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Review Article

Qillat-i-Ifrāz-i-Daraqiyah (Hypothyroidism) and its Correlation with *Sū'i Mizāj Bārid* – A Conceptual Review of Undisclosed Unani Domain

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Abstract

Qillat-i-Ifrāz-i-Daraqiyah (hypothyroidism) is the most common disease of the thyroid gland. Iodine deficiency remains a common cause of hypothyroidism worldwide. It is the most prevalent disease affecting up to 40/10,000 women and 6/10,000 men each year. There is no direct description of *Qillat-i-Ifrāz-i-Daraqiyah* in classical Unani books. However, ancient Greco-Arab scholars have given ample description of *Sū'i Mizāj Bārid* and mentioned its *Asbāb*, *'Alāmāt wa 'Awāriḍāt* in their treatise. The *'Alāmāt wa 'Awāriḍāt* of *Sū'i Mizāj Bārid* are very much similar to the clinical manifestations of hypothyroidism. In fact, *Sū'i Mizāj Bārid* is a descriptive concept leading to systemic manifestation such as the involvement of various organs such as *Qalb* (heart), *Kabid* (liver), *Dimāgh* (brain), *Ṭiḥāl* (spleen), *Mi'da* (stomach), and *Kuliya* (kidney) and consequently results into the spectrum of symptoms and signs. The overall symptom of *Sū'i Mizāj Bārid* coincides with the clinical presentations and complications of various organs in the case of hypothyroidism.

Keywords: *Greco-Arab medicine, hypothyroidism, Qillat-i-Ifrāz-i-Daraqiyah, Sū'i Mizāj Bārid*

Introduction

Hypothyroidism is a prevalent thyroid condition that can be effectively managed with hormone replacement therapy and regular monitoring. With proper treatment, individuals can enjoy healthy and normal lives. Early diagnosis and intervention are essential to prevent complications and ensure a high quality of life. There is no direct description of the *Qillat-i-Ifrāz-i-Daraqiyah* (hypothyroidism) in the Unani classical literature. *Qillat-i-Ifrāz-i-Daraqiyah* is the literal meaning of hypothyroidism. In fact, the word myxedema, which is a characteristic feature of hypothyroidism, has been derived from the Greek word myxedema.[1] Unani and Arab physicians have contributed to every branch of medical science. They have also mentioned a detailed description of endocrine glands. When we go through the classical Unani literature, we find that Unani physicians such as Buqrat, Ibn Sinā, Jālīnūs, Zakariya Rāzī, 'Ali Ibn 'Abbās Majūsī, Isma'īl Jurjānī, Ibn Hubal Baghdādī, and Ibn Zuhr were not only familiar with the endocrine glands but also identified the pathological conditions associated with these glands. Thus, they have emphasized the medicinal uses of animal parts such as the liver, spleen, kidney, testes, and *Jund bīdastar* for the treatment of numerous endocrine diseases.[2]

Buqrāṭ (Hippocrates) (460-337 BC), in his book "De Glandulis," narrated in context to the glands that "when glands of the neck become diseased themselves, they become tubercular and produce struma." The term "struma" is still used in some European countries (e.g., Austria and Italy) under the caption of goiter. 'Ali Ibn 'Abbās Majūsī (10th century AD) stated that the warmth, which occurs due to *Balgham-i-Ghalīḍ* results in Ghaingha (goiter) which is similar to glands. Ibn Hubal Baghdādī (1121-1213 AD) mentioned exophthalmic goiter under the heading *Ḥujūz al-'Ain* (exophthalmos) in his book, "Al Mukhtārāt fī al-Ṭib." He narrated "The main cause of *Ḥujūz al-'Ain* is accumulation of matter. The matter may be liquid or gaseous in nature. These matters accumulate in the vessels of the eyes resulting in dilatation of the vessels. Collectively, we can say that increased pressure of vessels of eyes is the cause of disease."[2] Ismā'īl Jurjānī In his "Treasure of Medicine" first described protrusion of

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the eyes (exophthalmos) which is now considered an important sign of Grave's disease.[3]

Historical Background

Abu Al-Manṣūr Al-Ḥasan Al-Qamrī has defined "*Gutar*" as it is an outgrowth of tissue that lies between two layers of the skin which move freely. It is neither attached to the body nor difficult to separate from the body. Most probably, it is separated from the body. It has no origin and varies in size and shape. Further, it is located in the anterior part of the neck which is commonly known as *Ghaingha*. Sadeeduddin Gazaroni (1344 AD) narrated the functions of glands in his treatise "Al-Shareh Al-Mughanna. The benefits of glands are that secretions of some glands are essential for the survival of human being, e.g., testes, while secretions of some glands help in nutrition and metabolism. For instance, the sub-lingual glands help in moistening the tongue and mouth and also assist in digestion."[2]

The secretions of the abovementioned glands may be related to endocrine (testes) and exocrine (sublingual) glands. However, the clinical manifestations of *Qillat-i-Ifrāz-i-Daraqiyah* closely resemble the *'Alāmāt wa 'Awāriḍāt* of *Su'-i-Mizāj* Barid which has been described by eminent Unani physicians such as Ibn Sina, Zakariya Rāzī, Rabban Ṭabrī, and Akbar Arzānī in their treatises. According to Unani doctrine, the disease appears either due to alteration in the *Ṭaba'ī Mizāj* (normal temperament) or *Ṭaba'ī Akhlāṭ*. The normal *Mizāj* of the body is based on Asbab Sittah Zaroria (six essentials of life). Any alteration in these essential factors may change the Tabayee *Mizāj* of the human body. The *Su'-i-Mizāj ghayr Ṭaba'ī* is mainly of four types, i.e. *Su'-i-Mizāj* Har, *Sū'i Mizāj Bārid*, *Su'-i-Mizāj* ratab or *Su'-i-Mizāj* ratab maddi, and Barid Sada or *Sū'i Mizāj Bārid* Maddi. All the types of *Su'-i-Mizāj* may be characterized by their respective *'Alāmāt wa 'Awāriḍāt*. The *'Alāmāt wa 'Awāriḍāt* of *Sū'i Mizāj Bārid* is *Imtila* (congestion), dry and cold skin, *Kasrate Luabe Dahan* (excessive salivation), *Qillat-i-Ishtiha* (decreased appetite), *Kathrat-i-Nawm* (excessive sleep), *Takān* (fatigability), *Ghunūdagi* (drowsiness), *Nabḍ-i-baṭī* and *mutafawit* (slow and delayed pulse), *Kund-zahni* (diminished intellectual functions), *Istirkha-i-a'ṣāb*, puffiness or looseness of the body.[4]

These symptoms are somehow related to the clinical manifestations of hypothyroidism described in western medicine. In Unani system of medicine, *Sū'i Mizāj Bārid* is used in a broader perspective, which encompasses most of the symptoms related to hypothyroidism. In addition, the consequence of *Sū'i Mizāj Bārid* leads to *Awrām-i-Bārida*. Regarding *Awrām-i-Bārida*, Ibn Sina (980–1037 AD) has mentioned in his book "*Al Qānūn fī al-Ṭib*" under the heading of *Mo'alajāt-i-Awrām* that "inflammations are of two types: hot inflammation and cold inflammation. Cold inflammation may be of two types: soft in consistency (*awrām-i-tahabbujia*, *auzima*) and hard in consistency (*Waram-i-sawdāvī*). The causes of these inflammations are either *Bādiya* or *Sābiqa*. An example of *Sābiqa* is *Imtilā* (*imtilā-i-khilṭī*), and examples of *Bādiya* are trauma, injury, and poisonous animal bites."[4] Furthermore, Allama Kabīruddīn mentioned that *Tahabbuj* and *Auzima* are the best examples of cold inflammation. Because these types of inflammations occur due to the retention of *Maiyat-i-Damwiya* (plasma), putrefaction (*Ta'ffun*) is not a necessary condition for these inflammations (*Tahabbuj* and *Auzima*).[5] In view of the above explanation, hypothyroidism may be put under the category of *Awrām-i-Bārida*. Further, it is considered that *Sū'i Mizāj Bārid* may consequently develop *Awrām-i-Bārida* if it persists for a long duration.[6-9]

Consequence of *Sū'i Mizāj Bārid*

1. All physiological functions including metabolism, elimination or excretion, walking, and speaking are diminished[4,10]
2. People of *Sū'i Mizāj Bārid* are more susceptible to developed *Sudda* (obstruction) which may eventually develop following complications
   a. *Fālij* (paralysis) – If Sudda occurs in the brain vessels it may cause *fālij*
   b. *Waja' al-Qalb* (angina) – If it occurs in the vessels of the heart, it may cause *Waja' al-Qalb* (angina) and *Aflās al-Qalb* (M. I)
   c. Infertility – *Sū'i Mizāj Bārid* may cause obstruction in the arteries supplying the genital organ and may eventually develop infertility
   d. Deep vein thrombosis – If *Sū'i Mizāj* occurs in a deep vein of the body, it may cause deep vein thrombosis.
3. *Sū'i Mizāj Bārid* is the most common cause of

Table 1: Correlation of *Sū'i Mizāj Bārid* to symptoms of hypothyroidism

Symptoms of *Sū'i Mizāj Bārid*	Symptoms of hypothyroidism
Khushk wa Khurdari jild	Dry and coarse skin
Bayāḍ-i-badan	Pallor of the skin
Bayāḍ al-Lisān	Thick tongue
Kathrat-i-nawm	Excessive sleep
Takān wa Kasalmandī	Lethargy and somnolence
Nabḍ baṭī wa mutafāwit	Low volume pulse
Khafqān	Palpitation
Tahabbuj Wajhī	Puffiness of face
Ḍu'f-i-tanaffus	Diminished breathing capacity
Kund zahni	Diminished intellectual functions
Nisyān	Dementia
Ḍu'f-i-shahwat	Loss of libido
Istisqa	Ascites
Qabḍ	Constipation
Qillat-i-Ishtihā	Decreased appetite

Table 2: Common diseases associated with *Sū'i Mizāj Bārid* are as follows

Hummae balghamiah and Mukhṭalita
Ṣawt Abaḥḥ (hoarseness of voice)
Waj' al Mafāṣil (arthritis)
Waj' al uzn (pain in ear)
Buṭlāne sham (anosmia)
Su'āl wa nazla (cough and common cold)
Dama (asthma)
Waja ul sadar (chest pain)
Jū' al kalb
Nafkhe shikam (flatulence)
Istisqa (ascites)
Siman mufriṭ (obesity)
'Uqr (infertility)
Sudā' bārid sāda (khibta)
Ḍu'f-i-badan (weakness of the body)

Table 3: Umoomi alamaat of *Sū'i Mizāj Bārid*

Dry and cold skin, thin, soft, and scanty hair
Imtilā (congestion)
Kundzahni (diminished intellectual functions)
Foolishness, slow activity
Excessive salivation, diminished thirst, decreased appetite
Fatigability, drowsiness, excessive sleep
Nabḍ Baṭī and *Mutafāwit* (slow and delayed pulse)
Looseness of the body

Table 4: *Sū'i Mizāj Bārid Dimāgh*

Dimāghī fuṭūr
Kundzahni (diminished intellectual functions)
Buzdilī (cowardice)
Kathrat-i-nawm (excessive sleep)
Nisyān (forgetfulness)
Kasal mandī (lethargy)
Nazla wa zukām (common cold)

Table 5: *Sū'i Mizāj Bārid Qalb*

Nabḍ-i-*sagheer, bati and mutafavit*
Zofe tanaffus
Decreased quwa
Khafqan (palpitation)
Khauf wa wahshat (fear)
Buzdilī (cowardice)
Pallor of the skin
Diminished facial expression
Bawl abyaḍ
Kathrat-i-nawm (excessive sleep)

Amrāḍ-i-A'ṣāb such as *Istirkhā*, *Ra'sha*, *Ikhtilāj*, *Khidr*, *Fālij*, *Laqwa*.[4,6,11]

The various properties of symptoms of *Sū'i Mizāj Bārid*[4,6-8,11-16] are summarized in Tables 1-9.

