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SARAKHS (*DRYOPTERIS FILIX-MAS*): MEDICINAL IMPORTANCE IN PERSPECTIVE OF UNANI MEDICINE AND PHARMACOLOGICAL STUDIES

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Review Paper

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ABSTRACT

True natural remedies and medicinal plants can be used to treat and control various illnesses. The world is currently searching for natural substances with fewer medicinally potent negative effects. *Sarakhs* (*Dryopteris filix-mas*), a male fern, is the name given by botanists to this plant. The male fern is the hardest-working species that reproduces in our country. Rhizomes have been used medicinally. It possesses the *Mujaffif Qurūh, Qātil-i-Kirm-i-Shikam*, and *Kāsir-i-Riyāh* properties. Filicic acid, flavaspidic acid, filmaron and flavonoids are the chemical constituents. It has antioxidant, antibacterial, antifungal, and abortifacient properties.

No. of Pages: 6 **No. of Figures: 1** **References: 24**

Keywords: Dryopteris filix-mas; Sarakhs; Rhizome; Unani Medicine.

INTRODUCTION

In Unani medicine, various rhizomes such as *Zanjabīl, Zard Chob, Zaranbād*, etc. etc. have been used since long time for various medicinal purposes. [(1)] *Sarakhs* is also a rhizome which is one of the most important drugs for treating intestinal worms and one of the key medications described in various classical literature. *Sarakhs* is known as *Batāras* in Greek [(2)] and Male fern or Aspidium in English. [(3)] *Sarakhs* (rhizome) is obtained from *Dryopteris filix-mas* belonging to family *Polypodiaceae*. The genus name is derived from Greek *"dryas"* means oak, and *"pteris"* means fern in reference to the presence of some species of wood ferns in woodland areas populated with oaks.[(4)] *Dryopteris filix-mas* is commonly used for medicinal purposes. It has two types male and female. The male type lacks flowers and fruits, but has only one stalk approximately one centimetre in length. Females lack stems and have only one leaf. It is found in hilly regions and in North America.[(2)] When the stem was yellowish, it was crushed and oozed. The most potent constituent found in this plant is Filicic acid.[(5)] It is an herbaceous perennial fern with a scaly creepy rhizome bearing stalked bipinnate leaves (fronds).) The rhizome is composed of brownish-black, ovoid,

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cylindrical segments 3–4 cm in diameter and 6–15 cm in length. The falicic acid present in rhizomes is a mixture of dimeric, trimeric, and tetrameric butanone chloroglucosides that kills tapeworms.[3] Laminae narrowly deltoid in outline. [6] Young fronds were coiled in a spiral and covered with brown scales. In summer two rows of green sori (round of sporangia) appear on the underside of fronds. They turn brown as they ripen and produce spores that the fern reproduces and spreads. All parts of the plant are poisonous. [7] According to Antaki, its production is abundant in Syria, and its flower color is red. The seeds are black in color and are cultivated in Britain (Europe). North America, North Asia, and the hilly regions. [5] Dryopteris is closely related to Polystichium and Lastreopsis, but distinguished from Polystichum by the kidney-shaped indusia, and from Lastreopsis by its abundance of stipe-scales and absence of hairs. *Dryopteris filix-mas* is closely related to *D. affinis* but can be distinguished by the second pinnae being round-ended and margins toothed throughout. [8] *Dryopteris filix-mas*, a wild leafy vegetable, has gained popularity among high mountain residents in the Hindukush-Himalaya region due to its exceptional nutritional profile, and its commercial cultivation also offers viable income alternatives. Nevertheless, in addition to phytochemicals with medicinal applications, ecological factors strongly affect the mineral content and nutritional composition. However, little is known about how this wild fern grows in heterogeneous ecological habitats with varying soil physicochemical properties and coexisting species, producing fronds with optimal mineral and nutritional properties.[9] the phytochemicals are oleoresin, filicic acid, flavaspidic acid, filmaron and albaspidin, glycosides, anthracene derivatives, steroids/triterpenoids, tannins, flavonoids, and alkaloids.[10]

This study aimed to emphasize the therapeutic applications of *Dryopteris filix-mas*, drawing from descriptions in the literature and scientific studies conducted on different parts of this plant. The presence of these diverse phytoconstituents underscores the potential of these plants for various medicinal purposes.

2. Materials and Methods

All accessible ancient textbooks were searched using key phrases, such as Sarakhs, *Qarfas*, and *"Batāras"* in the context of Unani medicine, in order to perform a thorough literature review. Additionally, terms like "male fern," *Dryopteris filix-mass*," and so on were used to search internet databases like Google Scholar, ResearchGate, and others. Both traditional Unani terminology and botanical nomenclature were included in the search. The selection of review papers and experimental research for data collecting and analysis was done with great care. This methodical approach sought to compile pertinent data from modern scientific literature as well as traditional Unani sources, resulting in a thorough analysis of the therapeutic uses and characteristics of the *Dryopteris filix-mas* in the context of Unani medicine. Appropriate Unani Terminologies were taken from Standard Unani Medical Terminology Published by Central Council for Research in Unani Medicine in collaboration with the World Health Organization.

3. Observations

3.1 Geographical Distribution: This fern grows in various regions across Europe, temperate Asia, northern India, northern and southern Africa, temperate areas of the United States, and the Andes Mountains of South America. [11]

3.2 Botanical description

A large herbaceous perennial fern with a scaly creeping rhizome bearing stalked bippinate leaves (fronds). Young fronds were coiled in a spiral and covered with brown scales. In summer, two rows of green sori (a round group of sporangia) appear on the underside of the fronds. They turn brown as they ripen and produce spores that the fern reproduces and spreads. All the plant parts were toxic. [7]

3.3 Taxonomic Classification

Kingdom: Plantae
Division: Pteridophyta

Class:	Pteridopsida
Order:	Polypodiales
Family:	Dryopteridaceae
Genus:	Dryopteris
Species:	*D. filix-mas.*

3.4 Description of the Unani literature
Sarakhs (rhizome) is black, knotty, and fibrous. Male ferns do not have stems, flowers, or roots. Only one branch of the yard originated from the root. Leaves were placed close to each other. The female plants had no branches and one leaf. However, some researchers say that female ferns have many branches and leaves. Its roots are very long and both species grow in hilly regions. Their efficacy is same and lasts for four years. When the root is broken, a dark color emerges. According to Antaki, its production is abundant in Syria, its flower color is red, the seeds are black in color, and it is cultivated in Britain (Europe). North America, North Asia, and the hilly regions. The effective component of this drug is a white powder, commonly known as Filicic acid. It has been described as hot in the second degree and dry in the first degree, but in others, it is written as hot and dry in the third degree. It acts as a deobstructive agent and dissolves rheum. Their consumption was beneficial for severe palpitation. [12]

3.5 *Mutaradifat* (Vernacular names)
The plant is known by various names according to different places and languages, as in.

Arabic:	Qarfas.
Bengali:	Pankhraj
English:	Male fern
Persian:	Kīldārū
Roman:	Sagin.
Syrian:	Qatbus, Qatus.
Tamil:	Hirvi, Iruvi [13]
Unani:	Bataras, Fasrafataras
Urdu:	Sarakhs

3.6 *Ajza-i-Musta'mala* (parts used)
Dried fronds, rhizomes, oleoresin [14] of *Dryopteris filix-mas* are used for medicinal purposes.

3.7 *Mizaj* (Temperament):
Hār 2^0 Yābis 1^0 (hot and dry in 2^{nd} and 1^{st} degree respectively) [16], Hār 1^0 Yābis 2^0 (hot and dry in 1^{st} and 2^{nd} degree respectively) [15], Hār Yabis 2^0 (hot and dry in 2^{nd} degree), Hār Yabis 3^0 (hot and dry in 3^{rd} degree).[16]

3.8 *Miqdar Kharak* (Dose):
The therapeutic dose is 7g [16] and 1–3 g [13]

3.9 *Af'āl* (Action)
It has *Mujaffif Qurah* (desiccative), *Qatil-i-Kirm-i-Shikam* (anti-helminthic) and *Kasir-i-Riyah* (carminative) [13].

3.10 *Iste'malat* (therapeutic use)
Various therapeutic uses have been mentioned. It has been found effective in diseases like *Khafaqan* (palpitation), *'Irq al-Nasa* (sciatica), *Niqris* (gout), *Dadan-i-Am'a* (worm infestation). [5]

3.11 *Tarkīb Iste'māl* (Method of Administration)
It repels lice and removes all stomach worms. [12]
If sprinkled over boils, it becomes dry and fills. [12]
If the wound is not healed by any means, it is healed by applying the paste of its rhizome to the wound. [12]

It is consumed in the quantity 10 ½ g up to 14 g to remove intestinal worms. It should be taken with milk as it seems to be less beneficial when it is taken alone. [12]

If *Sarakhs* is mixed with *Hinā* (Henna) and applied over scalp, it proves beneficial for initial stages of cataract. [12] Its leaves should be kept over roof, it prevents development of flea over roof. If given with honey, it forbids pregnancy and aborts the child, acting as an abortifacient. [5]

3.12 *Maḍarrat* (toxicity, side effects, and adverse effects)
Though *Sarakhs* has many uses including *Mujaffif Quruh* (desiccative) but it has been found harmful for some vital organs. It is harmful to lungs and kidneys. [5] As with herbal remedies or traditional medicines, moderation and caution are crucial to avoid potential adverse reactions or toxicity, and it is advisable to seek guidance from healthcare professionals or herbalists, especially when incorporating plants with potential

medicinal properties into one's diet or health care regimen.

3.13 *Musleh* (corrective)
It appears that in traditional practices, potential side effects such as kidney and lung-related issues related to *Dryopteris filix-mas* are addressed using specific remedies such as *Shah Balūt* (Oak) and *Katīra* (*Sterculia urens*) for kidneys. [5] It is important to note that traditional remedies may vary and the effectiveness of specific herbs depends on individual factors. While these traditional remedies may have been used in certain cultural contexts, consulting healthcare professionals or herbalists is advisable for personalized advice and guidance, particularly if someone experiences adverse effects and toxicity from *Dryopteris filix-mas* or any other herb.

3.14 *Badal* (Substitutes)
Many other traditional substitutes are used instead of *Dryopteris filix-mas. Kamila* (*Mallotus philippenensis*) is used as alternative.[5] This substitute may serve similar purposes or possess medicinal properties comparable to those of traditional medicine. However, it is important to note that the efficacy and safety of substitutes may vary, and individuals should exercise caution and seek guidance from health care professionals or traditional practitioners when choosing alternatives.

Fig. 1: Plants of *Dryopteris filix-mas.*

3.15 Compound formulations:
Ma'jūn Sarakhs useful for intestinal worms. [17]

3.16 Chemical constituents:
Filicin, α-flavaspidic acid, albaspidin, filixic acid, from rhizomes; synthesis of filicinic acid; five acid identified in fronds-hexadeca-7,10,13-trienoic,octadeca 9,12,15-trienoic, eicosa-8,11,14-trienoic, eicosa-5,8,11,14-tetraenoic and eicosa-5,8,11,14,17-pentaenoic acids. [7]

3.17 Pharmacological Studies

3.17.1 Antibacterial activity
Among the five fern species, *D. filix mas* showed the most remarkable antimicrobial activity. *Lygodium altum*, *Salvinia molesta*, *Salvinia cuculata*, *Helminthostachys zeylanica*, *Dryopteris filix-mas* and its antimicrobial spectrum covers both gram positive and gram negative. [18]

3.17.2 Anti-oxidant activity
The methanolic extract of *Dryopteris filix-mas* leaves effectively reduced harmful DPPH radicals in a concentration-dependent manner that depended on the amount used. It can also reduce other substances, indicating that it can help neutralize harmful molecules. Additionally, this liquid has the potential to kill cells. [19]

3.17.3 Antifungal activity
Methanolic and flavonoidal extracts from *Marchantia polymorpha L.*, *Dryopteris filix-mas* (L.) Schott and were tested against three fungal and plant pathogens; *Alternaria solani*, *Fusarium oxysporum* and *Rhizoctonia solani*. The extracts from *D. filix-mas* and *E. foliata* inhibited mycelial growth by over 80 %. *M. polymorpha* and *D. filix-mas* completely inhibited the mycelial growth of *R. solani* at the highest tested concentration (5 mg/ml) [20]. The inhibition of spore germination of fungi was observed to be around 10% for most extracts at a concentration of 10 mg/ml. [21]

3.17.4 Contraceptive Activity
The plant extract inhibited spontaneous contractions and oxytocin-induced and high KCl-induced uterine contractions. The plant extract

had no effect on oxytocin-induced contractions under calcium-free conditions, indicating an inhibitory effect on uterine contractility. This may have possible applications as a tocolytic or contraceptive, as most contraceptive plants have shown a uterine-relaxing effect. [22]

3.17.5 Insecticidal activity
In an in vitro study, the plant extract of *Dryopteris filix-mas*, *Tanacetum vulgare, juglans nigra*. *Syzygium aromaticum* and *Allium sativum* showed high Antischistosomal activity. [20]

3.17.6 Anti-helminthic activities
It exhibits anti-helminthic activity. Most diseases caused by helminths are chronic and debilitating in nature; they probably cause greater morbidity and economic and social deprivation among humans. *Dryopteris filix- mas* has proven good against helminths. [23]

3.17.7 Cytotoxic activity
Dryopteris filix-mas schott traditionally used for the treatment of various ailments. From the experiment it is clear that the methanol extract of leaves of *D. filix-mas* possesses strong antioxidant and cytotoxic activity so it may play an important role for the treatment of cancer. Cytotoxicity assays have been used to screen for cytoxicity of this plant extract for therapeutic uses that targets rapidly dividing cancer cells. [19]

3.17.8 Toxic effects on heart
The toxic effects of male ferns were assessed in cats and rabbits through intravenous injections of filmaron or oral administration of fern extract. Lethal doses can lead to serious complications including arrhythmia, disturbances in ventricular function and myocardial infarction [24].

3.17.9 Anti-diarrhoeal activity
There is decrease in transit time in gastrointestinal tract due to consumption of this drug. Also, there is reduction in intestinal fluid volume. It has anti-diarrhoeal activity by reducing gastrointestinal peristalsis. [10]

4. Conclusion
This review highlights the therapeutic potential of *Dryopteris filix-mas*, commonly known as male ferns, based on its traditional uses and scientific investigations. The plant exhibits a rich array of phytoconstituents, including filicic acid, flavaspidic acid, filmaron, and flavonoids, which contribute to its diverse medicinal properties, such as antioxidant, antibacterial, antifungal, and abortifacient effects. A detailed description of its morphology, particularly the characteristics of its roots, leaves, and reproductive structures, provides valuable insight into its botanical features. The traditional medicinal uses of *Dryopteris filix-mas*, as documented in historical texts, underscore its significance in various therapeutic applications, ranging from alleviating palpitations to treating stomach worms and promoting wound healing. However, caution is warranted regarding the potential adverse effects on the kidneys and lungs. Moreover, this review emphasizes the importance of combining *Dryopteris filix- mas* with other substances, such as milk or Hina, to enhance its therapeutic efficacy and mitigate potential side effects. Overall, this comprehensive exploration underscores the promising role of *Dryopteris filix-mas* in traditional Unani medicine and warrants further scientific investigation to unlock its full therapeutic potential while ensuring its safety and efficacy.

Consent and ethical approval
It is not applicable.

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SKIN DISORDERS IN THE LIGHT OF UNANI SYSTEM OF MEDICINE

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ABSTRACT

Skin disorders have been prevalent since the Greco-Arabic period. Unani physicians have described the structure and functions of skin interpreting the etiology, clinical features, and management of various skin disorders. These scholars have stated a comprehensive description of various skin ailments such as Hikka (Pruritis), Urticaria (Shara), Quba (Ring worm), Jarb (Scabies), Acne (Basoor-e-Labniya), Bars(Vitiligo), Namla(Herpes), Nar farsi (Eczema), Daus sadaf (Psoriasis) and Saleel (Wart) etc.

Ancient Unani scholars have been treating these ailments successfully forages. They have compiled a single as well as composite herbal formulations and various methods of Ila-j bit- tadbeer such as Cupping-Hijamah, Leeching-Irsal-e-Alaq for the treatment of skin disorders. These herbal medicine and therapies have greater significance in the treatment and management of various skin disorders.

No. of Pages: 7 **References: 17**

Keywords: Skin disorders, Unani medicine, Ilaj- bit- tadbeer.

INTRODUCTION

Skin disorders have been prevalent since the Greco-Arabic period. Unani physicians have described the structure and functions of skin interpreting the etiology, clinical features, and management of various skin disorders.[1]

According to Unani classical literatures, all dermatological diseases are discussed under the heading of Ilaj-e-Zahir-e-Badan having three components-[2]

- Amraz-e-Jild (Skin diseases),
- Amraz-e-Sha'ar (Hair diseases)
- Amraz-e-Azfaar (Nails diseases).

Unani physicians like Buqrat, Jalinoos, Zakariya Razi, Maseehi, IbneSina etc. were treating skin diseases successfully and effectively since long time and had elaborately discussed it in Unani classical literature.

These scholars have stated a comprehensive description of various skin ailments such as

- Hikka (Pruritis),
- Urticaria (Shara),
- Qooba (Ring worm),
- Basoor e Labniy (Acne) ,
- Bars (Vitiligo, Leukoderma),
- Nar farsi (Eczema),

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- Daus sadaf (Psoriasis)
- Namla (Herpez)
- Saleel (Wart) etc.

Skin complaints affect all ages from neonate to the elderly and cause harm in a number of ways. Skin is the organ that extends itself superficially and penetrates itself into the deeper levels of the body.

According to Unani, any skin disorder occurs when there is an imbalance of humour (Akhlat) in our body. [3]

Following an incompatible diet (food items of opposite nature) or an incompatible lifestyle that is against the season or (nature) of a person, causes the generation of toxins or poisons in our body. When these toxins accumulate in the body tissues, skin etc and contaminate them, skin diseases erupt.

All treatments aimed at curing skin disorders emphasise on the complete penetrative and detoxifying abilities of the treatments rendered. The approach of unani to treating skin problems is by eliminating the root causes of the same.

The principles of treatment in Unani Medicine for skin diseases involves

- Tadeel-e-Mizaj,
- Istifragh/Tanqiyah-e-Badan
- Herbal medicine having pharmacological actions like Mussafie-dam (Blood purifier), Muhallil-e-Waram (Anti-inflammatory).

This paper mainly focuses on etiology, clinical presentation and management of skin diseases in unani system of medicine.

Hikka (Pruritis), khujli, Kharish[4]

Kaifiyat Marz: It is of two types dry and wet. Khushk dry hikka is due to khilt e saudavihabis and wet is associated with rutubat e balghamiya. Mostly it occurs due to ehteraq e khoon and saudaviyat.

Asbab (Causes)

- Uncleaned body
- Unsuitable diet
- Indigestion most commonly associated with disturb liver function
- Disturbances of menstrual cycle
- Sometime During pregnancy

Alamat (Clinical features)

Wet hikka

Small boils over body which may filled with and associated with pain and burning sensation

If Dry

Small boils appear all over the body with so much intense itching that the patient become restless.

The skin becomes dry and rough.

Itching starts from hand fingers or bones of back and wet from calf

Usool e ilaj

- Treat the cause
- Improve digestion
- Improvement in liver function
- In female if menstrual disturbances is the cause treat it

Ilaj[5]

- Fasadwa Ishal
- Safoof e kishnizi 6gm bd
- Safoof e musakkin 6gm bd
- Sharbat e Unnab 10ml bd
- Hab e Musaffikhoon 2bd
- Masaffie 10ml bd
- Majoon e Ushba 5gm bd
- Mix Rogan e sandal 1 tola in Arq e Gulab 5tola and apply locally or massage it to relieve itching

Shara (Urticaria), Pitti uchhalna4,5,6

Kaifiyat: Red round spots appear over the skin

Asbab

- Indigestion
- Overeating
- Intake of heavy and delayed digestive food or hot and spicy food such as brinjal, mango and meat.

Alamat:

- Red round Patches or spot appear all over the skin causing burning sensation and intense itching and disappear soon.
- May be associated with mild fever.
- Acute illness disappear in few weeks and chronic persists for years.

Usool e Ilaj

- If over eating or heavy food is the reason advice qai
- If related to any specific food or medicine, stop it

Ilaj

- Safoof e kishnizi 6gm bd or
- Safoof eUshba 6gm bd
- Sharbat e Unnab 10ml bd or
- Sharbat e Tamrulhindi 10ml bd
- Hab eMarwareed1bd
- Jawarish Anarain 5gm bd
- Jawarish Safra shikam5gm bd
- Mix Rogan e sandal 1 tola in rogan e Gulab 10tola and apply locally or massage

Daad (Quba), Ring worm[4,5,7,8]

Kaifiyat

- It is a contagious disease usually occur over neck, back, coccyx and lower back

Asbab

- Indigestion
- Intake of heavy food
- Unhygienic body
- No bath for longer duration
- Increase intake of sweets
- Wearing wet cloth

Alamat

- Daad appears especially in inguinal region (Foto and jaggaso)
- The affected skin becomes hard and rough causing severe itching
- The more the patient scratches the more the itching
- The skin becomes safed siyahimael
- sometime small boils appear over the affected skin which unites and dew drop like discharge appear from them
- sometime scaling (bhoosi) occur due to dryness
- Patches appear over affected area
- Sometime it becomes red and swollen
- Small boils appear causing burning sensation and pain

Usool e Ilaj

- Advice Irsal e Alaq (Leech therapy), or Fasad and steam bath(Hamam)

Ilaj

- Masaffie 10ml bd
- Hab e Marwareed 1bd
- Cap Momiyai 1od
- Marham e Qooba for L A

Bars(Leukoderma), Safed dag[5,6,8,9]

Kaifiyat: It occurs due to fasad e khoon and baroodat .weakness of quwat-e-hazima produces fasidkhoon circulating all over the body and if balgham is the cause of fasad-e-khoon than bars develop.

Asbab

- Moroosi (Hereditary)
- Associated with Ingestion of with fish and milk together
- Common in seaside area

Alamat

- White patches appear on skin. At initial stage they are small in size but size gradually size increases.
- Whole body is affected bust most commonly seen over face and hands.

Usool e Ilaj

- Use Munzijwamushile Balgham for tanqiya
- Afterward use Har medicine

Ilaj

- Majoon e Bars 5gm bd
- Dawa e Bars 3gm bd
- Cap Momiyai 1od
- Cap Atherilal 1bd
- Hab e Azraqi 1bd
- Zimad e Bars for L A for 5 min

Basoor e Labniya (Acne), Muhase[4,7]
Kaifiyat: Most common during adulthood (Puberty). Red or white small boils appear over cheeks and nose.

Asbab
- Improper digestion or metabolism
- Impure blood.
- Use of hot and spicy food egkabab, sharab,
- Constipation
- Sometime associated with Sudden stoppage of Haemorrhoid bleeding
- In young females associated with menstrual disturbances and
- also seen during pregnancy

Alamat
- Small red or white boils appear over face, neck and cheeks
- Pus discharge is also seen

Usool e Ilaj
- Treat the underlying cause
- Advice Fasadsararu in galbakhoon

Ilaj
- Hab e Musaffikhoon 2bd
- Masaffie orArq e MurakkabMusaffi or
- Sharbat e unnab10ml bd
- Safoof e musakkin 6gm bd
- Hab e Rasoth bd
- Majoon e ushba or Itrifalshahetra 7gm bed time
- Zimad e Husn for L A

Nar farsi (Eczema), chhajan, Akoota[2,5,6]
Kaifiyat; In this condition painful boils appear over affected area associated with sever itching and and burn followed by scale formation'

Asbab
- General weakness of body
- Weakness of nerves
- Gout
- Arthritis
- Fever and Chills
- During Dentition in children or intestinal worms

Alamat
- Affected skin is red in color with appearance of small transparent boils
- Intense itching , burn and pain
- On day 3rd and 4th the fluid in boil becomes thick with rupture of boils forming scales
- It may be acute and chronic. pain and burn is less in chronic condition

Usool e Ilaj
- Mussaffiyat e khoon
- Mushilat
- Mulayyinat
- Musakkinatjild
- Maneat e ufoonat
- Fasadwaishal

Ilaj
- Marham sufedakafoor for LA
- Hab e Musaffikhoon 2bd
- Masaffie orArq e MurakkabMusaffi or
- Sharbat e unnab10ml bd
- Safoof e musakkin 6gm bd
- Hab e Rasoth bd
- Majoon e ushba or Itrifalshahetra 7gm bed time

Namla (Herpez)[4,5,7,9]
Namla-ant Saaiya-Dodnewali
One or few boils with intense burn and itching.

Aqsam
- Namlashafooya
- Namlakhataliya
- Namla Muntaqiya
- Namlaqazhiya

Asbab
- Lateef or tezsafra
- Indigestion
- Fever (Qabz qism ke hummiyat)
- Nerve disturbances (Futoor)
- Liver dysfunction

Usool e ilaj
- Talyyanwaishal
- Tskeenwatabreed
- Tasfiyakhoon

Ilaj

- Sharbat eUnnab or Sharbat e Sandal 10ml bd
- Hab e musaffikhoon 2bd
- Cap momiyai 1od
- Khameera Marwareed 3gm od
- Safoof e musakkin 6gm bd
- Dietotherapy for all

Daus sadaf (Psoriasis), Taqashshure jild[2,5,]

Kaifiyat: Psoriasis is the word of unani language. It means itching. Psoriasis is a non infectious, inflammatory disease of the skin, characterized by well defined erythromatous plaques with large, adherent, silvery scales.

Asbab

Cause unknown

Psoriasis can be caused due to many reasons. Some of the most common reasons are genetic predispositions, and khiltesauda consumption of opposite foods (such as fish and milk/curd together, consumption of equal quantities of ghee and honey etc.), exposure of the skin due to cuts, bruises or burns and application or consumption of medicines/skin irritants. Additional causes could include excessive smoking, alcohol consumption and mental stress.

More prevalent in cold and dry climate

Alamat

- Itching and silvery scaling of skin

Ilaj

- Sharbat e unnab 10ml bd
- Majoon e Dabidulward 5gm bd
- Majoon Najah 10gm od
- Hab e Musaffikhoon 2 bd
- Cap Momiyai 1od
- Marham e Qoobq mix with Rogan e kameela for L A

Saleel (Warts)[6,7]

Kaifiyat; Small hard round boil or tumour which appear on different parts of the bodyesp face, neck, hand and vulva.

Usually they are not painful except in patients of syphilis(ateshak)

Asbab

- Thick and extreme dried matter either balghami or saudavi or mixture of both

Ilaj

- Sharbat e unnab 10ml bd
- Majoon e Dabidulward 5gm bd
- QurskushtaGaudanti 1bd
- Cap Momiyai 1od
- Hab e Tinkar 2bd
- Wondertouch for L A

Various methods of Ilaj bit tadbeer are effective for skin diseases such as cupping (Hijamah) therapy, Irsal e Alaq (Leech therapy) ad Fasad (Venesection)[10,11,12]

Cupping (Hijamah) Therapy

Effective for

- **Cupping therapy** is an ancient form of alternative medicine in which special cups are applied on the skin for few minutes to create suction.

Cupping/Hijamah : It is of two types Dry and Wet .

- **Dry cupping** : This is the process of using a vacuum on different areas of the body in order to gather the blood in that area without incisions.
- **Wet Cupping** : This is the process of using a vacuum at different points on the body but with incision in order to remove 'harmful' blood which lies just beneath the surface of the skin.
- It is effective for Dermatitis, Psoriasis, Vitiligo, Acne, Herpes Pruiritis

The systematic review of few randomized control trials examined evidence regarding the use of cupping in the treatment of dermatologic conditions, as highlighted here.[1,13,14,15,16,17]

- Wet cupping was found to be superior to standard care in improving cure rate, symptoms, and incidence of post-herpetic neuralgia in 651 patients with herpes zoster, with no serious adverse effects.
- A cure rate of 55% was found in 20 patients treated with cupping for urticaria compared with 30% in 20 control patients treated with an antihistamine and a traditional Chinese remedy.
- Patients with acne vulgaris who were treated with wet cupping and a Chinese herbal mask for 2 weeks demonstrated greater clinical improvement than control group participants treated with the herbal mask alone (94.7% vs 61.1%, respectively).
- Wet cupping was found to be effective in treating acute eczema (n=46) compared with oral loratadine and topical ointment (n=42), with a "cured and markedly effective rate" of 89.1% vs 42.9%, respectively.[5]
- In a case report of a 30-year-old man with psoriasis who had been unsuccessfully treated with steroid creams, cupping led to a 90% remission, with no new lesions noted at the 6-month follow-up.

Although these results show promise for the use of cupping in dermatology, most "studies and reports were carried out using a small sample size and qualitatively assessed the efficacy of treatments," concluded Soliman and colleagues.[1] "More studies, and preferably randomized controlled trials, are needed to truly demonstrate the role of cupping in treating dermatological conditions."

Irsal e Alaq (Leech Therapy)

It Removes impurities

- Leeches suck impure blood from ulcerated area
- Prevent progression
- Improve micro circulation and thereby facilitate healing
- Hirudin and other enzymes present in Leech saliva help in – preventing clots in blood vessels.

It is effective for Dermatitis, Psoriasis, Eczema, Acne Herpes , Pruritis

Fasad (Venesection)

It is advised in following conditions. Qooba, Eczema, urticaria, Herpes, Pruritis, Warts

CONCLUSION

Unani physicians have enumerated a comprehensive description of etiology, clinical features, and management of various skin disorders. They have compiled a single as well as composite herbal formulations and have also described several methods of Ilaj bit-tadbeer such as Cupping-Hijamah, Leeching- Irsal e Alaq for the treatment of skin disorders. In the treatment and management of various skin disorders these herbal medicine and therapies have had a greater impact.

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SHARBAT-E-MAWEEZ FOR IRON DEFICIENCY ANEMIA: A REVIEW

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ABSTRACT

Anemia, characterized by reduced oxygen-carrying capacity in the blood, manifests through diminished red blood cell count or decreased hemoglobin levels. According to W.H.O. standards, hemoglobin levels below 13.0 gm/dl in adult males, below 12.0 gm/dl in non-pregnant adult females, and below 11.0 gm/dl in pregnant females signify anemia. Unani physicians often refer to this condition as Soo-Ul-Qiniya, exhibiting clinical signs such as weakness of the liver (Zauf-e-Kabid), nail brittleness (Zufr-e-Talqia), abnormal temperament (Fasad-e-Mizaj), pallor and yellowish discoloration of the skin (Zardi-wa-Sufaid Jild), and headaches (Sudaa).

