

KĀHU (LACTUCA SATIVA LINN.) IN UNANI MEDICINE: A COMPREHENSIVE REVIEW OF TRADITIONAL USES AND SCIENTIFIC EVIDENCE

Samreen¹, Md. Wasi Akhtar^{*2}, Yasmeen Shamsi³, Shahid Shah Chaudhary⁴

¹PG Scholar, Department of Moalajat (Medicine), School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India-110062.

²Assistant Professor, Department of Moalajat (Medicine), School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India-110062.

³Professor, Department of Moalajat (Medicine), School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India-110062.

⁴Associate Professor, Department of Ilmul Saidla, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India-110062.

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***Corresponding Author: Md. Wasi Akhtar**

Assistant Professor, Department of Moalajat (Medicine), School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India-110062.

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ABSTRACT

Kāhu (*Lactuca sativa* Linn.), commonly known as lettuce, is an important medicinal plant extensively described in the Unani system of medicine. Traditionally, its seeds (*Tukhm-i-Kāhu*), leaves, latex (*Afyūn-i-Kāhu* or lactucarium), and seed oil (*Roghan-i-Kāhu*) have been used for the management of insomnia, headache, nervous disorders, inflammatory conditions, dry cough, fever, jaundice, excessive thirst, and various disorders associated with hot temperament. Classical Unani texts describe *Kāhu* as possessing *Munawwim* (hypnotic), *Musakkin* (sedative), *Mubarriid* (refrigerant), *Muḥallil-i-Awrām* (anti-inflammatory), and *Mudirr-i-Bawl* (diuretic) properties. A comprehensive search was conducted using classical Unani references, pharmacopoeias, national formularies, and scientific databases including PubMed, Scopus, Google Scholar, and ScienceDirect. Phytochemical investigations reveal the presence of diverse bioactive constituents, including lactucin, lactucopicrin, sesquiterpene lactones, flavonoids, phenolic compounds, terpenoids, glycosides, vitamins, and minerals. Experimental studies have demonstrated significant sedative, hypnotic, anxiolytic, antioxidant, anti-inflammatory, antidiabetic, neuroprotective, cardioprotective, and anticancer activities, thereby supporting many traditional therapeutic claims. Clinical studies have reported beneficial effects of lettuce seed preparations in improving sleep quality in patients with insomnia, including pregnancy-related insomnia, and have also shown favorable effects on lipid profiles in dyslipidemic individuals. Furthermore, *Tukhm-i-Kāhu* is incorporated into numerous compound formulations described in the National Formulary of Unani Medicine, highlighting its therapeutic significance in Unani practice. The available evidence suggests that *Lactuca sativa* is a valuable medicinal plant with substantial traditional and scientific support. However, well-designed clinical trials with larger sample sizes are required to validate its broader therapeutic applications and elucidate the underlying mechanisms of action.

KEYWORDS: *Lactuca sativa*, Kāhu, *Tukhm-i-Kāhu*, Unani medicine, sedative, hypnotic, phytochemistry, pharmacology, insomnia.

INTRODUCTION

Unani system of medicine is one of the oldest traditional systems of medicine based on the principles of *Mizāj*

(temperament) and *Akhlāt* (humoral theory) mainly laid down by *Buqrāt* (Hippocrates). Medicines used for the treatment of various diseases are procured from the 3

natural sources viz. Herbal, Animal and Mineral, however medicinal plants occupy a central position in the Unani therapeutics. Medicines from plant origin are extensively used either singly or in compound formulations. *Kāhu* (*Lactuca sativa* Linn.), commonly known as lettuce, is regarded as an important Unani medicine due to its potent *Mubarriid* (cooling), *Musakkin* (sedative), *Munawwim* (hypnotic) and other properties.^[1,2]

Tukhm-i-Kāhu (lettuce seed) has been described extensively in classical Unani literature by most of the renowned authors of such as *Ibn Sīna*, *Ibn Baitār*, *Najmul-Ghani* and *Mohammad Kabīruddīn* etc.

