo lissa*
- *Mumsik*
- *Naf-e-nutu-e-reham*

***Naf-e-Khas*[12,13,14]**

Qabid an habis

***Miqdar Khorak* (Dose)[12,13,14,]**

4 *masha*

***Muḍirr* (Adverse effect)[13,14,15,16]**

- Chest
- Throat

***Muṣliḥ* (Corrective)[13,14,15]**

Katira, Samagh arabi, Zardi baize neem brasht.

***Badal* (Substitute) [15,16]**

- *Post e anar*
- *Jafat e baloot*
- *Halela zard*

Murakkabat (Compound Formulations)[13]

- *Habbe raswat*
- *Safuf e habis*
- *Sunoon e zard*
- *Habbe pechish*

Chemical constituents

Galls contain 50-70% of the tannic acid,[18] gallic and ellagic acid [19] besides starch, sugars, essential oil, and anthocyanins. They were also found to contain beta-sitosterol, amenoflavone, and hexamethyl oleanolate. ether, isocryptomerin, calcium oxalate, methyl.[3,9,13,17]

Pharmacological activity

Anti-inflammatory activity

The alcoholic extract of *Q. infectoria* galls demonstrated significant anti-inflammatory activity in multiple experimental models. Oral administration reduced paw oedema induced by carrageenan, histamine, serotonin, and PGE_2, while topical application suppressed PMA-induced ear inflammation. This effect is attributed to inhibition of macrophage and neutrophil functions, leading to reduced release of inflammatory mediators such as PGE_2, NO, O_2^-, and lytic enzymes.[6,9]

Antioxidant activity

Ethanol, acetone, and aqueous extracts of *Quercus infectoria* were assessed for antioxidant activity using DPPH radical scavenging and metal chelation assays. The ethanolic extract showed the highest antioxidant activity (94 ± 0.05% in the DPPH assay), while the other extracts were less effective. This strong activity is likely due to the high flavonoid and tannin content.[6,9]

Anti-bacterial activity

The ethanol extract showed superior inhibitory activity against all tested uropathogens, with marked effectiveness against Gram-negative bacteria. This activity may help prevent UTIs by hydrolysable tannins, which inhibit bacterial adhesion by mimicking urinary tract cell receptors and blocking bacterial attachment.[6,9]

Wound healing property

In an experimental study, ethanolic extract of shade-dried *Quercus infectoria* leaves was evaluated for wound-healing activity in rats using incision, excision, and dead-space models at doses of 400 and 800 mg/kg. The extract significantly enhanced wound healing, accompanied by increased levels of antioxidant enzymes such as superoxide dismutase and catalase in granuloma tissue, suggesting an antioxidant-mediated mechanism.[6,9,11]

Analgesic Activity

Fan et al. (2014) evaluated the analgesic potential of the methanolic extract of Quercus infectoria galls in rats using the hot-plate and tail-flick tests. The extract was administered intraperitoneally at a dose of 20 mg/kg, while morphine sulfate and sodium salicylate (10 mg/kg) were used as reference drugs. The findings demonstrated that the methanolic extract of Quercus infectoria galls produced a statistically significant analgesic effect.[11]

Discussion

The therapeutic role of *Mazū* (*Quercus infectoria*) in gynecological disorders is supported by a convergence of classical Unani knowledge, experimental pharmacology, and clinical application. The Unani concepts of *Qābiḍ* and *Hābis-i-Dam* provide a coherent theoretical framework that is pharmacologically plausible in view of the high tannin content of *Mazū* and its demonstrated tissue-contracting, haemostatic, and anti-inflammatory actions.

Importantly, clinical evidence for *Mazū* exists both in single-drug studies and, more prominently, in combination therapies and procedural applications, particularly in the management of heavy menstrual bleeding and abnormal vaginal discharge. The widespread use of *Mazū* in intravaginal tampons, pessaries, and classical compound formulations highlights its practical effectiveness in restoring mucosal tone and controlling excessive secretions.

Although combination studies limit precise attribution of therapeutic effects to a single agent, the consistent inclusion of *Mazū* across multiple clinical interventions strongly suggests its therapeutic contribution. Therefore, the classical and contemporary use of *Mazū* is not only empirically supported but also clinically relevant. Future well-designed controlled clinical trials may further delineate its individual and synergistic roles in gynecological practice.

Conclusion

Mazū (*Quercus infectoria*) is a cornerstone Unani drug in gynecological therapeutics, widely used across oral formulations, compound preparations, and local procedural applications. Its therapeutic actions are scientifically plausible and clinically supported, particularly in heavy menstrual bleeding and abnormal vaginal discharge. While much of the clinical evidence involves combination therapies, the consistent and widespread use of Mazū underscores its central therapeutic value. Further integrative clinical research may help refine its role as both a single and combination agent in evidence-based practice.

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Image Author -1	Dr Saba Anjum Quadri PG Scholar ilmul Qabalat wa amraze niswan Govt Unani Medical College Bengaluru
Image Author -2	Prof. *Aisha Anjum. A, Professor and HOD, Dept. of *Ilmul Qabalat wa Amraze Niswan* (Obstetrics and Gynaecology), Govt. Unani Medical College & Hospital, Bangalore, India.
Image Author -3	Dr Sara Mujeer*, PG scholar, Dept of Ilmul Qabalat wa Amraze Niswan (OBG), Govt. Unani Medical College & Hospital, Bengaluru, India.
Image Author -4	Dr Shaik Sameena Zameer, PG scholar, Dept of Ilmul Qabalat wa Amraze Niswan (OBG), Govt. Unani Medical College & Hospital, Bengaluru, India.
Image Author -5	Dr Shafiya Roohi*, PG scholar, Dept of Ilmul Qabalat wa Amraze Niswan (OBG), Govt. Unani Medical College & Hospital, Bengaluru, India.