In numerous Unani medical texts, Sharbat-e-Maweez is recommended for treating iron deficiency anemia. It serves as a potent nutrient and hemopoietic agent, offering diverse benefits such as haemopoietic stimulation (mawalid-e-dam), aphrodisiac and general body toning properties (muqavvi-e-bah-wa-badan), and liver strengthening effects (muqavvi-e-meda-wajigar). Sharbat-e-Maweez represents a palatable and easily administered form of Unani medication, thus enhancing patient compliance and efficacy in managing iron deficiency anemia.

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Keywords: Anemia, hemoglobin levels, Soo-Ul-Qiniya, Zauf-e-Kabid, Zufr-e-Talqia, Fasad-e-Mizaj, Zardi-wa-Sufaid Jild, Sudaa, Sharbat-e-Maweez, haemopoietic stimulation, muqavvi-e-bah-wa-badan, muqavvi-e-meda-wajigar.

INTRODUCTION

Soo-ul-Qiniya, derived from the Arabic words "Soo" meaning defect and "Qiniya" meaning treasure, encapsulates a condition where the body's vital assets are compromised. In classical Unani literature, it denotes a deficiency in both the quantity and quality of blood, often marked by a reduction in red blood cell count (Kuriryat-e-Hamrah) and alterations in its constituents. The liver's weakened functionality, influenced by changes in its temperament (Mizaj), emerges as a significant contributor to the onset of Soo-ul-Qiniya, precipitating a cascade of bodily degeneration.[1-9]

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Over the course of history, Unani physicians have frequently interchanged the terms Soo-ul-Qiniya and anemia, underscoring clinical manifestations such as weakness of the liver (Zauf-e-Kabid), nail brittleness (Zufr-e-Talqia), abnormal temperament (Fasad-e-Mizaj), pallor and yellowish discoloration of the skin (Zardiwa Sufaid Jild), and headaches (Sudaa). The term "faqruddam" was formerly synonymous with Soo-ul-Qiniya, describing a reduction in blood volume and altered red blood cell count.

Diverse Unani medical experts have elucidated the origins of imperfect blood and the progression of Soo-ul-Qiniya, attributing causative factors to include excessive bleeding, menstrual irregularities, and liver or stomach pathologies. Avicenna's accounts align Soo-ul-Qiniya with iron deficiency anemia (IDA), delineating clinical features such as weakness, palpitations, pallor, fatigue, and amenorrhea in females. Further symptoms associated with IDA encompass weakness, extreme fatigue, shortness of breath, headaches, palpitations, rapid heartbeat (tachycardia), confusion, or loss of concentration. Classical signs such as spoon-shaped nails (koilonychias), glossitis, stomatitis, and dysphagia augment the diagnostic spectrum of IDA, emphasizing its multifaceted clinical presentation and significance.[9-23]

Introduction to Sharbat-e-Maweez:

Sharbat-e-Maweez, a formulation prevalent in Unani medicine, has garnered attention for its potential efficacy in treating Iron Deficiency Anemia (IDA). This medicinal syrup is acclaimed for its multifaceted therapeutic properties, making it a notable inclusion in the management of various health conditions, particularly those related to blood disorders.

1. **Nutrient and Hemopoietic Action**: Sharbat-e-Maweez is lauded for its role as a muwallid-edam, which denotes its capacity to stimulate the production of blood components. By enhancing the generation of red blood cells (RBCs) and bolstering hemoglobin levels, it actively contributes to addressing the underlying deficiency characteristic of IDA.

2. **General Tonic and Aphrodisiac Effects**: In addition to its hemopoietic properties, Sharbat-e-Maweez serves as a muqavvi-e-bah-wa-badan, acting as a tonic for the body. This attribute extends to its aphrodisiac qualities, which play a role in promoting vitality and overall well-being.

3. **Stomachic and Liver-Strengthening Benefits**: Sharbat-e-Maweez exhibits muqavvi-e-meda-wajigar properties, implying its ability to strengthen the stomach and liver. By optimizing digestive functions and enhancing liver health, it aids in the assimilation of nutrients essential for blood formation.

4. **Cardio and Brain Tonic**: Another notable aspect of Sharbat-e-Maweez is its muqavvi-e-Qalbwa-dimagh action, which highlights its potential as a cardio and brain tonic. This dual functionality underscores its capacity to support cardiovascular health and cognitive function, thereby complementing its hemopoietic effects.

5. **Laxative Properties**: Additionally, Sharbat-e-Maweez is recognized for its mulayyan attribute, signifying its laxative properties. This aspect contributes to overall gastrointestinal health, ensuring the efficient elimination of waste products and promoting digestive regularity.

Given its comprehensive spectrum of effects, Sharbat-e-Maweez emerges as a promising therapeutic agent for addressing the complex pathology of IDA. Its palatable nature and ease of administration further enhance its appeal, facilitating patient compliance and optimizing treatment outcomes. Therefore, a detailed assessment of its efficacy in managing IDA is warranted, underscoring its potential significance in the realm of Unani medicine and beyond.[13,27,33]

Method of Preparation:

To prepare Sharbat-e-Maweez, a meticulous

process is followed to ensure the infusion of medicinal properties and palatability:

1. **Soaking of Ingredients**: All individual medicinal components are soaked in water overnight. This step allows for the extraction of beneficial compounds and enhances the potency of the formulation.

2. **Decoction Preparation**: The soaked ingredients are then subjected to decoction the following morning. This involves simmering the mixture over heat to extract medicinal constituents effectively.

3. **Addition of Honey**: Once the decoction reaches an optimal concentration, honey is incorporated into the mixture. Honey not only enhances the taste but also contributes additional therapeutic properties, such as antimicrobial and soothing effects.

4. **Boiling to Consistency**: The concoction is carefully boiled until it achieves the desired consistency characteristic of Sharbat. This ensures proper amalgamation of all ingredients and the formation of a palatable syrup.

By meticulously following this method, the medicinal efficacy of Sharbat-e-Maweez is maximized, ensuring its suitability for addressing various health concerns, including Iron Deficiency Anemia.[13]

Action:

1. **Mawallid-e-dam (Haemopoietic):** Sharbat-e-Maweez exhibits properties that stimulate the production of blood components, making it beneficial for addressing conditions associated with blood deficiency such as anemia.

2. **Mulayyan (Laxative):** This formulation possesses laxative qualities, aiding in the regulation of bowel movements and promoting gastrointestinal health.

3. **Muqavvi-e-meda-wa-jigar (Stomachic & Liver Strengthener):** Sharbat-e-Maweez serves to strengthen both the stomach and liver, optimizing digestive functions and enhancing liver health.

4. **Muqavvi-e-bah-wa-badan (Aphrodisiac & General Body Tonic):** It acts as an aphrodisiac, promoting vitality and vigor, while also serving as a tonic for the overall body, enhancing energy levels and general well-being.

5. **Muqavvi-e-qulb-wadimag (Cardio Tonic & Brain Tonic):** Sharbat-e-Maweez possesses properties that support cardiovascular health and cognitive function, contributing to heart and brain vitality.

Therapeutical Uses:

1. **Soo-ul-Qiniya:** Sharbat-e-Maweez is employed in the management of Soo-ul-Qiniya, a condition characterized by blood deficiency, presenting symptoms such as weakness, pallor, and fatigue.

2. **Qabaz (Constipation):** Its laxative properties make it effective in alleviating constipation, promoting regular bowel movements and relieving associated discomfort.

3. **Zof-e-Amma (General Weakness):** This formulation is utilized to address general weakness, enhancing energy levels and promoting overall vitality.

4. **Zof-e-Meda (Stomach Weakness):** Sharbat-e-Maweez strengthens the stomach, addressing weaknesses associated with digestive functions and promoting optimal gastrointestinal health.

5. **Zof-e-Bah (Liver Weakness):** It is employed in cases of liver weakness, facilitating liver function and promoting hepatic health.

6. **Zof-e-Jigar (Liver Disorders):** The formulation is beneficial in managing liver disorders, aiding in the restoration of liver health and functionality.

7. **Zof-e-Qalb (Cardiac Weakness):** Sharbat-e-Maweez is utilized to address cardiac weakness, supporting heart health and function, and promoting cardiovascular well-being.

By virtue of its diverse actions and therapeutic uses, Sharbat-e-Maweez emerges as a versatile and valuable formulation in the Unani system of medicine, offering comprehensive support for various health concerns.[13]

Dose:
25ml Bd[13]

Sharbat-e-Maweez Ingredient and Quantity: [13]

Sr. No	Ingredients	Botanical Name	Each 250ml Contains
01	Maweez Munaqqa	Vitis vinifera linn	25 gm
02	Balchad (Sumbuluttib)	Nardostachys jatamansi	1.75gm
03	Zafran 1.75gm	Crocus sativus	1.75gm
04	Zanjabeel powder	Zingiber officinale	1.75gm
05	Jozbuwa (jayaphal)	Myristica fragrans	1.75gm
06	Qaranful	Eugenia caryophyllata	1gm
07	Mastagi	Pistacia lentiscus	1gm
08	Shahed (Honey)		250ml

Maweez Munaqqa:
TEMPERAMENT: Hot and Moist.

ACTION: Mughazzi, Muqawwi Jigar, Mawalid-e-Dam, Muqawi Badan, Munjiz-e-Khilt galiz, Mufatteh Sudud, Mulaiyan-e-Shikam, Mohallil, Jali.[34]

Balchad:
TEMPERAMENT: Hot1 and dry2.

ACTION: Mohallil-e-Waram, Musakkin, Jali, Mutayyib-e Dahan, Mujaffif, Kasir-e Riyah, Muqawwi-e-Qalb, Muqawwi-e-Dimagh, Mudir-e-E Baul.[34]

Zafran:
TEMPERAMENT: Hot3 and Dry3.

ACTION: Mawallid-e-Dam, Mufarreh, Mudirr-e-Baul, Mudirr-e-Haiz, Muqawwi-e- Reham, Muqawwi-e Bah, Muqawwi-e-Meda, Daf-e-Tashannuj. Musakkin.[34]

Zanjabeel:
TEMPERAMENT: Hot3 and dry2.

ACTION: Kasir-e-Riyah, Hazim, Munaffis-e-Blagham, Jali.[34]

Jozbuwa:
TEMPERAMENT: Hot2 and Dry3.

ACTION: Mufarreh, Muqawwi-e- Kabid, Muqawwi-e-Bah, Mutayyib-e-Dahan, Muqawwi-e-Meda, Qabiz, Kasir-eRiyah, Mukhaddir.[34]

Qaranful:
TEMPERAMENT: Hot3 and Dry3.

ACTION: Mufarreh, Muqawwi-e-Qalab, Daf-e-Taffum, Musakkin-e-Alam, Muqawwi-e-Dimagh, Muqawwi-e-Meda, Muqawwi-e-Ama, Muqawwi-e-Kabid.[34]

Mastagi:
TEMPERAMENT: Hot2 and Dry2.

ACTION: Muqawwi-e- Meda wa Jigar, Kasir-e-Riyah.[34]

Shahed:
TEMPERAMENT: Hot2 and Dry2.

ACTION: Muqawwi-e-Badan, Muqawwi-e- Meda wa Jigar, Muqawwi-e-Bah, Jali, Mufatt-e-Sudda, Muqawwi-eBasarat, Mudirr-e-Baul, Mudirr-e-Haiz, Muqawwi-eReham, Mullaiyan.[34]

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LAWSONIA INERMIS L.: AN UPDATED REVIEW OF THE ETHNOBOTANICAL, PHYTOCHEMICAL, PHARMACOLOGICAL, AND TOXICOLOGICAL ASPECTS IN UNANI MEDICINE

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Review Paper

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ABSTRACT

Background
Lawsonia inermis L., commonly referred to as henna in the Unani medical system, is a plant belonging to the Lythraceae family. There are several chemical components found in the stem, bark, roots, flowers, and seeds that have commercial, medicinal, and cosmetic applications. The bioactive constituents, pharmacological actions, pharmacokinetics, and pharmacological adverse effects of *Lawsonia inermis* are all thoroughly reviewed in this research.

Aim of the review
This paper aims to highlight the medicinal properties of Henna in view of its temperament in Unani and phytoconstituents in the treatment of various diseases. Further, exploring its phytochemistry, pharmacological and pre-clinical studies (*in-vitro* & *in-vivo*) in respect to scientific researches.

Materials and methods
Henna was explored in classical Unani literature for its temperament (*Mizaj*), medicinal properties, pharmacological actions and therapeutic uses. Google Scholar, PubMed, Scopus, and Web of Science were searched for pertinent papers, which were then examined for updates and significant characteristics pertaining to the plant.

Results
Henna has been used in Unani system of medicine for ages. Numerous bioactive substances have been found in *Lawsonia inermis* L. such as fatty acids, steroids, xanthones, leucocyandin, epicatechin, catechin, polyphenols, alkaloids, quinones, tannins, and quercetin. Historically, the plant has been used to cure a wide range of illnesses, including as lumbago, ulcers, psoriasis, scabies, boils, ocular problems, hair loss, and jaundice. A variety of pharmacological properties have also been discovered in it, including as wound healing, hepatoprotective, analgesic, anti-inflammatory, antiparasitic, antioxidant, antifungal, anticancer, and hypoglycaemic effects.

Conclusion
Lawsonia inermis has a promising future in Unani medicine for a variety of medicinal uses; nevertheless, further research is required to properly investigate its therapeutic effects for a range of public health diseases.

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Keywords: Henna; Anti-inflammatory; Lawsonia inermis; phytochemistry; Unani.

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1.Introduction

Medicinal plants are valuable resources for pharmacological research and drug development because they can be utilized as prototypes for pharmacologically active substances or as a source of raw materials for the synthesis of drugs, in addition to being used directly as therapeutic agents. Lawsonia inermis L. is a widely utilized plant that grows abundantly in tropical and subtropical regions. Native to the Indian subcontinent, the Middle East, and North Africa is henna. For thousands of years, people in North Africa and Asia have used henna, a plant that blooms in sunny climates, as a red dye and perfume. Mummies in ancient Egypt were covered in textiles stained with henna. The leaves were utilized in Arabia and India to create a pigment that was used to color the soles of feet, fingers, and nails.[1]

Lawsonia inermis is a plant that is commonly grown as a hedge.[2] This plant's seeds, bark, and leaves are all utilized medicinally. The leaves taste awful and are unpleasant. Entire leaf is diuretic and astringent. Gargling with the leaf decoction relieves sore throats. Applying leaf pastes might help relieve headaches and burning feelings in the foot. Additionally, they are used for skin conditions, burns, and boils. Leaves are used to cure a variety of conditions, including scabies, amenorrhea, syphilitic sores, lumbago, hemicranias, haemorrhagia, bronchitis, boils, ulcers, stomatitis, opthalmia, and illnesses of the spleen. They also promote hair development.[3] Hina is applied as a soothing poultice. Southern Indian Tamil practitioners remove highly valued leaves and blossoming twigs for lepra therapy. As a preventative measure against specific skin conditions that are common in eastern tropical and semi-tropical regions, the leaves' aqueous infusion was administered to the body's exterior areas.[4]

1.1 Unani Description

1.1.1 Vernacular names [5-10]

Arabic	Hina
Persian	Hina
Bengali	Mehedi
English	Henna Plant, Egyptian Privet
Gujarati	Mendi, Medi, Mendi
Hindi	Mehendi, Hena
Kannada	Gorante, Mayilanchi
Malayalam	Marutonni, Pontalasi
Kashmir	Mohuz
Marathi	Mendi, Mehndi, Mendhi
Oriya	Manjuati, Benjati
Punjabi	Hinna, Mehndi
Sanskrit	Kukravaka, Shahashara, Kokadanta, Mendika, Raktgarbha, Ragangi
Tamil	Marutonri, Aivanam, Marithondi, Maruthoni, Aivani, Korandam, Kurandagam, Kurinji, Pida
Telugu	Goranta, Gorata, Krommi, Kuravakammu, Maida, Pachapeddagoranta, Goranti
Urdu	Mehndi

1.1.1 Mahiyat (Unani description)

Mehndi plant is 1.5 m to 2 m in height and trunk is 1 yard in length. Bushes are of thorny type. Leaves are similar to punica granatum leaves, dark green in colour and bitter and sour in taste. Branches red colored but twigs are not round in shape.[7] Flower of hina is known as Faghia. According to ved, flowers are found in bunches in different green or yellow color. In Ainul Akbari, Abu fazal describes the colour of the flower as red, yellow and white. Mehndi alone means barg hina in which small flowers occur in branches. Flowering blooms twice a year once in a spring and once in winter season. Fruits contain thin seeds found in bunches with soft rind appear twice in a year. Karmani and Tarmazi are two types of Hina. According to botanist, Hina is of

male and female type. Leaves are broad and big in male variety and more and smaller in female type. It is used for local application as a hair dye. [7-13]

1.1.3 Parts used (Hissae mustamela)
Almost all parts of the plant are medicinally active but the chief constituients are Leaves, flower and seeds[8,14,15,16], Bark[15,17].

1.1.4 Temperament (Mizaj)
The temperament of Henna is particularly cold and dry type but in different degree as per the description of Unani Scholars. For Instance, it has been mentioned by most of the Unani physicians as Sard Khushk 2° (Cold & Dry 2°)[6-12] type. But, As per Najmul Ghani and A'zam Khan, the very famous scholars of Unani Medicine as Sard Khushk 1° (Cold & Dry 1°)[10-11] and Murakkabul Quwa.[10-11]

1.1.5 Therapeutic dose (Miqdare khurak)
According to Kabeeruddin, the writer of Makhzan al Mufradat the dose described as 1-3 gm.[7]

In Taj al mufradat, an eminent Unani book it has been mentioned the usual dose is 3-5 gm.[6]

1.1.6 Adverse effects (Mazarrat)
It has been described to be harmful for lungs and throat disease in several ancient Unani Texts. [6-13] A'zam Khan mentioned in Muheet e Azam that henna may cause choking of throat. [11]

1.1.7 Correctives (Musleh)
Kateera (Sterculina urena Linn), Asphgol (Plantago ovata). [7-13]

1.1.8 Substitute (Badal)
Mundi (Sphaeranthus indicus Linn), Shahtra (Fumaria parviflora).[7-13]

1.2 Habitat and distribution
Native to Arabia and Persia, probably also in the drier parts of the Indian peninsula and Ceylon and it is cultivated mainly in Haryana, Gujarat and to a small extent in Madhaya Pradesh and Rajasthan. It is found in western India cultivated chiefly as a hedge and garden plant. A shrub or small tree cultivated throughout India. It is perennials, grown by surviving seeds in Spring, attaining maturity by August. It is used medicinally in Indo China, the Philippine Islands, French Guiana, West and North Africa. It occurs throughout the year. The crop is harvested twice a year, April to May and October to November from second year onwards of its growth.[4,5,15-19]

1.3 Botanical distribution
It is a densely branching, deciduous, glabrous, occasionally spinescent shrub that reaches a height of 2.4–5 m. Leaves are simple, entire greenish-brown to dull green lanceolate, apex mucronate, base tapering, short petiolate, glabrous, 2-3 cm in length and 1-1.5 cm in breadth. The flowers are in terminal, globular, cross-armed panicles, small greenish white and very fragrant. The fruit is round, the size of a pepper corn, four grooved, with the apex depressed, four-celled. The seeds are angular. The globose, 6 mm in diameter, somewhat veined on the surface, and style-tipped capsules are supported by a prolonged calyx. The decoction of the leaves is of a deep orange colour, which is destroyed by acids, and deepened by alkalies and vegetable astringents. It stains the skin of an orange red colour, which does not disappear until the epidermis has been renewed.[5,19]

The description of this plant has been studied in details with its phytopharmacology and phytochemical aspects.

2. Materials and methods: *Henna* was explored in classical Unani literature for its temperament (*Mizaj*), medicinal properties and therapeutic uses. Published works available on PubMed, Science Direct and Google Scholar were referred to collect all the available information regarding its phytochemicals and pharmacological studies. All relevant articles up to 2023 were referred including classical Unani books, English books, research, and review papers. The plant's scientific names were validated using 'The Plant List' (www.theplantlist.org). Standard Unani Medical Terminology published by Central Council for Research in Unani Medicine in collaboration with

the World Health Organization was used to describe the appropriate Unani terminologies. Glossary of Indian Medicinal Plants and different indexed journals were consulted for botanical and English names.

3. RESULTS AND DISCUSSION

3.1. Pharmacological actions (*Af'al*)

Muhallil (Resolvent), Musaffi Khoon (Blood Purifier), Musakkin Alam (Analgesic), Mujaffif (Dessicant) , Qabid (Astringent), Mudir Haiz (Emmonogogue), Jali (Detergent), Daf-e-Tashannuj (Anti spasmodic), Daf-e-Tashannuj (Anti spasmodic), Muqi (Emetic), Munaffis-e-Balgham (Expectorant).[4-18]

3.2. Ethnobotanical uses of Henna [4-18]

Table 1: Ethnomedicinal and Unani Medicinal Uses of Henna.

As per *Unani* literature	**As per Ethnobotanical literature**
Amraz-e-Jild (Skin diseases) like *Atishak* (Syphilis), *Judham* (Leprosy), *Kharish* (Itiching), *Jarb* (Scabies), *Humra* (Erysiplas), *Haraq* (Burns), *Humaiqa* (Chicken pox)	Obstinate skin diseases (*Amraz-e-Jild)* and Leprosy (*Judham*) and Prophylactic against skin diseases, Inflammation (*Mohallil-e-Waram*), Burns (*Haraq*) and Gonorrhea (*Suzak*), Boils (*Damameel*), Syphilitic sores (Qurooh-e-*Atishak*), Scabies (*Jarab*), Herpes (*Namla*)
Khizab (Dyeing hairs)	Staining hands and finger nails, Cosmetic hair dye, Prurigo
Irritation of hands and feet	Burning sensation of feet
Khushunat-e-Jild	
Wounds of head	Bleeding disorders, Ulcers (*Qurooh*), Wounds
Waja-ul-Mafasil (Rheumatism) *Waja-ul- Qutn* (Lumbago)	Muscle pain (*Waja-ul-Azlaat*), Lumbago (*Waja-ul- Qutn*)
Suda (Headache)	Headache (*Suda*)
Yarqan (Jaundice) wa *Marz-e-Tihal* (Spleen disease)	Jaundice (*Yarqan*), Spleen disease (*Marz-e-Tihal*)
Nail diseases like *Nakhun Khuaara*	
Ganj	
Hisaat-e-Kuliya (Kidney stone)	Calculous infection
Qula (Stomatitis)	Stomatitis *(Qula)*
Ehtebas-e-Baul (Retention of urine)	Dysuria (*Usr-ul-Baul*)
Isqat Janeen (Abortion)	Menorrhagia *(Kasrat-e-Tams)*
Shoosa (Intercostal neuralgia)	
Futuq wa Qeela (Hernia and Hydrocele)	Leucorrhoea (*Sailan-ur-Rahem*) and Spermatorrhoe (*Sailan-ur-Rahem*)
Shaqeeqa (Migraine)	Giddiness and Vertigo (*Dawar*)

3.3 Chemical composition of Henna

A colouring matter, hanno-tannic acid/tannin, resin, alkaloids, steroids, saponin, reducing sugars and mucilage are found. Two new xanthones-laxanthones (I) and (II) isolated and characterised as 1,3-dihydroxy-6,7-diamethoxy xanthone and 1-hydroxy-3,6 diacetsoxy-7-methoxy xanthone respectively.[29] 7- and 4'-glucosides of apigenin, 7- and 3'- glucosides of luteolin, 2-hydroxy-α-naphthaquinone (lawsone), esculetin, fraxetin, scopoletin were also isolated from leaves.[44] Recently it has been fount to contain rubinaphthin B; 9(11),12-oleanadien-3β-ol; 11,13(18)-oleanadien-3β-ol; catechin; afzelin; augustic acid; 1β, 2α, 3α, 19α-tetrahydroxy-12-ursen-28-oic acid; suavissimoside R1; lawsone; β-sitosterol; 1-tridecanol; and 1-pentadecanol. Apigenin, apigenin-7-glucoside and its derivatives, lutein, kaempferol, quercetin, isoscutellarin, tricine, kaempferin, isoquercitrin, (−) catechin, and other flavonoids have been identified from the plant are 3,7,4′,5′-tetrahydroxy-6-methoxyflavone, 3,5′-hydroxyflavone, 4,′-hydroxyflavanone, and 7,3-dimethoxy-6,8-dimethyl flavone.[1]

3.4 Pharmacological studies:

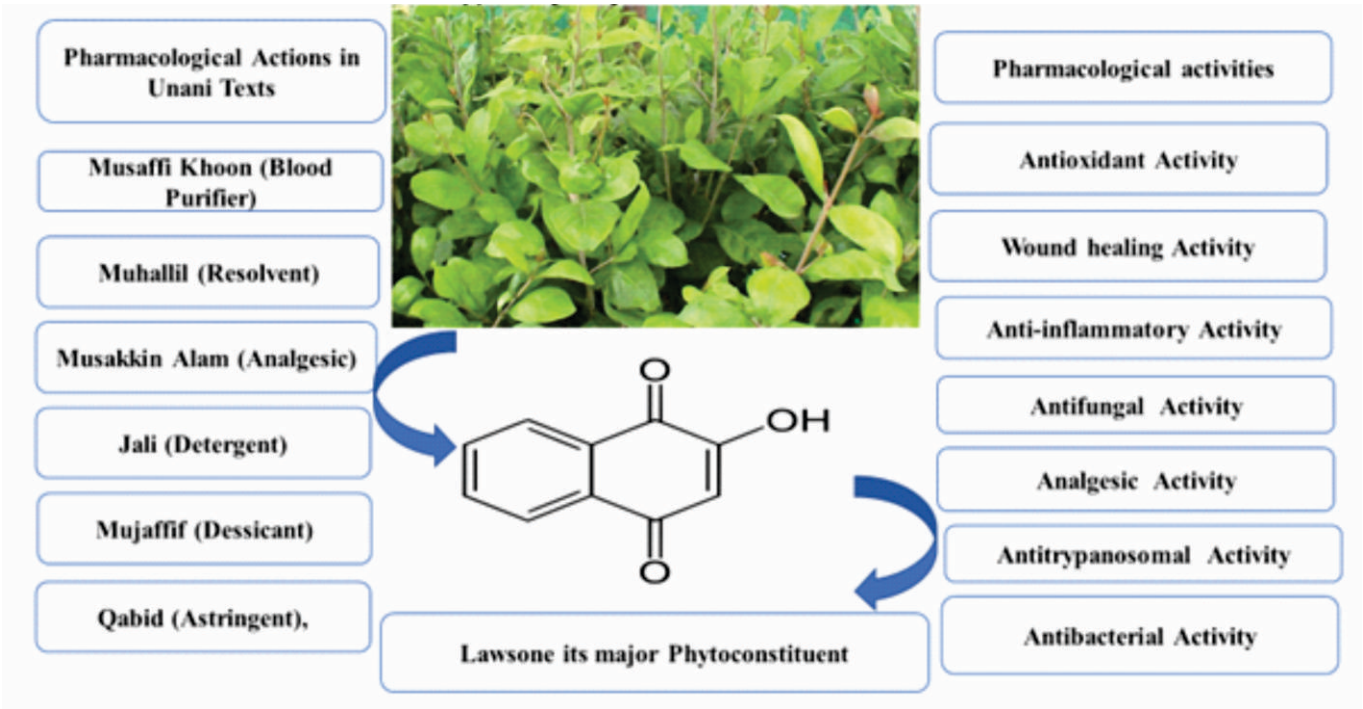

Fig. 1: Phytopharmacological studies of *Lawsonia inermis* L.

Anti-inflammatory activity

Jing-Ru Liou et al., evaluated the anti-inflammatory activity of 31 compounds of hina including three 1,5-diphenylpent-3-en-1-yne derivatives, lawsochylin A-C and three methyl naphthalene carboxylates, lawsonaphthoate A-C, were isolated from the stems and leaves of hina utilizing a bioassay-guided fractionation. The structures of the compounds were elucidated by spectroscopic data. Two compounds, lawsochylin A and lawsonaphthoate A showed potent anti-inflammatory activity by inhibition of superoxide anion generation and elastase release of human neutrophils in response to cytochalasin B. Moreover, the known luteolin, apigenin, 4 *S*-4-hydroxy-a tetralone, and 2-butoxysuccinic acid, also showed potent inhibition of superoxide anion generation and elastase release.[20]

Abdollah Keshavarz et al., carried out the study aimed to compare the effects of a traditional

medicine product (containing natural *hina* oil 25%) and hydrocortisone 1% cream on Diaper Dermatitis (DD) in infants. They conducted a triple blind, randomized trial of 82 children aged two years or less were randomly divided into two groups of 41 children each to receive either hydrocortisone ointment or *hina* medicinal product. Infants were treated 3 times a day for 5 days. The severity of dermatitis was assessed on the first, third, and fifth days using a six-point scale. Both groups showed an improvement in the severity of DD (mean DD severity on the first, third and fifth days, respectively, was 3.20, 1.39, and 1.20 in the *hina* group versus 3.20, 2.05, and 1.90 in the hydrocortisone group; $P < 0.001$). The *hina* group showed a better response when compared with the hydrocortisone group: the rate of improvement on the fifth day of treatment was 90.2% (37 of 41 children without erythema) in the former versus 61% (25 of 41 patients) in the latter ($P = 0.042$). No significant side effects were observed in both the groups. They concluded *Hina*, a traditional medicine product, can be considered an effective and appropriate treatment for DD in infants and children.[21]

Chaibi et al. (2017) investigated the anti-inflammatory properties of henna seed extracts in hexane, chloroform, and methanolic form. Comparing the methanolic extract to all other examined extracts, it seems to have the strongest anti-inflammatory impact, with an IC50 value of 510.23 mg/l. With an IC50 of more than 100 mg/ml, the extracts from hexane and chloroform were not particularly active.[22]

Antidiabetic activity

A 2017 study examined the effects of ethanol-extracted henna leaves on superoxide enzyme activity and blood sugar levels. In the study with the posttest-only control group design, strains of Wistar mice were employed. When compared to the control group, a significant drop in blood glucose levels was found. Superoxide dismutase enzyme activity increased, but not in a way that was statistically significant. The 400 mg/kg ethanol extract significantly reduced the blood glucose levels of the mice, but there was no appreciable change in the increase in SOD activity.[23] Ethanol (70%) extract of *L. inermis* showed significant hypoglycaemic and hypolipidaemic activities in alloxan induced diabetic mice after oral administration. Methanol (95%) extract of leaves of *L. inermis* showed significant in-vitro anti-hyperglycemic effect.[24]

Immunomodulatory effect

T-lymphocyte proliferative responses were promoted by the immunostimulant impact of a 1 mg/ml concentration of hina leaf methanol extract. Using the lymphocyte transformation assay (LTA) to guide the fractionation of the hina leaf total methanolic extract, seven chemicals were identified. The L. inermis leaf naphthoquinone fraction exhibited a strong immunomodulatory impact.[24]

Hepatoprotective activity

Alcoholic extract of the bark of *L. inermis* showed hepatoprotective effect against the carbon tetrachloride induced elevation in serum marker enzymes (GOT and GPT), serum bilirubin, liver lipid peroxidation and reduction in total serum protein, liver glutathione, glutathione peroxidase, glutathione-s-transferase, glycogen, superoxide dismutase and catalase activity. The results suggest hepatoprotective and antioxidant activity of extract of *L. alba* bark. Pretreatment of rats with the extract also inhibited the peroxidation of microsomal lipids in a dose-dependent manner. The hepatoprotective activity of the ethanolic extract of the dried leaves of *L. inermis* and its crude fractions (petroleum ether, ethyl acetate, butanol and butanone fractions) was evaluated against CCl_4 induced hepatotoxicity in mice. The ethanolic extract and its fractions reduced the total bilirubin content and SGOT, SGPT and SAL activities, and reduced liver weight compared to LIV-52 (control).[24]

Lawsone, a noteworthy bioactive naphthoquinone present in L. inermis, was studied by Darvin et al. (2018) in HepG2 cells exposed to RIF-INH and in Wistar rats to determine whether RIF-INH causes hepatotoxicity. HepG2 cells' viability was

reduced by RIF-INH administration; however, lawsone treatment significantly increased that vitality, even at a lesser dose (7.5 M). Lawson treatment also markedly reduced transaminase leakage and MDA levels. The albumin to globulin ratio improved and the serum transaminases and bilirubin levels of the RIF-INH-treated rats significantly decreased following lawsone administration.[25]

Antioxidant effect[47]

Modulator effect of 80 % ethanol extract of leaves of hina on drug metabolising phase I and phase II enzymes, antioxidant enzymes, lipid peroxidation in the liver of Swiss Albino mice. The hepatic glutathione S-transferase and DTdiaphorase specific activities were elevated above basal level by *L. inermis* extract treatment. With reference to antioxidant enzyme the investigated doses were effective in increasing the hepatic glutathione reductase (GR), superoxide dismutase (SOD) and catalase activities significantly at both the dose levels. Reduced glutathione (GSH) measured as non-protein sulphydryl was found to be significantly elevated in liver. Among the extrahepatic organs examined (forestomach, kidney and lung) glutathione S-transferase and DTdiaphorase level were increased in a dose independent manner. Chloroform extract of leaves of *L. inermis* had shown the highest activity (87.6 %) followed by α-tocopherol (62.5 %) by using FTC method and based on TBA method significant activity (55.7 %) compared to α-tocopherol (44.4 %).