Traditionally, it has been prescribed in conditions associated with excessive heat, increased dryness, insomnia, headache, irritability, inflammation, and bilious disorders. The latex obtained from the plant, commonly known as “Lettuce Opium” or lactucarium, resembles opium in appearance and action but does not have many of the undesirable effects associated with opium, such as constipation and digestive disturbances.^[3,4,5]

Modern scientific investigations including phytochemical, pre-clinical and clinical studies have confirmed many traditional claims of medicinal effects of *Tukhm-i-Kāhu* (*Lactuca sativa* Linn.). Phytochemical studies have identified important constituents having medicinal values. Lactucin, lactucopicrin, sesquiterpene lactones, phenolic compounds, flavonoids, alkaloids, and terpenoids are some important chemical constituents present in *Kāhu* (*Lactuca sativa* Linn.). Pre-clinical and clinical studies suggest that the plant possesses sedative, anxiolytic, anti-inflammatory, antioxidant, antidiabetic, cardio-protective, and neuroprotective activities. These scientific studies support the claims of Unani physicians and make this herbal medicine significant for various therapeutic purposes.^[6,7,8,9]

MATERIALS AND METHODS

A comprehensive literature review was conducted using classical Unani textbooks, pharmacopoeias, national formularies of Unani medicine, scientific databases, and published research articles. Information regarding morphology, temperament, actions, therapeutic uses, phytochemistry, pharmacology, and clinical studies was collected from classical references such as *Makhzan-ul-Mufradāt*, *Khazāin-ul-Adviya*, *Al-Qanūn fit Tib*, *Muḥit-e-Azam*, and *Al-Jāmi'a Li Mufradāt al-Advia wal Aghziya*. Modern scientific literature was searched through databases including PubMed, Google Scholar, Scopus, and ScienceDirect using keywords such as “*Lactuca sativa*”, “*Kāhu*”, “*Tukhm-i-Kāhu*”, “Lettuce”, “Lactucarium”, “sedative effect”, and “hypnotic activity”.

BOTANICAL DESCRIPTIONS

Taxonomical Classification^{10,11}

Kingdom	:	Plantae
Subkingdom	:	Viridiplantae
Infrakingdom	:	Streptophyta
Superdivision	:	Embryophyta
Division	:	Tracheophyta
Subdivision	:	Spermatophytina
Class	:	Magnoliopsida
Superorder	:	Asteranae
Order	:	Asterales
Phylum	:	Angiosperms
Order	:	Asterales
Family	:	Asteraceae
Subfamily	:	Cichorioideae
Genus	:	<i>Lactuca</i>
Species	:	<i>sativa</i>
Author	:	Linn.

Vernacular Names^[7,12]

Language	Name
English	Lettuce
Arabic	<i>Bazr al-Khas</i>
Persian	<i>Tukhm-i-Kāhu</i>
Hindi	<i>Kāhu</i>
Urdu	<i>Kāhu</i>
Gujarati	<i>Kāhu</i>
Tamil	<i>Shallatull-virai</i>
Telugu	<i>Kāvu</i>

Habitat and Distribution^[4,5,7]

The *Kāhu* plant (*Lactuca sativa* Linn.) is cultivated widely in India, Iran, Arab countries and Europe as well.

In India it grows mainly during the winter season, whereas in Arab countries and Iran it grows during spring season. The other varieties of lettuce viz. *Lactuca scariola* is commonly found in the western Himalayas while *Lactuca virosa* grows as a wild species in temperate regions. *Lactuca scariola* grows wild in the western Himalayas, while *Lactuca virosa* is a closely related variety. Meanwhile, *Lactuca sativa* the common garden type, is widely grown across India as a culinary vegetable. The parts used include seeds and a milky sap known as lactucarium. *Lactuca sativa* contains an alkaloid called lactucarium which is a blend of lactucine and three bitter principles: lactucine, the main bitter component, lactucopicrin, and lactucic acid. It also includes lactucine, an inert waxy, non-volatile substance (about 50%) as well as traces of hyoscyamine, known albumin acids, and a volatile acid with a scent similar to valerianic acid. The plant also contains potash 7p.c., mannite 2p.c., and ash 3 to 6p.c., which contains soda, manganic oxide, ferric oxide and lime. Lactucine is found in white crystals or scales. In Europe, lettuce is primarily consumed as a salad plant. The leaves of *Lactuca sativa* contains albuminous matter starch, sugar, gum, cellulose, lignose, chlorophyll, fat and ash and that rich in nitrates. Although lettuce is notably high in iron, its sap contains only a very small amount- almost all of it

precipitated when boiled. In fact, *Lactuca sativa* has just 0.023mg of iron per 100grams of the plant. The powdered seeds are dosed at 10-20 grains while the wild tincture is given in doses of 10 to 30 minims. The syrup which contains 10p.c of tincture dosed is 1-4 drams. The extract is taken in doses of 5-15 grains.

Morphology^[1,5,12]

Kāhu is an annual or biennial herb growing up to 4 feet in height having broad, smooth, and delicate leaves. The cultivated variety possesses green leaves and white seeds, while wild lettuce has tougher, greener, and having more bitter leaves. While it is also written that kahu plant is one meter tall and straight. Its leaves are large, broad and tongue-shaped. These leaves are used as a leafy vegetable. Fresh plant contains 0.0038% and dry plant contains 0.071% oxalic acid. Lactucopicrin also detected. The garden lettuce cultivated throughout India.