Uṣūl-i-'Ilāj of *Qillat-i-Ifrāz-i-Daraqiyah*

In the Unani system of medicine, the principles of treatment of any disease are based on the *Tadeel Mizāj*, *Istifragh wa Tanqiyah madde fasida*. Owing to the resemblance in the symptoms of *Qillat-i-Ifrāz-i-Daraqiyah* and with symptoms of *Sū'i Mizāj Bārid*, this disease may also be treated on the same line of treatment. For example, to restore normal *Mizāj*, Advia Harrah may be used. For the evacuation of morbid matter, particularly *Madde Balghamiah*, *Munzijāt-i-Balgham* (phlegmatic concoctives) and *Mus'hilāt-i-Balgham* (Phlegmatic Purgatives) should be used.[17]

Use of *Munzijāt-i-Balgham*

Beekhe badiyan 7 g, *Beekhe kasni* 7 g, *Beekhe krafs* 7 g, *Beekhe izkhar* 7 g, *Barge gauzuban* 7 g, *Anjeer zard* 5 No., *Maweez munaqa* 8 No., *Gulqand 'aslī* 15 g. Patients are advised to take decoction (40 mL) on an empty stomach twice a day for a period of 2–3 weeks till the symptoms of *Nuḍj* appear.[18]

Use of *Mus'hilāt-i-Balgham*

Barge sana 6 g, *Turbud* 6 g, *Turanjabeen* 4 g, *Ghārīqūn* 4 g, *Maghz-i-Amaltās* 7 g, *Shīr-i-Khisht* 7 g, *Roghan Bayd Injīr* 25 mL. Appropriate doses of *Mus'hilāt-i-Balgham* are added to the decoction of *Munḍij-i-Balgham* for a period of 3–5 days to induce purgation.

Tabrīd-i-Badan

This is the last step of *Munḍij wa Mushil* therapy usually done with the help of *Mubarridāt* to neutralize the side effects of *Mushilāt* on intestines. Commonly used drugs are *Lu'āb-i-behīdāna*, *Lu'āb-i-isapghol*, *Lu'āb-i-raisha Khiṭmī*, *Shīr-i-'unnāb*, *Shīr-i-bādiyān*, *'Arq shāhtra,* etc., These are used for a period of 2–3 days.

Use of Musakkhinat

After the completion of *Istifrāgh-i-balgham*, patients are advised to take *Ḥār Mizāj Advia* both single as well as compound formulation. The commonly used *Musakkhin advia* of herbomineral origin are *Filfil siyah*, *Kholanjan*, *Darchini*, *Kababchini*, *Salikha*, *Zeera*, *Karafs Naushader*, *Saji*, *Suhagha*, *Zanjabeel*, *Dār-i-filfil*, *Zaranbad*, *Peepal*, *Abhal*, *Kabab Cheeni*, *Qaranfal*, *Podina*, *Gandana*, etc., compound formulations used are *Har Moajeen wa Jawarishat*, etc., such as *Majoon Chobchini*, *Mojoon Zanjabeel*, *Majoon Khader*, *Majoon Talkh*, *Jawarish Jalinoos*, *Jawarish Kamoni*, *Jawarish Falafali*, *Jawarish Bisbasa*, and *Jawarish Podina*.[10,17,19]

Conclusion

There is no direct description of *Qillat-i-Ifrāz-i-Daraqiyah* in classical Unani books. However, ancient Greco-Arab scholars have given ample description of *Sū'i Mizāj Bārid*

Table 6: *Sū'i Mizāj Bārid Kabid*
Qabḍ (constipation)
Tarahulle badan (looseness of the body)
Tahabbuj (swelling on the face)
Whiteness of lips and tongue
Qillate atsh (decreased thirst)
Nabḍ-i-bati (delayed pulse)
Bawl-i-abyaḍ

Table 7: *Sū'i Mizāj Bārid Ṭiḥāl*
Zofe ishtihā (loss of appetite)
Nafkhe shikam (flatulence)
Kasrate luabe dahan (excessive salivation)
Heaviness on the site of *Ṭiḥāl*

Table 8: *Sū'i Mizāj Bārid Mi'da*
Ḍu'f-i-haḍm (dyspepsia)
Dakarey (excessive belching)
Ḍu'f-i-Ishtihā (anorexia)
Nafkhe shikam (flatulence)
Ghathyān wa Qay' (nausea and vomiting)
Atashe kādhib (pseudo thirst)
Tarahull-i-Badan (looseness of body)
Bayāḍ-i-badan (whiteness of body)

Table 9: *Sū'i Mizāj Bārid Kuliya*
Safaid Qārūrah (passage of white urine)
Paleness of the body
Ḍu'f-i-shahwat (loss of libido)
Ḍu'f-i-'Ām (general weakness)

and mentioned its *Āsbāb*, *'Alāmāt wa 'Awāriḍāt* in their treatise. The *'Alāmāt wa 'Awāriḍāt* of *Sū'i Mizāj Bārid* as mentioned above are very much similar to the clinical manifestations of hypothyroidism. In fact, *Sū'i Mizāj Bārid* is a descriptive concept leading to systemic manifestation such as the involvement of various organs such as *Qalb* (heart), *Kabid* (liver), *Dimāgh* (brain), *Ṭiḥāl* (spleen), *Mi'da* (stomach), and *Kuliya* (kidney) and consequently results into the spectrum of symptoms and signs. The overall symptoms of *Sū'i Mizāj Bārid* coincide with the clinical presentations and complications of various organs in the case of hypothyroidism. In the light of the above description, a hypothesis may be drawn that *Sū'i Mizāj Bārid* including *Su'-i-Mizāj Balghamī* may somehow be interpreted with the clinical presentations of hypothyroidism.

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Conflicts of interest

There are no conflicts of interest.

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Review Article

Berberis aristata DC. (*Dār-e-hald*) and *Asparagus racemosus* Willd. (*Satawar*): An Overview

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Abstract

In recent years, interest and research in medicinal plants have increased greatly. Traditional medicine and formulations, developed from ancient Indian herbal systems such as Unani medicine, are renowned for their significant applications. *Berberis aristata* DC., an Indian medicinal plant commonly known as *Dār-e-hald,* belongs to the family Berberidaceae. It has been used since ancient times for its antibacterial, anti-protozoal, anti-inflammatory, and antifungal activities. Similarly, *Asparagus racemosus* Willd., commonly known as *Satāwar*, belongs to the Liliaceae family and shares similar properties. Therefore, these two drugs hold significant importance in the Unani system of medicine, and this paper provides an overview of these two drugs in detail.

Keywords: *Asparagus racemosus, Berberidaceae, Berberis aristata, Liliaceae, Unani medicine*

Introduction

Berberis aristata DC., commonly known as *Dār-e-hald* in India, belongs to the Berberidaceae family. The bitter principle found in the root and wood is berberine. This plant grows across temperate regions of the Himalayas at altitudes of 6000–10,000 feet, from Bhutan to Kunwar, Nilgiri Hills, and Ceylon at 6000–7000 feet.[1,2]

Vernaculars

- Arabic: Argis, Ambarbaris, Huzuz-i-Hindi
- English: Indian Barberry, Ophthalmic Barberry, Tree Turmeric
- Hindi: *Dār-e-hald*, Chitra, Kemloo
- Urdu: *Dār-e-hald*
- Sanskrit: Daru-haridra, Pita daru
- Persian: *Dārchob*, *Dār-hald*, *Zarishk, Fil-Zahrah*.[3-5]

Description of the Drug

This large deciduous perennial shrub resembles a lemon shrub, typically reaching 1.8–3.6 m in height, with some specimens attaining up to 4.5 m. The stem is approximately 20 cm in girth, and twigs are whitish or pale yellowish-brown. Leaves measure 3.8–10 by 1.5–3.3 cm, are obovate or elliptic, entire, or with a few distant spinous teeth, green on both sides, and with prominent reticulate nerves. The flowers are golden yellow, borne in pendulous racemes 2.5–7.5 cm long, and bloom in spring. The fruit is 7–10 cm long, oval, bluish-black, or red, covered with a thick pale or bluish bloom, and grows in pendulous clusters. The stem is 2.5–5 cm in diameter, covered with soft cork and light brown bark, beneath which is a hard layer of strong cells with longitudinal furrows. The wood is impregnated with yellow coloring matter, soluble in water. The root bark is brittle, fibrous, with a bitter taste.[6,7]

In Unani literature, its fruit, *Zarishk*, resembles *Filfil Siyāh*: Smooth, shiny, soft, and green when unripe, turning blackish-blue or yellow when ripe, with a sweetish taste. The plant's stem and wood are referred to as *Dār-e-hald*, and its aqueous extract is called *Rasaut*.[8-10]

Parts Used

- Stem or wood (*Dār-e-hald*)
- Extract (*Rasaut*)
- Fruit (*Zarishk*).[2,11]

Temperament

- Hot and dry 3°[12,13]
- Hot and dry 1°[12,14]
- Cold and dry.[11]

Pharmacological Action and Medicinal Uses

- Analgesic (*Daafe Alam*)

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Quick Response Code:

- Alternative (*Mu'addil*)
- Anodyne to uterine muscles (*Musakkin Aḍlāt-i-Raḥim*)
- Anti-inflammatory (*Muhallil-e-warm*)
- Antibacterial (*Dāfa'-i-Jarāsīm*)
- Antibilious (*Dāfa'-i-ṣafrā*)
- Anti-coagulant (*Dāfa'-i-Injmād-ud-dam*)
- Anti-periodic (*Mana'-e-Bukhār*)
- Anti-pyretic (*Dāfa'-i-Humma*)
- Cholagogue (*Mudir-i-Ṣafrā*)
- Diuretic (*Mudir-i-bawl*).[15-17]

