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Review Article

AN UPDATED REVIEW ON USTUKHUDOOS PLANT

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ABSTRACT

Lavandula stoechas Mill. commonly known as Ustukhudoos, is perhaps the most important medicinal plant in the unani system of medicine. Whole part, flowers and essential oil of the plant is used to treat a variety of diseases. A number of ailments are treated by the plant which is used either alone or in combination with other plants. It is used for the treatment of various neurological disorders like hemiplegia, facial paralysis, tremors, epilepsy, melancholia, neurasthenia. Moreover, it is used in sinusitis, liver disorders and urinary disorders etc. *L. stoechas* possesses antimicrobial, antidiabetic, antioxidant, antifungal, anti-inflammatory, anticonvulsant, antispasmodic, sedative, hepatoprotective activities. This article discusses and summarizes the important medicinal values of Ustukhudoos in the perspective of Unani literature as well as modern scientific research.

Keywords: Ustukhudoos, *Lavandula stoechas*, neurological, epilepsy

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INTRODUCTION

The genus *Lavandula* is an important member of family Lamiaceae/Labiatae. Its species are cultivated in Spain, France and Italy. It is widely distributed in the Mediterranean region. Ustukhuddus is a herb that have leaves similar to the leaves of Satar (*Zataria multiflora*) but thinner and longer than that. Flowers are in cluster and have smell like camphor^{1,2}. It is stated by Dioscorides that, this plant is named stoechas as it grows on the Stoechades, a group of islands on the south coast of Gaul near Massila. It is wrongly named as ‘Alfazema’ in Western India. It is known as “Romero Santo” in Spain which means sacred rosemary³.

Scientific Classification⁴

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Asteridae
Order	Lamiales
Family	Lamiaceae/ Labiatae
Genus	<i>Lavandula</i>
Species	<i>L. stoechas</i>

Vernaculars⁵⁻¹⁰

English	Stoechades, Arabian or French Lavander
Hindi	Alaphajana Dharu, Ustkhuddusa
Gujarati	Lavandara-na-phula
Urdu	Ustkhudoos, Alfaajan
Bengali	Tantana
Marathi	Alphajan
Arabic	Anisul Arwah, Mumsikul arwah
Siryani	Sakhawis
Persian	Shahsafram

Habitat & Distribution

This herb is found throughout the Mediterranean region to Istanbul and Asia minor and in the Canaries, Portugal⁶. It is found in Rabi reason in forests and mountains having wet soils¹. Dried plant and flowers are imported into Mumbai from Persian Gulf⁶. Lavandula which is cultivated in Rome and Hejaz is more potent¹.

Botanical Description

Macroscopic: It is a perennial shrub up to 90cm, grey-tomentose. Leaves are linear, sessile, entire with somewhat revolute margins. Flowers are dark purple in colour, about 4mm long and in dense short peduncled spikes with terminal tuft of large purple bracts. Flowers are situated in the axils of downy, heart shaped bracts. Flowering occurs in June-July. The drug sample consists of dried spikes with peduncles. The peduncles are greyish brown in colour and quadrangular. It is bitter in taste and gives a slight aromatic odour⁷.



Ustkhudoos Flowers

Microscopic Characteristics:

Microscopic examination of the spikes shows that the flowers are borne in the axils of quite large, acuminate, rhomboid, leafy bracts. The bracts measure 6.5 to 8.5mm in length, 6-7mm in the breadth in middle and have prominent veins.

The flowers are shortly stalked. Tubular and measures 7 to 9mm in length with prominent veins. It has tubular calyx, not cleft but bears at its mouth single, tongue like, ovate tooth at the back. It bears 13 prominent nerves along its length. On its surface, it bears dense tomentum of branched, stellate hairs and minute glands.

At the base, a four chambered disc with 4 seeds is present. The seeds are ovate in shape, smooth,

measuring 1.4 to 1.5mm in length and 0.9mm in breadth in the middle.

The corolla tube is quite hairy and shows an opening 4 stamens. The anthers are 2-celled with hairs all around and brownish in colour. The pollen grains are almost rounded, smooth and 39.4 microns in diameter approximately. The style measures about 1.4mm in length and whole gynoecium is about 1.8mm long.

Peduncle: A cross section of the peduncle shows that it is quadrangular in shape forming 4 lobes. The surface is covered densely with hairs which are mostly tufted and stellate. Characteristic short stalked glands are present.

It shows an outer cuticle which is followed by a single layered epidermis and a few layered hypodermis in the lobes. Vascular structure consists of 4 prominent collateral vascular bundles. Vessels are confined to the 4 vascular bundles. At the centre, large zone of pith is present which consists of rounded parenchymatous cells mostly⁷.