Decoction of seeds used as demulcent. Plant used as cooling, sedative, diuretic, diaphoric, antiseptic, hypnotic, useful in the treatment of bronchitis, asthma and pertussis. Grain contains alkaloids having bitter substance lactucin. The stem exudes a milky latex after giving incision, this latex becomes solid on exposure to air and forms lactucarium. The flowers of *Kāhu* are white or pale yellow in colour, and the seeds are elongated, smooth, and white to blackish in colour. Fresh plant contains 0.0038% and dry plant contains 0.071% oxalic acid. Lactucopicrin also detected. The garden lettuce cultivated throughout India. Decoction of seeds used as demulcent. Plant used as cooling, sedative, diuretic, diaphoric, antiseptic, hypnotic, useful in the treatment of bronchitis, asthma and pertussis. Grain contains alkaloids having bitter substance lactucin. This widely known salad plant has not been commonly identified in its wild form. Its origin has been debated with several species proposed as its ancestor. A. De Candolle Boissier suggested that *Scariola*, a common European species is the parent plant. In contrast, Schultz (Bipontinus) argues that the wild form grows only in the mountains of Kordofan, where it was collected by Kotschy. Others, however have traced its origins to India. It was cultivated in England in the 15th century and probably earlier. The varieties are very numerous more than 70 being distinguished.

The main differences are the arrangement and form of the lower leaves and the color of the fruit or seed. In classical Unani textbooks, the following two varieties of *Kāhu* are mentioned.^[1,3,4]

1. *Bustāni Kāhu* (cultivated lettuce) and
2. *Ṣahrāyi Kāhu* (Wild lettuce)

Ṣahrāyi Kāhu or the wild variety is considered more potent medicinally as compared to the cultivated lettuce.

Mizāj (Temperament)^[1,13,14]

Tukhm-i-Kāhu (Lettuce seeds): *Bārid Yābis* (Cold and Dry) in the second degree

Afyūn-i-Kāhu (Lactucarium/ Latex): *Bārid Yābis* (Cold and Dry) in the fourth degree

Barg-i- Kāhu (Lettuce leaves): *Bārid Raṭb* (Cold and Wet) in the second degree

Roghan-i-Kāhu (Lettuce seed oil): *Bārid Raṭb* (Cold and Wet) in second degree

Parts Used^[7,15]

Leaves (*Barg-i-Kāhu*)

Seeds (*Tukhm-i-Kāhu*)

Latex or Lactucarium (*Afyūn-i-Kāhu*)

Oil (*Roghan-i-Kāhu*)

Af'āl wa Khawās (Actions and Properties)^[13,14,16]

Classical Unani physicians described *Kāhu* as:

Munawwim (Hypnotic)

Musakkin (Sedative)

Mubarrid (Refrigerant)

Musakkin-i-Alam (Analgesic)

Dāfi 'i-Ḥiddat-i-Ṣafra (Relieves bilious heat)

Mukhaddir (Anesthetic)

Mudirr-i-Bawl (Diuretic)

Mulayyin (Laxative)

Mufattiḥ Sudad (Deobstruent)

Muwallid-i-Laban (Galactagogue)

Māni 'i-Su'āl (Antitussive)

Muḥallil-i-Awrām (Anti-inflammatory)

Tiryāq Samm-i- 'Agrab (Scorpion sting antidote)

Musaffi-i-dam (Blood purifier)

Mawaqī' Isti'māl (Therapeutic Uses)^[12,13,17]

Traditionally *Kāhu*, mainly its seeds have been used in:

Sahar or *Bekhwābi* (Insomnia)

Ṣudā' Ḥārr (Headache due to Hot intemperament)

Mālankhūliyā (Melancholia)

Junūn (Mania)

Hummā (Fever)

Su'āl Yābis (Dry cough)

Waram-i-Shu'b (Bronchitis)

Zīqun Nafas Shu'bī (Bronchial Asthma)

Yarqān (Jaundice)

Sū' -i-Hazm (Dyspepsia)

Waram-i-Ḥārr (Hot inflammations)

'Aṭash-i-Mufrat (Excessive thirst)

Jarayān-i-Manī (Spermatorrhea)

Kasrat-i-Iḥtilām (Increased Nocturnal emissions)

TUKHM-I-KĀHU

Tukhm-i-Kāhu (Lettuce seed) is the most used part of *Kāhu* for all kind of medicinal purpose. The seeds are especially valued for their sleep inducing (*munawwim*) and calming effects (*musakkin*). The seeds of *Kāhu*, which is known as "*Tukhm-i-Kāhu*" or "*Bazr al-Khas*" are well known small sized (some are long) whitish, pale and shiny seeds. Another variety of the seeds are light brown, about one centimeter long and two millimeters

thick, similar to a grain. In Arabic it is known as “*Bazr al-Khas*” and in Persian it is called as “*Tukhm-i-Kāhu*”.

