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Review Article

Control of Emotions and Restoring Harmony in Unani Medicine

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Abstract

Emotional distress can contribute to diseases has been known since ancient times. Excessive emotions impair the temperament of internal organs and humors and pneuma (*Rūḥ*) impairs the faculties and functions of the organ resulting in diseases. Unani physicians recommend medicine and basic advice to restore harmony such as exercise, practicing temperance in eating and drinking, keeping a regular schedule of sleep, and pursuing mind-calming activities. Learning to control emotional distress is seen as a means of preventing related diseases and as a means of dealing with the diseases, once they have been diagnosed. Unani literature could be a valuable source for the drugs recommended for the prevention and management of emotions. The availability and safety of these drugs according to today's standards should be investigated.

Keywords: *Emotional distress, impaired temperament, pneuma*

Introduction

In Unani medicine, emotional and physical health are deeply intertwined, both influenced by the balance of the body's humor. To regulate emotions and restore harmony, practitioners adopt a holistic approach that incorporates herbal treatments, physical therapies, dietary modifications, and psychological counseling. The ultimate aim is to achieve equilibrium between the body, mind, and spirit, promoting overall health and emotional well-being. Emotions are pervasive in human life. The various stimuli and situations can cause emotions[1-4] and once people experience emotions, they guide their thoughts and behaviors.[5,6] It is thought that emotions constitute the key pathway linking psychological stress to disease, and enduring affective styles such as anxiety and depression have been found to be associated with greater morbidity and mortality.[7] Chronic stress affects memory, cognition, immunity, GIT, the cardiovascular system, and the endocrine system.[8,9] Diseases affect the ability of adults to function in their families, at work, and in the broader society. Diseases related to emotions are common in all countries where their prevalence has been examined. Because of the combination of high prevalence, persistence, and impairment, mental disorders make a major contribution to the total disease burden.[10] The World Health Organization indicated that one in four people in the world will be affected by mental or neurological disorders at some point in their lives.[11] Unani medicine is based on the qualities of four temperaments and four humors. Unani medicine acknowledges the mental, social, moral, and physical causes of disease and assumes that everyone should take responsibility for their own well-being.[12]

Methodology

The classical Unani texts, namely, *Al Qānūn fī al-ṭib* (Canon of medicine), *Kamil al-Ṣinā'ah*, *Kitāb al Mukhtārat*, *Zakhīra Khwarzam Shāhī*, *Mojiz al-Qānūn*, *Kulliyāt-i-Nafīsī*, *Mufarraḥul Qulūb*, *Firdaus al Hikmat,* and other books, were reviewed. Other published books and journals were also reviewed for further details. We searched scientific databases, namely, PubMed, Science Direct, Scopus, and Google Scholar. The search words used emotions, effects of emotions on health, and prevalence of diseases related to negative emotions. Related material has been collected and compiled.

Concept of Emotions in Unani Medicine

According to Unani medicine, pneuma flows with blood throughout the body.[13,14] An imbalance in the flow of pneuma along a particular channel will affect the body's

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organ system, leading to physical, mental, and emotional symptoms. Mental representation of the events whether they be good or evil for the individual, there is an agreeable or disagreeable passive state of consciousness this is called emotions.[15,16] Emotions are mental stimuli that influence our body. Under normal situations, they do not cause disease. However, when emotions become excessive or "built up" over long periods of time, the temperament of internal organs, senses of humor, and pneuma (rooh) impairs, which impairs the faculties and functions of the organ, and illness may result. According to Unani Medicine, the temperament (state of the internal organs) also affects our emotions. Each internal organ is associated with a characteristic positive mental energy (pneuma). When affected by external stimuli, the normal flow of energy within an organ system becomes disrupted, causing changes to one's emotional state. Emotions may, in this view, be the cause of a disease.[17,18]

Emotions are subdivided into
- Concupiscible
- Irascible.

Concupiscible implies attraction or repulsion and is love, hatred; desire, abhorrence; and delight, sadness. The irascible concern is the sense of self-preservation. They are hope of acquiring an object which is difficult or dangerous to obtain; despair of so doing; fear of a threatening evil or danger, with the impulse to flee; courage, when there is an impulse to remain angry. Avicenna gave a short list of emotions which is convenient in practice because every patient may be regarded as fundamentally governed by one or another, the others being relatively unimportant. These are esthetic and moral feelings. Avicenna describes five emotions, namely, joy, delight, sorrow, anger, and fear and each affects the health of the organs.[19]

Physiology of Emotions (Psychic Movement)

The physiology of emotion is closely connected to the stimulation of the nervous system, with various states and degrees of stimulation evidently related to a specific emotion. All psychic movements are accompanied by either inward or outward movement of pneuma which may either be sudden or gradual.[20] The outward movement of pneuma is followed by the cold of the interior, sometimes, this movement is excessive hence pneuma gets dispersed and both the interior and exterior become cold and a severe syncope or death follows the inward movement of pneuma results in the coldness of the exterior and heat in the interior, sometimes, it is chocked by the severe contraction thus both the exterior and interior become cold and a severe syncope or death occurs. The pneumatic outward movement is either sudden as in anger or gradual as in pleasure and happiness. The pneumatic inward movement is either sudden as in fear or gradual as in sorrow.[16] The aforementioned suffocation and dispersion always follow the sudden movement (of pneuma). Deficiency and decline in the innate heat always result from the gradual movement of pneuma. Deficiency means suffocation which is not sudden but gradual in each part and the decline in innate heat means not sudden but gradual dispersion. A decline in innate heat always results from the gradual movement of pneuma. Sometimes, it so happens that the pneuma moves simultaneously in two directions it happens when an emotion involves two impulses, e.g., worry because it produces anger and gloom and gives rise to two different movements or shame, which causes the pneuma to first contract toward the interior and then when reason and good judgment are restored expand and rise toward the exterior reddening the complexion.[14,21] The body is also influenced by psychic states (other than psychic notions) e.g., temperament changes because of the idea of fearful or pleasant objects (Nafis IB, 1954). The movement of pneuma is given in Table 1 while Table 2 shows emotions and their correlations.

Every emotion goes through three phases of activity, rising, acme, and falling, -as do the type of breath, hence different words are required to describe each emotion according as it is weak, strong, balanced, pure, or mixed.[15]

Physical Effects of Emotional Disturbances

- Anger stirs up the vital power and causes the breath (*rūḥ*) to expand all at once. The vessels engorge, the muscular power is intercepted, the mind becomes confused, and the bile is set in motion.[15] The pulse is large and rises high, swift, and brisk. It is not necessarily irregular because the passion does not change unless there is fear present as well, in which case anger would prevail at one time, and fear at another. Irregularity may also occur if shame is associated[17,27]
- Fear may manifest as gastric trouble, indigestion, constipation, or panic fear may provoke diarrhea and polyurea. The blood becomes flooded with toxins and the kidneys are taxed in consequence. In case of sudden origin, the pulse becomes quick, irregular disorderly. If

Table 1: Movement of pneuma[16,22-24]

Emotion	Movement of pneuma inward/outward	Sudden/ gradual
Joy	Outward	Gradual
Delight	Outward	Gradual
Sorrow	Inward	Gradual
Anger	Outward	Sudden
Fear	Inward	Gradual

Table 2: Emotions and their correlations[15,25,26]

Emotion	Dominant humor corresponding
Joy	Sanguineous
Delight	Sanguineous
Sorrow	Atrabilious
Anger	Bilious
Fear	Serous

the state is prolonged or more or less habitual, having begun insidiously, the pulse varies with the varying shades of anxiety[15,17]

Having begun insidiously, if the condition is prolonged or habitual, the pulse varies with the different shades of anxiety.