Total phenolic compound was 2.56 and 1.45 mg tannic per mg of *Hina* dry matter as extracted with methanol and water respectively. In effect of different concentrations of methanolic extract of *hina* in comparison with synthetic antioxidant. 2-hydroxy-1, 4- naphthoquinone (HNQ; lawsone) is the main ingredient of *L. inermis*. During the oxidation of 100μM phenanthridine by guinea pigs aldehyde oxidase formation of superoxide anion (SO_2) and hydrogen peroxide (H_2O_2) at 6-10% and 85-90% resp. HNQ inhibits the production of superoxide anion and substrate oxidation more potently than hydrogen peroxide.the IC_{50} value of HNQ with phenanthridine oxidation by aldehyde oxidase was 9.3±1.1 μM, which in excess of 15 fold of maximal plasma concentrations of HNQ, indicating a high degree of safety margin.[24]

Using the DPPH free radical scavenging experiment, Chaibi et al. (2017) reported on the antioxidant capabilities of the L. inermis methanolic extract. Significant antioxidant activity was observed in the study (IC50 = 17.0689 g/ml).[22]

Antibacterial activity

Aqueous, methanol and chloroform crude extracts of leaf of *L. inermis* showed the in-vitro antimicrobial activity to inhibit the growth of 6 human pathogenic fungi and 4 types of bacteria in dose dependent manner.[24]

It was recently demonstrated that methanol extracts from five distinct plants like *Punica granatum*, *Eucalyptus globulus*, *Lawsonia inermis*, *Centratherum anthermintic*um, and *Rubia cordifolia* had an impact on clinically derived S. oxacillin-resistant strains of the bacteria. It has been shown that these extracts have antibacterial properties. The IC50 range for these S. aureus methanol extracts is 0.250 to 4.30 mg/ml. According to their research, a number of medicinal plants may have antibacterial chemicals that might be utilized to treat S. aureus infections. This could aid in the development of more effective treatments for illnesses brought on by the bacteria that is resistant to drugs.[26]

Antifungal activity

During screening of barks of 30 plant species against *Microsporum gypseum* and Trichophyton mentagrophytes, only *L. inermis* extract exhibited absolute toxicity. The extract showed broad fungitoxic spectrum when tested against 13 ring worm fungi. Further the fungitoxicity of the extract remained unaltered at high temperature on autoclaving and after long storage. The leaves of *L. inermis* were also found to exhibit strong fungi toxicity and non-

phytotoxicity. The minimum effective dose against test organism was found to be 1000 ppm. Ethanol, methanol and aqueous extract of leaves of *L. inermis* are involved in defensive mechanism against spore germination of Drechslera oryzae. Lawsone isolated from the leaves of *L. inermis* has shown significant antifungal antibiotic effect. Aqueous extract of leaves of *L. inermis* was tested for the antifungal potential against eight important species of Aspergillus which isolated from sorghum, maize and paddy seed samples. *A. flavus* recorded high susceptibility and hence solvent extracts viz., petroleum ether, benzene, chloroform, methanol and ethanol extracts of the plant showed significant antifungal activity. Essential oil obtained by hydro-distillation from leaves of *L. inermis* growing in Iran were analysed by GC-MS and showed an antifungal activity. Ethanol extract of leaves of *L. inermis* showed significant antifungal effect against phytopathogenic fungi. Ethanol extract could be used as alternative source of antifungal agents for protection of plants or crops against fungal infection.[24]

Antiviral activity
The ethanol soluble fraction of *L. inermis* fruits displayed highly potent activity against Sembiki forest virus (SFV) in swiss mice and chick embryo models exhibiting 100 to 65% activities after 10 to 25 days of virus challenge.[24]

Antitrypanosomal activity
Crude Methanolic extract of leaf of *L. inermis* showed in vitro activity against Trypanosoma brucei at concentration of 8.3 mg/ml of blood in mice but not *in-vivo*.[24]

The medicinal value of L. inermis is demonstrated by recent in vivo research. According to studies by Tauheed et al. (2016), the extract significantly ($p = 0.05$) reduced the levels of parasitaemia at 250 mg/kg. PCV was significantly higher ($p = 0.05$) in group II at week two, but it was still higher ($p > 0.05$) in extract-treated groups than in group V. Rats in group II displayed significantly lower EOF and MDA values as compared to groups IV and V. Because of this, the leaf of L. inermis has a lowering influence on trypanosomosis pathology in addition to having an antitrypanosomal action against T. congolense in vivo rats. This function is probably brought about by shielding the erythrocyte.[27]

Antiparasitic activity
During an ethnopharmacological survey of antiparasitic medicinal plants used in Ivory Coast, 17 plants were identified and collected. Polar, non-polar and alkaloidal extracts of various parts of these species were evaluated in-vitro in an antiparasitic drug screening. Antimalarial, leishmanicidal, trypanocidal, antihelminthiasis and antiscabies activities were also determined. Among the selected plants, *L. inermis* L. showed interesting trypanocidal activities.[24]

Antidermatophytic activity[47]
The antidermatophytic activity of ethanol, ethyl acetate and hexane extracts of *L. inermis* were tested on 5 strains each of Tinea rubrum and Tinea mentagrophytes. All these extracts showed significant antidermatophytic properties in-vitro.

Tuberculostatic activity
The tuberculostatic activity of *hina* was tested in-vitro and in-vivo. On Lowenstein Jensen medium, the growth of Tubercle bacilli from sputum and of Mycobacterium tuberculosis was inhibited by 6 μg/ml of the herb. In vivo studies on guinea pigs and mice showed that the herb at a dose of 5 mg/kg body weight led to a significant resolution of experimental tuberculosis following infection with Mycobacterium tuberculosis.[24]

Antifertility activity
Ethanol extract prepared from the powdered seeds of *L. inermis* L. failed to show any antifertility activity. However in subsequent studies it was observed that the powdered leaves of *L. inermis* L. when administered as suspension or incorporated into the diet inhibited the fertility of rats. The fertility induced appeared to be permanent.[24]

Analgesic activity

The ethanol extract of 25 plants commonly used in traditional Arab system of medicine for treatment of pain, fever and rheumatism were investigated for their analgesic and antipyretic activities. The extract of leaves of *hina* showed significant analgesic as well as antipyretic activity. The fixed oil obtained from seeds were screened for pharmacological activity both *in-vitro* and *in-vivo*. It was concluded that seed oil is devoid of behavioural and CNS effects and failed to produce any effect on isolated tissue though it possess significant analgesic activity. [24] Using mice whose writhing was triggered by acetic acid, Sultana and Khosru (2011) investigated the analgesic qualities of an ethanol extract of Lawsonia inermis leaf. They discovered that diclofenac sodium did not appear to elicit any noticeable reflex inhibition.[28]Isoplumbagin and lawsaritol, isolated from stem bark and root of *L. inermis* L. showed anti- inflammatory activity against Carrageenan induced paw oedema in rats. The compounds phenylbutazone, isoplumbagin and lawsaritol at the oral dose of 100 mg/kg exhibited 61, 60 and 40 percent inhibition in comparison with controls. Isoplumbagin showed significant anti-inflammatory activity similar to that of phenylbutazone. Butanol and chloroform fractions showed more potent anti-inflammatory, analgesic and antipyretic effects than aqueous fraction of crude ethanol extract of *L. inermis* in a dose dependent manner. Leaves showed significant anti-inflammatory effect with some active principles. Cytotoxic activity Isoplumbagin exhibited up to a 1000 fold range of differential sensitivity, which represents distinct fingerprint of cellular responsiveness. At concentration of 10.5–10.8 M, the compound typically produced LC_{50} – level responses against a majority of the melanoma and colon cancer cell lines as well as against several of the non- small cell lungs, colon, CNS, and renal cell lines. Isoplumbagin showed an interesting profile of cytotoxic activity. Chloroform extract of leaves of *L. inermis* displayed the cytotoxic effects against liver and human breast (MCF-7) with IC_{50} values of 0.3 and 24.85μg/ml by microculture tetrazolium salt assay.[24]

Anticoagulant effect

Lawsone and its oxazine derivatives isolated from leaves of *L. inermis* had proven to be potential anticoagulant agent. [24]

Wound healing effects

Chloroform and aqueous extracts of leaves of the plant were capable of inhibiting the growth of microorganisms that are involved in causing burn wound infections. Ethanol extract of the plant (200 mg/kg/day) was used to evaluate the wound healing activity on rats using excision, incision and dead space wound models. Extract of *L. inermis* when compared with the control and reference standard animals: a high rate of wound contraction, a decrease in the period of epithelialization, high skin breaking strength, a significant increase in the granulation tissue weight and hydroxyproline content. Histological studies of the tissue showed increased well organized bands of collagen, more fibroblasts and few inflammatory cells when compared with the controls which showed inflammatory cells, scanty collagen fibres and fibroblasts.[24]

Protein glycation inhibitory activity

Ethanol extract of the *L. inermis* L. was evaluated in-vitro for protein glycation inhibitory activity using the model system of bovine serum albumin and glucose. The extract and its components showed significant effect on protein damage induced by a free radical generator in in-vitro assay system. It was found that the alcoholic extract, lawsone and gallic acid showed significant inhibition of Advanced Glycated End Products (AGEs) formation and exhibit 77.95%, 79.10% and 66.98 % inhibition at a concentration of 1500μg/mL, 1000μg/mL and 1000μM respectively. Luteolin, a plant flavonoid and found potent anti-inflammatory properties both in vitro and in vivo.[29]

Gastroprotective activity

The pharmacological effects of L. inermis leaf, folk, and ethnomedicine used to treat stomach ulcers were assessed by Basipogu and Syed

(2015). The leaves of L. inermis exhibited exceptional protection against tissue ulceration in the form of a methanolic extract. It thus validates its traditional usage in India as a treatment for ulcers.[30]

According to Davood Hekmatpou et al. (2018), henna has cooling and protective properties that assist avoid decubitus ulcers in intensive care units. Eighty patients in hospital intensive care units participated in a randomized research trial. The patients (n = 40) were divided into the control and treatment groups by random assignment. In the intervention group, henna was applied to the sacrum of the patient in addition to the usual preventive measures for decubitus ulcers. At the end of the experiment, it became apparent that six people in the control group had acquired decubitus ulcers.[31]

Toxicity studies

Mice were used to test the toxicity of L. inermis aqueous root extract at different dosages. Rats with pregnant females showed signs of lightheadedness, transient amnesia, and unexpected miscarriage. Rats that received the average amount on a daily basis stayed healthy and active. For every dosage, there was no recorded mortality. Following intraperitoneal administration of the extract at different doses, the results showed delayed toxicity.[32]

Mice were used to study the teratogenic effects of an 80% ethanol extract of *Lawsonia inermis*' aerial organs at particular doses. In this study, Jafarzadeh et al. Comparing the weight and height of the embryos to the control, the extract in both doses significantly reduced them. Neither the weight nor the height of the embryos varied significantly at these concentrations. Embryos with anencephaly and exencephaly, as well as rib and parietal bone malformations, were observed in varying frequencies in both *L. inermis*-treated groups. Therefore, it may be concluded that the plant's ethanolic extract has teratogenic properties because, according to the study, it causes the embryos to be considerably smaller and lighter than the control group.[33]

4. CONCLUSION

This study demonstrates that *Lawsonia inermis* L.is a pharmacologically significant plant whose whole plant has been used as a source of chemicals for traditional Unani medicine. The various therapeutic benefits of Lawsonia inermis L., including as its antibacterial, anticancer, antiproliferative, anti-inflammatory, antiangiogenic, antidiabetic, larvicidal, antileishmanial, and antimalarial properties, are illustrated by the studies discussed in this article. *Lawsonia inermis* L. has also demonstrated beneficial benefits on infectious illnesses, inflammation, and wound healing. These results highlight Lawsonia inermis L.'s importance as a useful resource for drug research and discovery.

5. Future Prospectives of the study

In order to increase the bioavailability and effectiveness of the bioactive ingredients, we also support the creation of novel henna extract formulations for topical and internal application. Clinical studies to assess the security and effectiveness of henna extracts in the management of several human ailments may also be taken into consideration. Finally, we suggest that a thorough examination of the mechanism of action of the bioactive chemicals in henna be conducted in order to comprehend their therapeutic potential and identify new pharmacological targets.

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Conflicts of interest

There are no conflicts of interest.

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A LITERATURE REVIEW ON THE MOST COMMON WOMEN PROBLEM (SAILAN-UR-RAHEM) AND ITS MANAGEMENT IN UNANI SYSTEM OF MEDICINE

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ABSTRACT

Sailan-ur-Rahem, a common problem in women's health, in the context of the Unani medical system. Sailan-ur-Rahem is a term used to describe a range of illnesses affecting the female reproductive system that pose serious health and quality of life difficulties to countless women worldwide.Approximately 20% of patients who visit gynecological clinics report having vaginal discharge, which could be an infection. 90% of the time, the inflammation is only mild, with the remaining 10% including more serious conditions. Due to their increased exposure to sexual activity and frequent childbearing, married women are more likely to experience vaginal infections such as cervical erosion, cervicitis, and pelvic inflammatory diseases, which can result in leucorrhoea.The Unani approach to Sailan-ur-Rahem stresses a holistic view of health, emphasizing the use of specialized therapeutic procedures to correct underlying imbalances and bring physiological humors back into balance. In order to reduce symptoms and enhance general wellbeing, these interventions frequently involve dietary changes, lifestyle adjustments, herbal remedies, and specialist medical care. The management methods and understanding of Sailan-ur-Rahem within the Unani medical system by fusing traditional knowledge with contemporary scientific ideas. This would improve healthcare services and improve women's health outcomes globally.

No. of Pages: 08 **No. of Figs: 1** **References: 30**

Keywords: Sailan-ur-Rahem, pelvic inflammatory diseases, herbal remedies, leucorrhoea, vaginal discharge, therapeutic management, cervical erosion, postmenopausal women.

Leucorrhoea (Sailan-ur-Rahem) is defined by Unani idea as a persistent inflammation of the vaginal mucous membrane (Ghisha-e-mukhati), and it is regarded as a medical ailment. As per the findings of distinguished Unani scholar Allama Najeebuddin Samarqandi, Silan-ur-Rahem is a type of waste material (Fuzlaat) that enters the uterus and is ejected out as a result of deficient and weak nutritive faculty (Quwat-e-ghazia) and takes the form of a fluid secretion [1]. Reputable

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Unani doctors have said in classical Unani literatures such as "Kamil-us-Sana," "Firdaus-ul-Hikmat," and "Tibb-e-Akbar" that insufficient uterine nutrition (zoaf-e-quwat-e-ghazia of rahem) leads to waste product accumulation (fuzlaat e-raddiya).

As a result, the uterus's ability to absorb nutrients (quwat e-jaziba) weakens and extra waste materials (fuzlaat-e-raddiya) are evacuated through the vagina or uterus as astefragh (excretion) [1, 2, 3]. According to Buqrat, the Unani medical system links the fundamental causes of illness to the idea of Akhlat, or humor (Hippocrates 360-470 B.C.). The notion of akhlat states that depending on the preponderance of akhlat, vaginal discharge might be Damvi (Sanguine), Balghami (Phlegmatic), Saudawi (Melancholic), or Safrawi (choleric). Phlegm humor, also known as Balghami khilt, is a type of mucus released from the vagina. All of this results in a weakening of the nutritional faculty (quwat-e-ghazia), which damages the vaginal lining and causes profuse vaginal discharge [1,2,5].

Sailan-ur-Rahem is a disorder characterized by anomalous discharges from the uterus, cervix, and vagina that are not blood. It includes practically all types of discharges induced by genital tract infections. Leucorrhoea is one of the most common gynecological problems, accounting for more than 25% of women's visits to the gynecologist [4]. Leucorrhoea is defined as excessive normal vaginal discharge. It is neither purulent nor offensive. It is non-irritating and never causes pruritus. Vaginal discharge is normal and non-infectious, although it can become infective in neoplastic conditions or when a foreign body is present. It is an extremely common issue in clinical practice.[28]

Married women are more likely to develop leucorrhoea because they engage in sexual activity and have children frequently, which can lead to vaginal infections such as cervicitis, cervical erosion, and pelvic inflammatory disease, all of which cause leucorrhoea. In Unani Medicine literature, discharge from the uterus, cervix, and vagina other than blood is referred to as sailan-ur-reham. [29] Women and children are our nation's most valuable assets. Women's health is the foundation for greater health for both their families and the nation. Sailan-ur-reham can be compared to leucorrhoea in modern medicine. [30]

As a result, sailan-ur-reham can be compared to leucorrhoea in the present medical system. As reported by Nurul Hasan Nayyar, this is a disorder in which the uterine mucus membrane is affected, resulting in chronic inflammation and impairment of the uterine quwat-e-ghaziya (nutritive faculty). "Sailan" in "Nurul-Lugat" refers to the flow of water or blood.[28] The medicines and other therapeutic managements utilized in this system, in reality, assist the body in regaining this capacity to an optimum level and therefore restoring humoral balance, thereby maintaining health. [4]. In fact, based on the preceding description, every vaginal discharge that is clearly purulent and contains pus cells should be attributed to a specific vaginal infection [6].

RATIONAL OF STUDY

The majority of the time, the Unani medical system provides minimally or no adverse effects while treating an illness at its source. Many unani medications are used to treat leucorrhoea, or sailan-ur-reham. Additionally, murmaki is used as a powder (safoof) in a dose of "Paune do (2) Masha (1.750 gm.)" together with a half-boiled egg. For three days, it is taken in the morning on an empty stomach, before meals. Despite the availability of many types of contemporary medicine, the prevalence of sailan-ur reham (leucorrhoea) has increased recently. If these medications are taken for an extended length of time, there may be negative effects.

ETYMOLOGY

Sailan-ur-rehamis composed of two words “sailan + reham”. The word sailan denotes the flow and the reham denotes the uterine material. That's why the meaning of sailan-ur-reham is flow of uterine material.

DEFINITION: In literature of Unani Medicine, discharge from uterus, cervix and vagina other than blood are described under the heading of sailan-ur-reham.

CLASSIFICATION OF SAILAN-UR-REHAM

Taking into account the descriptions provided by Unani Scholars, the classification of Sailan-ur-Rahem is as follows: Figure 1.

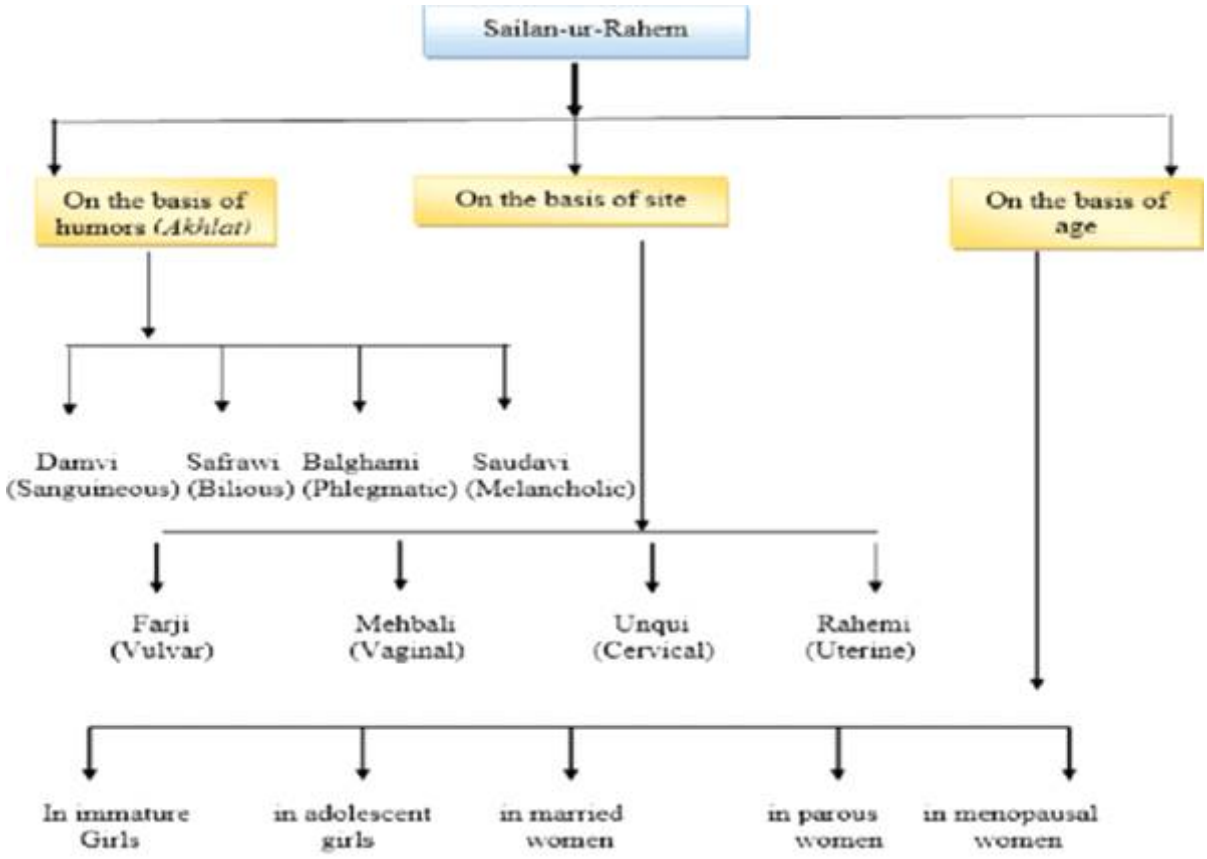

Fig 1: Showing the Unani classification of *Sailan-ur-Rahem* (Leucorrhoea).

I. On the basis of Humours (Akhlat) involved

(a) Sailan-ur-Reeham Damvi (Sanguineous): induced by excess khilt-e-dam (blood), resulting in crimson discharge.

(b) Sailan-ur-Rehem Safrawi (Bilious): It is caused by an excess of khilt-e-safra (bile), and the discharge is yellowish.

(c) Sailan-ur-Rehem Balghami (Phlegmatic): This condition is caused by an excess of khilt-e-balgham (phlegm), and the discharge is white.

(d) Sailan-ur-Rehem Saudavi (Melancholic): This condition is caused by an excess of khilt-e-sauda (black bile), with a blackish discharge.

II. On the basis of site

(a) Sailan-e-Farji (Vulvar discharge): The discharge originates from the outer part of the vagina.

(b) Sailan-e-Mehbali (Vaginal discharge): The discharge originates in the inner aspect of the vagina.

(c) Sailan-e-Unqui: discharge from the cervix of the uterus.

(d) Sailan-e-Rahemi: discharge from the uterine mucous membrane, which can occur at any age. In this situation, the discharge is white and thick, similar to egg whites.

III. Oh the basis of age

(a) Sailan-ur-Rahem in immature girls. It is the result of worm infestation, urinary incontinence, and vaginal itching.

(b) Sailan-ur-Rahem in adolescent girls: It is caused by excessive sorrow and melancholy, as well as bad living situations. It occurs close to menstruation.

(c) Sailan-ur-Rahem for married women: It originates in the inner aspect of the vagina as a result of uterine irritation exacerbated by coitus. The discharge is yellowish white, unpleasant, and produces extreme vaginal burning.

(d) Sailan-ur-Rahem in parous women: This condition is caused by a cervical cut during delivery and chronic inflammation of the uterine mucous membrane. Here, the discharge is white and viscous, similar to the white section of an egg.It originates in the cervix and turns yellowish and reddish when mixed with pus or blood. It is most typically found in pregnant women.

(e) Sailan-ur-Rahem in postmenopausal women: It is more common in elderly women and is caused by cervical or endometrial cancer, with Warm-e-Rahem Muzmin acting as a rare exception. It resembles curds or buttermilk.

Risk factors [2, 7, 8, 12, 13, 14,]

According to the Unani idea, the numerous risk factors connected with an elevated risk of developing Sailan-ur Rahem are listed and should be avoided.

- Lack of absorptive ability (Zoaf-e-quwat-e-jaziba)
- Low socioeconomic situations.
- Unsanitary conditions, especially during menstruation.
- Frequent abortion (kasrat-e Isqaat)
- Hardworking Cold Frequent intercourse (Kasrat-e-jima).
- Gonorrhoea (sozaak)
- Syphilis (Ateshak)
- Amenorrhoea (Ehtibas-e Haiz)
- General Weakness (Zoaf-e-Aam)
- Chronic constipation (Qabz-e Muzmin)
- Gout (niqras)
- Arthritis (Waja al-mafasil)
- Warm-e-Rahem, or uterine inflammation
- Vaginitis (Warm-e-Mehbal)
- Use of filthy garments during menstruation.
- Worm infestation (Kirm-e-Shikam)
- Dysentery (Pechish).
- Diarrhea (ishaal)
- Contraceptive device (Mana-e-aalat-e-hamal)
- Anemia (Faq-rud-dam)

PATHO-PHYSIOLOGY (Mahiyat-ul-Marz)

Ali Bin Abbas Majoosi (930-994 A.D.) detailed the pathophysiology of this disease in detail in his famous work "Kamil-us-Sana". He claims that Sailanur Rahem's abnormal temperament (Sue Mizaj) affects the uterus and diminishes the nutritive faculty (Quwat-e-Ghazia). This half-braked substance subjugates the Hararat-e Gharizia. In the absence of Hararat-e-gharizia, Hararat-e-ghariba takes over the uterus and converts stored uterine waste into diseased material. This toxic material is irritating in nature, and when it runs out of a female's vaginal system, it produces burning and irritation, as well as ulceration (erosion), particularly in the cervix. The discharge from the vaginal tract is called as Sailan-ur-Rahem [15].

ETIOLOGY (ASBAAB)

The etiology of Sailanur Rahem has been explained in depth by most Unani academics while discussing gynaecological problems. In Al-Qanoon-fit-tib, Ibn-e Sina explained the cause of Sailanur Rahem as a weakening of the digestive faculty (Quwat e-Hazema) of urooq-e-haiz and dominance of four humors (Akhlat-e-Arba) caused by infection (Ufoonat) in the uterus [16]. Some other famous Unani physicians have defined Sailan-ur-Rahem as being produced by Rahem's Zeof-e-quwat e-ghazia in conjunction with Akhlat-e-Arba dominance and waste material in the body [17, 18, 19].

Other causes of leucorrhoea include emotional difficulties, unsanitary environment, chronic disease, weariness, poor food, constipation, and a persistent retroverted uterus.

- Excessive secretion is commonly caused by physiological conditions such as high oestrogen levels during puberty, menstruation, pregnancy, and sexual arousal.
- Cervical causes are vaginal infections caused by bacteria, viruses, fungus, or parasites.
- Other reasons include atrophic vaginitis, cervicitis, and foreign bodies.
- The most frequent infections are Trichomonas vaginalis and Candida. These are curable, even though the majority of bacterial infections are asymptomatic.

CLINICAL FEATURES

Clinical symptoms of sickness are determined by the dominating humours (Akhlat). The colour of vaginal discharge depends on the relevant humours and might be pale, reddish, yellowish, or blackish. It might be thin or thick, viscous, and associated with a foul-smelling and itching sensation surrounding the affected area [20]. Other linked signs of illness include:

- Kamar Dard (Backache)
- Pedu me Dard aur Bochh (Pain and Sense of Heaviness in Lower Abdomen)
- Pindliyon me Dard (Pain in Calf Muscle)
- Haiz Takleef se aata hai (Dysmenorrhea)
- Susti aur Kahili (Malaise and Lethargy)
- Haath aur Pairon me Jalan (Burning Sensation of Hands and Feet)
- Qabz (Constipation)
- Saans lene me Takleef (Dyspnoea)
- Ikhtilaj-e-Qalb (Palpitation)
- Safaid zardi mayal tatoobat (Whitish yellow veginal discharge).
- Aam kamzori (Generalized weakness)
- Andamnihani me kharish (vaginal itching)

The vaginal mucosa and vulva may become inflamed, and in rare cases, the patient may become infertile as a result of discharge. The patient may appear pale, frail, sluggish, and irritated [8, 10, 13, 14, 16, 21].