Lettuce seeds are white, shiny, small and elongated in shape and they have a bland taste. Because of its *Bārid Yābis* (Cold and Dry) temperament, lettuce seeds have potent cooling, soothing and sleep inducing properties.

The seeds help to alleviate the excessive hotness of the sanguine humour and bile humour (*Dāfi ‘i-Ḥiddat-i-Dam wa Ṣafra*) and also quenches excessive thirst. Internally, *Tukhm-i-Kāhu* is also used either alone or with other suitable medicine by preparing *Shīra* (milky extract/syrup) and administering it for bilious and sanguineous fevers as well as conditions like melancholia, mania, jaundice, itching due to different causes and insomnia.

Tukhm-i-Kāhu, when applied externally as paste over forehead and head relieves hot headaches and induces good sleep. The paste of *Tukhm-i-Kāhu*, when applied over the scalp it works as a hair tonic and reduces hair-fall.^[1,3,13]

Dosage and Dose^[1,4,13]

3–5 grams in the form of powder

Substitute (*Badal*)^[1]

Tukhm-i-Khashkhāsh (*Papaver somniferum* Linn.)

Damm-ul-Akhwayn (*Dracaena cinnabari* Balf f.)

Adverse effects and contraindications^[1]

Lettuce is used as medicine in different indigenous systems of medicine; however, excessive use of *Kāhu* may produce adverse and unwanted effects, especially to those having cold temperament, and may lead to:

Weakness of eyesight
Forgetfulness
Reduced sexual potency
Flatulence

Continuous use of Lettuce may cause difficulty in breathing to the patients suffering from tuberculosis and asthma. It should be avoided or used cautiously in patients with glaucoma, benign prostatic hyperplasia, pregnancy, and lactation.

Corrective (*Mušliḥ*)^[1,13]

Masṭagī (*Pistacia lentiscus* Linn.)

Shahad (Honey)

Āb Barg-i-Khurfa (*Portulaca oleracea* Linn.)

ROGHAN-I-KĀHU (Lettuce Seed Oil)

Roghan-i-Kāhu is the second most common product of *Kāhu* being used for medicinal purpose, it is prepared by boiling *Shīra Tukhm-i-Kāhu* (milky extract) with sesame or almond oil until the water evaporates. To prepare *Roghan-i-Kāhu* two parts of the extract/ syrup of lettuce seed is added to one part of oil (Sesame oil or Almond oil). Another description mentions, to add *Shīra Tukhm-i-Kāhu* with equal amount of Sesame oil (*Roghan*

Kunjud) or two part of *Shīra Tukhm-i-Kāhu* with one part of Almond oil (*Roghan Bādām*) and the mixture heated gently at low temperature for about 5 hours in order to evaporate the water content. This content is filtered through a muslin cloth while it is still hot to obtain *Roghan-i-Kāhu*.^[1,18]

The oil is applied externally over the scalp and light massage is done or instilled into to nasal cavity.

Therapeutic Actions^[13,19]

Munawwim (Hypnotic)

Musakkin (Sedative)

Muqawwi Dimāgh (Brain tonic)

Muraṭṭib-i-Dimāgh (Moisturizing to the brain)

Muḥallil-i-Awrām (Anti-inflammatory)

Muwallid-i-Sha ‘r (Hair tonic)

Therapeutic Uses^[4,13]

Sahar or Bekhwābi (Insomnia)

Mālankhūliyā (Melancholia)

Ṣar ‘ (Epilepsy)

Ṣudā ‘ Ḥārr wa Yābis (Headache due abnormal Hot and Dry temperament)

Amrāz-i-Dimāgh wa A ‘ṣāb (Nervous disorders)

Substitute (*Badal*)^[1,6]: *Roghan Maghz Tukhm-i-Kadu*

Corrective (*Musleḥ*)^[1,6]: *Roghan Bādām*

LACTUCARIUM (*Afyūn-i-Kāhu*)

Afyūn-i-Kāhu (Lactucarium) is the dried milky latex obtained by giving incision on the stem and leaves; a sap exudes upon incision which solidifies on exposure to air and also changes its colour. This substance is called “Lettuce Opium” as it resembles opium in appearance, smell, taste and actions, but does not produce adverse effects. It has same temperament as *Bārid Yābis* (Cold and Dry), but in the fourth degree. The lactucarium obtained from wild lettuce is considered superior and more potent in all its effects than that obtained from cultivated lettuce. Sheikh has also written that wild lettuce possesses a potency similar to opium.