- Sorrow heat is extinguished or choked, nearly to obliteration, and the vital power is weakened, therefore, the pulse is small, weak, sluggish, and slow[15,17]

The blood state is altered during the sway of emotions

The humoral formula changes during emotional phases, but there is no rigid relation to be assigned.[15]

- Delight: In the case of delight, the movement of pneuma is gradual and outward. The pulse rate is relatively slow compared to in case of anger, but its volume is adequate for the resistance, and therefore, the pulse is slow and infrequent
- Joy the pulse is similar to in the case of delight, because usually large in volume and soft. It becomes slow and infrequent.[15,17]

Management

Positive emotions joy and delight are favorable emotions because their temperament is in accordance with the temperament of pneuma and these make the temperament of the body hot and humid.[17] Negative emotions are sorrow; fear and anger are harmful to the body. The combination of psychotherapy drug therapy and regimental therapy generally provides the quickest and most sustained response.[17,25]

Psychotherapy

Adjusting emotions

When one is in a bad or abnormal mood, one should try to adjust and control it lest it go to an extreme. The following methods are used for mental health care.

1. Exercising self-control: Unani medicine holds that five emotions i.e. Joy, delight, sorrow, anger and fear in an extreme state are one of the main causes of illness. So timely management of one's emotions in order to prevent them from going to extremes is an important method of maintaining health. Employ behavioral skills in combating negative emotions. This can help you work through the root of your emotions, helping you understand why you feel a certain way, what your triggers are, and what you can do to stay healthy
2. Diverting one's attention: Its principle is to free a person from emotions by adopting certain measures to avoid harmful stimulating factors. For example, when in great distress or depression, one may listen to a favorite piece of music or when one is in great sorrow following some misfortune one may stay with relatives or good friends for some time; Changing surroundings and atmosphere 9 can deflect bitter emotions, enabling one to restore normal life after calming one's mind
3. Stay hopeful during difficult times
4. Set healthy boundaries in relationships
5. Built self-esteem
6. One should increase social activities and networks
7. Pick up a former hobby or a sport you used to like
8. One should express oneself creatively through music, art, or writing
9. One should not share their emotions with others because sometimes others' response may increase their pain.[17]

Pharmacotherapy

Extreme emotions cause a change in temperament, i. e, abnormal cold temperament or abnormal hot temperament, when this change occurs without abnormal matter, the treatment is to alter it. When the change in temperament occurs with a change in substance/humor, the treatment is concoction and evacuation of morbid matter.

Anger

It increases heat in the body. Excessive anger burns bile and disperse it in the body. It is harmful to persons with bilious temperaments. Drugs of cold temperaments should be given, e.g., Sharbat Neelofer (*Nymphaea alba* syrup), *mā-al jubn* (Whey), *Ālū Bukhāra* (*Prunus domestica* L.) etc. Camphor and rose water concentrate the breath or prevent it from dissipating rapidly by imparting cold.[17] In case of abnormal substantial hot temperament (*Sū'-i-mizāj Ḥār māddi*), one should be treated with a concoctive of bile (*Munḍij-i-ṣafrā*) for 3–5 days followed by cholagogue (*Mushil-i-ṣafrā*) for evacuation of morbid matter. After evacuation, infrigidation *(Tabrīd*) should be done to reduce dryness and irritation by mucilaginous juices of drugs such as *Plantago ovata* Plantago (luabeisapghol) and moistening syrups.[15]

Some examples of concoctive of bile (*Munḍij-i-ṣafrā*) are *Beikh-i-kāsnī* (*Cichorium intybus* L. root), *Nīlofar* (*N. alba* L. flowers), *shāhtra* (*Fumaria officinalis* L.), *'Unnāb* (*Zyzyphus sativa* Gaertn. fruits), *Ṣandal safaid* (*Santalum album* L.), and *Mā al sha'īr* (Barley water/*Hordeum vulgare* L. water). Some examples of cholagogue (*Mushil-i-ṣafrā*) are *Saqmonia* (*Convulvulus scamonia*), *'Uṣāra raiwand* (*Rheum emodi* Wall. root extract), *Halaila kāblī* (*Terminalia chebula* Retz.), *Shīr-i-khisht* (*Fraxinous ornus* L.), *Ālū Bukhārā* (*P. domestica* L.), *Afsantīn* (*Artemisia absinthium* L.), *Tamar hindī* (*Tamarindus indica* L.), and *Zarishk* (*Berberis aristata* DC).[26]

Fear and sorrow

It decreases heat in the body and changes the temperament to relatively cold and dry without abnormal matter. Wine and hot exhilarant (*Ḥār Mufarreḥāt*) should be given, wine restores the breath by nourishing it. Pearl and silk (which counteracts unpleasant things) supply the

breath with brilliance and luminosity. *Anbar* (Ambergris) and *Marjān* (coral) concentrate the breath or prevent it from dissipating rapidly. *Darūnaj 'aqrabī* (*Nannoglottis hookeri* (Clarke ex Hook. f.) Kitam.) modifies the temperament of the breath by giving it heat, when the temperament of breath is cold, *Darūnaj 'aqrabī* acts as a stimulant both in virtue of its intrinsic property and by imparting warmth to the breath.[15,17,28]

When fear and sorrow change the temperament with abnormal matter, i. e, abnormal substantial cold temperament one should be treated with a concoctive of black bile (*Munḍij-i-Sawdā*) for 40 days, followed by melanogogue (*Mushil-i-Sawdā*) for evacuation of morbid matter. After evacuation, intimidation (tabreed) should be done to reduce dryness and irritation.[15] After evacuation, wine and hot exhilarant as discussed above should be given.[15,17] Some examples of concoctive of black bile are *Bādranjboya* (*Melissa officinalis* L.), *Bisfā'ij* (*Polypodium vulgare* L.), *Aftīmūn* (*Cuscuta reflexa* Roxb.), and *Parsiyāoshāṉ* (*Adiantum capillus-veneris* L.). Some examples of melanogogue are *Kharbakh Siyāh* (*Helleborus niger* L.), *Shaḥm ḥanzal* (*Citrullus colocynthis*), *Ghārīqūn* (*Agaricus albus* Scaeff.) etc.[20,23,29]

'Ilāj bit Tadbīr (Regimenal Therapy)

Exercise

In case of abnormal hot temperaments, one should do mild exercise. In case of abnormal cold temperament, one should do moderate-to-heavy exercise according to the condition of the person. Exercise can improve both physical and mental health through the following

- Draining of accumulated excess toxins
- Increasing the rate and efficiency of metabolism
- Inducing a meditation-like state, bringing a sense of detachment and mental relaxation
- Brightening the mood and help in maintaining a positive outlook.

Relaxation exercise helps to dissipate and diminish the harmful internal physiologic effects of negative emotions and may be helpful in reducing maladaptive behavior patterns.[17]

Sleep

One should get on a better sleep schedule by learning healthy sleep habits. Sleep must be moderately properly timed, excess must be avoided. Avoid injury resulting to mental and other faculties from remaining awake too long.[17]

Food

Mental excitement or emotions hinder digestion. In such conditions, one should eat light foods making good chime, e. g, wine, half-boiled egg yolk, meat soup (maa al laham), apple, pomegranate, and clean wheat chapati, lamb meat, etc. One should not eat unless hungry, nor should he/she delay his meal until the appetite has passed off. One should rise from the table while some appetite or desire for food is still present.[14,15,17]

Discussion

According to Unani medicine, pneuma flows with blood throughout the body, and emotions and physical health are intimately connected. Emotions are mental stimuli that influence the flow of pneuma in the body. Emotional stress can lead to disease development. This has been known since ancient times. According to the Unani Literature, emotional and psychological factors are important causes of illness. It indicates excessive emotions impair the temperament of internal organs and humors and pneuma (*rūḥ*) that impairs the faculties and functions of the organs results in diseases. For the preservation of health and prevention from diseases, ancient Unani physicians attempted to know the state of these emotions causally associated with the illness in their patient and then develop strategies to replace the pathogenic emotions with the opposite one to restore harmony. They prescribe medication and simple advice to preserve/restore harmony such as exercise, practicing moderation in eating and drinking, keeping a regular schedule of sleep, and pursuing mind-calming activities. The Unani drugs, foods, and therapies deployed for the management of emotions need to be validated.