Medicinal Uses

- Chronic uterine troubles (*Muḍmin Amraḍ-i-Raḥim*)
- Dysuria (*'Usr-e-bawl*)
- General weakness (*Ḍo'f-i-'Ām*)
- Fever (*Humma*)
- Amenorrhea (*Aḥtibās-e-Hayḍ*)
- Leukorrhea (*Sailan-ur-Raḥim*)
- Hepatitis (*Iltehab-e-jigar*)
- Inflammatory swellings, healing ulcers (*Indemāl-e-Zakhm*)
- Painful micturition (*Hurqatul bol*)
- Pruritus (*Kharish*).[2,5,18]

Phytochemical studies

Berberine is an alkaloid that occurs in the stem wood of *B. aristata*.[19] It also contains oxycanthine, fat, gum, tannins, and resin. The fruit contains tartaric acid, malic acid, tannin, resin, and fat. Flowers contain quercetin-e-caffeic and cholinergic acid isolated from flowers, with a yield of 2.76%. Berberine was isolated by high-performance thin-layer chromatography and 2.58% by the spectrophotometric method from *B. aristata*.[20,21]

Pharmacological Studies

Berberine and santonin isolated from *B. aristata* were tested against spore germination of some saprophytic obligate fungi. Berberine was effective against most fungi.[22,23] Santonin was constant, and berberine at different concentrations. The mixture was effective against all fungi tested.[22] Aqueous and alcoholic extracts of *B. aristata* produced anti-inflammatory activity in a carrageenan-induced rat paw edema, comparable to diclofenac sodium in terms of the activity in their respective therapeutic doses.[24] The alkaloid berberine possesses antibacterial and anti-inflammatory activities. Berberine affected the growth and structure of *Entamoeba histolytica*, *Giardia lamblia*, and *Trichomonas vaginalis in vitro*.[25,26]

Adverse Effects (*Muzir*)

Not suitable for persons with hot temperament and splenic disease.[19]

Corrective (*Musliḥ*)

Arq-e-Naranj and *Anisoon* have been recommended to detoxify the drug.[5,19]

Substitute (*Badal*)

Haldi (*Curcuma longa*).[13]

Dose

3–5 g or 1–3 g.

Chemical Constituents

Berberine, oxycanthine, santonin.[1,2,15]

Asparagus racemosus Willd.

Introduction

Asparagus racemosus, commonly known as *satāwar,* belongs to the family *Liliaceae*. Traditionally known as *shatāvari,* meaning "who possesses a hundred husbands" or "acceptable many," in Unani medicine, it is considered a "female tonic" important for its sapogenin content, a precursor of many pharmacologically active steroids. This species occurs widely throughout the tropical and subtropical regions and is chiefly found in central and northern India. The climber grows in low jungles and can reach lengths of 1–2 m.[27,28] Its growth is maximal during March, and the roots of Asparagus are collected from November to March (Autumn), dried, and marketed. In Unani literature, "*Jalinūs*" mentioned it by the name of *Shaqāqul,* and it has been used in Unani medicine since the 19th century.[4,8,13]

Vernacular Names

- Arabic: *Shaqāqul*
- Hindi: *Satavar, Satmuli*
- Persian: *Shakākul*
- Rajasthani: *Satawar*
- Urdu*: Satawar Doodhkari*
- Tamil*: Kilavari, Satavali*.[29]

Description of the Drug

An extensively scandent, much-branched, spinous undershrub with tuberous short root stock bearing numerous fusiform succulent tuberous roots. The roots are 3″–6″ long and 1/4″–1/2″ in diameter, silvery white or light ash-colored externally and white internally, smooth when fresh but developing longitudinal wrinkles when dry. They have a smell reminiscent of burnt sugar, a hard and mucilaginous texture, and a sweet taste. The roots are used medicinally in the Unani system of medicine. The stem of the plant is woody and gray, with linear, subulate leaves measuring 1/6″–1/4″ long, featuring a stout conical spinous spur. The flowers are simple and fragrant, arranged in racemes, and the berries measure 1/6″–1/4″ in diameter, with the fruiting season occurring in cold weather.[30,31]

Types

The roots are classified into two types: long and small. The

best variety is white, thick, and profuse; the long, blackish variety has lesser therapeutic value.

Part Used

- Root.[4]

Temperament

- Cold 1° and moist 1°
- Cold 2° and moist 1°
- Hot 1° and moist 2°
- Hot 1° and dry 2°.[13,32]

Pharmacological Action and Medicinal Uses

- Anticancer activity
- Anti-dysenteric activity
- Antifungal activity
- Anti-inflammatory activities (*Dāfa'-i-Iltehāb*)
- Anti-ulcer activity (*Mudammil*)
- Antioxidant activity
- Anti-abortifacient activity (*Mana'-i-Ḥamal*)
- Spasmodic to uterus (*Dafe Tachannuj-Aḍlāt-e-raḥim*)
- Hypoglycemic
- Hypertensive activity (*Daf-e-Ḍiqtutdam-qawī*)
- Uterine tonic (*Muqawwī-e-Raḥim*)
- Galactagogue (*Muwalid-i-shīr*).[27,33,34]

Medicinal Uses

- Anti-spasmodic (*Dafa'-i-Tashannuj*)
- Aphrodisiac (*Muqawwī-e-bāh*)
- Digestive (*Hāḍim*)
- Diuretic (*Mudir-e-bol*)
- Galactagogue (*Muwalid-e-shīr*).[4,13]

It is taken internally in women who complain of infertility, loss of libido, threatened abortion, menopausal problems, and stomach ulcers. The root is also fresh in the treatment of dysentery and is used in the management of behavioral disorders and minimal brain dysfunction. The root is alterative, antispasmodic, diuretic, galactagogue, and refrigerant.[4,12,29]

Phytochemical Studies

Recently, the racemosides and the saponin content of *A. racemosus* roots have been studied, revising the structures of the two major saponins of this plant, shatavarins I, III, and IV. Further confirmation was provided by the isolation of new minor steroidal saponins from *A. racemosus* roots. A limited number of steroidal saponins have been reported previously from the roots of this plant, with the major ones being shatavarins I and IV. Glycosides of quercetin, rutin, hyperoside, diosgenin, quercetin 3-glucuronide, and two spirostanolic and furostanolic saponins have also been identified, along with saponins IV. The bark exhibited anti-bacterial and anti-fungal activities; one molecule of *shatavari* IV causes uterine contraction.[31]

Corrective

- Shahed, Misri.[4]

Substitutes

- *Behman safed*
- *Moosli safed*
- *Shahed*.[4,13]

Dose and Dosage Form

6 *māsha* to 1 *tola* (12 g); *ma'jūn*: 3 *māsha* to 6 *māsha* (6 g); powder, decoction, infusion.[4,13]

Chemical Constituents

Essential oils, asparagines, arginine, tyrosine, flavonoids, resin, tannin, and shatavarin IV.[1,19,31]

Adverse Effects

It is harmful to the urinary bladder, lungs, and intestines.[4,13]

Conclusion

It is evident that the herbs *B. aristata* and *A. racemosus* have diverse beneficial biological activities due to which they can be used in many gynecological disorders.

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Conflicts of interest

There are no conflicts of interest.

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Review Article

Therapeutic Potential and Pharmacological Properties, Phytochemical Constituents of *Butea monosperma* (Lam.) Kuntze Syn. *B. frondosa* Roxb. Ex Willd. (*Gul-i-Tesū*)

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Abstract

Medicinal plants have been extensively utilized as efficacious interventions for the prevention and treatment of various diseases for centuries across diverse cultures worldwide. The introduction of numerous herbal drugs into the commercial market as a result of ethno-pharmacological studies and their utilization has become increasingly prevalent among individuals as a potential therapeutic resource within their healthcare system. *Butea monosperma* (*Tesu*) belongs to the Fabacea family and is found in its natural habitat across various regions of India. *Tesu* is widely recognized for its therapeutic attributes and is prevalent among rural and tribal communities to address a diverse range of health conditions. *Gul-e-Tesu* is a significant and essential drug in the Unani system of medicine. Its therapeutic value and its traditional use for centuries make it an intriguing drug and demand the vigorous scientific research required to validate its efficacy and safety and establish standardized guidelines for its use in various therapeutic contexts. Its phytochemical constituents, anti-inflammatory, wound healing, antioxidant effects, and various other therapeutic properties have implications for the management of various musculoskeletal conditions such as arthritis and oxidative stress-related diseases. This paper provides a comprehensive review of the diverse traditional and medicinal applications of the plant while also endeavoring to compile data on its chemical composition and pharmacological properties.

Keywords: *Butea monosperma, Fabacea family, Gul-e-Tesu, herbal medicine, Unani*

Introduction

Unani medicine, one of the AYUSH systems of Medicine, is an ancient system of medicine with roots that trace back to Hippocrates, Galen, and prominent physicians such as Ibn Sina (Avicenna), Raziz, and Ibn Rushd (Averroes). Unani medicine has been time tested for centuries and is an abundant source of remedies and continues to play a vital role in the healthcare system. Unani drugs are meticulously formulated herbs that embody specific properties, unique characteristics, and synergistic therapeutic effects to treat a wide range of ailments, from common colds to chronic illnesses.

Butea monosperma (Lam.) Kuntze is also known as *Tesu*, *Plash*, or *Dhaak* plant in India. Other parts of this plant, such as bark, leaves, seeds, and gum, are also used as medicine for various ailments. *Gul-e-Tesu*, the flower of *B. monosperma,* is a well-known Unani herb that has therapeutic importance in the Unani system of medicine as well as another Indian traditional system of medicine. It refers to the dried flower of the *Dhaak* or *Plas* tree, scientifically classified as *Butea frondosa* Koenig ex Roxb, more commonly recognized as *B. monosperma* (Lam.) Kuntze.[5,67] It is evident from classical texts that the traditional (Ayurvedic/Unani) Indian system of medicines has extensively utilized, throughout the centuries, the different therapeutic products obtained from different parts of the *Tesu* tree, such as bark (*Plas*), leaves, seeds (*Plas Papda*), and flowers (*Gule-Tesu*), and resins (*Samaghe Dhaak*, *Kamarkas*, *Chinyaa Gondh*) to address various diseases or ailments. Scientific studies have demonstrated the efficacy of hydroalcoholic, ethanolic, methanolic, and aqueous extracts derived from various parts of the tree for therapeutic purposes through pharmacological and clinical research.