DIAGNOSIS

In the classical USM literature, a simple test (swab method) is used to determine the colour of discharge. If the discharge is reddish with a heat dominance, and the urine is red turbid, it implies a blood predominance. If the discharge is white and accompanied with other balgham signs, it indicates that phlegmatic humour is predominant. If the discharge is yellowish, foul-smelling, and accompanied by extreme thirst, it indicates that yellow bile is the predominant kind. The blackish and turbid discharge associated with dryness and weakness indicates a predominance of black bile. [3, 18, 19, 22, 23, 24].

DIFFERENTIAL DIAGNOSIS (Tashkhees-e-farikha) [9, 16, 18, 22]

The following conditions should be ruled out before making a diagnosis :

- Sailan-e-Mani
- Bawaseer-e-Rahem
- Busoor-e-Rahem
- Sartan-e- Rahem
- Qurooh-e- Rahem
- Suzaak

Principles of treatment (Usool-e-ilaj) [8, 12]

- According to USM, the first step in treating Sailan-ur Rahem is to address the underlying cause.
- Maintain sanitation, particularly the local hygiene.
- Patients should wear cotton loose-fitting undergarments to keep their genitals aerated.
- If sickness occurs as a result of humour dominance (Akhlat), it should be treated first with concoctive and purgative therapy (Munzij and Mushil) of that humour, followed by suppositories (farzajat), which are used to treat menorrhagia.
- If the cause of Sailan-ur-Rahem is a lack of nutritional power (Quwat-e-ghazia), then Bahi (Cydonia vulgaris), apple and lemon sharbat (Citrus lemon), Arq-e-Maul lahem,

whey (Maul-jubn), or fruit juice (Maul-fawakhah) should be administered.Advise patients to consume readily digestible meals (ghiza-e-latif) and beverages because both boost the nutritive strength (quwat-e-ghazia) of the uterus.

- If the reason is a local vaginal infection, therapy should be administered to clear the morbid humours from the stomach and liver.
- Maintain patients' digestion adequately during the treatment period, and avoid constipation (Qabz) by giving a laxative diet and medications (Mullayin ghiza and Dawa).
- If the cause is anaemia, an iron complex should be administered.
- Improving patients' overall health should help to preserve the strength of all essential organs in the body.
- Patients must also be directed to avoid physical exertion and similarly anxiety factors (Nafsiyati asbaab) should be minimized or removed.
- The patients should advise for general measures of Sailan-ur-Rahem to avoid coitus.

Dietotherapy (Ilaj-bil-ghiza) [19]

- Patients should be provided easily digestible foods (Ghiza-e-latif and Saree-ul hazm), as well as liquids.
- Advise patients to consume moong dal, yellow arhar lentil (Arhar ki dal), meat soup (Maul-leham), green leafy vegetables, and fruits such as pomegranates, apples, and grapes.
- Ask the patients to consume iron-rich meals.
- Instruct the patients to avoid Ghiza-e-kaseef, hot, spicy, and bitter foods.

Drug therapy (Ilaj-bil-dawa)

Tab. Doxycycline is a tetracycline-based antimicrobial agent. It is the first line of treatment for nonspecific endocervicitis, and leucorrhoea may occur in cervicitis. According to the Unani concept, medications with expectorant (Mukhrij-e balgham), tonic (Muqawwi), astringent (Habis and Qabiz), diuretic (Mudir), laxative (Mullayin), purgative (Mushil), and analgesic characteristics (Musakkin) should be utilised. Sailan-ur-reham can also be treated by inserting a herbal mineral powder formulation into the vegina.Furthermore, medications should be chosen based on the humour involved. [24, 25] Compound Unani medicines Qustas should be combined with one Majoon. Single and complex medications often utilised by notable Unani physicians include the following:

Single drugs [17, 8, 19, 24, 25, 26, 27]

- Anisoon (Pimpinella anisum)
- Mazu (Quercus infectoria)
- Shibeyamani (Alum)
- Gul-e-supari (Acecia catechu)
- Gul-e-surkh (Rosa domestica)
- Afsanteen (Artemisia absinthium)
- Neem (Azadirecta indica)
- Sandal safaid (Santalum album)

Compound drugs [3, 26, 27]

The following unani formulations are used in the management of sailan-ur-reham-

- Majoon Supari Pak
- Majoon Mochras
- Majoon Muqawwi Rahem
- Majoon Suhaq Sonth
- Sufoof-e-Sailan
- Qurs-e-Sailan
- Habb-e-Sailan
- Habb-e-Marwareed
- Halwa-e-Supari pak
- Qurs-e-Qushta Khabs-ul-Hadeed
- Qusta Qalai
- Qusta Baiza-e-Murgh
- Qusta Musallas
- Qushta-e-Zaj

PREVENTIVE MEASURES [19]

- Maintain the genital area as clean and dry as possible.
- Wash the innerwear with a high-quality

detergent that is fungicidal and bactericidal.

- A morning stroll can help to reduce stress and boost disease resilience.
- Ask the patients to consume extra water to flush the toxins out of their bodies.
- In the event of an excess discharge, avoid all sugar-rich foods (sweets, pastries, puddings, etc.).
- Hot and spicy foods should be limited in the patient's diet.
- Advise patients not to drink alcohol.
- Add fresh curds to the patient's diet since they aid digestion and contain lactic acid, which lowers discharge.

Complications (Awarizaat) [2, 18]

- Uterine weakness leads to infertility.
- Abortion (Isqaat).

DISCUSSION

Sailan-ur-reham (Leucorrhoea) is an illness caused by a lifestyle condition; thus, changing one's lifestyle and nutrition pattern can help avoid and treat the disease.The treatments described above are effective in the treatment of Sailan-ur-reham (Leucorrhoea).

CONCLUSION

We can conclude that expanding our understanding of the abundant storage of Unani components and general principles of disease management, which have been used by Unani physicians since antiquity, will be extremely useful and complete. Because of the recognised side effects of conventional medications, Unani drugs and compound formulations may be a good choice for treating Leucorrhoea. Sailan-ur-reham is a worldwide condition that affects women of all ages. It affects up to 75% of women at least once in their lifetime. This is a relatively common issue in clinical practice. Almost 20% of patients who visit a gynaecological clinic complain of veginal discharge, which indicates an infection. Unani medications and compound formulations can be an effective treatment option for sailan-ur-reham. This article discusses the various causes of leucorrhoea, as well as its diagnosis and treatment in the context of classical Unani literature.

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CHARACTERIZATION OF BIOACTIVE COMPONENTS, ETHNOMEDICINAL USES, NUTRACEUTICAL POTENTIAL, AND PHARMACOLOGICAL ASPECT OF *JUGLANS REGIA* L. IN UNANI MEDICINE: A NARRATIVE REVIEW

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Review Paper

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ABSTRACT

Background: Foods high in immunonutrients, such as walnuts, are considered nutraceuticals and may have therapeutic properties. Utilizing these has been linked to a number of health benefits, such as a lower risk of coronary heart disease, cardiovascular disease, type II diabetes treatment, prevention and treatment of specific cancers, and a reduction in symptoms associated with age-related and neurological conditions.

Aim of the study: The current study recapitulates the most recent research on the relationship between chemical components and pharmacological activities as well as the nutraceutical benefits of walnuts.

Materials and Methods: Nutraceutical information about walnuts was gathered from published works, historical and contemporary documented classical scripts, Unani pharmacopeias, and databases including Pub Med, Web of Science, Science Direct, and Google Scholar.

Results: The walnut has been recognized to be a commercial, dietary, and medical plant that can be utilized to cure common medical conditions. According to the Unani medical system, walnuts are a great dietary food that can be utilized as nutraceuticals. It has been found to possesses pharmacological actions like Muqawwi-i-A'da' Ra'isa (Tonic for vital organs), Muqawwi-i-A'sab (Nervine tonic), Mulayyin-i-Am'a' (Laxative), Muqawwi Dimagh (Brain tonic) which is validated through the presence of several pharmacological activities like anti-diabetic, anti-bacterial, cardioprotective, hepatoprotective, immune booster and memory enhancer properties. Amongst the many bioactive substances found in different plant parts, juglone has been identified as having a major anti-cancer effect in the treatment of fatal cancer.

Conclusion: It is imperative to provide scientific evidence for the fundamental advantages of walnuts as a nutritional food source, as well as to clarify and validate any possible medicinal use.

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Keywords: Unani Medicine, Anti-bacterial, Walnut, Immunity, Memory enhancer.

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The cornerstone of treatment was thought to be natural medications, particularly those derived from medicinal plants. Research conducted over the past years has demonstrated that both developed and developing nations have a strong inclination toward and readiness to accept alternative therapies.[1] Traditional diets and herbal extracts have long been acknowledged as essential components of a holistic strategy for achieving total wellbeing and health, particularly in the context of ancient Greek medicine. The idea that food might serve as medicine was taken up by the Greek physician Hippocrates, who is famous for saying, "Let food be the medicine and medicine be the food." Throughout human history, a wide range of natural resources including nuts, cinnamon, saffron, vegetables, honey, garlic, ginger, pomegranate, mint, and many more have been used for their curative and strength-restoring properties when consumed.[2] Nutraceuticals are defined as bioactive molecules found in regular foods or in sources derived from plants. These substances can be administered in the form of functional foods or dietary supplements, offering additional benefits to important nutritional components. Nutraceuticals are a diverse group of bioactive compounds found in food sources, such as probiotics, fatty acids, amino acids, antioxidants, and phytonutrients. Nutraceuticals are well known for their involvement in diseases treatment and prevention, anti-aging qualities, and cancer prevention, with either proven prior or potential effects.[3]For example, garlic has been proposed as an adjunctive treatment for high blood pressure and cholesterol.[4]

Numerous studies have clearly demonstrated the advantages of nutraceutical substances for immune system functions. These include improving immunomodulatory activity, strengthening the infection response mechanism, and lessening the effects of autoimmune diseases and hypersensitivity. Additionally, studies have demonstrated the lipid-lowering, anti-cancer, anti-inflammatory, and antioxidant effects of nutraceuticals.[5] The immune system is an intricate host defense system made up of various specialized cells and components of proteins that work together to protect the body from sickness. The two subsystems that collectively make up the immune system are the innate and adaptive immune systems. Cellular and humoral responses are involved in both subsystems. As T cells are in charge of identifying and eliminating infections, this will consequently cause a commensurate reaction that is controlled by a number of cell-mediated responses. Apart from B lymphocytes that generate certain antibodies in response to antigens or diseases, it will also offer a neutralizing impact and defense against any damage the body may experience. [6] The field of nutraceuticals is becoming more and more appreciated, and there is a growing desire to discover new therapeutic choices through the use of cutting-edge science and technology. While numerous studies have documented the beneficial effects of nutraceuticals on the immune system. Numerous herbs with several phytochemicals have been researched; walnut is one such medication utilized in nutraceuticals.[7]

Geographical distribution of walnut

Juglans Regia L., a member of the Juglandaceae family, is a fragrant, ephemeral tree, a massive, monoecious, deciduous tree that grows to a height of 900–3300 meters that grows abundantly in Kashmir's North-Western Himalayas.[8] It yields approximately 88 percent of the world's walnut supply. It is native from the region from Balkans eastward to the Himalayas and southwest China. walnut trees are growing many in parts of the world, including Asia (foothills of the Himalayas, Iran, China and Japan), Southern and Eastern Europe, as well as North and South America. Walnut trees grow in some provinces of Iran such as Fars, Hamedan, Kohgiloyeh and Boyerahmad, and Lorestan.[9] The Indian Western Himalayan zone offers ideal agricultural climates for walnut production of superior grade. The center of walnut production in India is the Union Territory of Jammu and Kashmir, which produces a

significant portion of walnuts of an export-quality product. JKUT has two sections that manufacture walnuts. It is grown in the Jammu division's Ramban, Kisthwar, Doda, Rajouri, and Poonch districts in addition to all of the Kashmir division's districts. Since walnuts are a high-quality fruit that is sold to other nations, the walnut trade is very important to Jammu & Kashmir and is regarded as the main pillar of the state's economy. Locals who live in the region's more remote parts depend heavily on the walnut trade for their livelihood.[10]The leaf, flower, and kernel have been used in Unani medicine for medicinal as well as dietary purpose. The Temperament (Mizaj) described to be of Hot and Dry type.[8]

Description of the plant

Macroscopic characteristics:
The tree has gray bark and alternate, imparipinnate, mobile, elliptical or oblong-lanceolate leaflets that are longitudinally fissured. There are approximately two genera and fifteen species in the family of flowers, which are unisexual. Featuring five to nine leaflets that are unevenly pinnate and arranged in a regular pattern, the leaves are uniformly arranged and range in length from 25 to 40 cm.[11]Cotyledons are cream-brown in color, 2-3 cm long, slightly curving, coriaceous, sporadically corrugated, fragmented pieces, and have an oily, sweet flavor.[8]

Microscopic characteristics include small almond grains and fat in both the endosperm and cotyledons, as well as a broad zone of oval to a polygonal, thin-walled, radially extended parenchymatous cells.[8]

Powder: Cream colored; displays a profusion of spherical oil globules and clusters of cotyledon cells.[8]

This review delves deeply into the phytochemical action, ethnomedical use, and pharmacological action of these nutraceuticals within the Unani medical system.

2. Methodology
The data from publications pertaining to immunity enhancer were evaluated using bibliographic searching. The classical texts (Arabic, Persian, and Urdu) cited in Unani literature were thoroughly examined and scrutinized. A thorough analysis of the botanical herbs employed in the Unani medical system, especially in the form of nutraceuticals, as immunomodulators has been conducted. The Indian Medicinal Plants reference book and other indexed publications were used to meticulously translate the names of the medicinal plants into English. The study's sources included books with a modern bent, pertinent articles, periodicals, and indexed journals from Pub Med, Science Direct, and Scopus. The contents were searched using the following keywords: "Anti-inflammatory," "Walnut," "Antioxidant," "Anti-cancer," and "Unani Medicine." The study excluded the thesis, letters to the editor, non-English language articles, and dissertations.

3. Results and Discussion

Chemical composition and phytochemistry
Walnuts are nutrient-rich because they include a lot of fatty acids, proteins, vitamins, and minerals. They are a good source of flavonoids, phenolic acids, and polyphenols in addition to these. The kernels of walnut fruits have been found to contain larger concentrations of fats (68%), with proteins (16%) of the total.[12] Walnuts are a rich source of essential fatty acids and tocopherols. According to Zahoo et al., 17 chemicals have been found in walnut leaves; nine of these include epicatechin, aesculetin, taxifolin-pantocid, syringetin-o-hexoside, myricetin-3-o-glucoside, myricetin-3-o-pantocid, quercetin glucuronide, kaempferol pantocid, and kaempferol rhamnoside. [13]Additionally, it has been reported that this plant's leaves contain derivatives of naphthalene, specifically 5-hydroxy-1-4-naphthoquinone. One naphthoquinone chemical that is present in the new leaves and green shell of walnut tree fruits is called juglone (5-hydroxy-1, 4-

naphthoquinone). With a molecular weight of 174.16 and a formula of C10H5O2 (OH), juglone is the most noticeable component in all of the walnut tree's organs. Its precursor is a glycoside, a compound that is present in the aerial parts of the plant, particularly the leaves, and is hydrolyzed to become juglone. The fruits of the walnut tree include lipids, glucose, and organic elements such calcium oxalate, phosphate, citric acid, and malic acid in their green shell. The two main components present in the leaves and green shell of walnuts are juglone and phenolic compounds.[14] Triacylglycerols, which include polyunsaturated and monounsaturated fatty acids, make up the majority of the oil extracted from walnuts (MUFAs). Oleic and linoleic acids can also be found in walnut oil. There are two types of saturated fatty acids: palmitic acid and stearic acid. Other elements included in kernels include magnesium, calcium, potassium, phosphorus, iron, and sodium. Walnut is a rich source of essential fatty acids and tocopherols, and it also contains a variety of potentially neuroprotective ingredients, including long-chain omega-3 fatty acids and gamma-tocopherol (vitamin E). Additionally, the earlier research had demonstrated its effectiveness in treating dementia and Alzheimer's disease.[15]

Pharmacological Actions: Muqawwi-i-A'da' Ra'isa (Tonic for vital organs), Muqawwi-i-A'sab (Nervine tonic), Mulayyin-i-Am'a' (Laxative), Muqawwi Dimagh (Brain tonic), Muhallil (Resolvent), Jali (Detergent) and Mulattif (Demulcent).[16-19]

Ethnomedicinal uses

Kernel: About half of the fruit's total weight is composed of its edible part, walnut kernels. Nuts like walnuts are a great source of energy and are high in minerals, fats, and protein. It has the highest concentration of vitamin B-6 and a significant number of B group vitamins. These are consumed raw and make a healthy brain tonic. It helps prolong life and improve memory. It inhibits bone loss and has cardioprotective effects.[20]

Leaves In addition to treating skin conditions, eye irritations, eye pain, and conjunctivitis, the green leaves of walnuts are used to boost appetite in people who have low appetites. To relieve irritation and treat conjunctivitis, an infusion is prepared from leaves that are used in eye wash. Moreover, cuts, acne, and skin allergies are treated with the same leaf infusion to cure skin conditions.[20]

Shell Its powder is one of the key components found in cosmetics meant to cure sunburn and suntans on the skin.[20]

Bark: interior bark Walnut inner bark can be used to make a tincture or a stew. It is possible to use the decoction as a liver stimulant, to treat skin disorders, and to cure constipation and poor digestion.[20]

Unani medicinal uses: The kernel of the fruit can be taken alone or with raisin with help in the cure of Du'f al-Bah (Anaphrodisia/ loss of libido), Du'f al-Dimagh (Cerebrasthenia), Suda (Headache), Du'f al-Hafiza (Memory loss), and Naqahat-i-Umoomi (General weakness). The kernel is usually taken with figs and raisins acts as laxative and brain tonic specifically. If taken in roasted form helps cure cough due to cold temperament. If chewed empty stomach and applied on dermatophytosis lesion it removes and treats. The shell of walnut is particularly useful in treating bleeding piles if taken in roasted powdered dosage.[16-19]

Therapeutic dose: 10 -20 g.[16-19]

Adverse effects: If taken in huge quantity it produces ulcers in mouth and pharynx, inflammation of oral cavity, flatulence and headache.[16-19]

Pharmacological activities

Antioxidant Activity

By decreasing power, oxidizing lipids, and scavenging free radicals, the extracts of ethyl acetate, butanol, methanol, ether, and alcohol derived from various sections of the walnut plant,

such as the leaves, husks, and kernels, demonstrated their antioxidant ability. Walnut phenolics had a remarkable antioxidant impact, with the walnut pellicle showing the greatest level of protection. The ability to bind Fe2+ protects tissues and cells from oxidative damage and facilitates the simple transit of hydroxyl radicals across cell membranes. Thus, one important factor considered to determine antioxidant activity is the capacity to bind ferrous ions and quench hydroxyl radicals.[21]

The 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity assay, the copper ion reduction assay (CUPRAC), metal chelating ability (ChA), and the capacity to scavenge hydroxyl (OH−) and superoxide (O2−) radicals were used to measure the antioxidant activity. These techniques are thought to be significant predictors of the antioxidant capacity of plant samples. In this investigation, the compound that scavenges free radicals, DPPH, had the strongest antioxidant activity and the lowest IC50 value. The ascorbic acid (5.00, 0.01 g/mL) positive control was surpassed by the computed half maximal inhibitory concentration (IC50) value of 22.34, 2.70 g/mL. Low IC50 values for the hydroxyl radicals test (41.85, 0.09 g/mL), superoxide scavenging test (147.06, 0.27 g/mL), and chelating capacity test (71.69, 0.02 g/mL) all indicated high antioxidant activity. The results showed that flowers of J. regia were found to have a high capability to forage free radicals. [22]

Antibacterial activity

Several studies have used the agar streak and disc diffusion methods to report the antibacterial activity of walnut extracts. When tested against gram+ and gram-− strains of bacterial cultures, the aqueous extract of leaves, bark, fruits, and fruit green husk produced in hot and cold solvent showed antibacterial activity. The walnut's water-based extract and chloroform exhibit microbicidal activity against airborne microorganisms, and the extract from the leaves of the walnut tree is highly effective in treating acne by inhibiting the Propioni bacterium, which causes acne, as well as other bacteria that cause acne.[23] The essential oil for this investigation was extracted from J. regia leaves and subjected to GC-MS analysis. All essential oils and individual components were tested for antibacterial activity against a set of Gram-positive and Gram-negative microorganisms using disc diffusion and microdilution techniques. Strong substances in the maximal inhibition group include Germacrene D, β-pinene, β-caryophyllene, and α-pinene. S. epidermidis, B. subtilis, and S. aureus were the most inhibited Gram-positive bacteria, with MIC values of 15.62, 15.62, and 15.62 g/mL for J. regia essential oil, 48.31, 47.21, and 45.62 g/mL for α-pinene, and 46.55, 46.55, and 41.33 g/mL for β-pinene, respectively.[24]

Antiviral Activity

After researching walnut pellicle extracts, Angeli et al. [25]isolated a small number of antiviral chemicals that had the ability to suppress the replication of HSV-1 and HSV-2. For HSV-1 and HSV-2, the ID50 (con. which blocked 50% virus production) was determined to be 10 and 8 μg/mL, respectively. Nevertheless, the walnut pellicle extract showed no efficacy against Adenovirus (Adenoid), Coxsackievirus B1 (coxsackie B1), Poliovirus1 (polio1), or Echovirus 9 (ECHO-9). It turned out that the substances taken out of walnut pellicle extract were effective against viral illnesses.

Anticancer Activity

Juglone may be a viable chemotherapy preventive drug for neoplasia in human intestines, since it has been shown to reduce intestinal carcinogenesis in animals. Jurunene is a potent cytotoxin that has been shown by the human cancer cell lines HCT-15 cells, HL-60 cells, and doxorubicin-resistant HL-60R cells.[26] The carcinogenic and anti-proliferative properties of J. regia leaf extracts (methanol and aqueous extracts) at varying doses on the growth inhibitions of human (A375) and mouse (B16F10) melanoma cell lines. In the present research, the following extract concentrations were prepared: 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.40,

0.45, and 0.5 mg/mL of extract/mL. It was shown that the normal lymphocyte cell lines had very little sensitivity to the extracts. After treating the (B16F10) and (A375) cell lines for 72 hours, the cytotoxic activity was assessed, and it was determined that methanolic extracts, at various concentrations, demonstrated strong activity (cell anti-proliferation) against mouse melanoma, with an IC50 of 0.234 mg/mL, as opposed to 0.304 mg/mL on human melanoma cell lines. Similarly, water-based extracts from the aforementioned doses likewise demonstrated favorable(IC50 = 0.298 and 0.350 mg/mL)compared to mice and human cell melanomathe carcinogenic and anti-proliferative properties of J. regia leaf extracts (methanol and aqueous extracts) at varying doses on the growth inhibitions of human (A375) and mouse (B16F10) melanoma cell lines. In the present research, the following extract concentrations were prepared: 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.40, 0.45, and 0.5 mg/mL of extract/mL. It was shown that the normal lymphocyte cell lines had very little sensitivity to the extracts. After treating the (B16F10) and (A375) cell lines for 72 hours, the cytotoxic activity was assessed, and it was determined that methanolic extracts, at various concentrations, demonstrated strong activity (cell anti-proliferation) against mouse melanoma, with an IC50 of 0.234 mg/mL, as opposed to 0.304 mg/mL on human melanoma cell lines. Similarly, water-based extracts from the aforementioned doses likewise demonstrated favorable (IC50 = 0.298 and 0.350 mg/mL) compared to mice and human cell melanoma.[27]

Brain tonic Activity

A plant-based omega-3 fatty acid, phenolic acid (ellagic acid), gamma tocopherol (vitamin E), folate, melatonin, and flavonoids are among the many compounds found in walnuts that have the potential to be neuro-regenerative. n-3-linolenic acid (ALA) is also abundant in walnuts. Of the 1113 foods whose antioxidant levels were examined, it is noteworthy that walnuts came in second. Another study found that male rats protected against cisplatin-induced neurotoxicity received a walnut diet comprising 6% walnut oil. The findings showed that the consumption of walnuts improved cognitive and motor abilities, suggesting that consuming walnuts may help prevent the motor and cognitive impairment brought on by chemotherapy. Additionally, it was discovered that walnuts improved the transgenic mice model against Alzheimer's disease by 6-9% in terms of learning abilities, locomotor activity, memory, nervousness, and motor control.[28]

Cardiovascular Activity

Omega-3 and omega-6 polyunsaturated fatty acids (PUFA) have been reported to be present in high concentrations in walnuts. The majority of research has shown that omega-6 PUFA has no negative effects on human cardiovascular health, despite some studies linking it to an increased proinflammatory vascular reaction. Additionally, frequent walnut consumption (30–100 g/day) has been found to reduce cardiovascular risk factors in non-hyperlipidemic individuals. [29] Regular nut consumption has been associated with a decreased risk of myocardial infarction, both fatal and non-fatal. Epidemiological studies have shown that individuals who ate nuts five or more times a week had a 50% decreased risk of coronary heart disease compared to those who never did.[30]

Antidiabetic activity

Polyphenols found in walnuts are abundant and have been shown to exhibit potent inhibition of many enzymes, including amylase, sucrose, maltase, and glycosidase. In individuals with Type II genetically inherited diabetes mellitus, the polyphenolic compounds casuarictin, tellimagradin I, and tellimagradin II have been shown to have antidiabetic efficacy and to reduce urine peroxidase and triglycerides.[31]

Immunity booster activity

There is evidence of recent researches that suggest that walnut fruits strengthen the immune system by promoting lymphocyte growth and phagocytosis of different macrophages.[32]

Hepatoprotective activity

According to certain research, oral administration of walnut polyphenols from the kernel pellicle causes liver injury in mice modelled by CCi4. This finding demonstrated that polyphenols have a greater hepatoprotective effect than the widely used, well-known curcumin. It was discovered that the primary phytoconstituents detected in various walnut portions were polyphenolic contents, which are also in charge of oxidative damage and hepatoprotective function. One polyphenolic, tellimagrandins I, was shown to be one of the essential components of a hepatoprotective agent.[33]

Figure 1 depicted the phytochemistry, pharmacological action and pharmacological activities of *Juglans Regia* L.

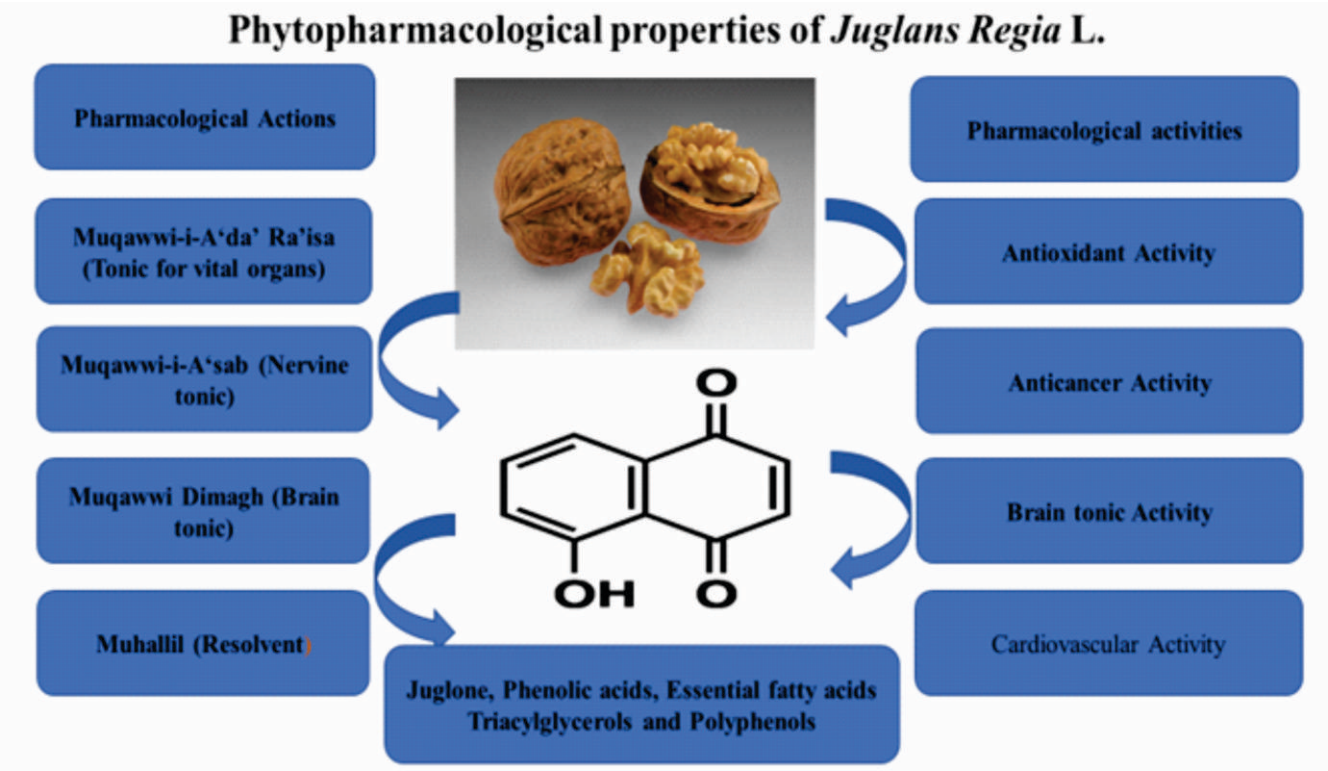

Fig. 1: Phytopharmacological properties of *Juglans Regia* L.

4. Conclusion

Due to their special combination of phytochemicals and bioactive elements, as well as their complex synergy that affects a variety of metabolic pathways, walnut consumption also enhances general health. When it comes to the Unani medical system, walnuts are a great food tonic for the heart, brain, and nerves as well as all other organs since they are the drug that has the pharmacological activity of Muqawwi-i-A'da' Ra'isa, or Torto for Vital Organs. Experimental research in its early stages also indicates that ALA may be neuroprotective, while walnut polyphenols most likely work in concert to improve brain function. It promotes immunity, fights diabetes, has several pharmacological properties that support the prevention of disease, and include anti-bacterial, anti-diabetic, neuroprotective, cardioprotective, and anti-cancer properties.

Future prospective

To completely utilize every component of the walnut, further extraction techniques will be required in the future. Nevertheless, more investigation is required to assess the long-term effectiveness of walnut eating and the ensuing health benefits. Juglone is regarded as a potent

anti-cancer substance that, with further study, might be useful against the majority of cancers that occur often. The bioactive qualities of walnut polyphenols are nevertheless supported by the data currently available, and further research on this topic is warranted.

