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Review Article

Therapeutic Potential of *Ustukhuddus* (*Lavandula stoechas* L.): The 'Broom of the Brain' in Unani Medicine and Neuropharmacology

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Abstract

Objective(s): To evaluate the therapeutic significance of *Ustukhuddus* (*Lavandula stoechas* L.) in Unani medicine, focusing on its role as a brain tonic, phlegm expeller, and nervine stimulant, with particular emphasis on its ability to eliminate *Saudawi* (black bile) and *Balghami* (phlegmatic) morbid matters from the brain.

Data Sources: This study is based on a comprehensive review of classical Unani texts, including *Al-Qanoon fi al-Tibb*, *Kitab al-Hawi*, and *Al-Jamiʿ li-Mufradat al-Adwiyah*, and on modern scientific databases such as PubMed, Scopus, and Google Scholar, to assess phytochemical composition and pharmacological studies on *Lavandula stoechas*.

Study Selection: Relevant literature was selected to highlight the traditional uses of *Ustukhuddus* in Unani medicine and to evaluate contemporary pharmacological evidence supporting its therapeutic actions, particularly on the central nervous system.

Summary: Unani literature documents the use of *Ustukhuddus* for neurological conditions, including paralysis, epilepsy, melancholia, mania, anxiety, numbness, tremors, convulsions, and chronic headaches. Modern research corroborates these uses by demonstrating the antioxidant, anti-inflammatory, neuroprotective, antidepressant, anti-spasmodic, sedative, analgesic, and anticonvulsant activities. Major phytoconstituents such as linalool, flavonoids, and phenolic compounds contribute significantly to these effects.

Conclusion: The integration of traditional knowledge with modern pharmacological evidence supports *Ustukhuddus* as a promising neurotherapeutic agent. Its inclusion in evidence-based Unani formulations may offer valuable potential for managing neurological disorders, warranting further clinical validation.

Keywords: *Ustukhuddus*; *Lavandula stoechas*; Unani medicine; *Jarūb-i-Dimāgh*; Broom of the brain; Neuroprotective.

Introduction

Ustukhuddus (Lavandula stoechas L.) belongs to the Lamiaceae family. It is commonly known as French lavender and features greyish-blue flowers with a bitter taste and a camphor-like smell.[1,2] The genus Lavandula comprises approximately 39 species, numerous hybrids, and nearly 400 cultivars, with *L. angustifolia, L. stoechas, L. latifolia, and L. x intermedia* being the most notable.[3] Greeks, Romans, and Arabs have historically used these plants for their aromatic and therapeutic qualities.[4] It is a valued medicinal plant in the Unani System of Medicine (USM) and has been recognised for its neurotherapeutic properties since ancient times. Dioscorides first described it in Kitab al-Hasha'ish, where its medicinal virtues were detailed, and he named it 'Stoechas' after the Stoechades Islands, where it was abundantly found.[2] It is traditionally cultivated in Mediterranean regions such as France, Spain, and Italy.[4] Unani scholars emphasised its role in removing *Saudawi* (black bile) and *Balghami* (phlegmatic) morbid matters from the brain, earning it the nickname "*Jarūb-i-Dimāgh* " (broom of the brain) for its purifying effect on the central nervous system.[5,6] In the Unani system, three main species are considered therapeutically important: *L. stoechas* (*Ustukhuddus*), *L. angustifolia* (*Khuzama*), and *L. latifolia*. Their flowers, whole plants, and essential oils have all been used therapeutically in various formulations.[7] Phytochemical investigations have shown that the essential oil of *L. stoechas* is rich in biologically active compounds and is widely utilised in the pharmaceutical, food, cosmetic, and perfumery industries.[8] About 1,500 tonnes of essential oils are extracted annually from various Lavandula species and

hybrids.[4] This paper aims to explore the Unani description, pharmacological effects, and therapeutic uses of *Ustukhuddus*, as well as to compare traditional claims with modern phytopharmacological evidence.