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Given its abundant medicinal properties, it finds application in a multitude of ailments and possesses a high concentration of antioxidants, making it a valuable component in cancer treatment and prevention. It also possesses hypoglycemic and hypolipidemic effects. It is employed as an antifungal agent in the treatment of fungal infections. Furthermore, it possesses anti-inflammatory properties, making it suitable for the treatment of degenerative disorders such as osteoarthritis. The plant is acknowledged for its anthelminthic, antistress, hepatoprotective, aphrodisiac, diuretic, febrifuge, antidiarrheal, antiestrogenic, and antimicrobial properties.[5,6,7,22,57]

Taxonomical Classification[67,68]

- Domain: Eukaryote
- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Division: Magnoliophyta
- Class: Magnoliopsida
- Subclass: Rosidae
- Order: Fabales
- Family: Fabaceae
- Genus: Butea
- Species: Monosperma.

Botanical Name:[32,33] *Butea monosperma* (Lam.) Kuntze/*Butea frondosa* Koenig Ex Roxb

- English: Flame of Forest, Parrot Tree
- Unani: Dhaak, Samagh Dhaak, Kamarkas
- Ayurvedic: Paalasha, Kimshuka, Raktapushpaka
- Sanskrit: Brahma Vrksa, lakshataru, Palasha,
- Hindi: Palas, Dhak, Chichra tesu, Polak, Desuka jhad
- Urdu: Palashpapra.

Vernaculars[20,71]

- Tamil: Palasam, Purasus
- Telugu: Moduga
- Kannada: Muthuga
- Bengali: Palas, Kinaki, Peras, Polashi, Kimsuka, Kimsuk
- Asami: Polash
- Punjabi: Keshu
- Gujarati: Kesudo.

Geographical Distribution

The tree *B. monosperma* derives from the family Fabaceae, which is one of the largest flowering plant families, comprising 630 genera and 18,000 species. The cultivation of this tree is predominantly observed in countries located in South Asia, such as India, Nepal, Sri Lanka, Myanmar, Vietnam, Thailand, Indonesia, Japan, and Laos. In the Indian subcontinent, the species is distributed in conjunction with the Indo-Gangetic plains. Typically, cultivation of this plant occurs in topographically elevated regions, reaching altitudes of 1200 m, except in exceedingly arid areas. Typically, it exhibits gregarious behavior in open grassland habitats and is found scattered within mixed forest environments. It can thrive in both irrigated and arid environments. It is possible to cultivate the plant in various types of soil, including shallow and gravelly sites, black cotton soil, clay loams, and saline or waterlogged soils. Seedlings exhibit optimal growth when cultivated in a fertile loamy substrate with a pH range of 6–7 while being subjected to elevated temperatures and relative humidity levels.[4,67]

Morphological Description

It is an erect, moderate-sized deciduous tree with a crooked trunk. It has a height of 12–15 meters.[66]

Flowers (*Gul-e-Tesu*)

The flowers of *B. monosperma* are called *Gul-e-Tesu* in the Unani system of medicine. Flowering in *B. monosperma* takes place from February to April. They are large, and their length varies from 2 to 4 or 4 to 6 cm. The arrangement of flowers is around the floral axis, which is called the inflorescence raceme. It has a long, velvety, olive-green peduncle. The entire flower is covered with a layer of fine hairs (pubescent). The pedicels are a bright yellowish-red to orange color. The calyx is campanulate.[5] The calyx is the lower part of the flower, about 13 mm long and dark olive-green. It is densely velvety on the outside and covered with silky hairs inside. It has a 3.8–5 cm long, lengthy, bright orange-red corolla, which has silky silvery hairs externally.[64] Anthers are uniformly arranged.[67] Stamens are present in two bunches, which are called diadelphous.[33]

Leaves

B. monosperma has pinnately trifoliate, large compound, linear-lanceolate, stipulate, entirely margined leaves. Their length and breadth vary from 15 to 20 cm and 10 to 15 cm, respectively. The petiole is 10–15 cm long. The leaflets are coriaceous, obtuse, glabrous at the apex, and finely silky and have a visible reticulate venation beneath with a connate or deltoid base. The terminal part of the leaflet is 10–20 cm long, broadly ovate from a cuneate base; the lateral part is smaller, 10–15 cm long and 7.5–10 cm wide, obliquely rounded at the base, with an equilateral, larger lower side.[64,67,78]

Seeds

The seeds of the tree are known as Palas Papra.[7] Seeds are found inside the pods of the plant, which are thickened, flat, long, and stalked. Each pod contains one seed. The shape, size, and color of the seed are variable. They are large and measure 2.5 cm to 5 cm long and 1.5 cm to 3.6 cm broad. Most of the seeds are reniform kidney shaped, but they also come in other shapes such as D-shaped, round, and oblong.[23] It is compressed on its lateral sides. These are the seeds of the exalbuminous type. They contain oil and mucilage.[7]

Fruit

Palas' flat leguminous fruit is in the form of pods that are about 15 cm long and 5 cm wide. On the young pods,

which are thick at the sutures, there are many hairs and a velvety covering. When these pods mature, they droop like bizarre legumes.[20,62]

Bark of stem

It has thick, fully matured, grayish to light brown stem bark of 0.5–1 cm, is curved and rough due to the presence of rhytidome, and has scattered dark brown spots of exudates. Rhytidome is the outermost layer of the trunk of the tree, which has a thickness of 0.2 cm. On peeling off, it shows a light brown surface, exfoliation of cork, and the presence of shallow longitudinal and transverse fissures. It also shows fractured laminated outer and fibrous inner parts. It has a pale brown, rough internal surface and a mildly astringent taste (Unani pharmacopoeia). A brittle ruby-colored gum bead, which is exuded from stem bark in the form of dried juice by the hardening of bark, is called Butea gum or Bengal kino.[16,78]

Gum

Red-colored discharge comes out from the stem of the tree in summer. It is known as Bengal Kino or Butea Gum or Kamarkas or Chinya Gondh. Gum is used to

Table 1: Phytochemical constituents

Parts of the plant	Active principles	Chemical constituents
Flower	Triterpene	Butrin, isobutrin, coreopsin, sulphurein, isocoreopsin, monospermoside, chalcones, isomonospermoside, and steroids[39]
	Flavonoid	Butin, butrin, isobutrin, butein, palasitrin, and prunetin[49]
	Glycosides	5,7-dihydroxy-3,6,4-trimethoxy flavon-7-O- α -L xylopyranosyl (1→3)-O- α -Larabinopyranosy 1)-(1-->4)-O-beta-D-galactopyranoside)[29]
Leaves	Fatty acids	Glucoside, oleic acid, linoleic acid, palmitic acid, lignoceric acid, and kino-oil[39]
Bark	Amino acids	Kino-tannic acid, gallic acid, palasitrin, pyrocatechin[19]
	Glycosides	Butrin, allophonic acid, alanine, butolic acid, cyanidin, histidine, lupenone, lupeol, medicarpin, miroestrol, palasmide and shellolic acid[78]
Stem	Steroids	Stigmasterol-β-D-glucopyranoside and nonacosanoic acid[29]
Seed	Enzymes	Seed oil: Proteinase, polypeptidase, proteolytic, and lipolytic enzymes[49]
		Seed: Palasonin with nitrogenous acidic compound, monospermoside (Butein-3-e-D-glucoside), isomonospermoside[19]
Gum	Tannins	Tannins, pyro catechin, mucilaginous matter[29]
Kamarkas or chinya gondh Resin-	Esters	Jalaric esters, laccijalaric esters, Z-amyrin, e-sitosterone and its glucoside, sucrose, and lactone-n-nheneicosanoic acid[19]
saponins	Polyphenols	Chalcones, butein, and butin etc.[29]

Table 2: The actions and uses of different parts of Palas (*Butea monosperma*)

Parts of tree	Actions	Therapeutic uses
Gul-e- tesu (Flower)	Muhallil waram (anti-inflammatory), Mudir-e-baul (diuretics), Mudir-e haiz (emmenagogue)	Dard-e-Masana (cytalgia), Warm-e-Rehem (endometritis), Usr-ul-Baul (dysuria), Ahtibas-e-baul (urinary incontinence), Ahtibas-e-haiz (amenorrhea), Warm Khussiya (orchitis), Wajaul Mafasil (arthralgia)[5]
	Qabiz-e-shikam (astringent), Rade Mawad (Repellent), Musakkin-e-Alam (analgesic)[5,22]	
Palas (Bark)	Muhallil waram (anti-inflammatory), Musakkin (sedative), Mudir-e-baul (diuretics), Qatil-e-Kirm-e-Amaa (vermicides), Qabiz-e-shikam (astringent), Mughalliz-e-mani (semen concentrative), Kasir-e-Riya (carminative)[5-7]	Waja-ul-Masana (cytalgia), Warm-e-masana (cystitis), Usr-ul-Baul (dysuria)[6]
		Deedan-e-Amaa (intestinal worm), Ishaal (diarrhoea), Sailan-ur-Rahem (leucorrhoea), Jaryan, Riqqat-e-mani (spermatorrhoea)[5]
		Bawaseer (heamorrhoids)[7]
Palaspapra (Seed)	Kasir-e-Riya (carminative)	Deedan-e-Amaa (intestinal worm), Bawaseer (heamorrhoids),[7] Waja-ul-Masana (cytalgia), Warm-e-masana (cystitis), Usr-ul-Baul (dysuria)[6]
	Muhallil warm (anti-inflammatory	
	Mudir-e-baul (diuretics)	
	Qatil-e-Deedan (anthelminthic)[7]	
	Muhallil warm (anti-inflammatory) Musakkin (sedative), Mudir-e-baul (diuretics), Qatil-e-Kirm-e-Amaa (vermicides)[6]	
Samaghe- Dhaak, Kamarkas or Chinya gondh (Gum)	*Mumsik* (avoricious)	*Zofe-bah, Sur'at-e-inzal, Sailan-ur-Rahem, Jaryan, Riqqat-e-mani, Sailan-ur-Rahem, Ishaal* (diarrhoea)[3,5]
	Mughalliz-e-Mani (semen viscositive)	
	Mujaffif (desiccative), Qabiz (astrigent)[3,36]	Dysentery, leucorrhoea, ringworm, erysipelatous inflammations,[8] Ulcers and sore throat[28]