Although lactucarium is no longer recognized in the British or Indian Pharmacopoeias, it was previously included in the London, Edinburgh, and Dublin Pharmacopoeias. In modern practice its role in the British and Indian systems has been replaced by *Lactuca virosa* L., which is now the accepted botanical source. In the United States Pharmacopoeia, *Lactuca sativa* is still listed as the primary source of lactucarium; however in current usage the substance is mainly obtained from *Lactuca virosa* with smaller contributions from *Lactuca sativa*, *Lactuca scariola*, and *Lactuca altissima*.^[5,20]

Therapeutic Use^[1,3,5,20]

Applying its latex (milky sap) to the eye helps in removing corneal opacities or spots by dissolving them, it also improves stye. It is strong pain reliever and induces sleep, although its sedative effect is milder

compared to poppy opium. However, unlike poppy opium it does not disturb digestion also does not constipation, and does not lead to laziness or weakness after use.

It is useful for many clinical conditions such itching, scabies, melancholia, epilepsy, chest pain and pain in abdomen. It also cures wounds and swelling of the hands, feet and joint, and increases appetite.

Dosage and Dose^[19]

2 *Chāwal* to 1 *Rattī* (30 milligrams to 120 milligrams) dried latex of the lactucarium

PHYTOCHEMISTRY^[5,17,21]

The chemical composition of the plant revealed the presence of numerous bioactive constituents including different classes of secondary metabolites, such as terpenoids, flavonoids, and phenols, glycosides, tannins, steroids, lactucin, lactucone, lactucopicrin, lactucic acid, lactucerine and sesquiterpene lactones which should be responsible for its biological activities.

The plant also contains essential elements, such as vitamins as well as minerals and organic substances. Minerals present in *Kāhu* include potassium, calcium,

magnesium, iron, copper, phosphorus, sulfur, and sodium. Some Vitamins are also found in abundance such as vitamin A, C, E, and K. The sedative activity of lettuce is mainly attributed to **lactucin** and **lactucopicrin**. It also includes a number of other minor substance with little special significance. Pure lactucerine forms colorless, needle-like crystals that are odorless, tasteless, neutral and insoluble in water. In addition to being rich in anthocyanidins, red lettuce is also a good source of different classes of phenolic compounds, primarily hydroxycinnamic acid, usually from caffeic acid derivatives and flavonols. Furthermore, the polyphenol content in lettuce tissues are various among cultivars and growing conditions, and anthocyanins have only been detected in red cultivars. Also Ca, Cu, Fe, K, Mg, Mn, Na, P, and Zn were detected and their contents differed among cultivars.

SCIENTIFIC EVIDENCES

Due to extensive description of *Tukhm-i-Kāhu* in different authoritative books of Unani medicine, many pre-clinical and experimental studies have been conducted to validate its safety and efficacy. A few published pre-clinical studies have been summarized in Table 1 of a quick review.

Table 1: Pre-Clinical Studies on *Lactuca sativa*.

Sr. No.	Pharmacological Activity	Bioactive Constituent(s)	Experimental Model	Key Findings
1.	Sedative and Hypnotic Activity	Lactucin, lactucopicrin, GABAergic-active phytochemicals	Rodent model; EEG analysis, receptor gene expression, and antagonist studies	Hydroalcoholic lettuce extract (HLE) increased NREM sleep and improved sleep behavior through modulation of GABAA receptors, suggesting its potential as a natural sleep-enhancing agent. ^[22]
2.	Sedative and Hypnotic Activity	Sesquiterpene lactones (lactucin, lactucopicrin), phenolic compounds (proposed)	Pentobarbital-induced sleep model in rodents	Hydro-alcoholic extract significantly increased sleep duration at 400 mg/kg. The n-butanol fraction (NBF) reduced sleep latency and prolonged sleep duration comparable to diazepam. Low acute toxicity (LD ₅₀ = 4.8 g/kg) and absence of neurotoxicity supported its safety as a sleep-promoting agent. ^[23]
3.	Anxiolytic Activity	Flavonoids, phenolic compounds, sesquiterpene lactones (proposed)	Elevated Plus Maze model in rats	Hydroalcoholic seed extracts significantly increased open-arm activity and reduced transfer latency, demonstrating anxiolytic effects comparable to diazepam and supporting traditional Unani use. ^[24]
4.	Anxiolytic Activity	Flavonoids, phenolic compounds, antioxidant constituents	Elevated Plus Maze, Open Field, Elevated T-Maze, and Marble Burying tests in mice	Hydroalcoholic extract of <i>Lactuca sativa</i> reduced malondialdehyde and nitrite levels while increasing catalase and glutathione activity, indicating anxiolytic and antioxidant-mediated neuroprotective effects. ^[25]
5.	Antioxidant and Anti-inflammatory Activity	Hydroxycinnamic acids, flavonoids, lactucin, lactucopicrin	DPPH, ABTS, FRAP assays and LPS-stimulated RAW264.7	Unpeeled stem lettuce showed higher phenolic and flavonoid content and superior antioxidant activity than peeled samples. Twenty-nine phytochemicals