Conclusion

Unani literature describes two basic means of dealing with excessive emotions.

1. Excessive emotions cause disorders of circulation of pneuma and blood resulting in alteration of the temperament of pneuma, humor, and organs, and finally, derangements in functions of internal organs are diseases. One can deal with the effects of emotions by making efforts to correct these internal imbalances by taking herbs, regular exercise, moderate properly timed sleep, eating light foods making good chime
2. Excessive emotions lead to diseases one must cultivate a mental condition that is calm by employing behavioral skills in combating negative emotions, diverting attention, i.e., changing the focus of excitation, staying hopeful during difficult times, setting healthy boundaries in relationships, building self-esteem, etc. Thus maintain equilibrium in humors quantitatively and qualitatively by using drugs and appropriate regimens.

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There are no conflicts of interest.

References

1. Berkowitz L. On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. Am Psychol

1990;45:494-503.
2. Frijda NH. The Emotions. Cambridge United Kingdom: Cambridge University Press; 1986.
3. Smith CA, Lazarus RS. Appraisal components, core relational themes, and the emotions. Cogn Emot 1993;7:233-69.
4. Markus HR, Kitayama S. Culture and the self: Implications for cognition, emotion, and motivation. Psychol Rev 1991;98:224-53.
5. Chaiken S, Liberman A, Eagly AH. Heuristic and systematic information processing within and beyond the persuasion context. In: Unintentent Thought. Vol. 16. New York, NY, US: The Guilford Press; 1989. p. 212-52.
6. Forgas JP. Mood and judgment: The affect infusion model (AIM). Psychol Bull 1995;117:39-66.
7. Cohen S, Pressman SD. Positive affect and health. Curr Dir Psychol Sci 2006;15:122-5.
8. Yaribeygi H, Panahi Y, Sahraei H, Johnston TP, Sahebkar A. The impact of stress on body function: A review. EXCLI J 2017;16:1057-72.
9. Nikhat S, Fazil M. A review on dalk (massage) with special reference to the prescribed mediciations. Tradit Integr Med 2017;2:39-52.
10. Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, *et al*. Disease Control Priorities in Developing Countries. 2nd ed. Washington (DC): The International Bank for Reconstruction and Development/The World Bank; 2006.
11. Zhou TH, Hu GL, Wang L. Psychological disorder identifying method based on emotion perception over social networks. Int J Environ Res Public Health 2019;16:953.
12. Fazil M, Nikhat S. Qai (Emesis): From ancient to modern era and its therapeutic efficacy in various disorders. J Drug Deliv Ther 2016;6:63-8.
13. Ahmad SI. Kulliyat-E-Asri. Vol. 103. New Delhi: New Public Press; 1982.
14. Kabiruddin M. Kulliyat-E-Nafisi. New Delhi: Idara Kitabul Shifa; 1954.
15. Gruner O. A Treatise on the Canon of Medicine of Avicenna. New York: AMS Press; 1930.
16. Arzani MA. Tibb-E-Akbar. Lucknow: Munshi Nawal Kishore; 1870.
17. Jurjani AH. Zakhira Khwarazm Shahi. Vol. 3. Lucknow; Munshi Nawal Kishore; 1878.
18. Nikhat S, Fazil M. An analytical review on nutool (irrigation) therapy. J Drug Deliv Ther 2015;5:1-4.
19. Gruner OC. The interpretation of avicenna. Ann Med Hist 1921;3:354.
20. Baghdadi IH. Kitab Al-Mukhtarat Fil Tib. Part-1. New Delhi: Central Council for Research in Unani Medicine; 2005.
21. Majusi A. Kamil Us Sina'ah Al Tibbiyah. Vol. 1. Lucknow: Munshi Nawal Kishore; 1889.
22. Sina I. Al Qanoon Fil Tibb. Vol. 1. New Delhi: Idara Kitabul Shifa; Kitabush Shifa, 2010.
23. Kabiruddin M. Kulliyat-E-Qanoon. Vol. 1. Lahor Pakistan: Sheikh Mohammad Bashir and Sons; 1932.
24. Chandpuri K. Mojiz-Al-Qanoon. New Delhi: Taraqqi Urdu Bureau; 1994.
25. Razi Z. Kitab Al-Mansoori. New Delhi: Central Council for Research in Unani Medicine; 1991.
26. Rushd I. Kitab Al-Kulliyat. 2nd ed. New Delhi: Central Council for Research in Unani Medicine; 1987.
27. Shah MH. The General Principles of Avicenna's Canon of Medicine. Karachi; Naveed Clinic. 1966.
28. Khan MA. Ikseer-E-Azam. Vol. 1. New Delhi; Idara. Matba Nizami; 2011.
29. Tabri R. Firdaus Al-Hikmat Fi Al-Tib. Lahore: Sheikh Mohammad Bashir and Sons; 1996.

Review Article

Fatty Liver Disease: A Holistic Concept and Management in Unani System of Medicine

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Abstract

Fatty liver disease (FLD) represents a spectrum of liver injuries, ranging from steatosis to steatohepatitis, and potentially progressing to fibrosis and cirrhosis. The hallmark histological feature of FLD is the accumulation of triacylglycerols and diacylglycerols in hepatocytes. With a rising prevalence and the potential for progression to cirrhosis and hepatic failure, FLD has become an important medical concern. Notably, individuals with cirrhotic alcoholic fatty liver have a 10% risk of developing hepatocellular carcinoma. FLD is classified into alcoholic FLD (AFLD) and nonalcoholic FLD (NAFLD). The Unani system of medicine provides a unique perspective on liver function, emphasizing the role of the liver in metabolic processes and the significance of its temperament (*mizāj*). In the Unani system of medicine, the liver plays a significant role in the normal metabolic functions of the body mainly in the production of *Akhlāṭ* (humors). It also provides a maximum amount of *Ḥarārat-i-Gharīzia* (chemical energy). The *mizāj* (temperament) of the liver is documented as hot and moist in classical Unani literature. Due to sedentary lifestyle, inconsistent dietary habits, excessive alcohol consumption, drugs, and excess intake of fatty food, its *mizāj* (Temperament) is altered to *Bārid* (cold) or *Ḥār* (hot) which is antagonistic to the liver, thereby allowing the accumulation of morbid matter in the form of fat (*Tashhamul Kabid*). This affects the normal functioning of the liver and results in *Sue-mizāj Bārid*/*Ḥār* (temperamental imbalance cold/hot). Despite the evolution, innovation, and advancement in mainstream medicine, the pharmacological intervention in FLD still remains cynical and it is not recommended for regular practice. This review explores the Unani understanding of fatty liver, highlighting its etiology and potential management strategies.