Table 3: Pharmacological studies on different parts of *Butea monosperma*

Pharmacological activities	Part used	Studies	References
Anti-inflammatory activity	Flower	The potent anti-inflammatory activity of aqueous extract and crude powder Gul-e-Tesu (*B. frondosa*) was reported *in vivo* study	[51]
	Leaves	Preventive activities of methanolic extract of *B. monosperma* leaves against thrombosis and inflammation have been shown in *in vitro* studies	[75]
	Root	Anti-inflammatory properties in the ethanolic extract of *B. monosperma* root have been reported	[10]
	Flower	Anti-inflammatory activity of petroleum ether extract of *B. monosperma* flowers	[79]
	Leave	Anti-inflammatory activity of *B. monosperma* leaf extracts in petroleum ether, hexane, chloroform, ethyl acetate, and ethanol	[34]
	Flower	The anti-inflammatory effect of ethanolic extract of *B. monosperma* flower in thermal wound healing	[32]
	Flower	Anti-inflammatory effect of a methanolic extract of *B. monosperma* flower against carrageenin-induced paw oedema and cotton pellet granuloma in albino rats	[57]
Analgesic	Flower	The potent analgesic activity of aqueous extract and crude powder Gul-e-Tesu (*B. frondosa*) was reported in an *in vivo* study	[51]
	Root	Analgesic property in the ethanolic extract of *B. monosperma* root	[10]
Anti-pyretic activity	Stem	Anti-pyretic activity of methanolic extract of *B. monosperma* Lam Stem Bark In Wister Rats	[55]
Anti-convulsive activity	Root	Antiepileptic activity of hydroalcoholic extract of the root of *B. monosperma* assessed in rats	[38]
	Root	Anticonvulsant, and CNS properties in the ethanolic extract of *B. monosperma* root	[10]
	Flower	The anticonvulsive activity of *B. monosperma* flowers in laboratory animals	[24]
Anti-diabetic activity	Leaves	Anti-hyperglycemic activity of hydro-ethanolic leaf extract of *B. monosperma* and it was revealed that they can inhibit α-amylase and α-glucosidase synergistically to prevent hyperglycemia	[18]
	Leaves	The ethanolic extract of *B. monosperma* leaf has anti-hyperglycemic activity, which is mediated by increased insulin secretion and glycogen formation in the liver	[54]
	Leaves	Aqueous extracts of *B. monosperma* leaves and bark showed anti-diabetic effects in streptozotocin-induced severe diabetes in rats	[1]
	Fruit	Hypoglycemic and hypolipidemic effects of the *B. monosperma* fruit in diabetic human subjects	[37]
	Leaves	Significant antidiabetic and antioxidant potential of ethanolic extract of *B. monosperma* leaves in alloxan-induced diabetic mice	[61]
Hypolipidemic activity	Leaves	Ethanolic extract of *B. monosperma* leaves Improved serum lipid profile via reduced LDL, cholesterol, TG, and increased HDL was also reestablished ($P<0.05$)	[54]
	Fruit	Hypolipidemic effects of the *B. monosperma* fruit in diabetic human subjects	[37]
Hepatoprotective activity	Flower and leaves	Aqueous extracts of *B. monosperma* have hepatoprotective properties against Fe-NTA-induced liver toxicity in rats	[15]
	Bark	The hepatoprotective activity of the ethyl acetate fraction of the bark of *B. monosperma* against thioacetamide-induced liver damage in rats	[25]
	Bark	Aqueous, ethanolic, or benzene-acetone extracts of *B. monosperma* bark have hepatoprotective activity in CCl4 and isoniazid-induced toxicity in Wistar rats	[63]
	Flowers	Aqueous extract of flowers of *B. monosperma* (Fabaceae) evaluated at different dose levels (200, 400, 800 mg/kg, p.o.) for its protective efficacy against CCl4 (1.5 mL/kg i.p.) induced acute liver injury. Hepatoprotective potential of aqueous extract of *B. monosperma* reported against CCl4 induced damage in rats	[60]
	Stem Bark	Hepatoprotective and anti pyretic activities of methanolic extract of *B. monosperma* Lam stem bark in Wister rats	[55]
Nephroprotective activity	Leaves	The extract of *B. monosperma* was found to be rich in flavonoids, polyphenolics, and alkaloids. Urine creatinine, serum urea, and blood urea nitrogen were found to be significantly ($P<0.001$) increased in rats treated with only gentamicin; whereas, treatment with the ethanolic extract of leaf of *B. monosperma* reversed the effect of gentamicin indicating nephroprotective activity	[50]

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Table 3: Contd...

Pharmacological activities	Part used	Studies	References
Anti-diarrheal activity	Bark	*B. monosperma* bark extract possesses antibacterial and anti-diarrheal activity	[59]
	Leaves	The alcoholic extract of *B. frondosa* leaves has antidiarrheal properties	[11]
Wound healing activity	Flower	The wound healing potential of methanolic extract of flowers of *B. monosperma* in diabetic animals	[41]
	Flower	*In vivo*, wound healing activity of an herbal gel containing an aqueous and ethanolic extract of *B. monosperma* flower	[76]
Free radical scavenging activity, antioxidant activity	Flower	The anti-oxidant property of the *B. monosperma* flower's aqueous extract	[2]
	Flower	Antioxidant, and anti-cancer properties of the *B. monosperma* flower's aqueous extract	[45]
	Flower	The antioxidant effect of ethanolic extract of *B. monosperma* flower	[35]
	Flower	*In vitro* antioxidant activity of *B. monosperma* flowers fractions	[21]
	Flower	Aqueous and butanoic extracts from the *B. monosperma* flower have antioxidant, pro-apoptotic, and free radical scavenging properties	[56]
Anti-bacterial activity, anti-fungal activity, anti-microbial activity	Leaves	Anti-bacterial activity of the petroleum ether extract of *B. monosperma* leaves	[46]
	Flower	Anti-microbial property of the *B. monosperma* flower's aqueous extract	[45]
	Whole plant	Antimicrobial, anthelmintic, and antiviral activity of plants traditionally used for treating infectious disease in the Similipal biosphere reserve, Odisha, India	[40]
	Flower	Rehman *et al*., have studied and demonstrated the *in vitro* antimicrobial effect of the Unani drug Gul-e-Tesu	[13,27,48]
	Leaves	*In vitro* antibacterial potency of *B. monosperma* Lam. leaf-extracts against 12 clinically isolated multidrug-resistant bacteria	[52]
	Root	Antibacterial properties of the petroleum ether extract of *B. monosperma* root	[74]
	Leaves and flowers	The aqueous and methanolic extracts of *B. monosperma* leaves and the methanolic extract of its flowers are shown to have antibacterial properties	[58]
Anthelminthic activity	Seed	The anthelminthic ability of the *B. monosperma* seed's crude aqueous and methanolic extract	[53]
	Leaves	Anthelmintic activity *B. monosperma* leaf extracts in petroleum ether, hexane, chloroform, ethyl acetate, and ethanol	[34]
	Seed	The anthelminthic ability of the aqueous extract of *B. monosperma* seed	[65]
Antiestrogenic and antifertility activity	Seed	Antifertility ability of the aqueous extract of *B. monosperma* seed	[62]
	Root	Antispermatogenic properties of the *B. monosperma* root's petroleum ether and chloroform extract	[77]
	Flower	Antifertility effect of methanolic extract of *B. monosperma* (Lam.) Taub. flower. A significant reduction in testicular and epididymal weight was observed in these animals. Sperm count, motility, and viability were also reduced significantly in animals treated for 180 days. Histological evaluation of testicular cells indicated distortions in germ cell arrangements at various stages of spermatogenesis. Following 45 days of withdrawal, the resumption of normal functional and histological characteristics was apparent	[43]
	Seed	Antifertility ability of the aqueous extract of *B. monosperma* seed	[62]
Bone forming and fracture healing activity	Stem bark	The bone-forming and fracture-healing abilities of the whole ethanolic extract of the stem bark of *B. monosperma*	[26]
Anticancer activity	Flower	The anticancer properties of the *B. monosperma* flower's aqueous extract	[2]
	Flower	Anticancer properties of the *B. monosperma* flower's aqueous extract	[45]
	Flower	The chemoprotective and anticancer properties of an aqueous extract of *B. monosperma* flowers	[12]
	Flower	Socoreopsin: An active constituent of n-butanol extract of *B. monosperma* flowers against CRC: Isocoreopsin, butrin and isobutrin are the important key compounds for the chemoprevention of colon cancer and isocoreopsin can be considered as a promising novel drug	[69]
	Flower	Chemoprevention with an aqueous extract of *B. monosperma* flowers results in the normalization of nuclear morphometry and inhibition of a proliferation marker in liver tumours	[31]

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Table 3: Contd...

Pharmacological activities	Part used	Studies	References
	Flower	Butein from *B. monosperma* flower isolates inhibits ovarian cancer cell growth by binding to IL-6 and suppressing its activity, which results in the inactivation of STAT3 and nuclear accumulation of FoxO3a and p27kip1, thereby limiting tumour growth. Our work highlights butein as a promising therapeutic agent for ovarian cancer treatment	[42]
Arsenic antidote	Flower	Protective effects of *B. monosperma* flower powder against Arsenic induced aberrant methylation and mitochondrial DNA damage in Wistar rat model	[14]

LDL: Low-density lipoprotein, TG: Triglycerides, HDL: High-density lipoprotein, *B. frondosa: Butea frondosa, B. monosperma: Butea monosperma*, CRC: Colorectal cancer, IL-6: Interleukin 6

prevent diarrhea. The gum is well known for restoring and contracting the muscles and tissues of females after delivery, hence popularly known as Kamarakas. Gum is used to get rid of cracks in toes, hence used in crack creams. The laddus (sweet dish) of palas gum is fed in Unani to increase sexual arousal. Gum is also used in diarrhea, acidity, eye, eye disorders, heat reduction, etc.[30]

Tree bark

Palas tree bark and its juice are used in antifungal formulations, wound healing, diarrhea, etc., The powder of stem bark is used in wound healing. The juice of the stem is applied over the tonsils. Stem paste is used to remove inflammation in the body.[30]

Root

It has a thick and long tape root with many well-grown lateral roots.[17]

Phytochemical constituents

The flower of *B. monosperma* (*Gul-e-Tesu*) contains butein, butrin, steroids, and flavonoids. Glucose and glycosides are present in the root of the tree. Butea gum possesses tannic properties, and its seeds contain oil, proteinase, and polypeptides, among many other active properties found in different parts of the tree [Table 1].[70]

Therapeutic applications of different parts of Plas or Tesu in the Unani system of medicine

In the Unani system of medicine, *Gul-e-Tesu* is used as an anti-inflammatory, diuretic, emmenagogue, and analgesic and in various disorders such as arthritis, endometritis, urinary incontinence, amenorrhea, orchitis, and arthralgia. Palas (Bark) is used as an anti-inflammatory, anthelminthic, and seed is used as a carminative, anti-inflammatory, and diuretic. Gum is used for dysentery, leucorrhea, and ringworm [Table 2].

Pharmacological Studies

The pharmacological properties that have been reported include anti-inflammatory, anticonvulsive, antidiabetic, anthelmintic, antimicrobial, antifungal antidiarrheal, antiestrogenic, antifertility, and antioxidant [Table 3].