Geographical Distribution

L. stoechas is spread across three continents: Africa, Europe, and Asia. It grows around the Mediterranean basin, including Morocco, Algeria, Tunisia, Spain, Greece, France, Italy, and Turkey. It is also found in Saudi Arabia and Iran.[3] According to Mohd et al., *L. stoechas* is also present in Bihar and Bengal in India.[9] Furthermore, *L. stoechas* has been introduced and cultivated in various temperate and subtropical regions of Europe, the Americas, Asia, and Australia for medicinal, aromatic, and ornamental purposes. [10]

Synonyms and Regional Names [11–16]

- Arabic: Anasul Arwah, Hafizul Arwah, Mawqaful Arwah, Alfajan, Geyah-i-Jalinus, Mumsik al-Arwah, Zaram, Zohr al-Zaram
- Bengali: Tantana
- English: Arabian or French Lavender, Stoecados
- Guajarati: Lavandarana phula
- Hindi: Dharu, Alphagandharu, Ustukhuddusa
- Marathi: Alphajan,
- Persian: Jarub-i-Dimagh, Ustukhuddus
- Syrian: Sanjavas, Shahe Safram Romi, Sakhawis
- Urdu: Ustukhuddus
- Unani; Ustukhuddus, Alfaajan

General Description

Lavandula stoechas is a perennial shrub up to 90cm, grey-tomentose, leaves linear, entire, sessile with somewhat revolute margins, flowers dark purple, about 4mm, long in dense short-peduncle spikes with a terminal tuft of large purple bracts. Flowers are situated in the axils of downy, heart-shaped bracts.[17]

Description in Unani Literature

Ustukhuddus (*Lavandula stoechas* L.) is regarded as one of the most important medicinal herbs in Unani medicine. It is an aromatic shrub, and its leaves resemble those of *Sa'tar Farsi* (*Zataria multiflora*), although they are thinner and longer. The plant's branches are described as resembling those of *Cuscuta reflexa*. Its flowers are greyish-blue, found in dense terminal clusters, and possess a camphor-like fragrance with a bitter taste. [18] The herb grows in the Rabi (spring) season, prefers moist soils, and reaches up to 1.5 feet in height. The green stem is coarse and rough, measuring around half a meter, while the leaves are bluish-white, sometimes tinged with yellow or red, and covered with fine hairs on their upper surface. [19] The medicinally active parts of the plant include its leaves and flowers. [19, 20] The genus name *Lavandula* derives from the Latin lavare, meaning "to wash," reflecting its historical use in ancient Greek and Roman cultures for cleansing. [21] The species name "*stoechas*" is derived from the Stoechades Islands, located off the coast of Marseilles, where the plant naturally grows in abundance. [22] In classical Unani texts, *Ustukhuddus* is often referred to as "*Jarūb-i-Dimāgh*" (broom of the brain) due to its ability to clear the brain of *balghami* (phlegmatic) impurities in *Sue Mizaje Balghami* (diseases caused by morbid phlegm), remove blockages, and enhance mental clarity and intellectual capacity. Its cephalic effects are well documented by Unani scholars and Greco-Arab physicians, including Galen (Jalinus), who praised its impact on the nervous system, earning it the nickname "Geyah-i-Jalinus" (Galen's herb). Among its varieties, another lavender species, Khuzama (Lavandula officinalis), is also mentioned in Unani literature and is primarily cultivated for its volatile oil. [20] However, the new greyish variety of L. stoechas is considered the most potent for medicinal use.

Ustukhuddus (*Lavandula stoechas* L.)

Pharmacological Actions in Unani Literature

Ustukhuddus possesses *Mulattif* (demulcent), *Muhallil* (resolvent), *Jali* (detergent), *Mufattih-i-Sudad* (deobstruent), *Mundij* (concoctive), *Munaqqi-i-Dimagh* (purifier of brain), *Muqawwi-i-A'sab* (nervine tonic), *Munawwim* (sedative), *Mushil-i-Balgham* (phlegmagogue), *Mushil-i-Sawda* (melanogogue), *Muharrik-i-A'sab* (nerve stimulant), *Dafi-i-Ta'affun* (antiseptic) and *Muqawwi-i-Alat-i-Bawl* (tonic to excretory system) properties. It is also used for its *Habis* (styptic), *Musakkin-i-A'sab* (nerve sedative), *Qabid Khafif* (mild astringent), *Kasir-i-reyah* (carminative), *Mufarrih Qalb* (exhilarant), *Muqawwi-i-Badan* (general tonic) and *Taryaq* (antidote) properties.[13,14,16,19,23,24] Its oil is rubefacient, antimicrobial, and used for nervous palpitations, giddiness, spasm and colic. Relieves sprains, neuralgia and rheumatism; rubbed for stimulating paralysed limbs and applied to sores, burns, scalds and varicose veins.[15]