Part Used Medicinally

Whole plant, flowers, Essential oil⁷

Temperament

Hot 1° Dry 2°^{1,7,9,11}

Hot 2° Dry 2°^{1,10}

Hot 2° Dry 3°¹

Dosage

3gm⁷

7-10gm, better to use with Sikanjbeen (As mentioned by Rhazes)^{9,10}

Toxicity

Harmful for people of hot and safravi temperament, increases thirst and causes nausea^{1,10,11}.

Correctives

Kateera (*Astragalus gummifer*)^{1,7,10,11}

Sikanjbeen^{1,11}

Substitute

Akasbel (*Cuscuta reflexa*, Aftimoon)^{1,7,11}

Frafiyun (*Marrubium vulgare*)^{1,11}

Compound Formulations

Majoon Najah³

Pharmacological Actions

- *Muhallil* (Anti-inflammatory)^{1,7,10,11}
- *Mulattif* (Demulcent)^{1,10,11}
- *Muqawwi* (Tonic)^{1,10,11}
- *Munaqqi* (Purifier)¹
- *Munaqqi Dimagh* (Brain purifier)^{1,10}
- *Muqawwi Aasab* (Nervine tonic)^{7,9}
- *Mufatteh Sudad* (Deobstruent)^{1,9,10,11}
- *Muqawwi Dimagh* (Brain tonic)^{1,11}
- *Muqawwi Qalb* (Cardio tonic)^{1,10,11}
- *Mufarreh*¹⁰

- *Muqawwi Meda* (Stomachic)^{1,11}
- *Mushile Balgham wa Safra wa Sauda* (Purgative of phlegm, yellow bile and black bile)^{1,10,11}
- *Muqawwi Jigar* (Hepatoprotective)^{1,11}
- *Tiryaaq* (Antidote)^{10,11}
- *Daafe Ufoonat* (Antiseptic)^{9,10,12}
- *Jaali* (Detergent)¹⁰
- *Dafe Tashannuj* (Antispasmodic)^{1,12}
- Anti-depressive¹²
- *Munavim* (Sedative)¹²
- Antibacterial¹²
- *Dafe-Tashannuj* (Anticonvulsant)¹²

Therapeutic Uses

- *Falij* (Hemiplegia)⁷
- *Laqwa* (Facial paralysis)⁷
- *Rasha* (Tremor)^{1,10,11}
- *Ilthab Tajaweef-e-Anf* (Sinusitis)¹²
- *Nazla Muzmin* (Chronic catarrh)^{1,11}
- *Zof-e-Aasab* (Neurasthenia)^{1,9}
- *Malikhuliya* (Melancholia)^{1,9}
- *Sara* (Epilepsy)^{1,9,11,12}
- Rheumatic and neuralgic pains^{1,9,10,11,12}
- *Suda* (Nervous headache)¹²
- Chest affections^{1,11}
- *Amraz-e-Kabid* (Liver disorders)¹¹
- *Amraz-e-Baul* (Urinary disorders)^{1,10,11}
- *Sadr* (Giddiness)¹¹
- *Nisyan* (Dementia)^{1,11}
- *Bawaseer* (Haemorrhoids)¹¹
- *Istisqa* (Ascites)¹¹
- *Junoon* (Schizophrenia)¹
- *Khadar* (Numbness)¹
- *Warme Kabid* (Hepatomegaly)¹
- Depression¹²
- *Sehr* (Insomnia)¹²

Phytochemical Constituents

- Organic: Carbohydrates, glycosides, phenolics, steroids, terpenes and resins.
- Inorganic: Aluminium, calcium, iron, magnesium, potassium and strontium⁷.
- Aerial parts of the plant contain oleanolic, ursolic and vergatic acid, beta-sitosterol, alpha-amyrin and its acetate, luteolin, erythrodiol, luteolin, acacetin and vitexin.
- The leaves contain polyphenols, apigenin-7-O-beta-D-glucoside, luteolin and its 7-O-beta-D-glucoside, and its 7-O-beta-D-glucuronide, rosmarinic acid, and 6-O-caffeoyl glucose.¹²
- Chemical composition of *Lavandula stoechas* oil: alpha-pinene, camphene, oct-1-en-3-ol, p-cymene, 1,8-cineole + limonene, cis-linalool oxide, fenchone, linalool, alpha-fenchol, alpha-campholenol, camphor, borneol, terpinen-4-ol, p-cymen-8-ol¹³.
- The ethanolic extract of whole plant of *L. stoechas* Linn was reported to yield beta-sitosterol, ursolic acid and an unidentified triterpenic acid. In the essential oil, 51 compounds have been described, the major ones being fenchone, pinocarvyl acetate, camphor, eucalyptol and myrthenol constituting 63.4% of the

oil. A new acetylated glucoside of luteolin and two flavone glucosides were isolated from *Lavandula stoechas*¹⁴.