Clinical studies carried out on *Gul-e-Tesu*

A clinical study[73] was carried out on patients with knee osteoarthritis with Unani herbs of *Asarun*, *Tukhme Karafs*, and *Filfil Daraz*) administrated orally along with the external application of the concoction of *Gul-e-Tesu* and *Gul-e-Baboona* (2:1) over the affected knee has shown a reduction in the Lequesne Algofunctional Index score ($P < 0.0001$), which concluded that the treatment module was effective in reducing the severity of disease of the patients with knee osteoarthritis. In another study,[9] in the management of knee OA, it was evaluated that the local application of classical fomentation of decoction of Unani medicinal plants, namely *Babuna*, *Nakhuna*, *Mako khusk*, *Gul-e-Tesu*, *Suranjan Talkh,* and *Namak-e-Lahori* along with oral administration of Habb-i-Suranjan has shown significant relief in subjective and objective parameters of knee OA.[9] Tahseen *et al*. observed the effect of different Unani compound formulations including *Gule-e-Tesu* as one of its components, effective in the treatment of pelvic inflammatory disease.[72] Qhuddsia *et al*. have also evaluated the effect *Gul-e-Tesu* as one of the ingredients of the Unani compound formulation in the form of Douche in patients of chronic endocervicitis.[47]

Conclusion

The therapeutic significance of *Gul-e-Tesu* (*B. monosperma) in* Unani, Ayurveda, and other traditional and indigenous systems of Medicine has demonstrated it as a potential and valuable resource for the management of various disorders in various traditional as well as modern systems of medicine. *Gul-e-Tesu* is a natural therapeutic agent and one of the important medicinal plants in the Unani system of medicine. The various bioactive compounds found in *Gul-e-Tesu*, such as flavonoids and alkaloids, contribute to its diverse medicinal properties, such as anti-inflammatory, antioxidant, antimicrobial, and analgesic effects. It is because of these properties that it is being extensively used for various arthritic diseases, musculoskeletal disorders, and oxidative stress-related diseases by AYUSH systems of medicines. The plant is also used in the management of various skin disorders due to its notable wound-healing properties and aiding in the regeneration of tissue. Despite

the promising therapeutic importance of *Gul-e-Tesu*, more rigorous scientific research in collaboration between traditional knowledge and modern science is warranted to further substantiate its therapeutic potential, understand its mechanisms of action, and determine appropriate dosages, safety profiles, and potential interactions with other medications is valuable for promoting public health.

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Conflicts of interest

There are no conflicts of interest.

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Original Article

Clinical Effect of a Unani Pharmacopeial Formulation *Ma'jūn Chobchīnī* in *Jarab* (Scabies): A Preliminary Study

Abstract

Background: The Unani Pharmacopeial Formulation Majoon-e- Choobchini is frequently used in Unani system of medicine for the treatment of various skin ailments. *Jarab* (Scabies) is the condition of skin that causes severe itching. It is a contagious disease characterized by severe itching and appearance of vesicles or pustules, particularly on the hands fingers web spaces and thighs. Sometimes the rashes of scabies are spread all over the body due to excessive causative substance (*Kasrat-i-madda*) of the body which are dominance. According to Unani concept *Jarab* (Scabies) is caused by abnormal humours (*Akhlat-i-Fasida*) of the body. *Didan-i-Jarab* were first observed by Unani physician and broadly described by them. Renowned Unani scholar Allama Najeebuddin Samarqandi quoted that *Jarab* (Scabies) is caused by parasites, which resembled the nits of the lice (*Didan misl Likh*). The abnormal humour accumulates beneath the epidermises. **Aims and Objective:** The objectives of the present open clinical study were to evaluate the safety and efficacy of Unani Pharmacopieal Formulation Majoon-e- Choobchini in the patients of Scabies (*Jarab*). **Material and Methods:** The study drug was Unani Pharmacopeial Formulation in the form of Majoon (semi solid) was administrated orally to the patients in the dose of 5 gram twice daily for the period of four weeks. The study was started after getting approval from the Institutional Ethical Committee of Regional Research Institute of Unani Medicine, Patna. After signing of an informed written consent, all selected patients presenting sign and symptoms of Scabies who met the inclusion and exclusion criteria were selected for the study. **Result:** The efficacy of the study drug was assessed on 30 cases by measuring in sign and symptoms of Scabies. After treatment Mean ± SEM score of clinical parameter of the disease including Pruritis, Burrows, Papules, Vesicles and Pustules were found statistically significant (P value < 0.05) respectively as compare to base line. LFT, KFT were found normal at base line and remained normal after treatment. There was no any adverse effects recorder in the CRF during the course of the study. **Conclusion:** The out came of the clinical study on the evidence of result obtained that Unani Pharmacopoeial Formulation Majoon-e-Chobchini is effective and safe in the treatment of Scabies. It is also useful in alleviating sign and symptoms associated with Scabies.

Keywords: *Jarab, Majun Chobchini, Pharmacopeil, scabies, unani*

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Introduction

Jarab (scabies) is a contagious disease characterized by severe itching (*Ḥikkah*) and appearance of rashes including small red papules, vesicles, or pustules, particularly on the hands, finger web spaces, and thighs. Scabies is caused by the mite *Sarcoptes Scabiei*. It can lead to the secondary infection.[1] Sometimes, the rashes of scabies are spread all over the body due to excessive causative substance (*Kathrat-i-Mādda*). Scabies occurs more frequently in persons living in congested quarters.

According to the Unani concept, *Jarab* is caused by abnormal humours (*Akhlāṭ-i-Fāsida*) of the Body which are of the following four types:

- Abnormal blood (*Fasid Khilt-i-Dani*) altered taste, smell, and consistency of blood
- Abnormal phlegm (*Balgham-i-Fāsida*)
- Alkaline phlegm (*Balgham-i-Shor*) abnormal yellow bile ratio of yellow bile in blood (*Ṣafra-i-Ḥādda/ Kathrat-i-Safra*)
- Abnormal black bile combusted black bile (*Muḥtariq Sawda*).

Dīdān-i-Jarab were first observed by physicians of Arab (*Aṭibbā-i-'Arab*) and described by a renowned physician *Abul Hasan Ahmad Ibn Muhammad Tabari* in his book *"Mo'ālijāt al-Buqratiyya"* from

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which *Allama Samarqandi* quoted that *Jarab* (scabies) is caused by the parasites which resemble the nits of the lice (*Dīdān mithl Līkh*). The exact morphology of the causative organism of scabies was not elaborated enormously due to lack of adequate facilities and modern scientific equipment. Invention of microscope paved the way for the same and *Mādda al-Jarab* was identified as *Sarcoptes Scabiei* and its infestation was termed scabies. The abnormal humours accumulate beneath the epidermis and they act as culture media for *Dīdān-i-Jarab* (*Sarcoptes Scabiei*) which are produced in these abnormal humours and cause the disease. For the first time they were identified by the Unani physician, Rabban Tabri, It is divided into three types as per the involvement of humors, i.e., *Jarab Ṣafrāwī*, *Sawdāwī,* and *Balghamī*. Its possible English term equivalent is Scabies.[2] The accumulation of abnormal humours beneath the epidermis may be due to the following four factors:

- Weakness of expulsive power of skin (*Zu'f-i-Quwwat Dafi'a*)
- Blockage of skin pores (*Masāmāt-i-Jild*)
- Viscosity of causative substance (*Ghildhat-i-Mādda*)
- Amount of causative substance (*Kasrat-i-Madda*).

The production of *Dīdān-i-Jarab* (*Sarcoptes Scabiei*) in the abnormal humors beneath the epidermis is due to the following three factors.

Development of infection in the humor (*Ufunat-i-Madda*) beneath the epidermis due to its long-term stagnation there which is due to its increased viscosity.

According to etiology, there are 4 varieties of scabies which are as follows: *Jarab Damwī* (scabies due to abnormal blood), *Jarab Balghamī* (scabies due to abnormal phlegm) o *Jarab Sqfrawi* (scabies due to abnormal yellow bile) *Jarab Sawdāwī* (scabies due to abnormal black bile). According to morphology of lesions of scabies, it is of the following two types: (1) *Jarab Yābis* (*Khushk Jarab*) (2) *Jarab Raṭab* (*Tar Jarab*).

Dry scabies are produced by dry and dense (*Yābis and Ghalīdh*) humors and characterized by the appearance of small papules and lack of exudation. Hence, vesicles and pustules are not seen in dry scabies.

Exudation occurs in wet scabies which is characterized by the appearance of vesicles and pustules. Sometimes blood oozes from the papules. Unani physicians have mentioned that *Dīdān-i-Jarab* (*Sarcoptes Scabiei*) may be seen in wet scabies.

Jarab Ṣafrāwī is characterized by the development of small red papules. Severe itching occurs in the lesions of bilious scabies. The rashes of *Jarab Sawdāwī* are black in color and itching is mild but it persists for a prolonged period. The rashes of *Jarab Balghamī are* white in color which may contain clear fluid (vesicles) or pus (pustules).[3,4]

Scabies manifests itself in various forms in different individuals.[5] Scabies is a common worldwide public health problem which affects about 300 million persons each year throughout the world and it is widespread in the tropics primarily in environments marked by overcrowding and poor hygiene, and can be endemic. The infestation causes considerable discomfort and can lead to secondary bacterial infections and complications such as poststreptococcal glomerulonephritis.

Several topical medications are available for the treatment of scabies in conventional medicine, but all the preparations have some disadvantages. Nodular lesions of scabies are extremely resistant to treatment and may take several months to resolve. Pruritus and rash, which are due to hypersensitivity to mite antigens, frequently persist for weeks or months even after effective treatment of Scabies.[5]

Study rationale

The treatment of *Jarab* (Scabies) has been described in detail in the Unani system of medicine. There are so many *Mufrad* (single) as well as *Murakkab* (compound) Unani formulations mentioned in classical texts which have been used in the treatment of *Jarab* (Scabies) by eminent Unani Physicians since ages and are known for their efficacy and safety, but they need to be validated on scientific parameters in order to generate data regarding their safety and efficacy.[6,7]

Ma'jūn Chobchīnī is an Unani Pharmacopeial Formulation widely used by Unani physicians to relieve symptoms *of Jarab* (Scabies). Therefore, the present clinical study has been planned to scientifically validate the efficacy and safety of *Ma'jūn Chobchīnī* in the treatment *of Jarab* (Scabies).[8]

Study objectives

1. To assess the safety of pharmacopeial formulation *Ma'jūn Chobchīnī* in *Jarab* (scabies)
2. To assess the efficacy of Unani pharmacopeial formulation *Ma'jūn Chobchīnī* in *Jarab* (scabies).

Study design

An open-label, multicentric clinical study was conducted.

Methodology

Each participant was informed about the study and provided a participant information sheet; a written informed consent was obtained before initiation of any study-related procedure. The study was conducted on 30 patients of both genders and different age groups in the Regional Research Institute of Unani Medicine, Guzri Bazar, Patna. Demographic data and information on the present disease condition, concomitant disease, and therapy were recorded. Thorough general physical and systemic clinical examination was carried out. Signs and symptoms pertaining to *Jarab* (Scabies) were recorded in the Case report form (CRF). Vital signs including blood pressure,

heart rate, temperature, and respiratory rate were noted. Blood samples were collected for the evaluation of laboratory parameters including, hemogram, liver function tests (LFTs), kidney function tests (KFTs), and fasting blood glucose to establish and confirm inclusion and exclusion criteria. The follow-up for clinical parameters was once in a week during treatment. Posttreatment follow-up was conducted after 2 weeks of completion of therapy.