			macrophages	were identified, and extracts significantly suppressed nitric oxide production and inflammatory gene expression. ^[26]
6.	Antioxidant and Anti-inflammatory Activity	Polyphenols, flavonoids, saponins, triterpenoids	In vitro antioxidant assays and carrageenan-induced inflammation model	Polyphenolic compounds reduced reactive oxygen species and lipid peroxidation. Methanolic seed extracts exhibited significant anti-inflammatory activity, likely mediated by flavonoids, saponins, and triterpenoids. ^[27]
7.	Antidiabetic Activity	Lactucaxanthin, anthocyanin-3-glucoside	Enzyme inhibition assays and high-fat diet-induced mouse model	Lactucaxanthin inhibited α -amylase and α -glucosidase, reducing postprandial hyperglycemia. Anthocyanin-3-glucoside improved insulin sensitivity, reduced blood glucose levels, alleviated hepatic steatosis, and decreased inflammatory cytokines. ^[28]
8.	Anticancer Activity	Iodine-enriched phytochemicals, phenolic compounds	Cancer cell-based experimental studies	Iodine-biofortified lettuce induced ROS generation in cancer cells, leading to cytotoxicity and apoptosis, indicating potential utility as a functional food in anticancer strategies. ^[29]

Clinical Studies

Below are a few published clinical studies that support the a few pharmacological activities of *Lactuca sativa*:

1. A randomized controlled trial conducted in **Korea** demonstrate significant improvement in sleep quality and duration after four weeks of treatment with *Lactuca sativa*. Its effectiveness may be due to its high levels of sesquiterpene lactones, and also target adenosine A1 receptors, enhancing sleep through non-GABAergic pathways.^[30]
2. A double blind randomized clinical trial conducted in **Iran** evaluated the efficacy of lettuce seed syrup prepared using a pharmacopoeial formulation against a placebo in patients with primary insomnia diagnosed according to DSM-4 TR. The treatment group showed a significant improvement in Sleep Rating Scales Scores (SRSS) compared to placebo, with no reported adverse effects. These findings suggest that lettuce seed syrup is a safe and effective option for improving sleep quality.^[31]

3. **Study on Pregnancy-related Insomnia:** A randomized controlled trial in pregnant women showed that oral administration of lettuce seed capsules significantly improved Pittsburgh Sleep Quality Index (PSQI) scores compared with placebo without any adverse effect.^[32]

4. **Study on Dyslipidemia:** An Iranian clinical study evaluated the effects of lettuce seed capsules (1000mg/day) administered for 12 weeks in comparison with placebo group. The findings demonstrate that lettuce seed extract significantly improves triglyceride, total cholesterol, low-density lipoprotein (LDL) and high density lipoprotein (HDL) levels compared with placebo.^[33]

COMPOUND FORMULATIONS: There are numerous compound formulations of Unani medicine in which *Kāhu* is one of the ingredients. Table 2 summarizes different compound formulations mentioned in different volumes of National Formularies of Unani Medicine.^[34]

Table 2: Description of Unani formulations in National Unani Formularies having *Tukhm-i-Kāhu*.

S. No.	Formulation	Part Used	Indication	Reference
1.	<i>Araq Aswad Bārid</i>	<i>Tukhm-i-Kāhu</i>	<i>Mālankhūliyā Mirāqī, Khafqān</i>	NFUM I
2.	<i>Habb Su'āl Musakkin</i>	<i>Tukhm-i-Kāhu Muqashshar</i>	<i>Su'āl</i>	NFUM VI
3.	<i>Habb Yarqān</i>	<i>Tukhm-i-Kāhu</i>	<i>Yarqān</i>	NFUM VI
4.	<i>Habb Mumsik Tīlāyī</i>	<i>Tukhm-i-Kāhu</i>	<i>Du'f-i-Bāh, Sur'at-i-Inzāl and Du'f-i-A'ṣāb</i>	NFUM V
5.	<i>Habb Nazlā</i>	<i>Tukhm-i-Kāhu</i>	<i>Sahar, Surfā and Nazlā</i>	NFUM II
6.	<i>Habb Sandal Mutalla</i>	<i>Tukhm-i-Kāhu</i>	<i>Ṣudā' Muzmin</i>	NFUM III
7.	<i>Itrifal Muqawwi Dimāgh</i>	<i>Tukhm-i-Kāhu</i>	<i>Du'f-i-Dimāgh, Nazlā-i-Muzmin</i>	NFUM IV
8.	<i>La'ūq Zīqun Nafas Qawī</i>	<i>Tukhm-i-Kāhu</i>	<i>Zīqun Nafas Rewi</i>	NFUM III
9.	<i>La'ūq Aāb Tarbūz Wāla</i>	<i>Tukhm-i-Kāhu</i>	<i>Marz-i-Sil & Su'āl Yābis</i>	NFUM V
10.	<i>Ma'jūn Mughalliz</i>	<i>Tukhm-i-Kāhu</i>	<i>Jaryān, Riqqat-i-Mani and Sur'at-</i>	NFUM V