Keywords: *Fatty liver disease, Sue mizāj Bārid/Ḥār, Tashhamul Kabid, triacylglycerol*

Introduction

Fatty liver disease (FLD) has become the predominant form of chronic liver disease worldwide. This condition encompasses a spectrum of liver injuries characterized by the accumulation of triglycerides in the cytosol of liver cells. The process begins with steatosis, defined as the abnormal retention of lipids within liver cells, which can progress to steatohepatitis, a more severe form where fat accumulation is accompanied by inflammation. If left unaddressed, FLD can advance to fibrosis and eventually cirrhosis, even in individuals who do not consume alcohol in excess; for men, this is defined as an upper threshold of 30 g per day, and for women, 20 g per day.[1]

FLD is a reversible condition and is recognized as one of the most common causes of liver dysfunction globally. While the liver naturally contains some fat, complications arise when this exceeds 10% of its total weight. The primary contributors to the development of fatty liver include excessive alcohol intake and obesity, with or without the associated effects of insulin resistance. Furthermore, FLD is linked to various other diseases that impact fat metabolism.[2]

Distinguishing between alcoholic FLD (AFLD) and nonalcoholic FLD (NAFLD) can be challenging based on morphological criteria alone, as both conditions exhibit similar micro- and macrovesicular fatty changes at different stages. The classification is primarily based on the role of alcohol consumption, where fatty liver can be classified as either alcoholic steatosis or NFLD, with more severe forms termed alcoholic steatohepatitis and nonalcoholic steatohepatitis (NASH).[3,4]

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Etiology

Fatty liver is usually associated with alcoholism, diabetes, hypertension, obesity, and dyslipidemia. It can also be due to a number of causes such as A-beta lipoproteinemia, glycogen storage diseases, acute fatty liver of pregnancy, malnutrition, total parenteral nutrition, severe weight loss, jejunoileal bypass, gastric bypass, jejunal diverticulosis with bacterial overgrowth, highly active antiretroviral therapy, amiodarone, methotrexate, diltiazem, glucocorticoids, tamoxifen, environmental hepatotoxins (e.g., phosphorus and mushroom poisoning), inflammatory bowel disease, HIV, hepatitis, and alpha 1-antitrypsin deficiency.[5,6]

Unani Concept of Fatty Liver

Literally, the term *Tashhamul Kabid* can be used for fatty liver. In the Unani system of medicine, *kabid* (liver) is considered the primary organ responsible for the metabolic activities mainly synthesis of *Akhlāṭ* (humors), hence any disorder related to the liver has to be dealt with utmost urgency. The normal *mizāj* (temperament) of the liver is hot and moist.[7-9] There is no direct description of FLD in Unani classical texts as such. However, many renowned Unani scholars have mentioned some disorders under the heading of *Amraze Jigar* (liver disorders) due to *Su'mizāj Ḥār* (impaired hot temperament) and *Su'mizāj Bāriḍ* (impaired cold temperament). The features and signs and symptoms of these disorders resemble fatty liver. In fatty liver, there is a generally painless enlargement of the liver with associated symptoms of indigestion, flatulence, dyspepsia, etc., This description matches with the definition and description of *Su'mizāj Bāriḍ kabid* or *Warm-e-Kabid Balghami* (phlegmatic hepatitis). *Warm-e-Kabid Balghami* has been mentioned in one or another form as nonpainful enlargement of the liver due to accumulation of *Balgham* (phlegm) and *Mizāj* (temperament) of *Balgham* (phlegm) is cold and wet. Unani scholars have mentioned *Shahm* (Fat) as a derivative of *Balgham* and described its temperament as cold and wet also. Due to unhealthy and irregular dietary habits, undue fat consumption, alcoholism, etc., *Mizāj* (temperament) of the liver is altered to *Bāriḍ* (cold) which is unsuitable to the liver. Thus, building up of morbid matter in the form of *Balgham* or *shaḥm* occurs, which disturbs the normal functioning of the liver. This in turn results in *Su'-i-mizāj Bāriḍ kabid*. Accumulation of phlegm (*Balgham*) in the liver does not cause (*Balgham*). The accumulation of phlegm in the body also results in indigestion, flatulence, anorexia, etc., Besides this, the major risk factors of fatty liver, i.e. obesity and hyperlipidemia, all are described in *Unānī* literature as the main causes of accumulation of phlegm (*Balgham*) in the body. Sometimes, the temperament of the liver may be altered to *Ḥār* due to excessive intake of hot foods, drinks, drugs, alcohol, etc., which interrupts the normal functioning of the liver resulting in *Su'-i-mizāj Ḥār kabid*. Thus, *Su'mizāj Ḥār kabid* can be correlated to the present concept of AFL and *Su'mizāj Bāriḍ Kabid* to NAFLD.[9-12]

This holistic perspective highlights the importance of maintaining liver health through balanced dietary practices and an understanding of temperament, offering valuable insights into both traditional and modern approaches to liver disorders.

Epidemiology

The prevalence of FLD in the general population ranges from 10% to 24% in various countries.[13] Old age is an important risk factor for hepatic steatosis.[14] Most cases are detected in persons between 40 and 60 years of age. FLD can occur in children as young as 4 years of age and can progress with age and hence it is more common in adolescence. Ten percent of children may have NAFLD due to an alarming increase in childhood obesity (22%–53%).[15] Moreover, boys show a higher incidence of the disease than girls (2:1).[16] The prevalence of ALD is higher in India, and 50% of cases of cirrhosis are due to alcohol abuse.[17,18] NAFLD is thought to be the most common liver disorder in Western countries, affecting about a third of the US population.[19] The estimated prevalence of NAFLD in the United States and Europe ranges from 14% to 20%, while in Asia, it is around 12%–24%.[20] However, this condition is present more frequently in persons with diabetes (50%) and obesity (76%) and is widespread in diabetic persons with morbid obesity.[1,21] Metabolic syndromes besides obesity and diabetes also play a key role for the development of NASH and advanced fibrosis on liver biopsy.[22,23]

Types of fatty liver

It is usually divided into two types: alcoholic fatty liver and nonalcoholic fatty liver.[24,25]

Alcoholic fatty liver

Alcoholic fatty liver is the grave consequence of heavy alcohol abuse. It manifests as the earliest phase of alcohol-related liver disease. Alcohol consumption damages the liver, alters its functioning, and as a result, hampers the breakdown of fats. In the presence of continuous damage, it can lead to a more severe form called alcoholic steatohepatitis. It is the major cause of liver disease in Western countries.[26] 15%–20% of chronic heavy alcoholics may develop hepatitis or cirrhosis, which can occur concomitantly or in succession.[27]

Usually, 80% of alcohol consumed passes through the liver for detoxification. In case of chronic alcohol use, there is a discharge of pro-inflammatory cytokines (tumor necrosis factor-alpha, interleukin-6 [IL-6] and IL-8, oxidative stress, lipid peroxidation, and acetaldehyde toxicity). These factors cause inflammation, apoptosis, and eventually fibrosis of liver cells. Certain factors expose an alcoholic person to severe forms of ALD which include obesity, iron overload (hemochromatosis), and hepatitis C. Genetic

factors also predispose to alcoholism and alcoholic liver disease. Monozygotic twins are more likely to be alcoholics and to develop liver cirrhosis than dizygotic twins. Cytokine polymorphism and polymorphism of enzymes such as ADH, ALDH, CYP4502E1, and mitochondrial dysfunction partly can account to the genetic factor. Females are at double the risk of developing alcohol-related liver disease than men. Consumption of 60–80 g of alcohol per day (about 75–100 mL/day) for 20 years or more in men or 20 g/day (about 25 mL/day) for women increases the risk of hepatitis and fibrosis by 7%–47%.[28] Drinking outside of meal times increases the risk of alcoholic liver disease up to 3 times. Malnutrition caused by vitamin A and E deficiencies can lead to alcohol-induced liver damage by preventing the regeneration of hepatocytes. Most alcoholics are malnourished because of a poor diet, anorexia, and encephalopathy, so this is a major cause of concern in them.[28]