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Conflicts of interest
There are no conflicts of interest.

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POSSIBILITIES AND OPPORTUNITIES OF UNANI MEDICINE IN ARCTIC COUNTRIES: A REVIEW

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Review Paper

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ABSTRACT

Arctic countries have been always the area of interest for medical and health related research for scientists from all over the world. This paper discusses the possibilities and opportunities of Unani medicine in Arctic countries through it's different modes of treatment viz Dietotherapy, Pharmacotherapy and regimental therapy, following a literature survey through classical Unani Texts, key word searches through Internet, Research studies done in RRIUM Srinagar related to cold climatic ailments, information collected form Kashmiri peoples (because the climatic condition of Kashmir is much similar to climatic condition of Arctic countries).

No. of Pages: 12 **References: 17**

Keywords: Arctic countries, Unani Medicine, Dietotherapy, Pharmacotherapy, Regimenal Therapy, Kashmir.

Introduction

In Unani medicine, the word "Unani" is the Arabicized form of "Ionian," which means "Unani" or "Greek." It is also called wisdom and sometimes simply "Unani." The origin of Unani medicine as a form of treatment lies in Arabic and Persian literature, and its basic theory is based on the composition of the four elements: *Balgham* (Phlegm), *Dam* (Blood), *Ṣafrā* (Bile), and *Sawdā* (Melancholy), which form the basis of the human body and the different temperaments formed from the amalgamation of these humors. Therefore, when these mixtures remain in moderation, the temperament of a person also remains moderate, thus maintaining health. However, when these humors deviate from moderation due to internal or external influences, the temperament of the human body deviates from normal, causing disease. Various procedures are provided by Unani medicine to bring this imbalance to moderation, which is named as treatment administered by a doctor. The human body carries within itself a healing power, known as immunity in modern medicine.

Galen (*Jalīnūs*, 131-200 AD) was the last physician of Greece. After the emergence of Islam, the renaissance of this art took place through Prophetic medicine. Gradually, medical books were translated from Syriac, Hebrew, and Unani into Arabic. Unani medicine was taught, and hospitals were started, thus making the

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practice of Unani medicine common. This credit is attributed to the heads of the *hakeems*, namely *Jibreel bin Bakhtishu, Hunain bin Ishaq, Yohanna bin Masuyah, Ali bin Raban Tabri, Jabir bin Hayyan, Zakariya Razi, Sabit bin Qara, Abu Sahl Masihi, Jurjani, Abul Qasim Zahrawi, Ibn al-Haytham, Abu Ali Sina, Zain-al-Din Jarjani, Ibn Baitar,* and *Dawood Antaki*, among others.

There are three methods of treatment:
- Treatment with food ('*Ilājbi'l Ghidhā*'/ Dietotherapy)
- Treatment with medicine ('*Ilājbi'l Dawā*'/ pharmacotherapy)
- Treatment with moderation and alteration in six essential factors ('*Ilājbi'l Tadbir*/ Regimental therapy)

Geographical Presentation of Arctic Countries: In Unani medicine, treatment varies according to each season and various regions. Early and late *Hakīms* have formulated different principles and laws based on changes in climate. Measures of hygiene, as well as laws regarding medicine and diet, have been explained in terms of traveling to cold countries and places where the temperature is below zero degrees. There are many definitions of the Arctic region. Generally, all areas in north of the Arctic Circle (66.33 N latitude) are considered in this region. (1) In this region, summer is cold, and winter is extremely cold. The average temperature in winter is minus 37 degrees Celsius and the minimum temperature has been recorded as minus 68 degrees Celsius. (1) The temperature here ranges from 20 degrees Fahrenheit to 50 degrees Fahrenheit, and in many places the temperature drops below the freezing point. Autumn is harsh and long. The summer lasts for a very short time. Rainfall is less, but snowfall is frequent. (3) *Ismail Jurjani's* collection in *Khawarzam Shahi* has signs and scales that the dispositions to accept the cold are not the same as those of the disposition to reject or accept the moistness because all Cold temperament accept the coldness relatively and quickly and the disposition to accept the dryness, moistness is different from the cold to hot temprament. (10)

As per Ibn Sina: Persons who go to live in cold countries become robust and stronger, and bolder and courageous. The digestion improves. If the climate is also damp the people will become obese and fleshy and coarse. The veins will not show under the skin of the hands, and the joints are indistinct in outline. The body becomes pale and delicate. (17)

Cold atmosphere. This drives the innate heat into the interior organs, unless the air has sufficient driving force itself to penetrate them. Cold atmosphere does not interfere much with the circulation of the humours or imprison them. But it favours catarrh and has a weakening effect on the nerves. It has a highly detrimental effect on the trachea. If the atmosphere is not so cold, it strengthens the digestion and all the interior functions, and improves the appetite. On the one hand it is more beneficial to a healthy person than a very hot atmosphere, and on the other hand it is detrimental to nerve- function. It closes the pores and causes matters from within the bones to pass outwards to the surface. (17) The temperament of winter season is cold and wet (15)

Residence in northerly countries: Persons who live in the north resemble in character those who live in cold countries with cold seasons. Likewise, Kashmir valley and Ladakh in India has some resemblance with north pole countries. Diseases of expression" and those due to confinement of the humours in the interior parts (Amraz al-haqqan wa al-asr) are liable to occur. Digestion is usually good. Such individuals have long life span. In cold countries where humours are confined to interior parts of body; regimens and drugs which can help to remove them from body may be helpful.

The following diseases occur in arctic countries due to cold climate and cold weather conditions:
Intefākh al-Asabe(Frost Bite) (2)
Nazla wa Zukām (Cold and Coryza)
Shara Balghami (Cold Urticaria)
Diq wa Sil (Tuberculosis)
Scarbiut (Scurvy)

Zā-tur-riya (Pneumonia)
Zeequn nafas (Asthma)
Zātul Janb (Pleurisy)
Iltehāb-e-Kulliya (Nephritis)(3)

Ismail Jurjani writes that *Sil wa Diq* (Tuberculosis), *Warm-e-Sho'abatur Riya* (Bronchitis), *Amraz-e-Riya* (Diseases of Lung), *Qooba* (fungal Infections) *Zukām* (Coryza) and *Nazla* (Cold) are common in such areas. (10)

In the winter season the commonly occurring disorders are *Zat al-Janb* (Pleurisy), *Zat al-Ri'a* (Pneumonia), *Zukam* (Coryza), *Hikka* (Pruritus), *Bahuha* (Hoarsness) *Su'al* (Cough), *Waja al-Janbayn* (pain in flanks), *Waja al-Qatan* (Low backache), *Suda* (Headache), *Saktaat* (Unconsciousness), *Sadr* (Vertigo).(16)

Ilājbi'l Ghidhā':
(Potential for dietary treatment in Arctic countries)

Hot drinks like tea, saffron kahwa, coffee, and green tea are useful for the residents of such a place. In addition, the use of meat, especially chicken meat, is beneficial as it produces blood with good quality. Its pigment is a powerful solvent that dissolves impurities and acts as a deobstruent. It also serves as anti-flatulent and antispasmodic. Its oil soothes joint pain caused by cold. (4)

Shaykh al-Rais mentioned in the Canon of Medicine that people should have a high-calorie diet in the winter season. If it is due to temperament disturbance, then one should increase the amount of exercise and reduce the food intake. It is obligatory to take such wheat in the diet and the stickiness in its flour is more compared to the wheat that is eaten in summer, and the same is the case with roasted meat. Avoid beetroot (*Beta vulgaris* L.), *karafs* (*Apium graveolens* L.), *bathuwa* (*Chenopodium album*), *cholai* (*Amaranthus*), *khurfa* (*Portulaca oleracea* L.), *kasni (Cichorium intybus)*. Joint diseases should be treated immediately. Immunity is strong in winters, that is why people in these regions are generally healthy and have sound bodies. (5)

The use of oily substances orally and locally is beneficial in such climatic situation to fight with dryness and coldness.

Buqrat (Hippocrates) says that a person food intake gets increases in cold season. A person should use meat of pigeon, chicken, sparrow, lamb, vegetables, spices and other hot eatables in cold seasons. (14)

The bread should be made heavier in winter than in summer. The same applies to flesh-meat, roasted meat, and the like. Potherbs: take cabbage, beet, celery. Avoid orach, red barley, purslane, endive.

Medical importance of cold water and ice:
Cold water: Drinking cold water is most important and most useful in all severe fevers. (2)
Ice: Its great advantage in treatment is that if it is placed on the stomach of a patient with high fever, the fever will go away or it will be reduced. One of the main benefits of ice in treatment is that placing it on the site of acute pain provides relief. Therefore, its use on cancer is a good treatment to alleviate its pain. Placing ice on the stops the bleeding. A Person who has ingested a hot-temperament poison should be provided with ice to consume, and applying ice on a scorpion sting provides great comfort. In the case of cholera putting ice on the patient's stomach is a cure for all their ailments. (2)

Some foods recommended for such regions by Unani physicians;

1. Chicken meat
2. Murghabi meat (A type of Duck)
3. Murabba Amla to treat Vit C Deficiency
4. Mango Pickels for Vitamins
5. Roghane Kalonji (*Nigella Sativa Linn* oil) orally as Muhallil (*Resolvant*) in cases of obesity.The steam bath (Hammame bukhari) is beneficial in all types of hypo and hyper lipidemias.
6. Wax bath (*Hammam Moomi*) for treatment of skin diseases in which skin becomes dry.

***Ilājbi'l Dawā'*:**
(Possibilities of Medicinal treatment in Arctic Countries):
Before discussing the above topic, it is best to first find out which herbs grow in that area.
Foraging wild herbs is a forgotten skill, which is now very much in trend in Finland. Many restaurants use wild herbs in their dishes, and consumers are starting to value the health, taste and quality aspects of the organic and local food that nature has to offer. Wild herbs have traditionally been used in Finland also for medicinal purposes or folk magic.

The folk medicine tradition in Finland is exceptionally rich, mainly based on sauna, massages, cupping, bone settling, and medicinal wild herbs. Elias Lönnrot was the first one to collect information about the Finnish healing methods and traditional medicinal plants. He gathered information about plants, determined the nutritional and medicinal value of such herbs, and published it under the title "Flora Fennica" in 1860. The medicinal values of wild plants, berries, and mushrooms are still a much-researched subject of interest .(5)

Introducing 6 common wild herbs in Finland:

1. Stinging nettle
2. Dandelion
3. Juniper
4. Heather
5. Goutweed
6. Birch

***Urtica dioica* (Stinging nettle)**

One of the easiest and versatile ingredients growing wild in the Finnish nature is the stinging nettle. The stinging nettle is known as nature's own spinach due to protein and fibres it contains. It has a variety of nutrients such as vitamins, minerals, fatty acids, amino acids, and polyphenols, many of which also act as antioxidants. It is especially rich in calcium, which is useful for a vegetarian diet. Stinging nettle might lower blood pressure, raise blood antioxidant levels, and reduce inflammation. It has been used to remove mucus. Nettle has also been thought to have curative effects on prostate enlargement as it increases the need to urinate. (5)

***Taraxacum officinale* (Dandelion)**
Many people think dandelion is a weed, which is not welcome in a garden or yard. But dandelion is, in fact, rich in carotene, which is beneficial to health, as well as vitamins B, C and D. Dandelion leaves contain about three times the amount of nutrients compared to other lettuce plants. Another good thing is, that it contains less nitrates than regular lettuce. According to some studies, dandelion also has a curative effect on various inflammations, and it lowers blood pressure and blood sugar levels. Dandelion also known as Herba Urinaria.

Young dandelion leaves from early summer, and preferable from shadowy place, are typically used in salads, but dried dandelion root has also been used as a coffee substitute. Even flowers and buds could be used blanched, but Dandelion has some bitterness, which limits the use. Dandelion is common in many grass areas, but I would recommend avoiding foraging the leaves from parks or pathways, where animals such as Doggy Urinaria might wander. Dandelion is a common wild herb in Finland. (5)

***Juniperus communis* (Juniper)**
Juniper berries are believed to increase the secretion of urine, sweat, stomach and intestinal fluids, and lower blood pressure. It can potentially increase the secretion of glands in the bronchi, trigger various cramps, reduce

flatulence, treat wounds, and reduce the growth of bacteria, viruses, and molds. Juniper has also been found to have invigorating effects. It potentially lowers blood sugar levels, increases superficial blood circulation, and may also relieve rheumatism problems. A person with kidney problems should not use juniper. From juniper second year old berries are typically used dried, and young shoots 10 dried-are good fresh for herbal tea or dried as a spice. I like to use 5 juniper berries in a venison stew, and juniper branches are good with smoking fish. Remember, that everyman's rights typically permit berry picking, but they don't allow collecting branches from trees, and you always need landowner's permission for that. (5)

***Calluna vulgaris heather* (Juniper berries)**

Delicate heather flowers have been traditionally used as an herbal tea to try to treat insomnia and reduce the number of bacteria and viruses. Heather may also relieve rheumatism, urinary stones and digestion. Heather flowers bloom in August. Mixing some heather flowers with wild raspberry leaves makes a tasty evening tea, which can help for example during period pain. A good rule of thumb for the use of wild raspberries is, that the leaves are best during the first year of growth, and berries can be picked on the second year from the same location. It resembles with *Abhal*(Juniperus Sabina linn) described in Unani Medicine, Which is a diuretic and emenogogue drug.(5)

***Aegopodium podagraria* (Goutweed)**

Goutweed is a ground elder, which was formerly used to treat gout. It's very common and even invasive plant found in gardens and side of forest roads, fields, and streams. Goutweed is one of the first wild herbs that can be foraged in spring. Goutweed's young leaves can be used for salads and soups in spring from April to May. It can also be frozen or dried. The leaves contain iron and vitamin C. The plant blooms in Finland from June to August, and it's not recommended to be used in salads mid or late summer as it takes on a tangy taste and has a laxative effect. Goutweed should not be mix with Aethusacynapium, Conium maculatum, and Cicutavirosa, which are all very poisonous. Goutweed resembles most Angelica sylvestris, which is harmless. Best way to identify goutweed is to follow it during the first year until it blooms and forage the young leaves on the next year when the plant has been previously identified. (5)

***Aegopodium podagraria* (Wild herb)**

(*Betula pendula* and *Betula pubescens*) Birch moments before the leaves start growing, birch trees provide birch sap, which moves inside the tree. It's clear liquid that can be consumed fresh from the tree. If you are ever in any Finnish survival show in the spring, remember that the birch is like a coconut during about one month a year. Birch sap collection isdone by drilling a hole into the tree trunk and leading the sap into a container by some tube. Birch effectively removes excess fluid and swelling from the body, and it is therefore well suited for those with unnecessarily high blood pressure. Birch has also been used for kidney and urinary infections and for the treatment of gout and rheumatism. Birch also contains an essential oil that prevents inflammation, and buds are stronger than leaves but the resin they contain can irritate the kidneys. It resembles *Atrilal* (*Ammi Majus Linn*) in Unani Medicine. (5)

Wild herbs in Finland

Birch sugar, also known as xylitol, is made from birch and used in many candies in Finland. Xylitol and Stevia are both low GI natural sugar

substitutes, low in calories. Xylitol, unlike Stevia, has proven health benefits, thus making it far superior to all other natural sugar alternatives. It's especially good for your teeth. Xylitol is, however, extremely dangerous for dogs, so never allow pets to eat any xylitol candy or chewing gum. Small newly opened birch leaves in spring are edible and can be used in herbal teas, salads, sandwiches, or soups, sauces and stews like any fresh herbs. The birch leaves contain plenty of vitamin C. People with low blood pressure and diabetics should be careful with birch. Externally birch leaves are used in the sauna to whip yourself to improve blood circulation and stimulate the skin. The aroma of the wet birch leaves is part of the Finnish sauna experience. Birch is also good ingredient in shampoos. Remember that for collecting birch leaves or branches, you always need landowner's permission. Damaging any plants or trees is not allowed by the otherwise generous everyman's rights. (5)

***Adiantum capillus veneris* (*Parsiaonshan*), Pakhan *Bed* (*Bergenia ciliata*).**

Some drugs which are considered as high-altitude plants i.e Adiantum capillus veneris (*Parsiaonshan*), Pakhan Bed (*Bergenia ciliata*) and cultivated in Kashmir Valley, which has much similar environmental condition with arctic countries. (5)

How to avail this plant in Arctic Countries:

These plants may be cultivated there in collaboration with Agricultural department or may be imported from Kashmir Valley. As there are some favourable conditions in Finland and in Siberia for cultivation of herbs as discussed earlier.

Adiantum capillus veneris (*Parsiaonshan*)

Scientific classification

Kingdom:	Plantae
Clade:	Tracheophytes
Division:	Polypodiophyta
Class:	Polypodiopsida
Order:	Polypodiales
Family:	Pteridaceae
Genus:	Adiantum
Species:	*A. capillus-veneris*

Binomial name

Adiantum capillus-veneris L. (11)

Adiantum capillus-veneris, the Southern maidenhair fern, black maidenhair fern, maidenhair fern, and Venus hair fern, is a species of ferns in the genus Adiantum and the family Pteridaceae with a subcosmopolitan worldwide distribution. It is cultivated as a popular garden fern and houseplant.

Distribution

Adiantum capillus-veneris is native to the southern half of the United States from California to the Atlantic coast, through Mexico and Central America, to South America. It is also native to Eurasia, and Australasia. There are two disjunct occurrences in the northern part of North America: at Cascade Springs in the Black Hills of South Dakota and Fairmont Hot Springs, British Columbia. In both instances, the warm microclimate created by hot mineral springs permits the growth of the plant far north of its normal range. It is similar in Zvonce spa resort (Звоначка Бања, Zvonačka Banja), near Pirot in Serbia, where hot mineral springs provide adequate heat and humidity for the survival of this species. It is found in temperate climates from warm-temperate to tropical, where the moisture content is high but not saturating, in the moist, well-drained sand, loam or limestone of many habitats, including rainforests, shrub and woodlands, broadleaf and coniferous forests, and desert cliff seeps, and springs. It often may be seen growing on moist, sheltered and shaded sandstone or limestone formations, generally south-facing in the southern hemisphere, north-facing in the north, or in gorges. It occurs throughout Africa in moist places by streams. On moist sandstone cliffs it grows in full or partial shade, even when unprotected. (11)

Description

Adiantum capillus-veneris grows from 6 to 12 in (15 to 30 cm) in height; its fronds arising in clusters from creeping rhizomes 8 to 27.5 in (20 to 70 cm) tall, with very delicate, light green fronds much subdivided into pinnae 0.2 to 0.4 in (5 to 10 mm) long and broad; the frond rachis is black and wiry.[5][7]

Cultivation

Adiantum capillus-veneris is cultivated and widely available around the world for planting in natural landscape native plants and traditional shade gardens, for outdoor container gardens, and as an indoor houseplant.

Adiantum mairisii is a winter hardy hybrid of *Adiantum capillus-veneris* with another species, which is likely to be one of *Adiantum raddianum*, *Adiantum aethiopicum*, or *Adiantum cuneatum*. As a houseplant, *Adiantum capillus-veneris* requires filtered light and very humid conditions. It should be grown in soil rich in organic matter and should be watered frequently but lightly, to keep the roots damp but not drenched. The temperature should not fall below 12 °C (54 °F). It is propagated by dividing, making sure each clump has a section of rhizome. (11)

Conservation

The fern is listed as an endangered species in North Carolina (as southern maidenhair-fern) and threatened species in Kentucky (as venus hair fern), due to loss of Appalachian habitat. (11)

Traditional uses

This plant is used medicinally by Native Americans. The Mahuna people use the plant internally for rheumatism, and the Navajo people of Kayenta, AZ use an infusion of the plant as a lotion for bumblebee and centipede stings. The Navajo people also smoke it or take it internally to treat mental illness.

In the traditional medicine of Iran, frond infusion of *Adiantum capillus-veneris* is used for jaundice therapy. Along with this, they have a wide range of medicinal uses and have been used to treat coughs, cold, and to aid in kidney function. (11)

***Bergenia ciliate* (Pakhan Bed)**

Bergenia ciliate

Scientific classification

Kingdom:	Plantae
Clade:	Tracheophytes
Clade:	Angiosperms
Clade:	Eudicots
Order:	Saxifragales
Family:	Saxifragaceae
Genus:	Bergenia
Species:	*B. ciliate*

Binomial name

Bergenia ciliate (12) (Haw.)

Sternb. Revis. Saxifrag. suppl. 2:2. 1831

Bergenia ciliata (fringed elephant's ears, winter begonia, hairy bergenia, Hindi & Sanskrit : *Pashanbheda*) is a plant species in the genus Bergenia, deciduous in USDA Zones 5 to 7, but usually remain semi-evergreen south of Zone 7. It is found in Northern India in Uttarakhand (Chamoli and other districts of Uttarakhand) and Himachal Pradesh (in district Shimla). This flower is related to the famous Phool Dei Festival (https://www.tourmyindia.com/states/uttarakhand/phool-dei-festival.html) celebrated in Uttarakhand. It is commonly known in India as Pathar phor buti. Also found in mountain areas of West Bengal, like Kalimpong, and Darjeeling. Afghanistan, south Tibet, Bergenin, catechin, gallic acid, gallicin, catechin-7-O-glucoside and β-sitosterol can be found in *B. ciliata*. It is known for its use in Ayurveda and other medicinal properties. It is mainly found on rocks, and it grows in the month of February and March. It is a highly cited medicinal plant in the Himalayan state of Sikkim located in Northeastern India. (6)

The plant is harvested from the wild for use as a medicine and sometimes also for food. Bergania

ciliata growing on the trail to Kareri lake in Himachal Pradesh, India. (12)

Unani Treatment of Some diseases due to Cold weather:

Chilblains; Erythema pernio (*Intefakh al-Asabi*)
It occurs on fingers as red, itching lesions may be associated with edema. Due to severe and constant exposure to cold, the skin of sensitive people becomes scaly, the arterioles constrict while the capillaries dilate. Therefore, there is a decrease in blood flow. Hemoglobin is completely deoxygenated. More than that due to edema there is lack of fluid in capillaries cause so the wastes get trapped inside soon. (6)

Cause:
Congestion of waste matter inside fingers due to the cold, the pores become constricted, due to which the substance cannot be dissolved, mostly people with bilious temperament are affected.

Symptoms: Possible in people of all sexes, middle-aged women are more affected

Principles of treatment:

- Apply heat locally.
- Avoid cold places and cold objects.

Congenital disorder
Icthyosis and exfoliation
Essentials of diagnosis

- Dryness roughness and scaling of the skin
- aggravated in the cold of winter, clearing up when the weather becomes warmer
- scaling and erythema over large area of the body

In this disease, the skin of the body becomes hard, rough and scaly, it usually does not itch, but if the condition is severe, itch occurs. It usually starts at the age of one to four years. And with time and age, it gets severe, the treatment is the same, because there is *taqashshuff* (flaking) and *taqshar* (Scaling), so try to bring coolnes. Use Marhame Qooba locally in these cases.(6)

Chapped hands and chapped lips (Shuqooq Jild wa atraf wa shafat)
In this disease, the skin of hands, feet, face or lips are torn, which causes severe pain. Sometimes they start bleeding. This condition occurs in the skin of any part of the body, but in general exposed parts of the body that are exposed to external influences such as hands, feet, face and lips are prone to cracking. The reason for this is extreme cold, and toxicity in blood. Since dryness is also present in this disease, so try to provide moisture. The patient should be kept away from severe cold, i.e. heat should be applied to him. Use *Takmeed Har* (Hot fomentation) in these cases. *Roghane Gul, Roghane Moom, Butter, Roghane Babuna* are useful locally in this case.(6)

***Rosacea* (Acnerosacea) & *Badshanam* (Erythema)**

Essentials of diagnosis:
- commonly middle age group usually after 30 years are affected
- distribution on Central part of face
- Seborrheic skin
- redness, Telangiectasia, without black heads

Use Zamade Jalinus, Marham Raal etc in this case locally.

Erythema
Erythema is an ill-defined red rash that usually occurs on the face or may also appear on exposed parts of the body such as the neck, hands, feet, or legs. It is a chronic disease that usually affects middle-aged people or in debilitated people. Severity increases in extreme heat. During the cold season, it is intense. This redness is similar to the red color of leprosy. In the treatment, it is necessary to provide heat and avoid cold places.(6)

***Quba-e Qadmain* (Tinea pedis)**
Usually occurs between the toes or sometimes

between the fingers. The affected skin is usually thick and red, itchy and cracks when severe. The skin of the sole is the most affected, usually it is limited for months and years.We can apply Marhame Kafur and Marhame Qooba in this ailment locally. (6)

Unani Treatment:
Roghan Halba (Fenugreek oil) 35 ml put in the mouth for 15 minutes.

Shahatra (*Fumaria officinalis*) 5 gm, *Chirata* (*Swertia chirata*) , *Ushba e Maghribi* (*Smilax Medica*) each 3gm, *Sarphuka* (*Tephrosia purpurea*), *Mundi* (*Sphaeranthus indicus*), *Barge Jhao* (*Tamarix gallica*), *Gul e surkh* (*Rosa damascena*) each 4 gm, *Haleela Siyah* (*Terminalia chebula*) 5 No, Decoction of the above drugs may be prepared and useful in above said ailment.(6)

***Akila* (Gangrene)**
This type of condition occurs when severe cold is applied to the skin and the swelling occurred in foot. *Akila* is actually a kind of hypothermia in which the organs begin to deteriorate.

Local wound should be cleaned with antiseptics. *Kachcha Papita* (Raw Papaya) crushed will applied on such lesions and do the daily dressings after proper wash with betadine and antiseptic solutions.

Munbit lahem Advia (Muscle growing drugs) are useful locally in this ailment like *marhame Ral* and *Marhame Zingar*. (6)

Regimenal therapy (*Ilaj-Bit-Tadbeer*)
Living in cold areas always brings coldness in the body therefore we can propose Musakhkhinat (in the form of regimens as well as dietary supplements)

- *Hammam* (Turkish Bath)
- *Tadheen* with oil having hot temperament.
- Use of *Dalk* (massage)
- *Riyaazat* (Exercise)
- *Abzan* (Sitz Bath)
- *Pashoya* (Foot Bath)
- *Inkebab* (Inhalation of medicated steam)
- *Nutool*(Irrigation)
- Local Steam (*Hammam e Bukhari*)
- Leeching *(Irsale Alaq*)
- *Mehjima Nariya*(Fire Cupping)
- *Hijamah Bila Shart*(Dry Cupping)
- *Hijamah Bish Shart* (Wet Cupping)
- *Qutoor* (Dropping)
- *Hammame Shamsi* (Sun Bath)
- *Ishal* (Purgation)
- Hot Fomentation (*Takmeed Har*)

Buroodat always brings stagnation in body humours; we can propose munzij Mushil therapy, cupping for evacuation of morbid matter. The cold air is the worst for pulmonary organs. In this season the cold affects the head, and a large amount of phlegm is produced in the head leading to several head related disorders. In these cases, Munzij Mushil Therapy, Hammam, Dalk to produce heat in the body may be prescribed. Riyazat may also be advocated. Nutool for head disorders. (17)

Hijamah:
Mahjima Nariya with massage (Massage with Roghane Babuna or Roghane Dafli, because these oils are having Muhallil resolvant properties) may be beneficial in cases of joint pain and Sciatica. (13)

The repletion (kasrat al-imtala) with, and the lack of dispersion of the humours (kilat ul-tahalul) predisposes to epistaxis and rupture of varicose veins. Ulcers readily heal owing to the vigour of the body and the purity of the blood, the external conditions are also favourable to healing, because there is nothing to relax or moisten tissues. The fact that the innate heat is plentiful in such

people prevents epilepsy from occurring, but if fits should occur, they will be correspondingly severe, for it would have to be a very powerful agent to bring such fits at all in these regions. Hijamah may be advocated in such cases. (17)

Abzan **(Sitz Bath)**

Effect on the female sex. Menstruation is defective owing to constriction of the channels and the absence of the stimulus to menstrual flow and to relaxation of the channels. Abzan may be indicated in such cases. Some assert that this makes the women sterile; that their wombs do not open. But this is contrary to experience; at any rate as regards the Germans [Turks, Parthians-in other readings]. The great amount of innate heat makes up for the absence of the stimulus to flow and to dilate the channels. Abortion, it is said, is rare amongst women in these climates, and this fact further supports the opinion that their vitality is great. Parturition is not easy because the organs in question remain hard and will not open easily. The milk will be scanty and thick, because the cold prevents the blood from flowing easily enough to the breasts. (17)

Hammam and Masssage:

Abul Hasan Ali Ibne Raban Tabri wrote in his treatise that the person living in cold regions should take Hammam and Massage with Hot Oils. (14)

***Riyazat and Ta'areeq*:(Exercise and sweating)**

Ibn Sina has advocated for WINTER. There should be plenty of physical work. Eat liberally, if the prevailing wind is northerly. If southerly, increase the exercise but diminish the amount of food. (17)

In such countries *Riyazat Muhallilah* may be performed with the help of games like Basketball, in which there will be continuous and rapid movement lead to sweating and evacuation of morbid matters. Sweating may occur with the help of steam bath *(Hammam Bukhari)*.

Purgation:

When the body is healthy, illnesses are unlikely to come on during the winter Should they do so, however, the appropriate treatment should be used, including **purgation** if that is necessary. Illness will only arise under strong provocation, the agents being usually of a "hot" quality. The reason is that the innate heat, which is the determining factor, is very strong during the winter, because the cold prevents its dissipation, and collects it among the interior organs. Furthermore, all the vegetative faculties are more efficient at this season. (2)

Role of regimental therapy in frost bite (*Bard-e-Atraf*):

Frostbite is a freezing, cold thermal injury, which occurs when tissues are exposed to temperatures below their freezing point for a sustained period of times. Frostbite is commonly found in countries with extreme cold climate and mostly found in military. Now a day's frostbite is found in people associated with winter sports like skiing, hiking, ice climbing. There on directly damaging the cell. Causing intracellular dehydration, intracellular electrolyte concentration increases dramatically initiating cell death. Due to continuous fall in tissue temperature, there is formation of intracellular ice crystals and later theses ice crystals expand leading to mechanical deterioration of cells. However, a study in Kashmir valley revealing efficacy of leeching in frostbite, showed outstanding results in the treatment of all forms of frostbite with very low recurrence rate. (2)

However, it is important to set up a proper lab bank for leeches where Standard operating procedures (SOPs) are followed. Adequate care should be taken for the survival of the leech. The principle of evacuation of morbid matters should be followed. Otherwise, the leeches will not survive, and the evacuation will not be possible in such cold countries. (2)

A paste of Neem (*Azadirecta Indica*), Haldi (Turmeric) and chinar (Platanus orientalis) is also beneficial in cases of frost bite if used locally.