	<i>Jawāharwālī</i>		<i>i-Inzāl</i>	
11.	<i>Ma'jūn Muqawwi wa Mumsik</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḍu'f-i-Bāh, Jaryān and Sur'at-i-Inzāl</i>	NFUM V
12.	<i>Ma'jūn Falaksayr</i>	<i>Maghz Tukhm-i-Kāhu</i>	<i>Waja' al-Ḥādd, Jaryān, Sur'at-i-Inzāl</i>	NFUM I
13.	<i>Mufarriḥ Bārid</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḍu'f-i-Qalb, Ḍu'f-i-A'sāb, Khafqān</i>	NFUM I
14.	<i>Mufarriḥ Bārid Jawāhirwālī</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḥummā Sawdāwī, Diq Rewī, Ḍu'f-i-Qalb, Khafqān</i>	NFUM I
15.	<i>Mufarriḥ Shaikh ur Rais</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḍu'f-i-Qalb and Khafqān</i>	NFUM V
16.	<i>Mufarriḥ Yāqūti Bārid</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḍu'f-i-Qalb, Naqāhat</i>	NFUM I
17.	<i>Mufarriḥ Yaqūti Mu'tadil</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḍu'f-i-Jism, Ḍu'f-i-Qalb Jigar wa Dimagh and Khafqān</i>	NFUM V
18.	<i>Qairūfī Akhzar (External Use)</i>	<i>Aab-e-Kahu</i>	<i>Su'āl Yābis, Dhāt al-Janb, Dhāt al-Riya</i>	NFUM II
19.	<i>Qurs Khashkhāsh</i>	<i>Tukhm-i-Kāhu</i>	<i>Su'āl Yābis, Surfā, Tap, Naft al-Dam, Sil</i>	NFUM II
20.	<i>Qurs Sarṭān-Kāfūri</i>	<i>Tukhm-i-Kāhu</i>	<i>Tap-i-Muḥarriqa, Surfā, Diq, Sil</i>	NFUM II
21.	<i>Qurs Kāfūr</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḥummā Ḥādda, Ḥummā Diq</i>	NFUM I
22.	<i>Qurs Kāfūr</i>	<i>Tukhm-i-Kāhu</i>	<i>Tap-i-Diq and Tap-i-Muḥarriqa</i>	NFUM V
23.	<i>Qurs Ṭabāshīr Afyūni</i>	<i>Tukhm-i-Kāhu</i>	<i>Ishāl, Zahīr-i-Muzmin</i>	NFUM IV
24.	<i>Qurs Ṭabāshīr Sarṭāni</i>	<i>Tukhm-i-Kāhu</i>	<i>Diq, Sil, Ḥummā-i-Diq</i>	NFUM IV
25.	<i>Qurs Ṭabāshīr Kāfūri Lūluwi</i>	<i>Tukhm-i-Kāhu</i>	<i>Ḥummā Diq, Sil, Khafqān, Tap-i-Muḥarriqa,</i>	NFUM I
26.	<i>Qurs Ziabīṭus Sāda</i>	<i>Tukhm-i-Kāhu</i>	<i>Ziabīṭus Ghayr Shakri</i>	NFUM I
27.	<i>Qurs Munawwim Bārid (External Use)</i>	<i>Tukhm-i-Kāhu</i>	<i>Sahar</i>	NFUM I
28.	<i>Qurs Musallas (External Use)</i>	<i>Tukhm-i-Kāhu</i>	<i>Ṣudā', Shaqīqa</i>	NFUM I
29.	<i>Qurs Musallas (External Use)</i>	<i>Tukhm-i-Kāhu</i>	<i>Shaqīqa and Ṣudā'</i>	NFUM V
30.	<i>Roghan Bazr al-Banj (Local/ Oral /Inhalation)</i>	<i>Tukhm-i-Kāhu</i>	<i>Sarsām, Mālankhūliyā, Waswās</i>	NFUM IV
31.	<i>Roghan-i-Kāhu</i>	<i>Shīra Tukhm-i-Kāhu</i>	<i>Sahar, Sara', Mālankhūliyā</i>	NFUM I
32.	<i>Roghan Labūb Sab'ā Bārid</i>	<i>Tukhm-i-Kāhu</i>	<i>Sahar, Ṣudā'</i>	NFUM I
33.	<i>Roghan Labūb-e-Sab'ā (External Use)</i>	<i>Tukhm-i-Kāhu</i>	<i>Yubūsat-i-Dimāgh, Ḍu'f-i-Dimagh and Sahar</i>	NFUM V
34.	<i>Sufūf Ziabeṭus Sada</i>	<i>Tukhm-i-Kāhu</i>	<i>Ziabeṭus Ghayr Shakrī</i>	NFUM I
35.	<i>Safūf Safūf Ṭabāshīr Murakkab</i>	<i>Tukhm-i-Kāhu</i>	<i>Tabkhīr-i-Mi'da, Zo'f-i-Mi'da, Sangrahnī</i>	NFUM VI
36.	<i>Tiryāq Nazlā</i>	<i>Tukhm-i-Kāhu</i>	<i>Nazlā, Zukām, Su'āl, Ṣudā'</i>	NFUM I
37.	<i>Zimād Mubarrid</i>	<i>Tukhm-i-Kāhu</i>	<i>Sarsām Ḥādd</i>	NFUM I