According to Unani literature, the causes *of Su'mizāj Ḥār* (AFL) include intake of hot foods drinks and medicines, strenuous physical and mental exercise, anger, mild worry, and occupations which produce heat. Alcohol, being one of the main causes of *Su'mizāj Ḥār* (AFL), highly disturbs the *Mizāj* of the liver. Since it is highly absorbable, its excess heat directly affects and increases the *Ḥarārat* of the liver resulting in marked deterioration of hepatic functions. Furthermore, sweet concentrated wine *Ghalīḍ sharāb* is also directly absorbed, thus producing *Hararat* and *sudda* in the liver, due to congestion in the narrow canaliculi which ultimately alters its *Mizāj*.[29]

Nonalcoholic fatty liver

NAFLD is the most common liver disorder in which fat accumulation occurs in the liver without excessive alcohol use. The disease ranges from simple fatty infiltration of the liver cells (steatosis) to fat with inflammation (NASH) and ultimately to cirrhosis occurring in the absence of excessive alcohol consumption defined as an upper threshold of 30 g/day for men and 20 g/day for women.[1] Histologically steatosis is defined as an increase in hepatocyte fat content while lobular inflammation with or without acidophilic bodies, hepatocellular ballooning, spotty necrosis, and perisinusoidal fibrosis are the major illustrations of NASH. The complete background of NAFLD is unknown, but it progresses in approximately 20% of cases to NASH and in turn to cirrhosis in 20% of the cases with NASH. NAFLD is considered the third most common risk factor for hepatocellular cancer and can occur in cases of NASH in the absence of cirrhosis.[30]

Unani Concept

According to our concept causes of *Su'mizāj Bārid* (NAFLD) can be summed up as: intake of cold food, drink and medicines, decreased intake of food, suppression of innate heat due to excess relaxation and resting, dispersion or diffusion of innate heat due to over activity, unnecessary or undue retention and obstruction from the accumulation *Fuḍlāt* (morbid matter), occupation which produces cold, excessive worry, joy, pleasure, fear, and anxiety. Because of the above-mentioned causes the normal *Mizāj* of the liver is changed to *Bārid*, thus allowing the deposition of fat and causing *Ḍo'f-i-Kabid* (hepatic impairment). Furthermore, due to the accumulation of morbid matter, *sudda* formation in the liver takes place that also disturbs the *Mizāj* of the liver and results in the weakening of hepatic faculties.[9,11,12,31,32]

Management of Fatty Liver Disease in Unani System of Medicine

Due to modern lifestyle, current trends, and alarming rise in fatty liver and related other disorders, an epidemic in the near future can easily be predicted. Therefore, its effective management and treatment is becoming an urgent need of the hour. At present, there is no conventional medical treatment available that has proven to effectively treat or manage fatty liver or its consequences. Mostly fatty liver is associated with diseases having considerable morbidity and mortality rates. The management recommended is based on lifestyle modifications specifically weight loss, physical exercise, and cognitive behavior therapy. The reasons for these changes in daily life involve complex factors that play a crucial role in insulin resistance and the lipotoxicity of fatty acids (FA). These factors contribute to the development of non-alcoholic fatty liver disease (NAFLD) and its progression to non-alcoholic steatohepatitis (NASH), fibrosis, and eventually cirrhosis. Obese patients are advised to achieve a gradual and sustained weight loss through proper diet and exercise. The weight loss should be around 5%–10% of body weight to reduce steatosis and above 10% to improve inflammation in patients with NASH (QM Anstee, 2013).[38] Evidence suggests that lower physical fitness is associated with an increased severity of NAFLD, and on the contrary, increased physical activity is associated with reduced abdominal fat, reduced intrahepatic fat, and improved insulin sensitivity.[33] All such factors are present in individuals with NAFLD and the metabolic syndrome.[34,35] Fatty liver can also be prevented by adherence to fat-free, low-carbohydrate, and high-fiber diet. The consumption of soft drinks, sugary syrups, and high carbohydrate diet as well as intake of dietary *trans*-fats-enriched foods is associated with insulin resistance and the development of hepatic steatosis. The specific mechanisms are unclear but are thought to be a consequence of the hepatic metabolism of fructose favoring ATP depletion, lipotoxicity, and insulin resistance combined with an enhanced TNF expression.

Therefore, there is a need for safe, proven, and cost-effective complementary medicine for FLD. Unani medicine is now being recognized all over the world as being useful in reducing the epidemic of degenerative diseases and

other lifestyle disorders faced in the developed world. Keeping this in mind, there is an urgent need to develop a management protocol from the natural and herbal sources which would be cost-effective, safe, and efficacious for the treatment of FLD.

The protocol of fatty liver management in Unani medicine comprises three parts mentioned below:

***Ilaj bil Ghiza* (dietotherapy)**

Diet plays an important role in managing fatty liver as unhealthy and irregular dietary habit is one of the important contributing factors. Both starvation and excessive food intake produce *Su'mizāj Barid*, hence balanced food intake is recommended. Oily, fatty, spicy, fried, and indigestible food should be avoided. Light and easily digestible diet should be prescribed for liver patients such as small bird's soup, chicken soup, pulses, *sagodana kheer* (Metroxylon sagu), *Daliya* (wheat gruel), *Kishneez* (*Coriandrum sativum*), *Pudina* (*Mentha piperita*), etc.[7,36]

***Ilaj bit tadbeer* (regimenal therapy)**

In this treatment approach, simple measures such as brisk running are highly recommended, as they help reduce body mass. *Dalak* (massage) with cold or hot oils such as *Roghan Afsanteen*, *Roghan Bābūna,* and *Zimād* over a hepatic region with *Zimād Jālīnūs* and *Zimād sumbul Ṭīb* over the hepatic region is done. *Ḥammām* (steam bath) is also advised.[7,10-12]

***Ilaj bid dawa* (pharmacotherapy)**

A number of Unani single and compound pharmacopeial drugs are available for the management of FLD. Some of them are listed here:

Single Unani drugs

These drugs mentioned below are usually given in the form of decoction/powder: *Anisoon* (*Pimpinella anisum*), *Badiyan*, *Tukhm-e-Karafs* (seeds of *Apium graveolens*), *Beekh Kasni* (root of *Cichorium intybus*), *Beekh Izkhar* (root of *Andropogon schoenanthus*), *Sunbul ut Tib* (*Nardostachys jatamansi*), *Mastagi* (*Pistacia lentiscus*), *Zafran* (*Crocus sativus*), *Tabasheer* (*Bambusa arundinacea*), *Darchini* (*Cinnamomum zeylanicum*), *Ghafis* (*Gentiana olivieri*), *Tukhm kasoos* (*Cuscuta reflexa*), Luk (*Coccus lacca*), *Zarawand tawil* (*Aristolochia indica*), *Hab e balsan* (*Commiphora opobalsamum*), *Uood garqi* (*Aquilaria agallocha*), *Gul e surkh* (*Rosa damascena*), *Mako* (*Solanum nigrum*), *Raiwand chini,* etc.[36]

Compound Unani drugs

These drugs include *Majoon dabidul ward*, *Dawa ul kurkum*, *Sikanjabeen bazoori*, *Arq kasni*, *Arq makoy*, *Arq brinjasif*, *Aab-e-murawaqain*, *Sharbat deenar*, *Sharbat bazoori*, *Qurs afsanteen*, *Jawarish jalinoos*, *Qurs afsanteen*, *Qurs Qust*, *Qurs Rewand*, *Qurs Luk*, *Sikanjabeen*, *Dawaul misk moatadil,* etc.[32,37]

For relieving pain, *Zimadat* (ointment) for local application are very effective. These help in altering *Mizāj* along with their analgesic property. Hence, for this purpose, *Radeaat* (Divergent) and *Muhallilat* (anti-inflammatory) are used in ointments such as *'Ud*, *Za'frān*. Preventive measures documented in our literature include avoiding food intake before a previous meal being getting digested, sudden intake of cold water on an empty stomach or after bath, coitus, or exercise. Steer clear of high-calorie foods and oily substances to prioritize your health and well-being. Making these choices will empower you to feel better and achieve your wellness goals.[10,11,32]

Conclusion

The treatment of FLD in conservative medicine is still debatable and not recommended for routine clinical practice. On the contrary, the approach by Unani scholars such as lifestyle changes, dietary modifications, and also the presence of a wide range of single and compound formulations confirms that this disease can be managed successfully. The Unani system of medicine offers time-proven, effective, and safe remedial measures which are feasible cost-effective, and free from adverse effects. In light of the present review, it can be concluded that Unani scholars knew measures to treat liver disorders and were well aware of the morphology and pathology of FLD and described *Tashhamul Kabid* in this context, which closely resembles FLD. Furthermore, the different regimens and modes of treatment prescribed by our eminent scholars are highly effective in managing FLD but need to be explored for efficacy on modern scientific parameters.