Therapeutic Uses in Unani Literature

In USM, flowers and leaves are used to treat *Amraz-i-Dimagh and A'sab* (nervous and brain diseases) such as *Nazla-i-Sard* (cold catarrh), *Suda'* (headache), *Nasiyan* (amnesia), *Sar'* (epilepsy), *Malankhūliyā* (melancholia), *Waswas sawdawi* (anxiety), *Junūn* (mania), *Jumūd* (catalepsy), *Fālij* (paralysis/hemiplegia), *Laqwa* (facial paralysis), *Ra'sha* (chorea), *Sadr* (giddiness), *Dawar* (vertigo), *Ikhtilaj* (trembling), *Tashannuj Imtila'i* (convulsion), *Khadar* (numbness), *Iltihab-i-Tajawif-i-Anaf* (sinusitis), etc. It relieves sprains, *Waj' al-A'sab* (neuralgia), and *Waj' al-Mafasil* (rheumatism). It is also useful for *Dama* (asthma), *Su'āl* (cough), *Warm-i-Jigar Sard* (fatty liver), and *Istisqa* (ascites). Ibn Sina (Avicenna) in his famous treatise, "Advia Qalbia", described its efficacy in removing the morbid *Sawda* and *Balgham* (black bile and phlegm) from the brain; hence, it is called "*Jarub-i-Dimagh*" (broom of the brain).[6,11,13,22,25]

Temperament:

Haar –Yabis (Hot 1° Dry 1°) [19,22]

Hot 1° Dry 2° [18,19]

Hot 2° Dry 2° [19,20]

***Mazarrat* (Toxicity / Adverse Effects)** [18–20]

According to Unani literature, *Ustukhuddus* is considered harmful for individuals with a hot and *Safrāwī* (choleric) temperament due to its inherently warm and dry nature (Har Yabis). Its overuse can worsen heat-related conditions, especially in those prone to bilious disorders such as headaches, dryness, and inflammation.

Musleh (Correctives)[18–20]

To reduce the potential adverse effects of *Ustukhuddus*, especially in individuals with a hot and *Safrāwī* temperament, Unani scholars have recommended the use of Musleh (correctives). These substances help counteract any harmful effects without diminishing the drug's therapeutic benefits.

Sikanjabeen – A vinegar-based syrup, used to balance the hot temperament and enhance palatability.

Katira (*Astragalus gummifer* Labill.) – A cooling and demulcent agent that counters the warm and dry nature of *Ustukhuddus*.

Badal (Substitutes)[12,19,20]

When *Ustukhuddus* is unavailable or contraindicated, the following *Badal* (substitutes) are recommended in Unani literature because of their similar therapeutic effects.

Frāsiyūn (*Marrubium vulgare* Linn.) – Known for its cephalic, deobstruent, and expectorant properties.

Akasbel / Aftimoon (*Cuscuta reflexa*) – Used as a nervine and for evacuating morbid humours, especially *Sauda*.

***Miqdār-e-Khurāk* (Dosage)**[27]

According to the eminent Unani physician Rhazes (Al-Razi), the therapeutic dose of *Ustukhuddus* (*Lavandula stoechas* L.) ranges from 7 to 10 grams. He recommended its administration preferably with *Sikanjabeen* (a vinegar-based syrup), which acts as a *Musleh* (corrective) to moderate its hot and dry temperament and enhance its efficacy, especially in neurological and melancholic conditions.

Phytochemical studies

Recent phytochemical investigations of *Lavandula stoechas,* up to 2025, confirm its rich profile of both volatile and non-volatile bioactives. Advanced GC–MS analyses of the essential oil from aerial and floral parts reveal a dominant presence of monoterpenes, such as fenchone (≈30–42%) and camphor (≈ 25–58%), alongside 1,8-cineole, linalool, and myrtenyl acetate, collectively accounting for over 50 components with notable antimicrobial and antioxidant potency.[28,29] In aqueous extracts, high-performance liquid chromatography (HPLC) fingerprinting revealed significant levels of naringin (≈ 38%), syringic acid (≈26%), and cinnamic acid (≈16%), alongside rosmarinic acid, which supports antidiabetic, antioxidant, and antiglycation activities.[30] Additionally, ethanol extracts exhibited elevated phenolic (≈ 148 mg/g) and flavonoid (≈ 85 mg/g) contents, with rosmarinic acid representing approximately 28.7%, which correlates with potent antioxidant and antiproliferative effects (IC_{50}: 22–94 µg/mL) against various cancer cell lines.[31] These comprehensive phytochemical updates highlight *L. stoecha's* chemotypic consistency and reinforce its emerging therapeutic relevance in metabolic, oxidative, and oncological contexts.