2 *Akbar Arzani* in his book *Iksir ul-Qulab Mufarah ul-Qulab*, recorded that one should avoid *faad* and vomiting in winter. Unless such conditions are created in the Arctic country that evacuation (*Istifragh*) is possible there. For example, room temperature should be maintained. For the safety of the patient, BT, CT blood sugar, HIV, etc. should be checked before bloodletting, the place where bloodletting is intended should be massaged. It may help in quick and easy bloodletting. (8)

Sheikh Al-Rais advises that such people who are cold in temperament and live in cold countries, should take measures to awaken the heat and take hot food, for example: *Riyazat*, Use of *Mu'ajan Kabir* etc. Also take a bath with warm water (Hammam) which may lead to sweating. (9)

In addition to above said therapies, we can do the *Pashoya* (Foot Bath) under SOP guidelines in n No of diseases like *Waja'al-Mafaail* (Joint pain), (*Suda*) Headache, *Irq Al-Nasa* (Sciatica) etc as indicated by Unani Physicians. Such countries also have patients suffering from anxiety disorders. So *Nutal* Therapy (Irrigation) may be helpful particularly in the cases of *Sahr* (Insomnia), *Shaqaqa* (Migraine) as studies suggests.

Conclusion

In Arctic Countries, we can do much in perspective of Unani System of Medicine particularly when we talk about *Ilaj Bit-Tadbeer* (Regimenal Therapy) and *Ilaj Bil-Ghiza (*Dietotherapy). Unani Physicians has described a list of diets to be used in Cold countries. Due to harsh weather, it is difficult to culture the medicinal herbs and weeds there, but these can be imported from India, which is considered as the hub of medicinal herbs, as and when required.

According to Unani Physicans, Peoples of such countries have *Barid Mizaj* (Cold temperament), hence *Har Tadbeer* (Warm regimes) and Har Aghzia (Diets having hot temparament) and Har Advia (Drugs having hot temperament) will work as per principle of Unani treatement i.e *Ilaj Bil Zid* (Contrary treatment). Har Diets Particularly Masale Jat (Spices) e.g., *Darchini* (Cinnamon; *Cinnamomum zeylanicum*), Tajqalmi (*Cinnamomum cassia*), Tezpat (*Cinnamomum tamala*), Dagad Phool (Black Stone flower; *Parmotrema perlatum*), Piyaz (Onion; *Allium cepa*), Lahsan (Garlic; *Allium sativum*), Haldi (Turmeric; *Curcuma longa*), Filfil Siyah (Black Pepper; *Piper nigrum* Linn), Filfil Daraz (Long Pepper; *Piper longum* Linn), Filfil Surkh (Chilli; Capsicum annum), Mirch Sabz (Green Chilli; *Capsicum frutescens*) etc. will be helpful in this regard.When these spicy foods will be used with various types as suggested by Unani Physicians, this may lead to potentiating and synergistic effect.

Fuqa'h or *Ghiar Muqattar Sharab* (Undistilled wine) as recommended by *Shaikh Al-Rais* may be helpful for *Ina'sh Hararat-e-Gharizi* (Maintenance of body temperature).

In Arctic Region Research on Pulmonary disorders and disorders related to head, brain and nerve disorders may be carried out with Unani Medicne's preventive and curative regimens and interventions.

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REGULATORY LANDSCAPE OF UNANI PRODUCTS UNDER D&C ACT AND RULES

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ABSTRACT

The Unani System of Medicine (USM), deeply rooted in tradition, undergoes scrutiny in India under the Drugs and Cosmetics Act (D&C Act) for consumer safety. Regulated by the Central Drugs Standard Control Organization (CDSCO) and guided by the Ayurvedic, Siddha, and Unani (ASU) Drugs Technical Advisory Board, this framework ensures Unani product safety, efficacy, and quality. Manufacturers must comply with Good Manufacturing Practices (GMP), and the D&C Act establishes standards for labeling, packaging, and quality control—essential for marketing Unani products in India. The paper aims to analyze key D&C Act provisions related to Unani formulations, focusing on regulatory procedures. The study sheds light on specific requirements governing Unani drug import, manufacture, distribution, and sale, offering valuable insights into the regulatory framework. It systematically examines the D&C Act, emphasizing sections related to Unani products. Unani Drugs must adhere to prescriptions in the 14 recognized Unani texts (Schedule I of D&C Act). The Drugs and Cosmetics Rules of 1945 cover Unani Medicine in Parts 16 to 19, addressing licensing (Part 16), testing (Part 16A), labeling and packaging (Part 17), and quality control standards (Part 19). In conclusion, this paper provides a nuanced analysis of the regulatory landscape governing Unani products under the Drugs and Cosmetics Act. It elucidates legal intricacies, emphasizing challenges in compliance, standardization, and merging traditional knowledge with contemporary requisites. The insights contribute to understanding the regulatory environment surrounding Unani medicines, balancing cultural heritage preservation with ensuring efficacy and safety for consumers.

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Keywords: Drugs and Cosmetics Act; 1940; D&C Act; Unani System of Medicine; USM; D&C Rules.

Introduction

REGULATORY LANDSCAPE OF UNANI PRODUCTS UNDER D&C ACT AND RULES

In the dynamic realm of healthcare, traditional systems of medicine play a pivotal role in providing diverse therapeutic options. Among these, the Unani system stands as a venerable tradition with deep historical roots. As we navigate through the complex landscape of medicinal practices, it becomes imperative to analyse the regulatory framework governing Unani drugs. This paper delves into the intersection of Unani medicine and the Drugs and Cosmetics Act (1940), in order to understand

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the parameters that shape the regulatory landscape of Unani drugs in the contemporary healthcare scenario.

"Unani drugs" include all medicines intended for internal or external use for (or) in the diagnosis, treatment, mitigation or prevention of disease or disorder in human beings or animals, and manufactured exclusively in accordance with the formulae described in, the authoritative books of Unani Tibb system of medicine, specified in the First Schedule. A "patent or proprietary medicine" in the context of Unani Tibb system refers to formulations containing solely the ingredients outlined in the formulae specified within the authoritative books Unani Tibb system as detailed in the First Schedule. However, this definition excludes medicines administered by the parenteral route and formulations explicitly included in the authoritative books.

Unani Tibb System of Medicine along with Ayurveda and Siddha finds mention in Chapter IV-A, Sections 22, 23, 24, 25 of Chapter IV and First and Second Schedule of the Drugs and Cosmetics Act, Part XVI to Part XIX and Schedule T of the Drugs and Cosmetic Rules.

Brief overview of the Act, Rules and Schedules concerning Unani Drugs

Chapter IV-A consisting of 21 sections outlines provisions related to Ayurvedic, Siddha, and Unani drugs, focusing on the establishment of regulatory bodies, such as the Ayurvedic, Siddha and Unani Drugs Technical Advisory Board (ASUDTAB) and Ayurvedic, Siddha and Unani Drugs Consultative Committee (ASUDCC). It also covers aspects like misbranded, adulterated, and spurious drugs, regulations for manufacturing and sale, appointment of analysts and inspectors, penalties for offences, and the power of the Central Government to make rules. It also emphasizes on compliance and licensing.

Part XVI of the Drugs and Cosmetics Rules outlines regulations related to the manufacture and sale of Ayurvedic (including Siddha) or Unani (ASU) drugs. It covers aspects such as licensing, application procedures, fees, forms of licenses, and conditions for grant or renewal. Additionally, there are provisions for loan licenses, certificates of renewal, and guidelines for Good Manufacturing Practices (GMP) in Ayurveda, Siddha, and Unani drugs. It also includes conditions, requirements, and procedures for maintaining records, inspections, and the identification of raw materials.

Part XVI-A of the Drugs and Cosmetics Rules outlines the approval process for institutions to conduct tests on ASU drugs and their raw materials. Key points include the application procedure, conditions for approval, equipment requirements, and the duration of approval. The process involves inspections, compliance checks, and the possibility of renewal or withdrawal of approvals.

Part XVII of the Drugs and Cosmetics Rules delineates stringent guidelines for the **labelling, packing, and permissible alcohol content in ASU drugs.** The stipulated regulations encompass the obligatory disclosure of comprehensive ingredient lists, cautionary labels for substances listed in Schedule E(1), and specific requirements for medicines intended for internal use. Moreover, it mandates the inclusion of manufacturing particulars, batch numbers, date of manufacture, and distinct labelling criteria for externally applied medicines. Provisions for export are detailed, necessitating compliance with the importing country's specifications. Significantly, it also emphasizes the conspicuous display of the expiry date for these medicines, with categorized shelf life parameters for diverse Unani medicines.

Part XVIII of the Drugs and Cosmetics Rules outlines the duties and qualifications pertaining to government analysts, inspectors, and the functioning of laboratories involved in the oversight of ASU drugs. Key aspects include the responsibilities of inspectors to conduct regular inspections, report findings, and initiate legal actions for violations. The qualifications for State Drug Licensing Authorities and the establishment of the Pharmacopoeia Laboratory

for Indian Medicine as a Central Drugs Laboratory are highlighted. The procedures for dispatching samples for analysis, recording conditions of seals, and reporting results are detailed, along with the stipulated fees for testing. The qualifications and duties of Government Analysts, including their role in analyzing samples and forwarding reports for publication, are also specified. Finally, the qualifications required for inspectors are outlined, encompassing educational backgrounds and practical training in the relevant systems of medicine.

Part XIX of the Drugs and Cosmetics Rules outlines standards for ASU drugs, including permitted excipients, natural coloring agents, and artificial sweeteners. It emphasizes compliance with existing pharmacopoeias and acts, labeling requirements, and responsible use of additives. Notably, it supersedes any previous notifications issued by the Department of AYUSH on the use of excipients, additives, or preservatives in these medicines.

The Schedule T legislates Good Manufacturing Practices (GMP) for ASU medicines, covering aspects like factory premises, hygiene, water supply, waste disposal, container cleaning, storage, machinery, batch records, distribution, quality control, and sterile product manufacturing. It emphasizes the need for adherence to specific standards, cleanliness, and documentation to ensure the quality and safety of the manufactured medicines. Exemptions are mentioned for registered practitioners not selling their own prepared medicines. Furthermore, this schedule also establishes guidelines and requirements for the manufacturing of different categories of Unani medicines, along with recommended machinery and equipment. It also includes specifications for in-house quality control sections, covering both chemistry and pharmacognosy aspects. Additionally, supplementary guidelines for manufacturing herbomineral-metallic (*kushtajaat)* compounds are detailed. It spotlights the need for good manufacturing practices, quality control, record-keeping, and employee medical examinations. Specific area requirements and equipment recommendations for different medicine categories are also outlined. It concludes with the mention of possible modifications at the discretion of the Licensing Authority.

THE DRUGS AND COSMETICS ACT, 1940
Chapter IV-A
PROVISIONS RELATING TO ASU DRUGS

Section 33C
This section establishes the Ayurvedic, Siddha and Unani Drugs Technical Advisory Board by the Central Government. The Board's primary purpose is to provide technical advice to both the Central and State Governments on matters related to Ayurvedic, Siddha, and Unani drugs. It is endowed with functions outlined in this Chapter and is officially constituted through a notification in the Official Gazette. The composition of the Board includes ex officio members such as the Director General of Health Services and the Drugs Controller, India. Additionally, it incorporates nominated members, representing various expertise areas like pharmacognosy, phyto-chemistry, and education in traditional medicine systems. The Board's composition also includes members from Ayurvedic, Siddha, and Unani pharmacopoeia committees, industry representatives, teachers in relevant fields, and practitioners of Ayurvedic, Siddha, and Unani Tibb systems. The Central Government appoints a Chairman from the Board's members, and nominated members serve a three-year term, with eligibility for reappointment. The Board has the authority to make bye-laws with the Central Government's approval, regulating its procedures and conduct. A Secretary is appointed by the Central Government, and the Board is provided with necessary clerical and staff support. In essence, this section establishes a specialized advisory board to offer technical guidance on matters concerning Ayurvedic, Siddha, and Unani drugs, ensuring a well-rounded approach involving professionals from different relevant domains.

Section 33D
It introduces the formation of the Ayurvedic, Siddha and Unani Drugs Consultative Committee (ASUDCC), granting authority to the Central Government for its establishment. This advisory committee serves a pivotal role by offering guidance and counsel to the Central Government, State Governments, and the [Ayurvedic, Siddha and Unani Drugs Technical Advisory Board]. Comprising two representatives nominated by the Central Government and additional representatives from each State nominated by their respective State Governments, the committee acts as a platform for collaborative decision-making. It convenes as needed, providing flexibility in addressing matters related to the administration of the Act, particularly concerning Ayurvedic, Siddha, and Unani drugs. The committee operates autonomously, regulating its own procedures, which enables it to establish rules and internal processes tailored to the dynamic landscape of traditional medicine practices. Overall, Section 33D establishes a consultative mechanism to ensure informed decision-making and uniformity in the application of regulations governing Ayurvedic, Siddha, and Unani drugs across different jurisdictions within the country.

Section 33E
It defines the criteria for deeming an ASU drugs as misbranded. The section outlines various conditions under which a drug falls into this category. Firstly, if the drug is colored, coated, powered, or polished in a manner that conceals damage or makes it appear of greater therapeutic value than it truly possesses, it is considered misbranded. Additionally, misbranding includes situations where the drug is not labeled in the prescribed manner, or if the label, container, or any accompanying material bears false or misleading statements, designs, or devices that make inaccurate claims about the drug.

Section 33EE
This section defines the conditions under which an ASU drug is deemed adulterated. If the drug contains filthy, putrid, or decomposed substances, or if it has been prepared, packed, or stored under unsanitary conditions leading to contamination, it is considered adulterated. Further, if its container is composed, either wholly or in part, of any poisonous or deleterious substance, or if it contains a color other than the prescribed one for coloring purposes, it falls into the category of adulterated drugs. Adulteration also includes the presence of harmful or toxic substances that may render the drug injurious to health, or if any substance has been mixed to reduce its quality or strength.

Section 33EEA
This section addresses the categorization of spurious ASU drugs. A drug is deemed spurious under several conditions outlined in this section. Firstly, if it is sold or offered for sale under a name that belongs to another drug, or if it is an imitation or substitute for another drug in a manner likely to deceive, it is classified as spurious. Additionally, if the label or container bears the name of a fictitious or non-existent individual or company as the manufacturer, or if the drug has been wholly or partially substituted by another substance, it falls into the category of spurious drugs. Furthermore, if a drug purports to be the product of a certain manufacturer when it is not genuinely so, it is also considered spurious.

Section 33EEB
This section focuses on the regulation of the manufacture for sale of ASU drugs. It stipulates that no person shall manufacture these drugs for sale or distribution unless it aligns with the prescribed standards.

Section 33EEC
It addresses the prohibition and regulation of the manufacture and sale of certain ASU drugs. It empowers the State Government, through a notification in the Official Gazette, to specify the date from which the manufacturing and sale of certain categories of drugs will be prohibited. These categories include misbranded, adulterated, or spurious Ayurvedic, Siddha, or Unani drugs. Additionally, the section mandates that individuals or entities must not manufacture

these drugs without a valid license issued under the chapter. The provision extends to the manufacturing of patent or proprietary medicines, requiring a clear display of all ingredients on the label or container. The section ensures that the manufacturing and sale of Ayurvedic, Siddha, and Unani drugs comply with the stipulated regulations, contributing to the overall safety and quality control in the traditional medicine industry. The exceptions provided for Vaidyas and Hakims manufacturing drugs for their own patients, as well as for small quantities for examination or analysis.

Section 33EED
Empowers the Central Government to exercise its authority in the interest of public safety concerning ASU drugs. If the Central Government, based on available evidence, concludes that the use of any such drug poses a risk to human beings or animals, or that the drug lacks the therapeutic value claimed, it can prohibit the manufacture, sale, or distribution of that particular drug. This provision highlights the government's responsibility to safeguard public health by intervening when there are concerns about the safety or efficacy of specific ASU drugs. The power to prohibit the circulation of such drugs underscores the commitment to ensuring that only medicines meeting established safety and efficacy standards are available in the market, aligning with the broader objective of protecting public welfare.

Section 33F
Establishes the role of Government Analysts in the regulatory framework for ASU drugs. Both the Central Government and State Governments have the authority to appoint individuals, meeting the prescribed qualifications, as Government Analysts for designated areas. These analysts play a crucial role in testing and analyzing the composition of these drugs. Importantly, the section imposes a restriction, ensuring that no person with a financial interest in the manufacture or sale of any drug can be appointed as a Government Analyst.

Section 33G
The section outlines the appointment of Inspectors by both the Central Government and State Governments for the purpose of regulating and overseeing ASU drugs. These appointed individuals must meet specified qualifications. The section grants these inspectors powers and duties as prescribed, allowing them to conduct inspections and ensure compliance with relevant regulations. Importantly, individuals with any financial interest in the manufacture or sale of drugs are prohibited from being appointed as inspectors, reinforcing the impartiality and integrity of the inspection process. Inspectors are deemed public servants, and their actions are subject to the oversight of the government authority appointing them.

Section 33H
This section extends the application of certain provisions, namely sections 22, 23, 24, and 25 of Chapter IV of the D&C Act, along with any rules made under these sections, to Inspectors and Government Analysts appointed under this chapter. These provisions, which typically apply to inspections, search and seizure, and analysis, are modified to encompass the context of ASU drugs. The section ensures that the powers, duties, and limitations specified in these provisions are tailored to the roles of Inspectors and Government Analysts dealing specifically with traditional medicinal products.

Section 22 of Chapter IV
The section delineates the powers bestowed upon inspectors within the designated jurisdiction. Inspectors, subject to specified rules, can inspect premises involved in the manufacturing, sale, or distribution of drugs and cosmetics. This includes scrutinizing manufacturing processes, testing methodologies, and places where these products are stocked or exhibited. They are authorized to take samples from manufacturing units, sellers, or distributors. Furthermore, inspectors can execute searches on persons, premises, or vehicles they believe are linked to offenses under the Act. They may also seize drugs or cosmetics, along with

substances or articles used for offenses. The section empowers inspectors to examine records and documents related to drug or cosmetic activities, and they can seize such materials if they are deemed to provide evidence of an offense.

Section 23 of Chapter IV This section details the procedural aspects governing the actions of inspectors. When inspectors take samples of drugs or cosmetics, they are required to tender the fair price and may seek a written acknowledgment. If the tendered price is refused or when inspectors seize a stock, a receipt in the prescribed form must be provided. When taking samples for testing, inspectors must inform the concerned party in writing, divide the sample into portions, seal and mark them, allowing the party to add their seal and mark. The section stipulates the disposal of sample portions – one sent to the Government Analyst, another produced in court, and if applicable, a third sent to the person whose details were disclosed under section 18A *[18A. Disclosure of the name of the manufacturer, etc.—Every person, not being the manufacturer of a drug or cosmetic or his agent for the distribution thereof, shall, if so required, disclose to the Inspector the name, address and other particulars of the person from whom he acquired the drug or cosmetic.]*. In cases of contravention, inspectors need to promptly ascertain compliance and, if no contravention is found, revoke their order or take necessary actions for the return of seized stock. Additionally, if a contravention is remediable by the possessor, the inspector should revoke the order upon satisfaction of remedy. The section also outlines the procedure for seizing records or documents, involving informing a Judicial Magistrate and seeking their orders regarding custody.

Section 24 of Chapter IV
This section establishes the obligation of individuals in charge of premises where drugs or cosmetics are manufactured, stored, or distributed. When requested by an inspector, these individuals are legally bound to disclose the location where the drug or cosmetic activities are taking place. This provision ensures transparency and cooperation in regulatory efforts, enabling inspectors to ascertain compliance with the Act by gaining access to the specific premises involved in the production or storage of drugs and cosmetics. The legal obligation imposed by this section underscores the importance of collaboration between industry stakeholders and regulatory authorities to uphold the standards and regulations outlined in the Act, contributing to the overall safety and quality of pharmaceutical and cosmetic products in the market.

Section 25 of Chapter IV
This focuses on the reports provided by Government Analysts regarding samples of drugs or cosmetics submitted for testing or analysis. Upon receiving a sample, the Government Analyst delivers a signed report in triplicate to the submitting inspector. The inspector then distributes copies, providing one to the entity from which the sample was taken and another to any person whose details were disclosed under section 18A. The third copy is retained for potential use in legal proceedings. The report signed by a Government Analyst serves as conclusive evidence of the stated facts unless the concerned party notifies, within twenty-eight days of receiving the report, their intention to present evidence contradicting it. In such cases, the court may order the sample to be sent to the Central Drugs Laboratory for further testing, and the resulting report from the Laboratory becomes conclusive evidence. The cost of this additional test is directed by the court, either to be paid by the complainant or the accused, depending on the court's decision.

Section 33I
Outlines penalties for offences related to the manufacture, sale, or distribution of ASU drugs. The section classifies offences into two categories. Firstly, offences related to misbranded, adulterated, or spurious drugs, or

the manufacture of drugs without a valid license, are punishable by imprisonment for a term extending up to one year and a fine not less than twenty thousand rupees or three times the value of the confiscated drugs, whichever is more. Secondly, the manufacture and sale of drugs in contravention of notifications issued under Section 33-EED *(The drugs prohibited from manufacture under Section 33EED are specified by the Central Government through notifications based on concerns related to risks to human beings or animals and the claimed therapeutic value)* is subject to imprisonment for up to three years and a fine extending to fifty thousand rupees or three times the value of the confiscated drugs, whichever is more.

Section 33J
This section addresses subsequent offences under this chapter, detailing enhanced penalties for individuals convicted more than once. The section outlines specific consequences based on the nature of the offence. For convictions related to misbranded, adulterated, or spurious drugs, or the manufacture without a valid license, subsequent offences lead to imprisonment for a term up to two years and a fine not less than fifty thousand rupees or three times the value of the confiscated drugs, whichever is more. For offences related to contravention of notifications issued under Section 33-EED, subsequent convictions may result in imprisonment for up to three years and a fine extending to one lakh rupees or three times the value of the confiscated drugs, whichever is more. The section provides flexibility for the court to impose lower penalties based on adequate and special reasons mentioned in the judgment, emphasizing the severity of repeated offences and aiming to deter individuals from engaging in unlawful practices related to Ayurvedic, Siddha, or Unani drugs.

Section 33K
Stipulates that upon conviction under this chapter, the stock of ASU drugs associated with the contravention shall be liable to confiscation. This means that if a person is found guilty of offences outlined in the chapter, the drugs involved in the violation may be seized by the authorities. Confiscation serves as a punitive measure, aiming to deter illegal activities related to the manufacturing, sale, or distribution of these traditional medicinal products.

Section 33KA
Mandates that any individual, excluding the manufacturer or their distribution agent, must disclose specific details to an Inspector if requested. These details include the name, address, and other particulars of the person from whom the individual acquired an ASU drug. The purpose of this disclosure requirement is to enhance transparency in the supply chain of these traditional medicinal products. By ensuring that individuals involved in the distribution of these drugs provide essential information about their sources, Section 33-KA facilitates effective regulatory oversight, helping authorities track and verify the origin of Ayurvedic, Siddha, and Unani drugs.

Section 33KB
It imposes obligations on individuals holding a manufacturer license pertaining to Ayurvedic, Siddha, or Unani drugs. According to this provision, license holders are required to keep and maintain records, registers, and other documents as prescribed by the relevant regulations. Additionally, the section mandates license holders to furnish necessary information to any officer or authority empowered under the Act.

Section 33L
Outlines the application of the provisions of this chapter, excluding section 33K related to confiscation, to government departments engaged in the manufacture, sale, or distribution of ASU drugs. It ensures that the regulatory framework established by this chapter, which includes licensing requirements, quality standards, and other stipulations, is applicable to government departments in a manner similar to private entities. However, unlike other provisions, it explicitly excludes the application

of section 33K, which deals with the confiscation of drugs upon conviction, thereby outlining a distinction in the enforcement mechanism concerning government departments.

Section 33M - Cognizance of offences
Addresses the initiation of prosecutions under this chapter. It stipulates that no prosecution can be instituted except by an Inspector and requires the previous sanction of the authority the inspector is subordinate to. This places a controlled and authorized mechanism for legal actions, ensuring that prosecutions are carried out with the official approval of the designated authority. Additionally, the section specifies that no court inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class shall try an offence punishable under this chapter, thereby establishing a higher judicial threshold for cases related to ASU drugs.

Section 33N
It delineates the substantial authority vested in the Central Government to promulgate rules, a power instrumental in enforcing the provisions of this chapter pertaining to ASU drugs. This regulatory framework is contingent upon consultation with or recommendations from the Board, emphasizing collaborative decision-making. The provision mandates prior publication of rules in the Official Gazette, ensuring transparency and public awareness. The rules, diverse in scope, cover crucial aspects such as the establishment of testing laboratories, qualifications and duties of Government Analysts and Inspectors, methods for testing drug authenticity, identification of poisonous substances, licensing procedures for drug manufacture and sale, including processed drugs, and conditions for cancellation or suspension of licenses. Additionally, the rules address packaging standards, labeling regulations, and the colors permitted for these traditional drugs. Importantly, the provision authorizes the prescription of standards for Ayurvedic, Siddha, or Unani drugs, reflecting a comprehensive approach to quality control. The inclusion of records and registers under Section 33KB highlights the emphasis on documentation and record-keeping, ensuring accountability and traceability in the manufacturing and sale of these traditional medicines.

Section 33O
This section grants the Central Government the authority to modify the First Schedule associated with ASU drugs. To enact such changes, the Central Government must engage in consultation with the Board, ensuring collaborative decision-making. The process involves issuing a notification in the Official Gazette, providing a minimum of three months' notice before implementing any amendments. Through a subsequent notification of similar nature, the Central Government can either add to or modify the entries in the First Schedule. Once this amendment process is completed, the First Schedule is considered officially amended according to the alterations made.

THE FIRST SCHEDULE

1. Qarabadin Qadri
2. Qarabadin Kabir
3. Qarabadin Azam
4. Ilaj-ul-Amraz
5. Al Qarabadin
6. Biaz Kabir Vol. II
7. Qarabadin Jadid
8. Kitab-ul-Taklis
9. Sanat-ul-Taklis
10. Miftah-ul-Khazain
11. Madan-ul-Aksir
12. Makhzan-ul-mufradat
13. National Formulary of Unani Medicine
14. Unani Pharmacopoeia of India

THE DRUGS AND COSMETICS RULES, 1945
The Drugs and Cosmetics Rules, 1945, are a set of rules that govern the import, manufacture, distribution, and sale of drugs and cosmetics in India. These rules are made under the authority of the Drugs and Cosmetics Act, 1940, and are designed to ensure the safety, efficacy, and quality of drugs and cosmetics sold in the country. The rules cover various aspects,

including the licensing of drug manufacturers and importers, the registration of drugs, the testing and analysis of drugs, the labeling and packaging of drugs and cosmetics, and the prohibition of certain drugs. The rules also provide for the establishment of a Central Drugs Laboratory to analyze and test drugs, as well as the appointment of drug inspectors to enforce the rules. Part XVI to Part XIX of the Drugs and Cosmetics Rules are related to the regulation of ASU Drugs.

PART XVI
MANUFACTURE FOR SALE OF ASU DRUGS

Rule 151 mandates that in the manufacturing process of ASU drugs, if operations extend to multiple premises, each site must secure an individual license. This provision ensures that each manufacturing location undergoes independent evaluation and regulatory scrutiny, promoting adherence to stringent safety, quality, and hygiene standards.

Rule 152 pertains to the appointment of Licensing Authorities by the State Government for the purpose of overseeing the manufacturing and sale of ASU drugs within specified areas. These Licensing Authorities are responsible for granting licenses and enforcing regulations outlined in the rules. The State Government designates these authorities through official notification in the Official Gazette.

Rule 153 outlines the procedures for applying for a license to manufacture ASU drugs for sale, as well as the associated fees. To initiate the licensing process, applicants must submit a formal application, utilizing Form 24-D, to the designated Licensing Authority. Alongside the application, a fee of one thousand rupees is required.

It also delineates provisions for license renewal, permitting applicants to seek renewal before the expiration of their existing license or within one month following its expiry. Renewal applications submitted within this timeframe incur a fee of one thousand rupees. However, renewal applications submitted later, within three months of expiry, are subject to an additional fee of six hundred rupees.

Furthermore, the section specifies the fee for obtaining a duplicate copy of a license, set at three hundred rupees.

Rule 153A delineates the procedures for obtaining a loan license to manufacture and sell ASU drugs, along with the associated fees. A loan license enables an applicant without manufacturing facilities of their own to utilize the production infrastructure owned by a licensee possessing a manufacturing license in Form 25-D.

Applicants seeking a loan license must submit a formal application, using Form 25-E, to the designated Licensing Authority. Alongside the application, a fee of six hundred rupees is required. Similar to the provisions for license renewal outlined in Rule 153, applicants may apply for loan license renewal before expiry or within one month following its expiration. Renewal applications within this timeframe incur a fee of six hundred rupees. However, renewal applications submitted later, within three months of expiry, are subject to an additional fee of three hundred rupees.

Additionally, the section specifies the fee for obtaining a duplicate copy of a loan license, set at one hundred and fifty rupees.

Rule 154 outlines the procedure for issuing a license to manufacture ASU drugs for sale, as well as the form of the license. To qualify for a license, applicants must ensure that the conditions specified in Rule 157 are met.

Once these conditions are fulfilled, a license to manufacture and sell ASU drugs is issued in Form 25-D. This license is granted within a period of three months from the date of receipt of the application by the Licensing Authority. Additionally, the grant of this license involves consultation with an expert in the relevant

system of medicine, as approved by the State Government.

Rule 154A pertains to the issuance of a loan license for the manufacture and sale of ASU drugs and specifies the form of this license.

Under this section, a loan license is granted in Form 25E to individuals or entities who do not possess their own manufacturing facilities but intend to utilize the manufacturing infrastructure of another licensee holding a manufacturing license in Form 25D.

The issuance of a loan license is subject to consultation with an expert in the relevant system of medicine, as approved by the State Government. Additionally, before granting a loan license, the Licensing Authority must ensure that the manufacturing unit has adequate equipment, staff, capacity for manufacture, and testing facilities to fulfill the manufacturing requirements on behalf of the applicant.

Rule 155 specifies the requirement for a certificate of renewal for a license to manufacture and sell ASU drugs. This certificate, issued in Form 26-D, serves as official confirmation of the renewal of the license. Upon completion of the renewal process, the Licensing Authority issues this certificate within the prescribed time frame, ensuring that the licensee maintains authorization to continue manufacturing and selling the specified drugs.