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Conflicts of interest

There are no conflicts of interest.

References

1. Ratziu V, Bellentani S, Cortez-Pinto H, Day C, Marchesini G. A position statement on NAFLD/NASH based on the EASL 2009 special conference. J Hepatol 2010;53:372-84.
2. Reddy JK, Rao MS. Lipid metabolism and liver inflammation. II. Fatty liver disease and fatty acid oxidation. Am J Physiol Gastrointest Liver Physiol 2006;290:G852-8.
3. Mills SJ, Harrison SA. Comparison of the natural history of alcoholic and nonalcoholic fatty liver disease. Curr Gastroenterol Rep 2005;7:32-6.
4. Toshikuni N, Tsutsumi M, Arisawa T. Clinical differences between alcoholic liver disease and nonalcoholic fatty liver disease. World J Gastroenterol 2014;20:8393-406.
5. Sanyal AJ, Siddiqui MS. Nonalcoholic fatty liver disease. Gastroenterol Clin North Am 2020;49:xiii-xiv.
6. Day CP, James OF. Steatohepatitis: A tale of two "hits"? Gastroenterology 1998;114:842-5.
7. Sena I. Al Qanoon Fil Tib (Urdu Translation by Kantoori Sayed

Ghulam Hasnain). New Delhi: Idarae Kitabul Shifa; 2010:1065-70, 1445-47 p.
8. Rushd I. Kitab Ul Kulliyat, Central Council for Research in Unani Medicine, New Delhi, 1987.
9. Ibne Z. Kitabul Taiseer Fil Mudawat wa Tadbeer. 1st ed. New Delhi: CCRUM; 1986: 185. 1st ed. New Delhi: CCRUM; 1986:185 p.
10. Baghdadi IH. Kitab Al-Mukhtarat Fil-Tibb Part-3. 1st ed. Central Council for Research in Unani Medicine; 2004.
11. Tabri R. Firdaus Al-Hikmat FI Al-Tib. Sheikh Mohammad Bashir and Sons; 1996.
12. Khan A. Iksir-E-Azam. Vol. 4. Munshi Nawal Kishore; 1885.
13. Angulo P. Nonalcoholic fatty liver disease. N Engl J Med 2002;346:1221-31.
14. Lee JY, Kim KM, Lee SG, Yu E, Lim YS, Lee HC, *et al.* Prevalence and risk factors of non-alcoholic fatty liver disease in potential living liver donors in Korea: A review of 589 consecutive liver biopsies in a single center. J Hepatol 2007;47:239-44.
15. Ovchinsky N, Lavine JE. A critical appraisal of advances in pediatric nonalcoholic fatty liver disease. Semin Liver Dis 2012;32:317-24.
16. Schwimmer JB. Clinical advances in pediatric nonalcoholic fatty liver disease. Hepatology 2016;63:1718-25.
17. Kumar V, Abbas AK, Fausto N, Aster JC. Robbins and Cotran pathologic basis of disease, professional edition e-book. Elsevier health sciences; 2014.
18. Fauci AS, Hauser SL, Jameson JL, Kasper DL, Longo DL, Loscalzo J, editors. Harrison` s Principles of Internal Medicine. McGraw-Hill Education LLC.; 2012.
19. Browning JD, Szczepaniak LS, Dobbins R, Nuremberg P, Horton JD, Cohen JC, *et al.* Prevalence of hepatic steatosis in an urban population in the United States: Impact of ethnicity. Hepatology 2004;40:1387-95.
20. Chitturi S, Farrell GC, Hashimoto E, Saibara T, Lau GK, Sollano JD, *et al.* Non-alcoholic fatty liver disease in the Asia-Pacific region: Definitions and overview of proposed guidelines. J Gastroenterol Hepatol 2007;22:778-87.
21. Del Gaudio A, Boschi L, Del Gaudio GA, Mastrangelo L, Munari D. Liver damage in obese patients. Obes Surg 2002;12:802-4.
22. Mofrad P, Contos MJ, Haque M, Sargeant C, Fisher RA, Luketic VA, *et al.* Clinical and histologic spectrum of nonalcoholic fatty liver disease associated with normal ALT values. Hepatology 2003;37:1286-92.
23. Dixon JB, Bhathal PS, O'Brien PE. Nonalcoholic fatty liver disease: Predictors of nonalcoholic steatohepatitis and liver fibrosis in the severely obese. Gastroenterology 2001;121:91-100.
24. Boloor A, Nayak R. Exam preparatory manual for undergraduates: Medicine. 2nd edition, JP Medical Ltd; 2018. p 803-5.
25. Goldman L, Schafer AI. Goldman's cecil medicine E-book. Elsevier Health Sciences;26th Edition, vol 2, 2019.p 986-9.
26. O'Shea RS, Dasarathy S, McCullough AJ, Practice Guideline Committee of the American Association for the Study of Liver Diseases, Practice Parameters Committee of the American College of Gastroenterology. Alcoholic liver disease. Hepatology 2010;51:307-28.
27. Menon KV, Gores GJ, Shah VH. Pathogenesis, diagnosis, and treatment of alcoholic liver disease. Mayo Clin Proc 2001;76:1021-9.
28. Lee SW. Epidemiology of alcoholic liver disease in Korea. Korean J Gastroenterol 2020;76:55-9.
29. Arzani MA. Tibb-E-Akbar. Munshi Nawal Kishor, Lucknow: Munshi Nawal Kishore; 1870.
30. Rahman RN, Ibdah JA. Nonalcoholic fatty liver disease without cirrhosis is an emergent and independent risk factor of hepatocellular carcinoma: A population based study. Hepatology 2012;56:50.
31. Sina I. Al Qanoon Fil Tibb. Vol. 1. Lucknow: Munshi Nawal Kishore; 1879.
32. Jurjani AH. Zakhira Khwarazm Shahi. Vol 3. Munshi Nawal Kishore; 1878:15-17.
33. Krasnoff JB, Painter PL, Wallace JP, Bass NM, Merriman RB. Health-related fitness and physical activity in patients with nonalcoholic fatty liver disease. Hepatology 2008;47:1158-66.
34. Mikines KJ. The influence of physical activity and inactivity on insulin action and secretion in man. Acta Physiol Scand Suppl 1992;609:1-43.
35. Perseghin G, Lattuada G, De Cobelli F, Ragogna F, Ntali G, Esposito A, *et al.* Habitual physical activity is associated with intrahepatic fat content in humans. Diabetes Care 2007;30:683-8.
36. Razi Z. Kitabul Abdal. 3rd edition Vol 8, New Delhi: Central council for research in Unani medicine.2000;43.
37. Sina I. Al Qanoon Fil Tibb. Vol. 4. 1879: Munshi Nawal Kishore; 1879.
38. Anstee QM, Targher G, Day CP. Progression of NAFLD to diabetes mellitus, cardiovascular disease or cirrhosis. Nature reviews Gastroenterology & hepatology. 2013;10:330-44.