Table 1: Major Essential Oil constituents of *Lavandula stoechas* L. from different countries

S. No.	Country	Plant Part Used	Major compounds identified	Total Compounds	Ref
1	Algeria	Flowers, Aerial part	Linalyl acetate (15.26%), Camphor (11.25%, 22.4%), γ-Terpinene (11.2%), Linalool (10.68%), 1,8-Cineole (10.25%), Fenchone (31.6%), p-Cymene (6.5%), α-Pinene (1.0%)	49 54	32 33
2	Italy	Aerial parts	Fenchone (37.0%), Camphor (27.3%), Bornyl acetate (6.2%), 1,8-Cineole (6%)	22	34
3	Greece	Leaves	Fenchone (44.8%), 1,8-Cineole (16.7%), α-Cardinol (7.2%), Camphor (6.2%)	62	34
4	Morocco	Aerial parts	Fenchone (30.5%), Camphor (18.2%), 1,8-Cineole (8.6%), Camphene (3.5%)	27	35
5	Pakistan	Aerial parts	Camphor (46.24%), Borneol (6.71%), Caryophyllene (4.72%), 1,8-Cineole (3.69%)	13	36
6	Portugal	Aerial parts	Fenchone (41.9%), Camphor (34.6%), Linalool (2.7%)	42	2
7	Spain	Aerial parts	Fenchone (37%), 1,8-Cineole (17.8%), Camphor (15.6%), Linalool (7.5%)	50	37
8	Tunisia	Aerial parts	Fenchone (34.3%), Camphor (27.4%), Lavandulyl acetate (5.6%), 1,8-Cineole (3.4%)	33	38
9	Turkey	Flowers	Fenchone (32.03%), Camphor (14.71%), Myrtenyl acetate (11.7%), 1,8-Cineole (7.67%)	34	39
10	India	Flowers	Camphor (52.1%), Fenchone (12.0%), 1,8-Cineole (9.7%), Bornyl acetate (6.2%), Camphene (3.3%), α-Pinene (1.1%), Terpinen-4-ol (0.6%)	25	40

Table 2: Traditional Uses of *Lavandula stoechas* in different countries

Countries	Local names (ethnic)	Parts used	Traditional uses	Dosage form	Ref
Algeria	Halhal	Aerial part	as an analgesic for toothaches	Infusion	41
Greece	Agroleványta (wild lavender)	Leaves	in diabetes, menstrual pains, kidney stones, carbuncles, otitis and hypertension.	Infusion and essential oils	42
Iran	Ossoghodus	Leaves	as an anticonvulsant, sedative antispasmodic	Infusion	43
Morocco	Halhal	Aerial part	in rheumatism, indigestion, cystitis, and nephritis	Decoction	44
Pakistan	Ustu khuddoos	Aerial part	in epilepsy and migraine	Decoction	45
Portugal	Rosmaninho	Aerial part	for heartburn, seasickness, and blood circulatory disorders and for sedation	Infusion	46,47
Spain	Cantueso, cap díase, bofarull	Flowered aerial part	as an herbal tea and for making liquor	Infusion	48
Turkish	Karabaş	Flowering branches	expectorant, menstrual regularity, antispasmodic and carminative Infusion	Infusion	48,49

Table 3: Modern scientific reports on the Pharmacological activities of *Lavandula stoechas* L.