DISCUSSION

Classical Unani physicians extensively described the medicinal importance of *Kāhu* and all parts of *Kāhu* used medicinally, particularly in diseases associated with excessive heat, dryness, insomnia, and nervous irritability. A detailed review of the *National Formulary of Unani Medicine (NFUM)* revealed that *Tukhm-i-Kāhu* (*Lactuca sativa* Linn. seeds) has been incorporated as an ingredient in numerous compound formulations. *Tukhm-i-Kāhu* is found in various dosage forms such as *Ḥabb* (pills), *Qurs* (tablets), *Ma'jūn* (electuaries), *Roghan* (medicated oils) etc. indicated in diverse clinical conditions like *Khafqān* (palpitation), *Su'āl* (cough), *Ṣudā'* (headache), *Shaqīqa* (migraine), *Mālankhūliyā* (melancholia) etc. The formulations are intended for

both internal administration and local application, highlighting the versatility of this drug in Unani therapeutics. It is also noted that most of the formulations mentioned in the Table 2, appear to exploit the *Musakkin* (sedative/analgesic), *Mubarrid* (refrigerant/cooling) and *Munawwim* (Hypnotic) properties of *Tukhm-i-Kāhu*. This shows the wisdom of Unani physicians, who frequently include *Tukhm-i-Kāhu* in formulations addressing pain, heat, irritability, and disturbed temperament.

Many modern pharmacological investigations support most of the claims of Unani physicians as summarized in Table 1. The pharmacological activities for which pre-clinical and experimental studies have been conducted

and found to be effective include Sedative and Hypnotic Activity, Anxiolytic Activity, Antioxidant activity, Anti-inflammatory Activity, Antidiabetic Activity and Anticancer Activity. The sedative and hypnotic actions attributed to lactucin and lactucopicrin validate the traditional use of lettuce seeds and lactucarium in insomnia and anxiety disorders. Similarly, antioxidant, anti-inflammatory, neuroprotective, and cardioprotective activities support its use in chronic inflammatory and metabolic conditions.

But when clinical studies searched, very few studies found to be published and that also on a few of the pharmacological activities claimed by Unani physicians, and even proved by many pre-clinical studies. Clinical studies conducted strengthen the therapeutic potential of *Lactuca sativa*, especially in sleep and anxiety disorders. However, a good number of clinical studies with larger sample size and using different parts of the plant are needed to be conducted to evaluate the different therapeutic activities and to elucidate its mechanism of action.

CONCLUSION

Tukhm-i-Kāhu (*Lactuca sativa* Linn.) is an important medicinal plant of the Unani system with extensive traditional and modern therapeutic relevance. Classical literature describes it as a cooling, sedative, hypnotic, and anti-inflammatory drug useful in insomnia, inflammatory disorders, headache, cough, and nervous system disorders.

Contemporary scientific studies mainly pre-clinical studies support these traditional uses and demonstrate additional pharmacological activities including antioxidant, cardio-protective, neuroprotective, antidiabetic, and anticancer effects. Only a few of the therapeutic activities have been validated by clinical studies, therefore, further clinical studies need to be conducted to validate different proven pharmacological activities.

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