Review Article

A Review on Medicinal Potential of *Mocharas* (*Bombax ceiba* L.)

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Abstract

Mocharas is the dried gum of the deciduous tree *Bombax* ceiba/*Salmalia malabarica.* It is widely distributed throughout India and Andaman ascending the hills up to 1500 m or even more. The gum has different colors such as white with a thick consistency, and it converted into red and dry. It has the various medicinal properties, i.e. Astringent (*Qābiḍ*), Demulcent (*Mulaṭṭif*), Styptic (*Ḥābis*), Aphrodisiac (*Muqawwī-i-Bāh*), Retentive (*Mumsik*), Dessicant (*Mujaffif*), Spermatogenic (*Muwallid-e-Manī*), Uterine tonic (*Muqawwi-e-Raḥim*), Repellent (*Rāde'*), and Glutinous (*Mugharrī*). In this paper, we have discussed the uses of *mocharas* in different diseases.

Keywords: *Aphrodisiac (Muqawwi-e-Bah), Gum, mocharas, styptic (Habis)*

Introduction

Mocharas, the dried gum of the tree *Bombax* ceiba/*Salmalia malabarica* is a deciduous tree widely distributed throughout India and the Andaman ascending the hills up to 1500 m or even more. It occurs throughout the year. Flowering takes place from January to March and fruiting from March to May. The tree also known as Kanta-kudruma means a tree with hard conical prickles. The gum has a different color like white with a thick consistency and it converts into red and dry.[1] The flower buds are known as Semargulla.[1,2] Its seeds are covered with fine cotton hairs and these hairs are used for stuffing pillows and are called Sembhal ki rooae. The root is white, soft, and mucilaginous and is called Musli Sembhal.[3] There are two types of Sembhal trees. One has prickles and is called Kanti Sembhal, the second type has no prickles. The first variety has better pharmacological actions.[3,4] *B. ceiba* L. belongs to the family Bombacaceae which contains about 26 genera and nearly 140 pantropical species.[4]

Botanical Name: *Bombax ceiba* L.
Kingdom: Plantae
Division: Magnioliophyta
Phylum: Magniolipsida
Order: Malvales
Family: Bombacaceae
Genus: Bombax
Species: Ceiba.[2-8]

Vernacular names

Arabic: Samagh-ul-Mocharas;[9] Assam: Semul[2,3,9] Bengali: Roktosimul, Shimul, shemgal, Senur, Pagu;[2,3,9] English: Silk-cotton tree;[9] Gujarati: Ratoshemalo, Sawar, Simala, Shemolo;[3,4,9] Hindi: Semal, Semar[3,4,9] Punjabi: Simble, Mocharas;[3,4,9] Trade Name: Semal;[3,4,9] Urdu: Sembhal;[3,4,9] Unani Name: Mocharas, Samagh-ul-Mocharas, and Semul.[3,4,8-10]

In Unani literature

In the traditional Unani system of medicine, Mocharas is a lofty, deciduous tree that grows up to 40 m tall with horizontally spreading branches and young stems covered with hard prickles. The bark is gray-brown or silvery gray-colored with hard sharp conical prickles.[3,8] Gum is light brown to opaque or dark brown called Semul gum. The gum is also known as Supari ka phool (*Areca catechu*).[3] Seeds are covered with fine cottony hairs and these hairs are used for stuffing pillows and are called Sembhal ki rooae. It is used in phlegmatic cough and respiratory disorders. Tooth powder containing Mochras is beneficial for loosened teeth and bleeding gums.[3] Mochras can be used in the treatment of Jiryan (Spermatorrhoea) and Salsul-Baul (urinary incontinence).[3,8]

Distribution

The trees of *B. ceiba* are distributed among the tropical eastern Himalaya belt like Nepal, West Bengal, Sikkim, and Burma. It also occurs in Sri Lanka, Pakistan,

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Bangladesh, Myanmar, Java, Sumatra, and Northern Australia.[2,3,9]

Parts used

Almost all parts of the tree such as gum, roots, stem bark, flowers, seeds, leaves, etc., possess medicinal properties. However, in the Unani System of Medicine, only gum and roots are used medicinally.[2,3,9]

Temperament

Whole plant: Cold 2° and Dry 3°;[3] Cold 2° and Dry 2°;[3] Gum: Cold 2° and Dry 3°.[3,10,11]

Action

Astringent (Qabiz),[2-4,6,9,12] Demulcent (Mulattif),[2-4,6,9,12] Styptic (Habis),[2-4,6,9,12] Aphrodisiac (Muqawwi-e-Bah),[4,5,8-10,12] and Retentive (Mumsik).[6,9,12]

Dessicant (*Mujaffif*),[2,3,9] Spermatogenic (*Muwallid-e-Mani*) Uterine tonic (*Muqawwi-e-Rahem*),[8,9,11,12] Repellent (*Rade'*),[4,5,8,9] Avaricious and semen Viscositive (*Mumsik wa Mughalliz-e-Mani*),[4,5,8,9,12] Glutinous (*Mugharri*),[4,5,8,9] Adipogenous (*Musammin-e-Badan*),[4,5,8,9] Amenorrhoeic (*Habis-e-Tams*),[8,10,11] Anti-microbial (*Daf-e-Jaraseem*),[1,2,13] Hepatoprotective (*Muhafiz-e-Kabid*)[1,2,13] Antihyperglycemic (*Daf-e-Ziabetus*)[14] Antihyperlipidemic (*Daf-e-Sham*),[14] Analgesic (*Musakkin-e-Alam*),[14,15] Anti-acne (*Daf-e-Basoor Labaniya*),[16] Cardioprotective.[17]

Uses

Menorrhagia (*Kasrat-e-tams*),[2-4,6] Gonorrhea (*Suzak*),[8-10,15] Dysentery (*Zaheer*),[8-11] Gout (*Niqras*),[10-12] Chronic cystitis (*Iltihab-e-Masana Muzmin*),[2,10-12] Bleeding piles (*Bawaseer-e-Khooni*),[2-4,10-12] Epistaxis (*Ru'āf*),[11,12] Watery semen (*Riqqat-e-Mani*),[3,11,12] Lekcorrhea (*Sailan-ur-Rahem*),[3,4,10-12] Spermatorrhea (*Jiryan*),[10-12] Premature ejaculation (*Surat-e-Inzal*),[3,18,19] Hemoptysis (*Nafs-ud-Dam*),[1-5] Diarrhea (*Ishal*),[2-4,18,19] and Incontinence of urine (*Salsul-Baul*).[18,19]

Dosage

The various dosages of gum mentioned in Unani literature are:

3–5 g[6,7] or 5–10 g.[3,11]

Adverse effect

It manifests dryness in the body.[15,20,21] It increases the production of the morbid humors in the body.[15]

Correctives

Garam Masale (Hot Spices)[3,4] *Darchini* (Stem bark of *Cinnamomum verum*).[21]

Alternative

Samagh-e-Dhaak (Gum of *Butea monosperma*)[3,5,10] *Mastagi* (Gum of *Pistacea lentiscus*).[3,10]

Chemical Constituents

Gum (bark exudate) contains catechol tannin and tannic and gallic acids. 4 It yields a mixture of L-arabinose, D-galactose, and D-galacturonic acid and traces of rhamnose. 6-O-β-D galactopyranosyl uronic acid D-galactose. 2,4,6-tri-2,6-di-O-methyl-D-galactose and 2,3,4tri-O-methyl-D-galacturonic acid in equivalent amounts.[1,2,18] Flowers contain β-sitosterol and β-D-glucoside of β-sitosterol, hentriacontane, kaempferol, quercetin, traces of essential oil, and two anthocyanidin glycosides. Seeds contain N-hexacosanol, palmitic acid, octadecyl palmitate, gallic acid, tannic acid, 1-gallayl-β-glucose, ethyl gallate, and a mixture of α-, β-, ɣ-tocopherols, crude protein and pentosan, oleic acid, myristic, palmitic, arachidic, and linoleic acids.[1,2,18] Stem contains shamimicin, lupeol, β-sitosterol, flavonoids, glycosides, sterols, and terpenoids. The stem bark contains crystals of calcium oxalate and potassium nitrate.[1,2,19]