S.No	Pharmacological Activity	Extract (Dose)	Method / Model	Key Results	Ref
1	Anti-epileptogenic	Aerial part-aqueous ethanolic extract (200–800 mg/kg)	PTZ kindling in mice, MDA, NO, and SOD assays	200 mg/kg showed a superior effect to valproate, possibly via NO suppression	50
2	Anti-inflammatory	Aerial part- ethanolic extract (1000, 2000 mg/kg)	Carrageenan-induced rat paw oedema	A 1000 mg/kg dose significantly reduced inflammation	51
3	Anti-inflammatory	Aerial part- ethanolic extract (in vitro)	LPS-stimulated macrophage model	Reduced nitrite production without cytotoxicity	34
4	Anti-inflammatory	Aerial part- hydroalcoholic extract (10, 25 mg/kg)	*In vivo* paw inflammation	Comparable to dexamethasone, reduced MMP-9, iNOS, COX-2	52
5	Anti-inflammatory	Aerial part- Flavonoid/tannin/mucilage extract	Carrageenan paw edema	Reduced ROS, neutrophil apoptosis implicated	53
6	Antioxidant	Essential oil, ethanol extract	DPPH, phosphomolybdenum (*in vitro*)	Flavonoids, linalool, thymol, rutin are responsible	2,6,51,54
7	Neuroprotective	Lavender oil (50–200 mg/kg)	Ischemia-reperfusion in mice, Longa method	Reduced protein carbonyl, MDA; ↑ SOD, CAT, GSH-Px	9
8	Antibacterial & Analgesic	Essential oil, aqueous, ethanolic (100–400 mg/kg)	Disk diffusion (*in vitro*), hot plate (*in vivo*)	Effective vs. Gram +ve; 400 mg/kg > morphine (60–90 min)	2
9	Cytotoxic, Scolicidal, Insecticidal	Essential oil	MTT assay, protoscolex viability, insecticidal assay	Significant cytotoxicity, 100% adulticidal effect	39
10	Anti-spasmodic & Sedative	Aqueous, methanolic extract (400, 600 mg/kg)	Irwin test, PTZ model, pentobarbital sleep time	600 mg/kg ↑ latency & sleeping time; mimics diazepam	45
11	Antispasmodic (Jejunum)	Hydro methanolic extract (0.1–1.0 mg/mL)	Rabbit jejunum contraction	Smooth muscle relaxation; 7-methoxycoumarin active	45

Discussion

The present review highlights the unique position of *Ustukhuddus* (*L. stoechas*) as a bridge between the traditional wisdom of Unani medicine and modern neuropharmacological evidence. In Unani literature, *Ustukhuddus* is described as "*Jarūb-i-Dimāgh*" (broom of the brain), owing to its ability to eliminate morbid matters of *Sauda* (black bile) and *Balgham* (phlegm) from the brain. [5,11,13,15,22,25] This traditional concept, although metaphorical, aligns with the current understanding of its role in enhancing neuroprotection, reducing oxidative stress, and modulating inflammatory mediators within the central nervous system. [9,50–52]

Phytochemical investigations have confirmed that essential oils of *L. stoechas* are dominated by fenchone, camphor, 1,8-cineole, and linalool, along with phenolic compounds such as rosmarinic and syringic acids. [28–30, 32–40] These constituents account for its antioxidant, anti-inflammatory, anxiolytic, neuroprotective, and anticonvulsant effects. Modern studies provide experimental validation for its traditional indications in epilepsy, melancholia, mania, paralysis, convulsions, and chronic headaches. For instance, animal studies have demonstrated anti-epileptogenic activity comparable to or superior to that of standard drugs, such as valproate, attributed to the modulation of nitric oxide and oxidative stress pathways.[50] Similarly, its neuroprotective role in ischemia–reperfusion injury supports Unani claims of strengthening and cleansing the brain. [9]

A noteworthy aspect is its neuroprotective and nervine tonic properties (*Muqawwi-i-A'sab*), which align with current evidence of sedative, antispasmodic, and

analgesic activities.[45] The dual action of stimulating nerve function while exerting anxiolytic effects reflects a balanced therapeutic profile. However, its warm and dry temperament (Har Yabis) may cause adverse effects in individuals with *Safrawi (*choleric) constitutions, as reported in classical texts. Unani scholars recommended *Sikanjabeen* and *Katira* as *Musleh* (correctives) to counteract these adverse effects without reducing efficacy.[18–20] A concept similar to modern pharmacovigilance, emphasising dose standardisation and formulation balance.

Comparative ethnomedicinal data from other cultures (Morocco, Greece, Portugal, Turkey, etc.) reinforce the universality of its therapeutic relevance, particularly for neurological, gastrointestinal, and inflammatory disorders. [41–48]

Conclusion

Ustukhuddus shows a strong link between traditional Unani claims and modern pharmacological evidence. Its wide range of biological activities, including neuroprotective, anticonvulsant, anti-inflammatory, antioxidant, analgesic, antibacterial, cytotoxic, and sedative effects, support its use as *"Jarūb-i-Dimāgh"* in Unani Medicine due to its *Munzij, Mushil, Mulattif, Munawwim, Jali, Mufatteh, Muqawwī-e-A'sab* properties. The overall evidence highlights its potential as a multi-targeted therapeutic agent, particularly for neurological, inflammatory, and oxidative stress-related disorders. These findings emphasise the importance of combining classical Unani knowledge of *Ustukhuddus* with modern biomedical research and highlight the need for further clinical and mechanistic studies to explore its therapeutic potential in contemporary integrative medicine.

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