Pharmacological Studies

- **Antimicrobial activity:** Antimicrobial effect of essential oil of *Lavandula stoechas* was evaluated using Broth microdilution (MIC determine the minimum inhibitory concentration) methods. Essential oil of *Lavandula stoechas* showed highly inhibitory antimicrobial activity especially on gram positive bacteria and can be used instead of chemical drugs to treat bacterial infections¹⁵.
- **Spasmogenic and Spasmolytic activities:** The crude extract of *Lavandula stoechas* and its fractions were studied in vitro for the possible presence of spasmogenic and spasmolytic constituents. The crude extract of *L. stoechas* caused atropine-sensitive spasmogenic effect in guinea pig ileum. The study showed that *L. stoechas* exhibits both spasmogenic and spasmolytic activities, mediated through cholinergic and Calcium channel Blockade (CCB) like mechanism¹⁶.
- **Antidiabetic and antioxidant activity:** The study revealed that *Lavandula stoechas* essential oils significantly protected against the increase of blood glucose as well as the decrease of antioxidant enzyme activities induced by alloxan treatment. Subacute essential oils treatment induced a decrease of lipoperoxidation as well as an increase of antioxidant enzyme activities. These findings suggested that *L. stoechas* essential oils protected against diabetes and oxidative stress induced by alloxan treatment. These effects are in part due to its potent antioxidant properties¹⁷.
- **Antifungal activity:** Essential oils from the stems/leaves and flowers of *Lavandula stoechas* were tested for their antifungal activity using the paper disk diffusion method. The study revealed that essential oils tested were effective on the inactivation of *Rhizoctonia solani* and *Fusarium oxysporum* and less effective against *Aspergillus flavus*. Among the single compounds tested, fenchone, limonene and myrtenal appeared to be the more effective on the inhibition of *R. solani* growth¹⁸.
- **Anti-inflammatory activity:** The anti-inflammatory activity was evaluated by Carrageenan-Induced Rat Paw Edema method. The hydro-ethanolic extract of *L. stoechas* (5 and 10 %) inhibited the inflammation induced by carrageenan in rats in a dose dependent manner. At dose of 10 %, *L. stoechas* produced a significant inhibition of inflammation at 74±7 % compared to 69±10.3 % for diclofenac at 1 %. The results clearly highlighted the significant anti-inflammatory effect of hydroethanolic extract of *L. stoechas*¹⁹.
- **Anticonvulsant activity:** The aqueous-methanolic extract of *L. stoechas* flowers (LS) was studied for its possible anticonvulsant and antispasmodic

activities. When tested in mice, LS (600 mg/kg) significantly reduced the severity and increased the latency of convulsions induced by pentylenetetrazole (PTZ). LS likewise reduced PTZ's lethality. The study showed that the plant extract of *L. stoechas* exhibits anticonvulsant activity²⁰.

- **Antispasmodic activity:** The study was carried out on isolated rabbit jejunum preparations. *Lavandula stoechas* caused a dose-dependent (0.1–1.0 mg/ml) relaxation of spontaneous contractions. *L. stoechas* also inhibited K⁺-induced contractions in a similar dose range, thereby suggesting calcium channel blockade. The study revealed that the plant extract of *L. stoechas* exhibits antispasmodic activities²¹.
- **Sedative activity:** The study was carried out in mice. *Lavandula stoechas* up to a dose of 600 mg/kg was found devoid of any hypnotic effect in mice, however, animals were found to be dull, calm and relaxed. The sedative effect of the plant extract was confirmed, as it prolonged the pentobarbital sleeping time in mice similar to that of diazepam²¹.
- **Hepatoprotective and Nephroprotective activity:** Hepatoprotective and nephroprotective effects of *Lavandula stoechas* essential oils (LSEO) were evaluated against malathion-induced oxidative stress in young male mice. LSEO treatment abolished all malathion-induced body gain loss,

liver and kidney relative weight increase, hemodynamic and metabolic disorders, as well as hepatic and renal oxidative stress. The study suggested that *L. stoechas* essential oil exerts potential hepato- and nephroprotective effects against malathion-induced oxidative stress in mice. The beneficial effect of LSEO might be related, in part, to its antioxidant properties²¹.

CONCLUSION

This review enlightens that traditionally *Lavandula stoechas* is useful in various ailments primarily in neurological disorders such as hemiplegia, facial paralysis, melancholia, epilepsy, dementia, schizophrenia. *Ustukhudoos* has been proven scientifically to possess various pharmacological activities like anticonvulsant, nephroprotective, hepatoprotective, anti-spasmodic, anti fungal, antioxidant activities. As the preliminary investigations show promising results against neurological disorders, this aspect need to be thoroughly investigated so that it can be established as a standard drug. The scientific analysis of *Ustukhudoos* (*Lavandula stoechas*) proves many of the activities mentioned in Unani literature. Further investigations are needed to find out the mechanism of action, active principle and utility of *Ustukhudoos* in clinical practice.

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