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Ustukhuddus (*Lavandula Stoechas* Linn.) A Traditional Herb with Versatile Pharmacological Activity: An Overview

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ABSTRACT

Plants are of the main sources of medicine and a large numbers of drugs in use are derived from plants. The therapeutic uses of plant are secure, inexpensive & effectual as their ease of accessibility. Among the plants known for medicinal value, the plants of genus *Lavendula* belonging to family Lamiaceae are very imperative for their therapeutic potentials. *Lavendula stoechus* Linn, known as Ustukhuddus is such plant origin drug familiar in Unani literature which possesses a lot of pharmacological actions *viz*; *Dafe Tashannuj, Dafe Suda, Mufarreh Qalb Wa Dimagh, Muqawwi Aasab, Jaroobe Dimagh etc.* and few are scientifically evaluated and many are yet to be evaluated. The present review attempts to cover the up to date complete literature analysis on *Ustukhuddus* with esteem to its phytochemistry, pharmacognostic characters and it's a variety of pharmacological activities.

Keywords: Traditional Medicine, Ustukhuddus, *Lavendula stoechus* Linn, Antioxidant

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INTRODUCTION

Traditional medicine is defined as "the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses.[1] *L. stoechas* is a plant of the Lamiaceae family that is widely used in folk medicine in different parts of the world. *Lavandula stoechas* L. (Lamiaceae), locally known on the Subcontinent as '*Ustukhuddus*, is indigenous from the Arabic and Mediterranean Coasts to Asia Minor. Imported product in Pakistan and used by traditional healers for various diseases of the central nervous system, like epilepsy and migraine.[2,3] Its species are widely distributed in the Mediterranean region and cultivated in France, Spain and Italy. Ustukhuddus (*L. stoechas* Linn) is a herb having leaves like the leaves of Satar (*Zataria multiflora*) but thinner and longer than that. Flowers are in cluster having smell like Camphor.[4,5] As stated by Dioscorides, this plant is named Stoechas from its growing on the Stoechades, a group of islands on the south coast of Gaul near Massila. In Western India, it is wrongly named 'Alfazema'. It is known in Spain as "Romero Santo" meaning sacred rosemary. [6]

Image of *Lavendula Stoechas*.

MUTRADIFAT (Vernacular Names) :

Arabic:Anisul Arwah, MumsikulArwah

Bengali: Tantana Stoechadas,

English:Arabian or French Lavander

Guajarati: Lavandarana phula

Hindi: Dharu, Alphagandharu, Ustukhuddusa

Marathi: Alphajan

Persian: Shahsafram

Siryani: Sakhawis

Unani: Hafizul arwah

Urdu: Ustukhuddus. [2,7,8,9,10]

TAXONOMICAL CLASSIFICATION:

Kingdom - Plantae

Division - Magnoliophyta

Class - Magnoliopsida

Order - Lamiales

Family - Lamiaceae/ Labiatae

Genus - *Lavandula*

Botanical name- *Lavandula stoechas* Linn.[11]

Habitat:

It is native to the Old World and is found from Cape Verde and the Canary Islands, southern Europe across to northern and eastern Africa, the Mediterranean, southwest Asia to southeast India. Many members of the genus are cultivated extensively in temperate climates as ornamental plants for garden and landscape. This herb is found in forests and mountains having wet soils in Rabi season. In India, it is found in Bihar and Bengal but the quality is not good.[4] It also found in Canaries, Portugal, and eastwards throughout the Mediterranean region to Constantinople and Asia Minor.[2] The plant cultivated in Peshawar and Afghanistan is of the best quality. [12] Qualities of *Lavandula* which cultivated in region of Hejaz and Rome is more persuasive in medicinal value.[4]

Botanical explanation:

L. stoechas Linn is a plant of Lamiaceae/Laniatae family which is an evergreen shrub from 1/2-1 m. tall (depends upon subspecies or cultivar). The narrow, linear, stalkless leaves are untoothed, with (rolled) margins, covered with a fine grey down, usually giving a grey-green overall appearance. The habit is stiffly branched and more open than other species of Lavandula. The flower stalk (peduncle) is usually shorter than the flower spike (in L. stoechas subsp. stoechas) but is often longer as in L. stoechas atlantica and L. stoechas pedunculata and cultivars derived from these. The squarish flower spike is composed of closely set fertile bracts that house the corollas (actual flowers) and is topped by a tuft of large, showy, sterile bracts, which are the more conspicuous part of the inflorescence.[13] It is a perennial shrub up to 90 cm, grey-tomentose, entire and sessile with somewhat revolute margins; flowers dark purple, about 4 mm, long in

dense short peduncled spikes with terminal tuft of large purple bracts. Flowering occurs in june-july, which is situated in the axils of downy, heart shaped bracts. [9]

Explanation in unani literature:

Ustukhuddus was known to Unani physicians since very long time and Dioscorides has described it in Kitabul Hashaiash.[14,15,16] This plant attains a height up to one and half feet. The stem of plant is of green colour having rough surfaces. The leaves are linear and arranged in denses. The flowers are arranged in dense peduncle spikes. The leaves are similar to Satar leaves having lesser width and more length. There are hairs on the dorsum having essence which produce sneezing on smell. Grey coloured and slight bitter in taste with bit pungency is rated best of quality.[4,17,18,19,20] Dioscorides mentioned that this plant is called Stoechas from its growing on Stoechadas, a group of islands on the south coast of Gaul near Massilia and it is much valued by the Muslim physicians.[6,21,22] The taste of the plant is bitter. [4,22,23,24] It has been credited with cephalic virtue and called as '*Jaroobe Dimagh'* which means broom of the brain. It is called so because it sweeps away all phlegmatic impurities, removes obstructions, strengthens its power of expelling waste crudities and improves the intellect. [4,6]Its medicinal values were first described by Jalinoos (Galen), that is why, it is also known as Galeenial herb (Giahe Jalinoos).[6]

Parts used Whole plant, flowers, Essential oil [21]

Temperament (Mizaj):

Hot 1º and Dry 2º

Ibn-e- Sina mentioned as Hot 1º and Dry 2º. [4,9,23,24,25]

Actions Mention In Unani Literature:

Dafe taaffun (antiseptic), *Habis* (styptic), *Jali* (detergent), *Mufatteh sudad* (deobstruent), *Muhallil* (resolvent), *Mulattif* (demulscent), *Munaqqi* (purifier), *Mushile balgham* (phlegmagogue) *Muqawwi* (tonic), *Muqawwie Asab* (nervine tonic). [4,9,23,26,27]

Uses

It is beneficial in *Malikholia* (Melancholia), *Junoon* (Mania), Nisyan (Amnesia), *Sara* (Epilepsy), *Waswas saudawi* (Anxiety), *Istirkha* (Atony), *Tashannuje imtelayi* (Congestive Convulsion), *Khadre* (Numbness), *Ikhtelaj* (Trembling) and Sinusitis. Ibne Sina has also mentioned it in his treatise '*Advia qalbia*' and described its efficacy in removing the *sauda* (black bile) from head and brain. [22] It is quite efficacious for removing *saudawi* and *balghami* (black bile and phlegmatic) morbid matters from the brain, hence called as 'broom of brain' (*Jaroobe Dimagh*).[4,23] It also provides strength to head, brain, liver, spleen, stomach and intestines. [22,23,24,25] Muslim physicians consider it to be cephalic (tonic), resolvent, deobstruent

and carminative and prescribe it in chest affections and for expelling bilious and phlegmatic humours. The author of *Makhzanul Advia* has credited it with cephalic virtue and called it 'broom of the brain' (*Jaroobe dimagh*) because it sweeps away all phlegmatic impurities, removes obstructions, strengthens its power of expelling (waste) crudities and improves the intellect. [6]

Muzzirrat (Toxicity):

Unani physicians also describe *muzir ashrat* of Ustukhuddus. It his harmful specially people those temperament is *Har* (Hot) and *Yabis* (Dry) or Safravi.[4,23]

Musleh (Correctives):

Katira (*Astragalus gummifer*, Labill) and Sikanjabeen have musleh property to the Ustukhuddus [4,9]

Badal (Substitutes):

When Ustukhuddus is unavailable then use these drug as a substitute eg;-Akashbel / Aftimoon (*Cuscuta reflexa*). Frāsiyūn (*Marrubium vulgare*, Linn) [23,26]

Miqdare Khurak (Dosage):

Abu Bakar Mohammad Bin Zakaria Al- Razi (865-925 AD.) describe, its dose is 7-10 gm and is better to use with sikanjabee.[22,28]

Pharmacological actions:

Anticonvulsant, Analgesic, Anti-tremor, Antiphlegmatic, Carminative, Cardiotonon, , Detergent, Deobstruent, Expectorant, Mufarreh Qalb, Resolvent, Stimulan.[6,29,30,31,32,33]

Therapeutic uses:

It is used as anticonvulsant (*Dafe Tashannuj*), hypnotic (*Munawwim*), sedative and antispasmodic.[32,33] The essential oil obtained from its flowering twigs has been used as a remedy against colic and chest affections, to relieve in headache (viz; *Sudae Asbi, Sudae Balghami wa Sudae Saudavi*), biliousness and for cleansing wounds. [29,30,31,34]

This plant is claimed for having the properties to remove obstruction, strengthen brain power, expel the crudities from the brain and clarify the intellect. [6]

Photochemical constituents:

The oil of *L. stoechas* is obtained from the flower part which content differ from the range of 0.77–1.2%.[35] Its main contains organic substances as carbohydrates, glycosides, phenols, steroids, terpines, resins, inorganic substances as aluminum, calcium, iron, magnesium, potassium and strontium. It also has Apigenin-7-O-β-D-glucoside, luteolin, its 7-glucoside and 7-glucuronide, rosmarinic acid and 6-caffeoyl glucose isolated from leaves., fenchon (30.85),

pinocarveyl acetate (10.2.), camphor (9.58), eucalyptol (8.12) and myrtenol (4.65%) determined as major components in essential oil, longipin-2-en-7β, 9α-diol-1-one (I) and its 9α-acetate (II) Isolated from aerial part.[36] The ethanolic extract of whole plant of *L. stoechas* Linn was reported to yield β-sitosterol, ursolic acid and an unidentified triterpenic acid.[37] 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 [38] A new acetylated glucoside of luteolin and two flavone glucosides was isolated from the flower of *L. stoechas*.[39]

Drug interactions:

Due to the diuretic action of this herb the following drug interactions are possible: may potentiate other diuretics and increase the risk of hypokalemia. When taken with corticosteroids there is a risk of hypokalemia; if hypokalemia occurs, there is possible antagonism with antiarrhythmics and potentiation of muscle relaxants; there is increased risk of toxicity with anti-inflammatory analgesics; it antagonises antidiabetic (hypoglycaemic) drugs; and it may potentiate and/or interfere with antihypertensives. Due to the antihypertensive (hypotensive) action of this herb the following interactions are possible: When taken with anesthetics, an increased hypotensive effect can occur, as it potentiates antihypertensives; when taken with diuretic drugs, difficulty with diuresis and hypertension may result (antagonism of sympathomimetics).[13]

Murakkabat (Compound formulation):

Ustukhuddus is the main ingredient of some Unani formulation which is mainly uses for neurological disorder (*Zoefe Dimagh, Sudae Muzmin, and Amraze Dimagh*). *Viz*; Itriphal Ustukhuddus, Itriphal Sanai, Itriphal Ghudadi, Itriphal Muqawwi Dimagh.[40,41,42,43]

PHARMACOLOGICAL STUDIES:

Antioxidant activity:

It was reported that essential oil of *L. stoechas* shows antioxidant activity in the presence of six compounds were identified and the most important ones are: linalyl acetate (15.26%), linalool (10.68%), 1-8 cineole (10.25%), γ-terpinene (11.2%) and camphor (11.25%). The study of antioxidant power of these oils was carried out by 1, 1-diphenyl-2-picryhydrazyl (DPPH) method. The results obtained showed the existence of an antioxidant activity of the essential oil from the dried flowers of *L. stoechas*, but less effective compared with vitamin E.[44] Another study has reported that antioxidant activity of the essential oil from flowers of *Lavandula* kind against the oxidizing deterioration of the lard.[45,46] Methanolic extracts and essential oils of ustakhuddus displayed significant antioxidant activities. The level of antioxidant capacity varied

according to extracts and species.[47]

Antimicrobial Activity:

The bulk of the extracts of *L. stoechas* subsp. *luisieri* showed modest activity against *Staphylococcus aureus* strains and also against other Gram-positive bacteria tested. On the other hand, against the Gram-negative strains, only *n*-hexane extract showed activity against *K. pneumoniae*. The *M. smegmatis* bacillus growth was strongly inhibited by this species' dichloromethane, methanol and water extracts. All *L. pedunculata* extracts showed no antibacterial activity against the tested bacterial strains but its dichloromethane extract showed moderate activity against *M. smegmatis* bacillus,[48] another study it was reported that oil of *L. stoechas* showed antimicrobial activity against 22 bacterial strains.[49]

Antispasmodic and anticonvulsant activity:

The aqueous-methanolic extract of *L. stoechas* flowers at the dose of 600 mg/kg significantly reduced the severity and increased the latency of convulsions induced by pentylene tetrazole (PTZ). *L. stoechas* likewise reduced PTZ's lethality. It 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 diazepam. In isolated rabbit jejunum preparations, *L. 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. This effect was confirmed when pretreatment of the jejunum preparation with LS produced a dose-dependent shift of the Ca dose-response curve to the right, similar to the effect of verapamil, a standard calcium channel blocker. [50] *L. stoechas* has been used traditionally acts as Dafe Sara (epilepsy), *Dafe Tasannuz* (antispasmodic) and *Munawwim* (sedative) activity.[33]

CONCLUSION:

Unani Medicine always relies upon the use of natural products and has been the foundation of new vistas for the innovation of many drugs was having today. At present, augmented cost of healthcare has turn out to be motivating forces in the budge towards interest in wellness, self-care and alternative remedy. The exploration of present review article testifies, the bestow for further research, those indication which mentioned in classical literature.

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