Selection of patients

The patients *of Jarab* (scabies) attending the outpatient department (OPD) centers were selected for the study. A detailed clinical history was taken and complete physical examination has been carried out to make the clinical diagnosis of *Jarab* (scabies). Patients were considered eligible for enrolment into this study if they fulfilled all of the inclusion criteria and none of the exclusion criteria, as defined below:

Inclusion criteria

- Patients of any sex in the age group 19–65 years
- Presence of at least 3 of the following:
  - Scabietic lesions (papules and vesicles) at classical sites (interdigital spaces, etc.)
  - Classical burrow
  - Nocturnal pruritus.
- History of pruritus in family members
- History of contact with a scabies patient with and without
- Microscopic demonstration of mite, eggs, or fecal pellets.

Exclusion criteria

The following patients will be excluded from the study

- Patients with crusted or nodular scabies
- Patients with diabetes mellitus
- Known cases of hepatic, renal, or cardiac ailments
- History of hypersensitivity to study drug or any of its ingredients
- History of addiction (alcohol and drugs)
- Pregnant and lactating women.

Subject recruitment

Patients with *Jarab* (scabies) attending the OPD of respective Centers were assessed for clinical, biochemical, and pathological parameters. If they did not meet the exclusion criteria and fulfilled the inclusion criteria, they were enrolled in the study. The patients were informed about the nature and objectives of the study and details of other study-related procedures. Informed consent was obtained before enrolling into the study. The detailed history was recorded and the patients were examined in detail clinically to record the various signs and symptoms of *Jarab* (scabies). Blood samples were collected for the pathological and biochemical investigations.

Study drug

The Unani Pharmacopeial formulation *Ma'jūn Chobchīnī* was evaluated in this study. It is a semisolid formulation given orally in a dose of 5 g twice daily 1 h after meals.[8] The composition of the *Ma'jūn Chobchīnī* is given in Table 1.

Assessment of *Mizāj* (temperament)

Assessment of *Mizāj* (temperament) was done at baseline and at the end of treatment.

Follow-up evaluation

The patients were assessed clinically at every week. The subjective and objective clinical observations were recorded in the follow-up sheet.

Safety assessment

The safety was monitored on clinical parameters and pathological and biochemical investigations at baseline and at the end of treatment. The laboratory investigations conducted were: complete blood count (hemoglobin [Hb] %, total leukocyte count [TLC], differential leukocyte count [DLC], erythrocyte sedimentation rate [ESR]), routine and microscopic examination of urine, LFT (serum bilirubin, serum glutamic-oxaloacetic transaminase, serum glutamic-pyruvic transaminase, serum alkaline phosphatase), KFT (serum urea, serum creatinine, serum

Table 1: Composition of *Ma'jūn Chobchīnī*[8]

Ingredients	Botanical/English name	Quantity
Chobchīnī	*Smilax china* L.	250 g
Khusyat-us-Tha'lab	*Dactylorhiza incarnata* (L.) Soo	50 g
Khulanjān	*Alpinia galanga* (L.) Willd	40 g
Gul-i-Gaozabāṉ	*Borago officinalis* L.	25 g
Behman Safaid	*Centaurea behen* DC	25 g
Behman Surkh	*Salvia sclarea* L.	25 g
Shaqāq-ul-Miṣrī	*Leiotulus secacul* (Mill.) Pimenov and Ostr.	25 g
Abresham	*Bombyx mori* L.	15 g
Mughās	*Litsea glutinosa* (Lour.) C.B. Rob.	15 g
Jadwār	*Delphinium denudatum* Wall. ex Hook. f. and Thomson	10 g
'Asl or *Qand Safaid*	Honey or sugar	1.5 kg

uric acid), and Blood urea nitrogen (BUN). The safety of the drugs was also assessed clinically in conformity with adverse events reported by the patients or observed by the investigator clinically on the follow-up. No adverse effects of the Unani Pharmacopeial formulation *Ma'jūn Chobchīnī* were observed during the course of the study, and at the end of the study, the drugs were found safe in the patients of *Jarab* (Scabies).

Clinical assessment

Clinical assessment has been done by counting of skin lesions and grading of pruritus using the Global Evaluation Scoring System.[9] Clinical improvement has been assessed by reduction in number of lesions and pruritus.

- Skin lesions graded on a scale of 0–3 on the basis of number of lesions
  - Grade 0 = No lesions
  - Grade 1= <10 lesions
  - Grade 2 = 11–49 lesions
  - Grade 3= >50 lesions.[10]
- The assessment of pruritus will be done on a scale of 0–3 on the basis of severity.
  - Grade 0 = No pruritus
  - Grade 1 = Mild pruritus
  - Grade 2 = Moderate pruritus
  - Grade 3 = Severe pruritus.[10]

Assessment of results

The results of the study were recorded in terms of percentage efficacy as calculated from Clinical and microbiological assessment score. The study results were graded as The grading of the therapeutic response is detailed in Table 2:

Ethical approval

Written approval of the study has been obtained from Institutional Ethics Committee.

Statistical analysis

Baseline and follow-up values of clinical subjective parameters, and pathological and biochemical parameters were statistically analyzed using student's paired "*t*"-test and paired Wilcoxon signed-rank test. The result was expressed as the mean ± standard error of mean. $P < 0.05$ has been considered as statistically significant and $P < 0.01$ and $P < 0.001$ have been considered as statistically highly significant.

Results and Discussion

During the course of the study patients were divided into four age groups viz. 18–30 years, 31–40 years 41–50 years and 51–60 years. It was observed that 20 cases out of 30 (66.67%) belonged to the age group of 18–30 years and 10% belonged to the 31 years to 40 years and 16.67% were 41 years to 50 years and 6 (6.66%) were between 51 years and 60 years. High incidence of the disease was among the lower middle age group [Table 1], that is, 18 years to 30 years, the observation is very close to study carried by Nisreen M. Ibraheem in Tirkit, Iran, in that it is found that high incidence of the disease was found in the age group of 20 years (male) 36.0% and in same age group female was found 20.3%, and in age group of 30 years male was found 26.5%, female was found 25.7%.[11] The demographic characteristics of the patients are described in Table 3.

The prevalence of the disease Scabies (*Jarab*) was found more in (63.33%) in the *Damwī* (Sanguine) *mizāj* patients than the *Ṣafrāwī* (Bilious) 26.67% and *Balghamī* (Phlegmatic) 10.00%. No any patients of *Sawdāwī* (Melancholic) *mizāj* was found in the study. The classification of the patients done by socioeconomic status of the patients, it was found that 50% patients belongs to middle-income group and 50.00% patients belongs to the low-income group. No patients of high income were

Table 2: Therapeutic response criteria

Percentage efficacy	Result
90–100 relief in symptoms and signs	Complete relief
60–89 relief in symptoms and signs	Relief
30–59 relief in symptoms and signs	Partial relief
<30 relief in symptoms	Not relieved

Table 3: Demographic data (*n*=30)

Characteristics	Treatment groups	Number of patients (%)
Age group (years)	18–30	20 (66.67)
	31–40	3 (10.00)
	41–50	5 (16.67)
	51–65	2 (6.66)
	Means±SEM	30.9±2.3
Genderwise distribution of patients	Male	13 (46.33)
	Female	17 (56.67)
Chronicity of disease (months)	0–6	22 (73.33)
	7–12	1 (3.33)
	13–18	-
	19–24	5 (16.67)
	>24	2 (6.67)
Socioeconomic status	Higher	-
	Middle	15 (50.00)
	Lower	15 (50.00)
Dietary habits	Vegetarian	4 (13.34)
	Mixed	26 (86.66)
	Nonvegetarian	-
Mizāj (temperament)	*Damwī* (sanguine)	19 (63.33)
	Balghamī (phlegmatic)	3 (10.00)
	Ṣafrāwī (bilious)	8 (26.67)
	Sawdāwī (melancholic)	-

SEM: Standard error of mean

found in study. The prevalence of the *Jarab* (Scabies) was more common amongst the mixed dietary habits (86.66%) as compared to vegetarian dietary habits (13.34%). This observation needs to be further studied by taking a large sample size.

In the present study, 53.33% of the patients showed relieved and 33.33% showed partially relieved, while 13.34% of patients showed not relieved. There were no any patient who was completely relieved by the drug. The efficacy of *Ma'jūn Chobchīnī* on the clinical parameters of *Jarab* is presented in Table 4.

The main ingredient of this Unani Pharmacopeial is *chobchīnī* (*Smilax china*), which has effects of *muṣaffī-i-dam* (blood purifier), *mulaṭṭif* (demulscent), *mufattiḥ* (deobstruent), *mu'arriq* (diaphoretic) that why it is frequently used for skin disorder in Unani system of medicine.[12,13] A study done by A Vijayalakshmi revealed that *Smilax china* L. is performed anti psoriatic effect of the rhizome.[14]

The effect of the study drug compound Unani Pharmacopeial formulation on hematological parameter (Hb, TLC, DLC, ESR) and biochemical parameters (LFT and KFT) as assessed by the laboratory investigation at base line and at the end of the study. There were no undesired results reported in the above-mentioned laboratory parameters; no adverse/side effects were noticed during the course of the study. The study drug was found safe and effective at the prescribed dosages schedule. The overall general therapeutic response of *Ma'jūn Chobchīnī* is depicted in Figure 1.

Table 4: Effect of *Ma'jūn Chobchīnī*, on clinical parameters of *Jarab* (scabies)

Presenting symptoms	Follow-up	Mean±SEM	Efficacy (%)	*P*	Significant
Pruritus	BT	2.67±0.09	62.5	<0.001	HS
	AT	1±0.13			
Burrows	BT	24.9±1.98	70.41	<0.001	HS
	AT	7.37±1.3			
Papules	BT	20.63±2.63	79	<0.001	HS
	AT	4.33±0.86			
Vesicles	BT	15.97±3.27	81.21	<0.001	HS
	AT	3±0.65			
Pustules	BT	13.45±2.14	85.13	<0.001	HS
	AT	2±0.44			

HS: Highly significant, SEM: Standard error of mean

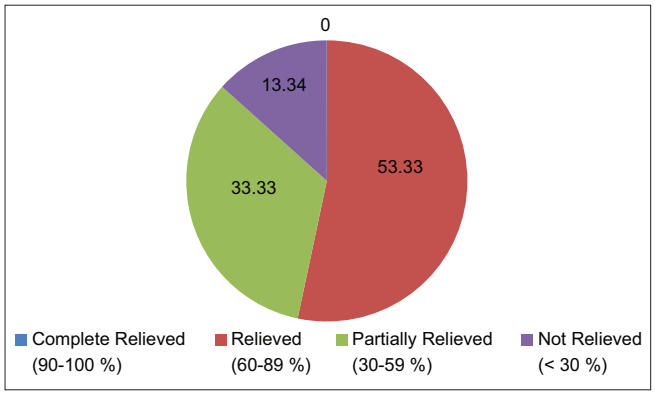

Figure 1: General therapeutic response

Conclusion

On the ground of the above findings and observations, it can be concluded that the Unani pharmacological formulation *Ma'jūn Chobchīnī* is effective and safe in the treatment of Scabies (*Jarab*). The drug is affordable, easily available, and well tolerated by the patients without having any adverse effects.