Rule 155A outlines a similar provision for the renewal of a loan license, which permits the manufacturing and sale of ASU drugs without possessing a manufacturing facility. A certificate of renewal, issued in Form 26-E, confirms the extension of the loan license. This certificate is provided by the Licensing Authority within the designated period, enabling the licensee to continue utilizing manufacturing facilities for the specified period.

Rule 155B introduces the concept of a certificate of Good Manufacturing Practices (GMP) for manufacturers of Ayurvedic, Siddha, or Unani drugs. This certificate, issued to licensees who comply with the GMP requirements specified in Schedule T of the rules, serves as recognition of adherence to quality manufacturing standards. The certificate is valid for a period of five years from the date of issuance of the license, ensuring ongoing compliance with GMP regulations and promoting the production of safe and effective pharmaceutical products.

Rule 156 delineates the duration of validity for an original license to manufacture and sell ASU drugs. Such a license, issued in Form 25-D, remains valid for a period of five years from the date of its issuance, provided it is not suspended or canceled earlier. Additionally, the section outlines provisions for license renewal, allowing licensees to apply for renewal before the expiration of their existing license or within one month following its expiry. If the renewal application is submitted within this timeframe, the license continues to remain in force until a decision is made on the renewal application. However, failure to apply for renewal within three months of expiry results in the license being deemed expired.

Rule 156A outlines the duration of validity for a loan license. An original loan license, issued in Form 25-E, or a renewed loan license, issued in Form 26-E, remains valid until the 31st of December of the year following the year in which it is granted or renewed. Similar to the provisions for original licenses, failure to apply for renewal within three months of expiry results in the license being deemed expired.

Rule 157 outlines the conditions that must be met for the grant or renewal of a license. Before a license is granted or renewed, applicants must ensure compliance with the specified conditions. These conditions include:

I. Ensuring that the manufacturing of ASU drugs is conducted in premises and under hygienic conditions as specified in Schedule T of the rules.

II. Compliance with Good Manufacturing Practices (GMP), as verified by the Licensing

Authority, and issuance of a GMP certificate simultaneously with the grant or renewal of the license.

III. Prohibition on using prefixes or suffixes with the names of ASU drugs, except as described in authoritative books specified in the First Schedule of the Act.

IV. Restrictions on using the names of ASU drugs for naming any patent or proprietary medicine, except for single plant-ingredient based formulations.

V. Requirement for licensees to seek renewal with appropriate names for drugs not conforming to specified rules within one year of the commencement of the Drugs and Cosmetics (4th Amendment) Rules, 2015.

VI. Imposition of penalties under section 33-I of the Act for contravening the specified rules.

Additionally, the section outlines requirements for competent technical staff involved in the manufacturing process, specifying qualifications and experience criteria for individuals directing and supervising the manufacture of ASU drugs:

- Degree/Diploma in relevant system of medicine or Pharmacy.
- Minimum 2-8 years' experience in drug manufacturing.
- Registration as Vaid/Hakim or Pharmacist as required.

Rule 157A mandates licensed manufacturing units of ASU drugs to maintain records of raw materials used in the preceding financial year. These records must be kept in the prescribed format provided in Schedule TA. Each manufacturing unit must submit these records to the State Drug Licensing Authority of ASU drugs and to the National Medicinal Plants Board or any designated agency by the 30th day of June of the succeeding financial year.

Rule 158 outlines the conditions that must be adhered to by license holders manufacturing ASU drugs. These conditions include:

- Maintenance of proper records detailing the manufacturing process and any tests conducted on raw materials and finished products.
- Authorisation for inspectors appointed under the Act to access manufacturing premises, inspect facilities, and obtain samples for testing.
- Maintenance of an Inspection Book to facilitate recording of inspectors' observations and identified defects during inspections.

Rule 158A imposes additional conditions on loan license holders manufacturing ASU drugs. These conditions include:

- The loan license is deemed cancelled or suspended if the manufacturing license of the entity providing manufacturing facilities is suspended or cancelled.
- Compliance with the provisions of the Act and rules, including any further requirements specified in subsequent rules under Chapter IV-A of the Act.
- Maintenance of proper records detailing the manufacturing process and any tests conducted on raw materials and finished products.
- Authorisation for inspectors appointed under the Act to access manufacturing premises, inspect facilities, and obtain samples for testing.
- Maintenance of an Inspection Book to facilitate recording of inspectors' observations and identified defects during inspections.

Rule 158B provides guidelines for issuing licenses pertaining to ASU drugs. These guidelines include:

- Definition of Ayurveda, Siddha, or Unani medicines under section 3(a) and patent or proprietary medicines under section 3(h).
- Criteria for issuing licenses for various types of medicines, including those mentioned in the First Schedule of the Act.

- Requirements for safety studies and evidence of effectiveness for different types of medicines.
- Specific conditions for issuing licenses for medicines promoting positive health, beauty products, medicinal plant extracts, and other formulations.
- Standard protocols published by Central Research Councils and other relevant bodies to be considered during the licensing process.
- *Rule 158C* pertains to the issuance of Free Sale Certificates (FSC) and Non-Conviction Certificates (NCC) for ASU drugs manufacturers. This section mandates the State Drug Controller or Licensing Authority to issue these certificates upon request by the manufacturer, within 15 days from the date of application.
- The Free Sale Certificate, available in Form 26 E2-I for original license holders and Form 26 E2-II for loan license holders, confirms that the products manufactured by the licensee comply with regulatory standards and are approved for sale in the domestic and international markets.
- The Non-Conviction Certificate, available in Form 26 E3, certifies that the licensee has not been convicted of any drug-related offences. These certificates are essential for manufacturers to demonstrate compliance with regulatory requirements and facilitate the export of Ayurvedic, Siddha, and Unani drugs to various countries.
- Category Ingredient (S) Indication (s) Safety studyExperience/Evidence of Effectiveness Published Literature Proof of Effectiveness(A) ASU drugs, given in 158 B as referred in 3(a)As per textAs per textNot RequiredRequiredNot Required(B) Any change in dosage form of ASU drugs, as described in section 3 (a) of the Drugs and CosmeticsAs per textAs per textNot RequiredRequiredNot RequiredASU drugs, referred in 3(a) to be used for new indication. As per textNewNot Required If Required. For issue of licence to the medicine with respect to Ayurvedic, Siddha and Unani, the conditions relating to safety study and the experience or evidence of effectiveness.

❖ *Rule 159* addresses the cancellation and suspension of licenses issued under the Act. This section empowers the Licensing Authority to cancel or suspend a license if the licensee fails to comply with any of the conditions of the license or violates any provisions of the Act or the rules made thereunder.

Before taking such action, the Licensing Authority must provide the licensee with an opportunity to show cause within a specified period, which shall not be less than fifteen days from the date of receipt of the notice. The licensee can present their defense and provide reasons why the license should not be cancelled or suspended.

If the licensee's license is suspended or cancelled, they have the right to appeal to the State Government within three months from the date of receiving the order. The State Government will consider the appeal and make a decision accordingly. CategoryIngredient (S)Indication (s)Safety studyExperience/Evidence of EffectivenessPublished LiteratureProof of Effectiveness(A) AqueousAs per textAs per textNot RequiredNot RequiredNot Required(A1) AqueousAs per textNew IndicationNot RequiredNot RequiredRequired(B) Hydro AlcoholAs per textAs per textNot RequiredIf RequiredNot Required(B1) HydroAlcoholAs specifiedNew IndicationRequiredIf RequiredRequiredOther than Hydro/ Hydro-AlcoholAs specifiedAs specifiedRequired Acute, Chronic, mutagenicity and teratogenicityIf RequiredRequiredFor issue of license with respect to extract of medicinal plant (dry or wet) CategoryIngredient (S)Indication (s)Safety studyExperience/Evidence of EffectivenessPublished LiteratureProof of EffectivenessPatent or Proprietary medicineAs per textTextual RationaleNot RequiredOf IngredientsPilot study as per relevant protocol for

Category	Ingredient (S)	Indication (s)	Safety study	Experience/Evidence of Effectiveness	
				Published Literature	Proof of Effectiveness
(A) ASU drugs, given in 158 B as referred in 3(a)	As per text	As per text	Not Required	Required	Not Required
(B) Any change in dosage form of ASU drugs, as described in section 3 (a) of the Drugs and Cosmetics	As per text	As per text	Not Required	Required	Not Required
ASU drugs, referred in 3(a) to be used for new indication	As per text	New	Not Required	If Required	Required

For issue of licence to the medicine with respect to Ayurvedic, Siddha and Unani, the conditions relating to safety study and the experience or evidence of effectiveness

Ayurveda, siddha and Unani drugsASU drugs with any of the ingredients of Schedule E(1) of the Drugs and Cosmetics Act, 1940As per textExistingRequiredRequiredRequiredFor issue of license with respect to Patent or Proprietary medicine. The condition relating to Safety studies and experience or evidence of effectiveness.

Rule 160 delineates the process for **identifying raw materials** used in the preparation of ASU drugs. This section mandates that raw materials must be identified and tested for genuineness where applicable. Records of these tests and the methods used must be maintained.

Category	Ingredient (S)	Indication (s)	Safety study	Experience/Evidence of Effectiveness	
				Published Literature	Proof of Effectiveness
Patent or Proprietary medicine	As per text	Textual Rationale	Not Required	Of Ingredients	Pilot study as per relevant protocol for Ayurveda, siddha and Unani drugs
ASU drugs with any of the ingredients of Schedule E(1) of the Drugs and Cosmetics Act, 1940	As per text	Existing	Required	Required	Required

For issue of license with respect to Patent or Proprietary medicine. The condition relating to Safety studies and experience or evidence of effectiveness

Category	Ingredient (S)	Indication (s)	Safety study	Experience/Evidence of Effectiveness	
				Published Literature	Proof of Effectiveness
(A) Aqueous	As per text	As per text	Not Required	Not Required	Not Required
(A1) Aqueous	As per text	New Indication	Not Required	Not Required	Required
(B) Hydro Alcohol	As per text	As per text	Not Required	If Required	Not Required
(B1) HydroAlcohol	As specified	New Indication	Required	If Required	Required
Other than Hydro/ Hydro-Alcohol	As specified	As specified	Required Acute, Chronic, mutagenicity and teratogenicity	If Required	Required

For issue of license with respect to extract of medicinal plant (dry or wet)

PART XVI (A)
APPROVAL OF INSTITUTIONS FOR CARRYING OUT TESTS ON ASU DRUGS AND RAW MATERIALS USED IN THEIR MANUFACTURE ON BEHALF OF LICENSEES FOR MANUFACTURE FOR SALE OF ASU DRUGS

Rule 160A outlines the application process for obtaining approval to conduct tests on ASU drugs, as well as their raw materials.

- Application Procedure: Entities seeking approval to perform tests on these drugs must submit an application in Form 47 to the Licensing Authority appointed by the State Government. This authority is referred to as the "approving authority" under this section.
- Inspection Fee: Along with the application, an inspection fee of six thousand rupees is required for testing the specified drugs listed in the First Schedule to the Act. If the approval renewal is sought within six months of its expiry, an additional fee is applicable.
- Additional Information: Applicants may be required to furnish additional information as requested by the approving authority in connection with the application.

Rule 160B elaborates on the form and conditions for granting approval to institutions for conducting tests on ASU drugs on behalf of licensees involved in manufacturing these drugs :

- **Approval Form:** Approval for conducting tests on these drugs is granted in Form 48.
- Conditions for Approval:
- Premises Requirements: The premises where the tests are conducted must be well-lit, properly ventilated, and, if necessary, air-conditioned to maintain accuracy and enable specialized tests.
  - **Space Requirement:** Adequate space must be provided for various sections such as Chemistry, Pharmacognosy, Microbiology, etc., with proper partitions. The minimum required area is 800 sq. ft.
  - **Expert Staff:** The applicant must provide a list of qualified experts such as chemists, botanists, and specialists in Ayurveda/Siddha/Unani or pharmacy, with specified degrees and experience.
  - **Equipment:** Adequate equipment essential for conducting tests must be provided, as per pharmacopoeial or other available standards. A detailed list of recommended equipment is provided for

Chemistry, Pharmacognosy, and Microbiology sections.

Chemistry Equipment:

- Apparatus for determination (alcohol, volatile oil, boiling point, melting point)
- Analytical instruments (refractometer, polarimeter, viscometer, UV spectrophotometer)
- Laboratory furnaces and ovens (muffle furnace, hot air oven)
- Glassware and supplies (distillation apparatus, sieves, crucible)
- Miscellaneous equipment (water bath, heating mantle, centrifuge machine)
- Testing apparatus for tablets (disintegration, friability, dissolution)
- Others (pH meter, gas cylinder, dehumidifier, etc.)

Pharmacognosy Equipment:

- Microscopy equipment (microscope, microtome)
- Laboratory supplies (chemical balance, slide cabinet, trays)
- Heating equipment (hot plates, oven)
- Storage facilities (refrigerator)
- Miscellaneous supplies (LPG cylinder, camera lucida, micrometers)

Microbiology Equipment:

- Sterilisation equipment (autoclave, incubators)
- Microscopy equipment (microscope)
- Laboratory supplies (water bath, colony counter)
- Others (laminar air flow bench)

Rule 160C outlines the duration of approval granted to institutions for conducting tests on ASU drugs:

- **Validity Period:** An approval granted or renewed in Form 48 or Form 49, respectively, is valid for a period of three years from the date of issuance or renewal.
- **Renewal Procedure:** If an application for renewal is submitted before the expiry of the approval, or within six months after expiry along with the additional inspection fee, the approval continues until a decision is made on the renewal application. Failure to apply for renewal within six months of expiry results in the approval being deemed expired.

Rule 160D delineates the conditions attached to approvals granted to institutions conducting tests on ASU drugs :

- **Institutional Requirements:** Institutions, referred to as approved laboratories, must ensure they possess and maintain adequate staff, premises, and equipment as specified in Rule 160B.
- **Storage Facilities:** Approved laboratories are mandated to provide proper storage facilities to preserve the properties of the samples intended for testing.
- **Record-Keeping Obligations:** The approved laboratory is required to maintain comprehensive records of tests conducted on all samples of ASU drugs, along with the test results and protocols. These records must be retained for a specified period, depending on the expiry date of the substances.
- **Inspection and Compliance:** The approved laboratory must permit inspectors appointed under the Act to enter the premises, inspect the equipment, and review testing procedures. They are also obliged to provide necessary information to inspectors for compliance verification.
- **Reporting Obligations:** The laboratory is responsible for reporting any changes in personnel, premises, or equipment to the approving authority. They must also furnish test reports in the prescribed format.
- **Quality Compliance:** The approved

laboratory must adhere to the provisions of the Act and rules made thereunder, along with any additional requirements specified under Chapter IV-A of the Act.

- **Inspection Book:** An inspection book must be maintained by the approved laboratory to facilitate recording of inspector impressions or identified defects.

Rule 160E: This section mandates a pre-approval inspection conducted by designated inspectors appointed by both the Central and State Governments. The purpose of this inspection is to thoroughly examine the premises and equipment intended for testing ASU drugs. Additionally, the qualifications of the expert staff employed by the laboratory are scrutinized to ensure they meet the required standards.

Rule 160F: Following the inspection conducted as per Section 160E, inspectors appointed by the Central Government are required to submit a detailed report of their findings to the approving authority. This report encompasses a comprehensive assessment of the laboratory premises, equipment intended for drug testing, and the qualifications of the expert staff employed by the institution.

Rule 160G: Upon receiving the inspection report specified in Section 160F, the approving authority conducts further inquiry, if necessary, to ensure compliance with the rules under the Act. Based on their assessment, the approving authority either grants approval in Form 48 if satisfied with compliance or rejects the application if not satisfied. In case of rejection, the applicant is informed of the reasons for rejection, providing them with clarity on areas needing improvement or rectification.

Rule 160H: If an application for approval is rejected, the applicant has six months to inform the approving authority that the conditions for approval have been met and to deposit a specified inspection fee. Subsequently, the approving authority may conduct another inspection to verify compliance with the conditions for approval. If satisfied with the outcome of the further inspection, the approving authority may grant approval in Form 48, allowing the applicant to proceed with conducting tests on ASU drugs.

Rule 160I: This section details the renewal process for approvals granted under Section 160G. Upon receiving an application for renewal, the approving authority conducts an inspection to ensure continued compliance with the rules under the Act. If satisfied with compliance, the approving authority issues a certificate of renewal in Form 49, extending the validity of the approval for another specified period.

Rule 160J addresses the withdrawal or suspension of approvals by the approving authority if the approved laboratory fails to comply with the conditions specified under the Act or the rules made thereunder. The approved laboratory is provided with an opportunity to show cause why such an order should not be passed before the approval is withdrawn or suspended. Additionally, the approved laboratory may appeal against the withdrawal or suspension of approval within a specified period.

PART XVII
LABELLING, PACKING AND LIMIT OF ALCOHOL IN ASU DRUGS

Rule 161: Labelling and Packing Requirements:

- Comprehensive Labelling Practices: Rule 161 mandates comprehensive labelling practices for ASU drugs, ensuring transparency and consumer safety. Key provisions include the disclosure of all ingredients used in the preparation, referencing authoritative texts for the method of preparation, and the inclusion of cautionary labels 'Caution: To be taken under medical supervision' for medicines containing Schedule E (1) substances.
- Essential Particulars: Labels must prominently display essential particulars such as the drug's name, net content, manufacturer details, license number, batch

number, date of manufacture, and indications for external use.

- **Exemptions:** Certain coverings used solely for packing, transport, or delivery are exempt from labelling requirements.

Rule 161A: Export Provisions:

- Adaptation to Destination Laws: It allows for the adaptation of labels and packages for export to meet the specific requirements of destination country laws. Despite adaptations, essential particulars such as drug name, manufacturer details, batch/lot number, date of manufacture, and main ingredients must be prominently displayed on the container.
- **Code Number Provision:** In cases where consignees request no manufacturer details for non-classified drugs, a code number approved by the Licensing Authority is required on labels, ensuring traceability and compliance with regulatory standards.

Rule 161B: **Expiry and Shelf Life Standards**:

- Date of Expiry: Rule 161B mandates the prominent display of the date of expiry on labels, ensuring the safe use of medicines.

Name of the group of medicine	Shelf life
Habb (Pills)	3 years
Qurs (Tablets)	3 years
Majoon/Dawa	3 years
Khamira	3 years
Itrifal	3 years
Tiryaq	3 years
Laooq	2 years
Laboob	2 years
Halwa	2 years
Mufarreh/Yaqooti	2 years
Burood/Surma/Kohal	3 years
Kushta	5 years
Raughaniyat	3 years
Marham/Zimad/Qairooti	3 years
Ayarij/Sufoof	2 years
Safoof (Namak wala/containing salt)	1 year
Sharbat/Sikanjabeen	3 years
Jawarish	3 years
Capsule	3 years
Arq	1 year
Qutoor	1 year
Nabeez	5 years
Murabba	1 year
Tila	2 years

PART XVIII
GOVERNMENT ANALYSTS AND INSPECTORS FOR ASU DRUGS

Rule 162 delineates the duties of inspectors involved in regulating the manufacturing of ASU drugs.

- Inspection Responsibilities: Inspectors are required to conduct biannual inspections of licensed premises to ensure compliance with licensing conditions, statutory provisions, and rules under the Drug and Cosmetics Act.
- Reporting Obligations: Following each inspection, inspectors must submit detailed reports to the controlling authority, outlining observations regarding adherence to regulatory requirements.
- Sample Collection and Analysis: Inspectors have the authority to collect drug samples during inspections for subsequent testing and analysis, aiming to verify product quality, potency, and safety.
- Prosecution Authority: Inspectors are empowered to initiate legal proceedings in cases of violations of the Drug and Cosmetics Act and associated rules, reinforcing the importance of regulatory compliance.

Rule 162A outlines the qualifications required for individuals serving as State Drug Licensing Authorities responsible for licensing Ayurvedic, Siddha, and Unani drugs.

- **Educational Qualifications:** The individual must possess Ayurvedic/Siddha/Unani qualifications as per Schedule II of the Indian Medicine Central Council Act, 1970, or a B Pharma (Ayurveda) degree from a recognized university.
- **Experience Requirement:** A minimum of five years' experience in Ayurvedic, Siddha, or Unani drug manufacturing, testing, or enforcement of relevant provisions of the Drug and Cosmetics Act, 1940, and associated rules. Alternatively, teaching/research experience in clinical practice of Ayurveda, Siddha, or Unani systems is acceptable.

Rule 163 outlines the procedural requirements for dispatching samples to government analysts for testing or analysis.

- **Method of Dispatch:** Samples for testing or analysis must be sent to the Government Analyst by registered post or by hand in a sealed package, accompanied by a memorandum in Form 18-A enclosed in an outer cover addressed to the Government Analyst.
- Both the package and outer cover must be marked with a distinguishing number to facilitate identification and tracking.
- A copy of the memorandum and a specimen impression of the seal used to seal the package must be sent separately to the Government Analyst by registered post or by hand.
- **Receipt and Inspection:** Upon receipt of the package, the Government Analyst or an authorized officer must open it, record the condition of the seals, and proceed with the analysis.
- **Reporting of Results:** Once the test or analysis is completed, the Government Analyst must provide one copy of the results in Form 13-A to the sender and simultaneously send another copy to the Controlling Authority and the Drugs Controller, India.

PHARMACOPOEIAL LABORATORY FOR INDIAN MEDICINES TO FUNCTION AS CENTRAL DRUGS LABORATORY FOR THE PURPOSE OF TESTING OR ANALYSIS OF ASU DRUGS

Rule 163A outlines the functions of the Pharmacopoeial Laboratory for Indian Medicine :

- Developing pharmacopoeial standards and drafting monographs.
- Serving as the Central Appellate Drug Laboratory.
- Conducting analysis of drug samples under relevant regulations.

- **Reference Facilities:** Maintaining a reference museum and herbarium.
- Training Center: Operating a training center for quality control methods.
- Carrying out tasks assigned by the Government of India.

Rule 163B states that:

- The Central Drug Laboratory's responsibilities for ASU drugs are managed at the Pharmacopoeial Laboratory for Ayurvedic, Siddha, and Unani Medicine in Ghaziabad, Uttar Pradesh.
- The Director of the Pharmacopoeial Laboratory oversees the functions related to these drugs, serving as the authoritative figure for their regulation and oversight.

Rule 163C governs the dispatch of samples for testing or analysis:

- Samples for testing ASU drugs must be sent by registered post in sealed packets, enclosed with a memorandum in Form 1A specified in Schedule A, to the Director of the Pharmacopoeial Laboratory for Indian Medicine.
- Both the packet and the outer cover should be marked with a distinct number to facilitate identification.
- Additionally, a copy of the memorandum in Form 1A and a specimen impression of the seal used to seal the packet must be sent separately by registered post to the Director of the Pharmacopoeial Laboratory for Indian Medicine.

Rule 163D: Upon receipt of the sample packet, an authorized officer at the Pharmacopoeial Laboratory for Indian Medicine is required to open it and record the condition of the seal on the packet.

Rule 163E: After the completion of the test or analysis, the results, along with full test protocols, must be promptly provided to the sender in the specified format in form 2A

Rule 163F: This section outlines the fees for conducting tests and analyses, as specified in Schedule B-1 of the Drug and Cosmetics Rules.

Rule 163G: Certificates issued by the Pharmacopoeial Laboratory for Indian Medicine must be signed by the Director or an authorized officer designated by the Central Government.

Rule 164 delineates the method of test or analysis to be employed concerning ASU drugs:

- The method of test or analysis must adhere to specifications outlined in the Ayurvedic, Siddha, or Unani Pharmacopoeia.
- If no specific tests are specified in the pharmacopoeias, the Government Analyst may employ scientifically established tests to determine whether the drug contains the ingredients as stated on the label.

Rule 165 delineates the qualifications required for a Government Analyst:

- The Government Analyst must possess qualifications prescribed in Rule 44 or hold a degree in ASU System conferred by a recognized University, State Government, or Statutory Faculties, Councils, and Boards of Indian Systems of Medicine recognized by the Central or State Government.
- Additionally, the Government Analyst must have a minimum of three years' postgraduate experience in drug analysis in a laboratory under the control of a Government Analyst appointed under the Act, a Chemical Examiner to Government, or the Head of an institution approved for this purpose.

Rule 166 outlines the duties of a Government Analyst :

- The Government Analyst is responsible for analyzing or testing drug samples sent by Inspectors or other authorized entities under the Act.
- They must furnish reports of the test or analysis results in accordance with the rules.
- Government Analysts appointed under

FORMS	PURPOSE
FORM 1 (Rule 163C)	Memorandum to the Pharmacopoeial Laboratory for Indian Medicine (PLIM)
FORM 2A (Rule 163E)	Certificate of test or analysis from the Pharmacopoeial Laboratory for Indian Medicine or Government Analyst
FORM 13A (Rule 163-5)	Certificates of tests or analysis by Government Analyst under section 33H of the Drugs and Cosmetics Act, 1940
FORM 18A (Rule 163-1)	Memorandum to Government Analyst
FORM 24D (Rule 153)	Application for the grant/renewal of a licence to manufacture for sale of Ayurvedic/ Siddha or Unani drugs
FORM 24E (Rule 154A)	Application for grant or renewal of a loan licence to manufacture for sale Ayurvedic (including Siddha) or Unani Drugs
FORM 25D (Rule 154)	Licence to manufacture for sale of Ayurvedic (including Siddha) or Unani drugs
FORM 25E (Rule 154A)	Loan Licence to manufacture for sale Ayurvedic (including Siddha) or Unani Drugs
FORM 26D (Rule 155)	Certificate of renewal of licence to manufacture for sale of Ayurvedic / Siddha or Unani drugs
FORM 26E (Rule 155A)	Certificate of renewal of loan licence to manufacture for sale of Ayurvedic / Siddha or Unani Drugs
FORM 26E-I (Rule 157B)	Certificate of Good Manufacturing Practices (GMP) to manufacture of Ayurveda, Siddha or Unani drugs
FORM 26E2-I (Rule 158C)	State Drug Controller or Licensing Authority for Ayurveda, Siddha and Unani Medicines
FORM 26E2-II (Rule 158C) Free Sale Certificate	State Drug Controller or Licensing Authority for Ayurveda, Siddha and Unani Medicines
FORM 26 E3 (Rule 158C) Non-Conviction Certificate	State Drug Controller or Licensing Authority for Ayurveda, Siddha and Unani Medicines
FORM 35 (Rules 158 and 158A)	Form in which the Inspection Book shall be maintained
FORM 47 (Rule 160 A)	Application for grant or renewal of approval for carrying out tests on Ayurvedic, Siddha and Unani drugs or raw materials used in the manufacture thereof on behalf of licensees for manufacture for sale of Ayurvedic, Siddha and Unani drugs
FORM 48 (Rule 160 B)	Approval for carrying out tests or analysis on Ayurvedic, Siddha and Unani drugs or raw materials used in the manufacture thereof on behalf of licensees for manufacture for sale of Ayurvedic, Siddha and Unani drugs
FORM 49 (Rule 160- I)	Certificate of renewal for carrying out tests or analysis on Ayurvedic, Siddha or Unani drugs or raw materials used in the manufacture thereof on behalf of licensees for manufacture for sale of Ayurvedic, Siddha or Unani drugs

FORMS	PURPOSE
FORM 50 (Rule 160 D(f)	Report of test or analysis by approved Laboratory
SCHEDULE B(1) (Rule 163F)	FEES FOR THE TEST OR ANALYSIS BY THE PHARMACOPOEIAL LABORATORY FOR INDIAN MEDICINE (PLIM) OR THE GOVERNMENT ANALYST
SCHEDULE TA (Rule 157 A)	FORM FOR RECORD OF UTILIZATION OF RAW MATERIAL BY AYURVEDA OR SIDDHA OR UNANI LICENSED MANUFACTURING UNITS DURING THE FINANCIAL YEAR

section 33F are required to periodically forward reports of their analytical work and research to the Government for potential publication.

Rule 167 details the qualifications necessary for an Inspector:

- The individual must meet the requirements outlined in Rule 49 and have received practical training in manufacturing ASU drugs.
- Alternatively, they may hold a degree in ASU System, or a degree in Ayurveda Pharmacy from a recognized institution.
- A diploma in ASU Systems from a recognized State Government or institution is also acceptable.

PART XIX
STANDARDS OF AYURVEDIC, SIDDHA AND UNANI DRUGS

Rule 169 delineates the permissible excipients for ASU drugs, in accordance with established standards such as the Indian Pharmacopoeia, Prevention of Food Adulteration Act, and Bureau of Indian Standard Act.

- Excipients, including additives, preservatives, antioxidants, and flavoring agents, must adhere to specified limits and quality specifications as outlined in relevant regulations.
- Only natural coloring agents permitted by the Prevention of Food Adulteration Rules and colors approved under the Drugs and Cosmetics Rules are allowed.
- Clear labeling requirements for preservatives and coloring agents are mandated.
- Manufacturers must disclose additives used in formulations and ensure their rationality, safety, and appropriate quantities.
- Artificial sweeteners are permitted in proprietary ASU products, subject to statutory warnings and adherence to specified acceptable daily intake levels as recommended by the US FDA:
  - Sucralose: 5 mg/kg body weight
  - Aspartame: 40 mg/kg body weight
  - Saccharin: 5 mg/kg body weight
  - Acesulfame K: 15 mg/kg body weight
- Any prior notifications from the Department of AYUSH regarding excipients, additives, or preservatives are superseded by these regulations.

REFERENCE

Drugs and Cosmetics Act, 1940, Rules, 1945; Government of India

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AN OVERVIEW ON THE PHARMACOLOGICAL ACTIVITIES OF SHARBAT-E-UNNAB

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ABSTRACT

Sharbat is a significant oral liquid Unani dosage form. The primary advantage of preparing pharmaceuticals using sharbat is preserving them and preventing putrefaction and fermentation since they are done with sugar or honey. Sharbat-e-Unnab is a sweet-tasting liquid dosage form made from the decoction of Ziziphus jujuba fruit. It has been used for a long time in the treatment of skin diseases such as, Nar-Farsi (eczema), Urticaria and Blood heat suppression (Musakkin-e-Hiddat-e-khoon), Musaffi-e-khoon (Blood purifier) and Daf-e-ufoonat (Antiseptic). The major component of Sharbat-e-Unnab is Ziziphus jujuba fruit, which has carbohydrates, proteins, vitamins, and minerals. Polysaccharides, Alkaloids, Glycosides, Flavonoids, Ternoids, and Vitamin C are among its phytochemical ingredients. Studies on its pharmacological properties revealed effects that included Wound healing, Immunomodulatory, Anti-inflammatory, Anti-cancerous Antiallergic and Antioxidant properties.