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Conflicts of interest

There are no conflicts of interest.

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Effect of Oral Unani Formulations and Head Massage Therapy followed by *Ḥijāma Bi'l Shart* (Wet Cupping) in Diffuse Hair Loss (*Intithār al-Sha'r*): A Case Study

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Abstract

Diffuse hair loss is a kind of hair fall involving hair loss evenly across the scalp. According to the Unani System of Medicine, the term *Intithār al-Sha'r* is used by Unani Scholars such as *Dioscorides*, *Zakaria Rāzī*, *Ibn Māswaya*, *Ali Ibn Abbas Al-Majūsī*, and *Ibn Sīnā* and they described the most common cause that is poor production of *Bukhārāt-i-Dukhānīyya* which causes poor gathering in the skin pores producing *Yubūsat* in the whole body. In this report, a 25-year-old male patient visited the outpatient department of the Regional Research Institute of Unani Medicine, Habak, Srinagar, Jammu and Kashmir, in December 2020. The patient was diagnosed with a diffuse hair fall. Four sittings of wet cupping were done for 60 days, with each sitting done at an interval of 15 days. In this study, it was validated that *Hijama Bi'l Shart* has a significant effect on hair growth.

Keywords: *Hair loss, Hijama Bi'l Shart, Intithār al-Sha'r, regimenal therapy, Unani treatment, wet cupping*

Introduction

Diffuse hair loss (DHL) is an excessive loss of hair from all over the scalp without producing any bald spots, inflammation, or scarring. It is the result of the disruption of one phase of the hair cycle. The most common DHL is telogen effluvium. It is a condition, in which the anagen phase of the hair cycle is prematurely terminated resulting in diffuse club hair loss. The loss of hair is usually 200 scalp hairs per day. It is common throughout the world with women affected in preponderance.[1,2] In the Unani System of Medicine (USM), hair loss or hair fall is generally termed as *Intithār al-Sha'r.* It is caused by a decreased production of *Bukhārāt-i-dukhānīyya* (hair substances) which eventually causes less accumulation near the skin pores and paves the way to the *Yubūsat*. This *Yubūsat* alters the normal structure of the body's skin, making it extremely thin and loose. Thus, hair comes out easily when gently pulled, resulting in hair thinning and shedding.[3-6] In the modern system of medicine, no specific treatment is present to deal with this problem. However, various corticosteroids and cosmetic therapies such as stemoxydine and caffeine, niacinamide, panthenol, dimethicone, and acrylate polymer have been used but their efficacies remain unestablished. Hence, there is a need to explore alternative therapies for its treatment.[7,8]

Case Report

A 25-year-old, male patient, nondiabetic, normotensive, and euthyriodic reported to the Outpatient Department of RRIUM on December 09, 2020, with a complaint of loss of hair fall in clumps, leading to the visible areas of the scalp [Figure 1]. He was diagnosed case of diffuse hair fall and had been on allopathic treatment for 2 years which reduced the hair fall, however, this improvement could be seen for the duration of the treatment course only, and the hair fall was recurrent even after the allopathic treatment was tapered and then discontinued, which compelled the patient to look for other options of treatment as well. The patient was put through an intensive examination which included both the specific examination related to hair fall as well as systemic examination. On history taking, it was found that the patient had no allergic history. Drug history, surgical history, medical history, and family history of hair fall were all

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nonsignificant. The patient had no comorbidities and no history of any psychological disease. His sleep, appetite, and bowel were all normal. The nutritional status of the patient was good, he had a muscular body with a weight = 70 kg and a height was 5"9. All the vitals were within the normal range with blood pressure = 120/80, pulse = 74 bpm, respiratory rate = 16/min, and temperature = 97.6 F. Systemic examination consisting of a thorough examination of central nervous, cardiovascular, digestive, and respiratory systems were found with the normal parameters.

On specific examination of disease, on the scalp, no signs and symptoms of infection were found and the scalp was dandruff-free. The hair pull test, hair tug test, and hair card test were positive. For performing the hair pull test, roughly 40–60 strands of hair were grasped between the thumb, index, and middle finger, and a gentle pull along the shaft from the scalp toward the hair end was executed, about 6–7 strands of hair were easily extractable which indicated that the test was positive. To assess the hair fragility, a hair tug test was performed, and a group of hairs was held between the fingers in the middle of the shaft length and width with other hand a pulling force was given, which led to the breakage of the hair shaft indicating the positive test. Similarly, we performed a hair card test to differentiate newly growing hairs from broken hairs. To perform this test, a card of about 8 cm × 12 cm, with a black and white color on one, was taken and the card was placed on the scalp against the hair shafts on the affected area. Newly growing hairs are tapered at the ends, broken hairs are blunt-ended, and miniaturized hairs have a smaller caliber than the other hairs, during this test, it was found that the amount of broken hairs was greater in number, followed by miniaturized hair and newly born hairs were least in number. All the above tests indicated that the severity of the hair fall could be put in the moderate category.

Investigations

Hemoglobin percent, clotting time, bleeding time, and random blood sugar were done and found within normal limits.

Figure 1: Day 1 before treatment, day 30, day 60th after treatment

Intervention and follow-up

Oral administration of *Itrīfal Ustukhuddus* and *Jawārish Amla* was done for 60 days; massage with *Ravghan-i-Bādām Shīrīn* was done for 60 days and *Hijama bi'l Shart* procedure was done every 15th days for 4 sittings.

Procedure

Oral medication-Itrīfal Ustukhuddus and Jawārish Amla

Itrīfal Ustukhuddus in a dose of 7 g at night and *Jawārish Amla* [see ingredient in Tables 1 and 2] in a dose of 7 g twice a day after the meal were given orally daily for 60 days.[9]

Massage with Ravghan-i-Bādām Shirin

The patient was provided massage therapy with *Ravghan-i-Bādām Shirin* for 45 days and instructed to avoid it during 5-days (before and after) *Hijama* procedure on each sitting.

Table 1: Ingredients of *Itrīfal Ustukhuddus*[9]

Name of the drug	Botanical name	Quantity of drug
Post-i-Halela Zard	*T. chebula* Retz.	100 g
Post-i-Halela Kabuli	*T. chebula* Retz.	100 g
Halela Siyāh	*T. chebula* Retz.	100 g
Post-i-Balela	*T. bellerica* (Gaertn.) Roxb.	100 g
Amla	*P. emblica* L.	100 g
Gul-i-Surkh	*R. damascena* Mill.	100 g
Ustukhuddus	*L. stoechas* L.	100 g
Bisfāij	*P. vulgare* L.	100 g
Aftimūn	*C. reflexa* Roxb.	100 g
Kishmish	*V. vinifera* L.	100 g
Ravghan-i-Bādām or *Ravghan-i-Zard*	*P. amygdalus* Batsch. or Clarified butter	Q.S.
'Asl or *Qand Safed*	Sugar	3 kg

T. chebula: *Terminalia chebula*, *T. bellerica*: *Terminalia bellerica*, *P. emblica*: *Phyllanthus emblica*, *R. damascena*: *Rosa damascena*, *L. stoechas*: *Lavandula stoechas*, *P. vulgare*: *Polypodium vulgare*, *C. reflexa*: *Cuscuta reflexa*, *P. amygdalus*: *Prunus amygdalus*

Table 2: Ingredients of *Jawārish Amla*[9]

Name of the drug	Botanical name	Quantity of drug
Amla Khushk	*P. emblica* L.	50 g
Post-i-Turanj	*C. medica* L.	10 g
Sandal Safed	*S. album* L.	10 g
Mastagi	*P. lentiscus* L.	5 g
Dana Hīl Khurd	*E. cardamomum* (L.) Maton.	5 g
Post Bayrūn-i-Pista or Gulnar Farsi	*P. vera* L. or *P. granatum* L.	5 g
Qand Safed	Sugar	1.5 kg

P. emblica: *Phyllanthus emblica*, *C. medica*: *Citrus medica*, *S. album*: *Santalum album*, *P. lentiscus*: *Pistacia lentiscus*, *E. cardamomum*: *Elettaria cardamomum*, *P. vera*: *Pistacia vera*, *P. granatum*: *Punica granatum*

Hijama bi'l Shart (wet cupping) procedure

Wet cupping was done on the scalp of the patient with sterilized disposable 3 number 3 cups, which were placed at the *Yāfūkh* (fontanel), and parietal lobe of the scalp (both sides). A total of 4 sittings (day 1, day 15, day 30th, and day 45th were done at intervals of 15 days for 45 days. Cups were applied with the help of a manual suction pump giving 2 and a half pull and cups were kept attached for 5 min, then, 16–20 superficial scarification was given, and cups were applied by the same procedure for 5 min. The blood collected in the cups was discarded as per the biomedical waste management.

Duration of the study

The duration of the study was 45 days. The intervention duration was 45 days, and after a month from the last sitting of wet cupping, the patient was again examined.

Outcome

The patient was assessed before and after the treatment based on a hair pull test, hair card test, and hair tug test.

Observations and results

The hair fall of the patient showed significant improvement after the treatment which is visibly clear from the photographs [Figure 1]. The density of the hair has also shown improvements.

Discussion

The improvements achieved in this case can be attributed to the regimenal therapy that is wet cupping. According to USM, wet cupping helps through *Imala-i-Mawad* (diversion of morbid matter) and *Istifrāgh-i-Mawād* (evacuation of morbid matter). The root cause of this disease is the accumulation of morbid wastes and decreased *Dukhān* (substance of hair). Wet cupping helps to drain morbid matter by giving incision openings to the skin pores, which allows *Akhlat-i-Fasida* to be evacuated from the body thus increasing the local circulation of blood. Increased blood circulation means more *Dukhān* (the substance of hair), which eventually increases hair growth by stimulating hair follicles and promoting new hair growth.[10-12] Oral administration of *Jawarish Amla* and *Itrifal Ustukhuddus* and Massage with *Ravghan-i-Bādām* Shirin supported the growth of hairs, providing strength to the hairs and removing morbid matters, as mentioned in Unani literature

Conclusion

From the results and discussion, it could be concluded that diffuse hair fall, which remains one of the common forms of hair loss, showed significant improvement with wet cupping, making it an important option in the treatment modalities of diffuse hair loss (DHL). It can act as a good option to the conventional treatment for hair loss. However, studies on a large scale need to be done to validate the effectiveness of this regimenal therapy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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