No. of Pages: 7 **No. of Tables: 3** **References: 52**

Keywords: *Sharbat-e-Unnab*, Unnab, Blood Purifier, *Unani Medicine*.

INTRODUCTION

While the Unani medical system frequently employed single medications for both prevention and cure, the use of compounded or multiherbal mixtures for therapy has also been practiced for hundreds of years.[4] Drinking is indicated by the Arabic term *sharbat*.[6] According to *Hkm. Kabeeruddin*, the word "*Sharbat*" refers to a sweet drink and is either *Persian* or *Urdu*.[5] *Sharbat-e-Unnab* is a highly significant Unani formulation that is mentioned in several classical Unani literatures, particularly in *Qarabadeen-e- Jalali*, *Ilajul Amraz*, and *Bayaz-e-Kabeer*. It is used as, a blood heat suppressant, a *Musaffi-e-khoon* (blood purifier), an amraz-e jild (skin diseases), a *Fassad-e-khoon* (blood putrefaction), etc.[1,2,3] Among Amraz-e-Jild wa *Fasad-e-Khoon* (skin illnesses and blood putrefaction), this formulation has several activities, including *Musaffi-e-Khoon* (blood purifier), *Musakkine-Hiddat-e-khoon*.[9,10]

Composition of *Sharbat-e-Unnab*:

The composition of *Sharbat-e-Unnab* as following;[1,11,13,14,15,16]

S. No.	Ingredients	Weight
1	Unnab	500 g
2	Sugar	1500 g

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Vernacular names of the plant:

Language	Vernacular names
Hindi	Ber
English	Chinese Date, Jujube
Punjabi	Beri
Sanskrit	Rajabadari
Gujarati	Bordi
Sindhi	Jangri
Botanical	Ziziphus jujube
Chinese	Da Zao and Hong Zoa

Scientific classification (Plants, USDA, 2017)

Kingdom	**Plantae - Plants**
Subkingdom	Tracheobiont - Vascular plants
Superdivision	Spermatophyta - Seed plants
Division	Magnoliophyta - Flowering plants
Class	Magnoliopsida - Dicotyledons
Subclass	Rosidae
Order	Rhamnales
Family	Rhamnaceae – Buckthorn family
Genus	*Ziziphus Mill*. - Jujube
Species	*Ziziphus sativa* Lam. - Indian jujube

Botanical description, Habitat and Distribution of *Unnab*:

A small tree or shrub with spines that can grow up to 10–12 meters high; leaves that alternate between being ovate to ovoid-lanceolate, measuring 3–7 cm long by 2-3.5 cm wide; apex slightly obtuse, base oblique; margin closely serrulate, 3 veins; Inflorescence: an axillary cyme; Flowers perfect, with 7-8 greenish-yellow flowers in each cluster; Fruits drupe, 1.5–5 cm long, ovate to oblong, dark reddish-brown when ripe, with a single stone encircled by fleshy pulp.[17]

Typically grown in India, Japan, China, Africa, Malaysia, Afghanistan, and Australia, it is also grown in Nepal, Rangpur, Baghdad, Jurjan, Khata, Punjab, Himalayas, Kashmir, Baluchistan, and arid, hot parts of Western India, primarily Rajasthan and Bengal.[17,18,19,20]

Unani description *of Unnab*:

According to *Najmul Ghani*, the fruit of a tree like Ber is called *Unnab*. It tastes delicious and has a crimson hue.[21]

Mizaj (Temperament); *Motadil*, between *dry* and *wet*[22,23]

Hot 2^0*Dry* 1^0[24]

Medicinal actions of *Unnab*:[21,25,26,27,28,29,30]

- *Musakkin-e-hiddat-e-khoon wa Safra* (Blood and bile refrigerant)
- *Musaffi-e-khoon* (blood purifier)
- Dafe hikka (anti pruritus)
- *Daf-e-Alam-e-Kuliya wa Masana* (Analgesic)
- *Mukhaddir* (Anaesthetic)
- *Munzij-e-Akhlat-e-Ghalizah* (Concoctive of viscous humour)
- *Mulayyin-e- Sadr* (Emollient of chest)
- *Munaffis-e-Balgham* (expectorant)
- *Daf-e-Sual wa Rabu* (Antitussive and anti asthama)
- *Daf-e-Khashunat-e-Halaq wa Sadar*
- *Mulayyin* (laxative)
- *Muza'if-e-Bah* (Anaphrodisiac)
- *Muqallil-e-Mani* (Reducer of semen)
- *Mundamil-e-Quruh* (cicatrizant)
- *Nafe sozish-e-Baul*
- *Mukhaddir* (Anaesthetic)
- *Musaffi -e-Saut*
- *Musakkin-e-Atash*
- *Mushil-e-Akhlat-e-Raqiqa*
- *Habisuddam* (styptic)
- *Muqauwi-e-Meda* (stomachic)

Mawaq-e-Istemal (Therapeutic uses of *Unnab*):

- *Busoor* (Skin eruptions), Sore throat, Dry cough.[31,32]
- *Hkm Azam Khan* stated that *Sharbat -e-Unnab* is very helpful in *Mashara* (Urticaria) in his book *Muhit-e-Azam*, *Amraz-e-Riatain* (Lungs diseases), *Nazfuddam* (Hemorrhage), *Hiddat-e-Khoon*, *Ghalayan-e-Khoon*, *Judri* (Chechak, Small pox) and *Hashba* (Measles), Khashunat-e-Halaq (sore Throat), Sozish-e-Baul (burning micturition), *Surfa Yabis* (dry cough); *Damma* (asthma), *Bahhat us Saut* (hoarseness of voice), *Hikka* (pruritus).[10,25,33]

Phytochemical constituents:
Ziziphus jujuba fruits include a variety of components that have been classified into many types of chemical compounds.

- Polyphenols (flavonoids, anthocyanins, and tannins), alkaloids, terpenoids, polysaccharides, organic acids, carotenoids, fatty acids, sterols, proteins, vitamins, and minerals are some of its chemical constituents.[34,35,36]

Pharmacological actions of *Ziziphus jujuba:*

Antioxidant and Anti-Inflammatory Effects
Research indicates that *jujube* has higher levels of phenolics and ascorbic acid than other typical fruit varieties. Additionally, scavenging techniques were used to evaluate the antioxidant capacity of *jujube* extract based on a drop in power, revealing variations in the antioxidant and free radical scavenging abilities of various *jujube* cultivars.[37] The physiochemical characteristics and antioxidant potential of *jujube* were discovered to be cultivar-driven. The oil extracted from *Z. jujube* seeds has also been shown to have antilisterial and antioxidant qualities.[38] The edible components of *jujube* include alkaloids, glycosides, flavonoids, phenolics, and phytochemicals with anti-inflammatory properties. Histamine and 5HT-induced inflammations are likewise avoided by jujube extract. In conclusion, it influences immunological responses and antioxidant activity via suppressing T-cell proliferation.[39,40,41]

Anticancer Activity
Numerous researches have documented the anticancer properties of *jujube* fruit. Apoptosis and differential cell cycle arrest in HepG2 cells have been shown to be concentration-dependently altered by *jujube* extract, for

example, leading to decreased cell viability.[42,43] *Jujube* also selectively inhibits the development of malignant cells and induces apoptosis. This may be a viable approach towards creating an effective cancer therapeutic. Moreover, the specific anticancer effect of *jujube* is due to decreased cell development and activated apoptosis, which might serve as the foundation for an effective cancer treatment plan.[44,45]

Wound-Healing Effect:
Reports have indicated that *jujube* fruit is beneficial for treating wounds and burns. Another name for it is the "fruit of life."[46,47]

Preparation of *Sharbat-e-Unnab*
Sharbat-e-Unnab is prepared in according the *National Formulary of Unani Medicine* (*NFUM*) and *Bayaz-e-Kabeer* Vol. II. After crushing the 500g of *Unnab*, soak it in 2 liters of water. After that, boil the soaked *Unnab* until the water content is reduced by half, then thoroughly mash and sieve them. Then this decoction is used to make *Qiwam* with 1.5 kg of sugar.[1,12]

As per *Qarabadeen-e-Majeedi*, an alternative technique of preparation involves smashing 600g of *Unnab* into minute pieces and letting them soak in 4 liters of water for 18 hours. The *Unnab* should then be boiled in the morning until the water content is reduced by half, and muslin fabric should be used to filter them. If there are any impurities that have accumulated on the top layer of the Sharbat, they should be removed with a spoon before the sugar is added and the mixture is cooked. Once you get the *Shabat* consistency, strain and bottle.

Af'al wa Khawas (Actions of Sharbat-e-Unnab)
Musaffi-e-Khoon (blood purifier)[1]

Musakkin-e-Hiddat-e-Khoon.[48]

Dafa-e-Suaal (antitussive).[13]

Muskkin-e-Alam-e-Sadr (analgesic).[3]

Munaffis-e-Balgham (expectorant).[2]

Mawaqa-e-Istemal (Therapeutic uses of *Sharbat-e-Unnab*)

Hiddat-e-Khoon wa Ghalba-e-Khoon.[48,14]

Judri (small pox).[1]

Hasba (measles).[14,49]

Mashra (urticaria).[50]

Suaal (cough).[16,51]

Wajausadr (chest pain).[11,50]

Zaturriya (pneumonia).[23]

Miqdar-e-Khurak (Therapeutic doses)

2- 4 *Tola* (24- 48 ml).[1,50]

4 *Tola* (48ml) with *Arq mundi* 5 *Tola* and *Arq-e-Gaozaban* 7 tola.[15]

20 to 50 ml with water or with any arq.[52]

25 to 50 ml with water or goat milk.[48]

CONCLUSION

A well-known blood purifier with a pleasant flavor, *Sharbat-e-Unnab* has been used for generations to cure a variety of dermatological conditions, including urticaria, measles, smallpox, eczema, and psoriasis etc. This formulation has various actions such as *Dafa e Sual* (antitussive), *Musaffi-e-Khoon* (Blood purifier), *Musakkine-Hiddat-e-Khoon* (suppressive blood heat) etc. Additionally, it helps with a few respiratory conditions including pneumonia and cough. Recent pharmacological research has demonstrated *Unnab's* potential as an antioxidant and anticancerous. Clinical research on Acne vulgaris and Primary Hypertension has been conducted on *Sharbat-e-Unnab*. To investigate its further pharmacological activities, *Sharbat-e-Unnab* may be the subject of future research.

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EFFICACY OF MAJOON SALAB AND JAUHAR KHUSSIYA WITH REFERENCE TO OLIGOSPERMIA: A CASE REPORT

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Case Study

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ABSTRACT

Oligospermia is a condition where sperm count is less than 20 million/ml of semen. It is one of the main causes of male infertility. Infertility has been defined by the World Health Organization as a public health problem. The male factor contributes to infertility in approximately 50% of couples. In the present case report an oligospermic infertile man is successfully treated with Unani compound formulations Majoon Salab and Jauhar Khussiya. These medicines possess Muwallide mani (Spermatogenic), Muqawwie bah (Aphrodisiac) and Mughallize mani properties. Modern scientific studies of various ingredients of these formulations showed spermatogenic and antioxidant activities.

No. of Pages: 6 **No. of Pics: 2** **References: 19**

Keywords: Infertility, Oligospermia, Majoon Salab, Jauhar Khussiya.

INTRODUCTION

Infertility is defined as the failure of a couple to achieve conception after one year of regular unprotected intercourse. [1] It can be classified as primary and secondary infertility. Primary infertility refers to couple who has never had a child while secondary infertility means that at least one conception has been occurred, but currently couple cannot achieve a pregnancy. Infertility has been demarcated by the World Health Organization as a public health problem.[2] A large-scale epidemiological survey of the World Health Organization found that about half of couples are infertile due to simple or comprehensive male factors. [3] The male factor contributes to infertility in approximately 50% of couples. Male infertility can be caused by abnormalities of semen in terms of semen quality or quantity. Some of the most common reasons are low sperm count, abnormal sperm shape and structure, reduced sperm motility etc. Oligospermia is one of the commonest conditions responsible for male infertility. Oligospermia is a condition where sperm count is less than 20

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million/ml of semen.[2] However WHO has given a new definition for oligospermia where number of sperm count is reduced to 15 millions per ml of semen ejaculate. [4] Usually as the sperm count decreases there is corresponding decrease in chances of conception. Oligospermia can be classified as follows. [5]

1. **Mild Oligospermia:** Concentrations 10 million - 15 million sperm/ml
2. **Moderate Oligospermia:** Concentrations 5 million - 10 million sperm/ml
3. **Severe Oligospermia:** Concentrations less than 5 million sperm/ml

In the Unani System of Medicine, the semen deformities are mentioned under the caption of Qillat-e-Mani and Riqqat-e-Mani. These conditions are mainly responsible for sexual disorders like Zof-e-Bah (Sexual dysfunction), Uqr (Infertility), Surat-e-Inzal (Premature ejaculation), Kasrate Ehtelam (Nocturnal emission), Jiryan (Spermatorrhoea) etc. Decreased quantity of haiwane manwiya (Spermatozoa) in Mani (seminal fluid) is called as Qillat-e-Mani or Qillate haiwane manwiya. The modern term equivalent for Qillat-e-Mani or Qillat-e-Huwain-e-Manvia is Oligospermia. [6,7]

In classical Unani text, the general term of Muqawwi-e-Bah is used commonly in the management of semen related pathologies. There are number of single as well as compound Unani drugs which have been successfully used in the treatment of various male sexual dysfunction. [6,7] The mufrad advia (single drugs) useful in Qillate mani are Salab misri, Khurma, Singhara, Turanjabeen, Tukhme shaljam, Kharkhsak, Nakhud siyah, Todri, Funduq, Maghze chilghoza, Pyaz kham, Bahman safed etc. [8,9]

Case presentation

The treated patient is 30 years old man diagnosed with primary infertility. He visited MTC & Assayer hospital, Mansoora, Malegaon OPD where he was advised for semen analysis. He was non-smoker, non-alcoholic, average built, shop keeper by profession. He got married before 3 years but his wife did not conceive a single time. He had no history of tuberculosis, syphilis, mumps or any other significant major illness. The couple had taken conventional medicine for about one year somewhere, but did not get any benefit. At the time of commencement of treatment, the general condition of the patient was good. General physical examination and vitals were within normal limits. The systemic examination of cardiovascular, respiratory, gastrointestinal and nervous systems was recorded normal. Genitals were normal in shape and size. On palpation testes were found normal in size and consistency, there were no dilatation of testicular veins (varicocoele). No swelling or tenderness of genitals found.

Before starting treatment protocol Semen analysis of the patient was done and also he was evaluated for safety parameters like complete blood count, liver and kidney function tests. All investigations were repeated after the completion of treatment. The patient has been diagnosed on Unani principles as a case of Uqr ibtedai (Primary infertility) due to oligoaesthenospermia and treated with compound Unani formulations Majoon Salab [10,11] and Jauhar Khussiya. [12] Majoon Salab 5gm and Jauhar Khussiya 1gm were given twice a day with milk for five months. After completion of treatment all investigations along with semen analysis were repeated and a significant improvement in sperm count other parameters were observed. Safety parameters were within normal range which shows that there was no any side effect of medicine on various systems of the body.

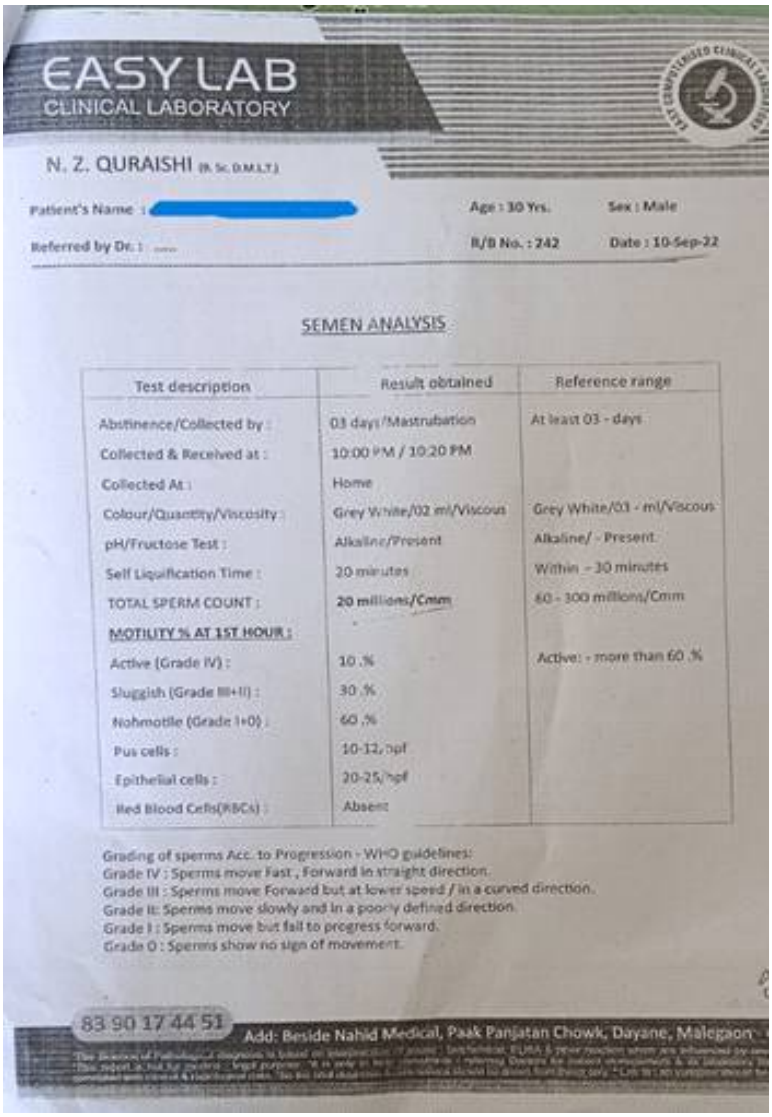
Ingredients of Majoon Salab:

Salab misri (Orchis latifolia), Mushk (Deer Musk), Jund bedastar (Castoruim), Darunaj aqrabi (Doronicum hookeri), Warqe nuqra (Silver foils), Amber (Amber), Sumbulut tib (Nardostachys jatamansi), Heele kalan (Amomum subulatum), Ood kham (Aquilaria apiculata), Kazmazaj (Tamarix gallica), Samaghe

arabi (Acacia arabica gum), Paneer maya shutre erabi (Cheese of camel milk), Bareg gaozaban (Borago officinalis), Badranjboya (Melissa offcinalis), Faranjmushk (Abelmoschus moschatur), Reg Mahi (Agama agilis), Maghz sare kunjashak (Brain of male sparrow), Maghz habbe sanobar (Colocasia esculenta), Maghz narjeel (Cocos nucifera), Maghz funduque (Sapindus emarginatus), Maghz pista (Pistacia vera), Bozidan (Tanacetum umbelliferum), Suranjan Shireen (Colchicum autumnale), Maghze pista (Pistacia vera), Todari surkh (Lepidium iberis), Todari zard (Lepidium iberis), Baheman surkh (salvia haematodes), Baheman safed (Centauria behen), Zanjabeel (Zingiber officinalis), Poodina khushk (Mentha arvensis), Khar Khasak (Tribulus terrestris), Kunjad (Sesamum indicum), Tukhm gazar (Daucus carota), Dar filfil (Piper nigrum), Zaranbad (Curcuma zedoria), Mastagi rumi (Pistacia lentiscus), Jozboa, Bisbasa (Myrustiza fragrance), Zafran (Crocus sativus), Quste Shireen (Saussurea lappa), Maghz Tukhm kharpaza (Cucumis melo), Indarjao Shireen (Wrightia tinctoria), Darchini (Cinnamomum zeylanicum), Qaranfal (Syzygium aromaticum), Heele khurd (Elettaria cardamom), Khulanjan (Ailpinia galanga), Shaqaqul Misri (Pastinaca secacul), Bazarul banj (Hyosyamus albus), Shahed (Honey) [10,11]

Ingredients of Jauhar Khussiya:

Bakrey Ke khusiye (Goat Testicles), Namak



EASY LAB
CLINICAL LABORATORY

N. Z. QURAISHI (B. Sc. D.M.L.T.)

Patient's Name : [redacted] Age : 30 Yrs. Sex : Male

Referred by Dr. : ..... R/B No. : 242 Date : 10-Sep-22

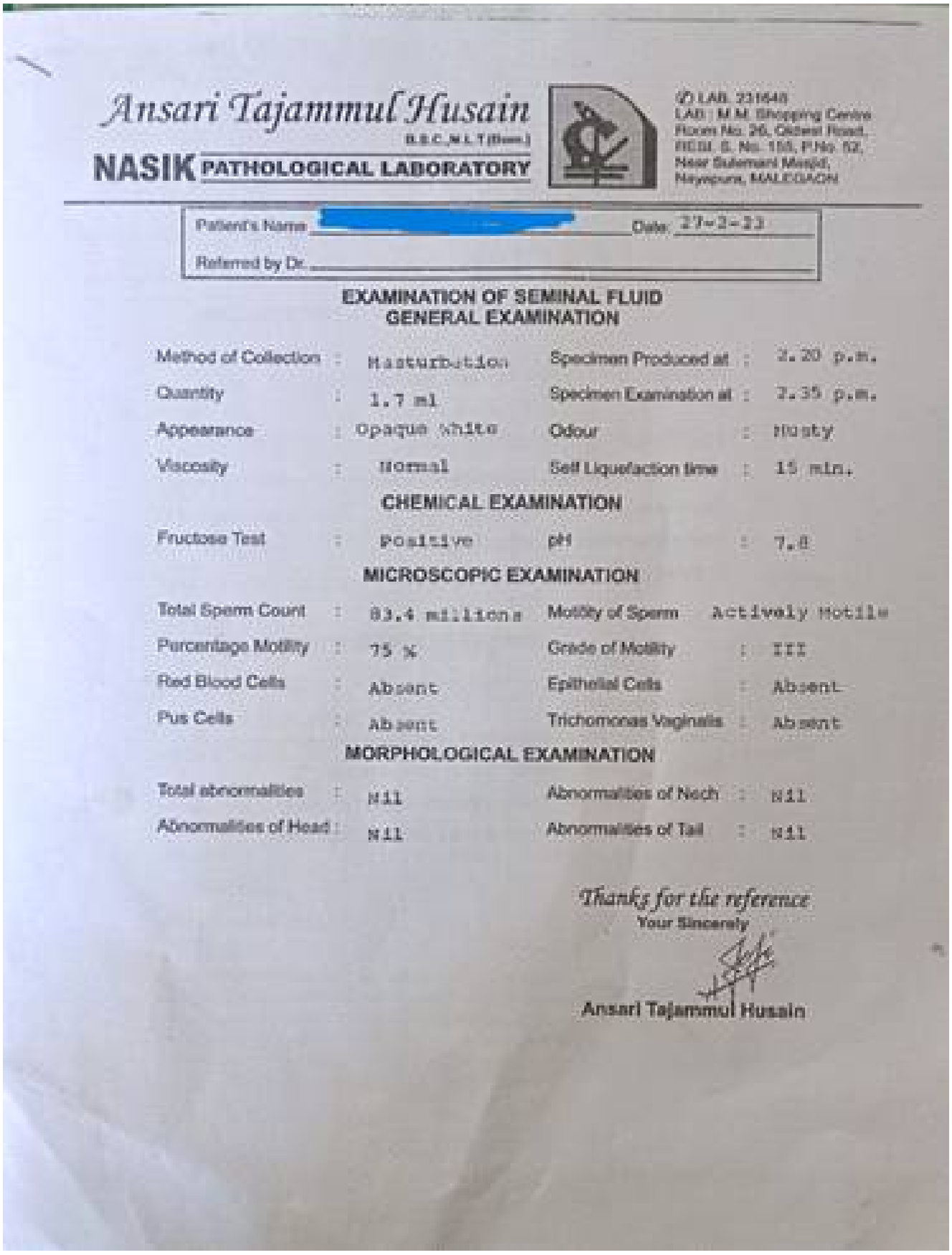
SEMEN ANALYSIS

Test description	Result obtained	Reference range
Abstinence/Collected by :	03 days/Mastrubation	At least 03 - days
Collected & Received at :	10:00 PM / 10:20 PM	
Collected At :	Home	
Colour/Quantity/Viscosity :	Grey White/02 ml/Viscous	Grey White/03 - ml/Viscous
pH/Fructose Test :	Alkaline/Present	Alkaline/ - Present
Self Liquification Time :	20 minutes	Within - 30 minutes
TOTAL SPERM COUNT :	20 millions/Cmm	60 - 300 millions/Cmm
MOTILITY % AT 1ST HOUR :		
Active (Grade IV) :	10 .%	Active: - more than 60 .%
Sluggish (Grade III+II) :	30 .%	
Nohmotile (Grade I+0) :	60 .%	
Pus cells :	10-12, hpf	
Epithelial cells :	20-25, hpf	
Red Blood Cells(RBCs) :	Absent	

Grading of sperms Acc. to Progression - WHO guidelines:
Grade IV : Sperms move Fast , Forward in straight direction.
Grade III : Sperms move Forward but at lower speed / in a curved direction.
Grade II: Sperms move slowly and in a poorly defined direction.
Grade I : Sperms move but fail to progress forward.
Grade 0 : Sperms show no sign of movement.

83 90 17 44 51 Add: Beside Nahid Medical, Paak Panjatan Chowk, Dayane, Malegaon

Pic 1: Pre -treatment Semen analysis report.



Ansari Tajammul Husain
B.S.C., M.L.T. (Bom.)
NASIK PATHOLOGICAL LABORATORY

✆ LAB. 231648
LAB : M.M. Shopping Centre
Room No. 26, Old wet Road,
R.C.M. S. No. 155, P.No. 52,
Near Sulemani Masjid,
Nayapura, MALEGAON

Patient's Name: [redacted] Date: 27-2-23
Referred by Dr.

EXAMINATION OF SEMINAL FLUID
GENERAL EXAMINATION

Method of Collection :	Masturbation	Specimen Produced at :	2.20 p.m.
Quantity :	1.7 ml	Specimen Examination at :	2.35 p.m.
Appearance :	Opaque White	Odour :	Musty
Viscosity :	Normal	Self Liquefaction time :	15 min.

CHEMICAL EXAMINATION

Fructose Test :	Positive	pH :	7.8

MICROSCOPIC EXAMINATION

Total Sperm Count :	83.4 millions	Motility of Sperm	Actively Motile
Percentage Motility :	75 %	Grade of Motility :	III
Red Blood Cells :	Absent	Epithelial Cells :	Absent
Pus Cells :	Absent	Trichomonas Vaginalis :	Absent

MORPHOLOGICAL EXAMINATION

Total abnormalities :	Nil	Abnormalities of Neck :	Nil
Abnormalities of Head :	Nil	Abnormalities of Tail :	Nil

Thanks for the reference
Your Sincerely

Ansari Tajammul Husain

Pic 2: Post treatment Semen analysis report.

Discussion:

Oligospermia is a condition where sperm count is less than 20 million/ml of semen.[2] It is one of the leading causes of male infertility. Living a healthy life is an important factor for producing healthy sperm. Living stressful life may lead to disruption of the production of healthy sperm. A couple is typically referred for evaluation in the OPD of MTC & Assayer hospital Mansoora, Malegaon after 3 years of unsuccessful attempts at conception. The male partner underwent semen analysis where he was diagnosed with oligospermia. He was given two Unani compound formulations viz Majoon Salab and Jauhar Khussiya for five months. Pre and post treatment semen analysis was done. The significant improvement in sperm count and motility were observed. Before treatment sperm count was 20 million/ml, active motility was 10% (Pic.1) while post treatment count was 83.4 million/ ml and active motility was 75% (Pic.2). These improvements would be because of Muqqawie bah (Aphrodisiac), Muwallide mani (spermatogenic), Mughallize mani and Musammine badan (nutritive) activities of most of the ingredients of test drug.

Majoon Salab is composed of forty-nine mufrad advia (single drug components) [11] many of them have Muwallide mani, Mughallize mani and Muqawwie bah properties. [13] Modern scientific clinical and experimental studies have also proved aphrodisiac and spermatogenic properties of some ingredients of test drug like Orchis latifolia, Tribulus terrestris, Centauria behen, Lepidium iberis.[14, 15, 16] Apart from this many of ingredients of Majoon Salab possess antioxidant activity. [17, 18] By virtue of these antioxidant and immunomodulatory properties test drug is found effective in improving sperm motility. [17, 18]

Second compound drug Jauhar Khussiya is composed of dried powder of goat testicle. It has properties like Muwallide mani and Muqawwie bah. [12] The principle of treatment in Unani system of medicine is based on the concept of organ protection, strengthening and maintenance of the Quwa at their equilibrium. The faculties at their equilibrium are poised inherently to maintain the normal function of that organ or system. It has been mentioned that each organ is bestowed with special Quwat for its optimal functioning. Unsiyaen (Testicles) are the azae raesa for Quwwate Tanasuliya. In case of derangement of function (zoaf) of any organ, the drugs enhancing its power (muqawwi advia) are advocated. This is the reason why in Unani system of medicine, for every organ and system, a group of tonic drugs (muqawwi advia) have been proposed, that safe guard its larger interest and bring it near to equilibrium, if some derangement in its structure or function takes place. Therefore, most of the sexual diseases are being treated on the basis of concept of Taqwiyate aaza. [19] Based on same assumption Jauhar Khussiya is advocated.

CONCLUSION

Unani system of medicine is one of the oldest traditional medicines. Unani scholars have elaborately discussed sexual diseases in their respective lexicons. They have mentioned the causes, symptoms, complications, treatment and management of various sexual diseases in their treatises under the caption of Zoafe bah. In fact, Zoafe bah is a broad term which encompasses various sexual disease entities like Istirkhae Qazeeb, Surate Inzaal and Qillate Mani etc.

In present case study Unani formulations Majoon Salab and Jauhar Khussiya showed a potent spermatogenic activity without any side effects. This can be concluded that it would be a better option for oligospermic infertile males. However, the study is at preliminary level. Therefore, it is recommended that further multicentre and large scale clinical studies and trials should be conducted for a meaningful statistical evaluation and the confirmation of results.

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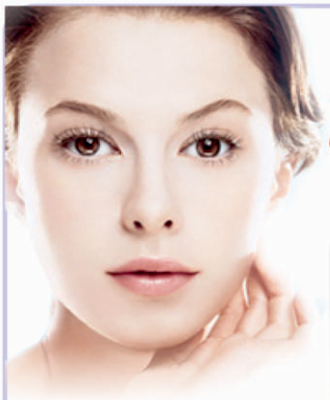

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