Pharmacological Studies

Antimicrobial and antibacterial activity

Plant extracts (acetone, methanol, and aqueous) were assayed for their activity against multidrug-resistant *Salmonella typhi*. Methanolic and aqueous extract of stem bark has also shown strong antibacterial activity against multidrug resistant *S. typhi* strains.[13,22]

Antioxidant activity

Methanolic extract of whole plant material of *B. ceiba* showed antioxidant activity. Flowers of *B. ceiba* have excellent natural antioxidant activities.[23,24]

Hepatoprotective activity

Methanolic extract of flowers of *B. ceiba* causes a significant decrease in alkaline phosphates, alanine transaminases, aspartate transaminases, and total bilirubin levels but increases in the level of total protein in comparison to control that enhances the function of the liver.[25]

Antihyperglycemic and antihyperlipidemic activity

Hydro methanolic extract of *B. ceiba* contains N-hexane that significantly decreases the levels of serum total cholesterol, triglyceride, phospholipids, free fatty acid, low-density lipoprotein-cholesterol (LDL-C), and very LDL-C and increases in high-density lipoprotein-cholesterol.[14]

Aphrodisiac

Roots of *B. ceiba* are used traditionally in the Unani system as aphrodisiac. Its juice is considered a nutritive, restorative, and sexual stimulant. It increases body weight by achieving a significant improvement in mount, intromission, and ejaculation frequencies. Fructose content in the seminal fluid also improves.[26]

Cardioprotective effect

Root powder of *B. ceiba* decreases the risk of coronary heart disease, atherogenic lipids, fibrinogen, and oxidative stress in patients with ischemic heart disease. It acts as the antilipidemic activity on the lipid contents in the blood and reduces plaque formation due to the lipids in the blood.

Unani Formulations

Majoon-e-Mocharas,[3,11,12] *Majoon-e-Sohag Sonth,*[3,11] *Majoon-e-Zanjabeel,*[3,10,11] *Majoon-e-Muqawwi Rahem,*[3,11] *Habb-e-Muqawwi,*[8,10] *Safoof-e-Gond Kateere Wala,*[10,11] *Safoof-e-Sailaan,*[3,5] and *Safoof-e-Ziabetus Qawi.*[3]

Conclusion

In this study, we conclude that Mochars have various medicinal properties that can be used in the treatment of diseases, and further clinical trials should be conducted to establish the effectiveness of Mocharas in various clinical conditions.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. The Wealth of India. A Dictionary of Indian Raw Materials and Industrial Products. Vol. IX. New Delhi: National Institute of Science Communication, Council of Scientific and Industrial Research; 1972. p. 175.
2. Khair CP. Ayurvedic Pharmacopical Plants Drugs Expanded Therapeutics. London: CRS Press; 2016. p. 109.
3. Ghani HN. Khzainul Advia. DaryaGanj, New Delhi: Idara Kitabush-Shifa; 2010. p. 1268.
4. The Wealth of India. A Dictionary of Indian Raw Materials and Industrial Products. Vol. I. New Delhi: National Institute of Science Communication, Council of Scientific and Industrial Research; 2021. p. 145.
5. Anonymous. The Useful Plants of India. National Institute of Science Communication. New Delhi: CSIR; 2001. p. 76.
6. Brown SH, Florida Dymock W, Warden CJ, Hooper D, editors. *Bombax Ceiba*. Lee County Extension, Fort Myers: University of Florida, IFAS Extension; 1890.
7. Dymock W, Warden CJ, Hooper D. Pharmacographia Indica. Vol. I. Pakistan: The Institute of Health and Tibbi Research, Hamdard National Foundation; 1890. p. 215-8.
8. Khan A. Muheet-e-Azam. Vol. I, 3. Central Council for Research in Unani Medicine; 2014. p. 252-254, 2012. p. 543-44. (Urdu Translation).
9. Anonymous. Unani Pharmacopeia. Vol. 2. New Delhi: Central Council of Research in Unani Medicine; 2007. p. 73-4.
10. Hakeem HA. Bustanul Mufradat Jadeed. Darya Ganj, New Delhi: Idara Kitab-ush-Shifa; 1922. p. 561.
11. Fazalullah MM. Makhzan ul Mufradat Maroof wa Jameul Advia. Delhi: Matba Aam Mufeed Press; 2019. p. 234.
12. Kabeeruddin AM. Bayaz Kabeer Idara kitabul shifa; 2010. p. 195,185,199.
13. Rani P, Khullar N. Antimicrobial evaluation of some medicinal plants for their anti-enteric potential against multi-drug resistant Salmonella typhi. Phytother Res 2004;18:670-3.
14. De D, Ali KM, Chatterjee K, Bera TK, Ghosh D. Antihyperglycemic and antihyperlipidemic effects of n-hexane fraction from the hydro-methanolic extract of sepals of *Salmalia malabarica* in streptozotocin-induced diabetic rats. J Complement Integr Med 2012;9:Article 12.
15. Nabi MG. Makhzan-ul-Mufradat-Wa-Murakkabat-e-Azam Al maroof ba Khwasul Advia" Narayan Das Jungli Mill. Ballimaran, Delhi: Jayyed Barqi Press; 1958. p. 197.
16. Ravichandran G, Bharadwaj VS, Kolhapure SA. Evaluation of Efficacy and Safety of Acne-N-Pimple Cream in Acne Vulgaris. Antiseptic; 2004. p. 249-54.
17. Patel SS, Verma NK, Rathore B, Nayak G, Singhai AK, Singh P. Cardioprotective effect of *Bombax ceiba* flowers against acute adriamycin-induced myocardial infarction in rats. Rev Bras Farmacogn 2011;21: 704-9.
18. Anonymous. Reviews on Indian Medicinal Plants. Vol. IV. New Delhi: Indian Council of Medicinal Research; 2014. p. 319-26.
19. Anonymous. Materia Medica of India and Their Therapeutics. 3rd ed. Delhi: Neeraj Publishing House; 2009. p. 103-4.
20. Razi Z. Kitab al-Hawi fi'l Tibb. 1st ed., Vol. IX. New Delhi: Central Council for Research in Unani Medicine; 2001. p. 34-9.
21. Lubhaya HR. Goswami Bayanul Advia. Vol. II. New Delhi: Goswami Pharmacy; 1977. p. 21-3.
22. Vaghasiya Y, Chanda S. Screening of same traditionally used Indian plants for antibacterial activity against *Klebsiella pneumonia*. J Herbal Med Toxicol 2009;68: 161-74.
23. Surveswaran S, Cai YZ, Corke H, Sun M. Systematic evaluation of natural phenolic antioxidants from 133 Indian medicinal plants. Food Chem 2007;102: 938-53.
24. Yu YG, He QT, Yuan K, Xiao XL, Li XF, Liu DM, *et al*. *In vitro* antioxidant activity of *Bombax malabaricum* flower extracts. Pharm Biol 2011;49:569-76.
25. Lin CC, Chen SY, Lin JM, Chiu HF. The pharmacological and pathological studies on Taiwan folk medicine (VIII): The anti-inflammatory and liver protective effects of "mu-mien". Am J Chin Med 1992;20:135-46.
26. Bhargava C, Thakur M, Yadav SK. Effect of *Bombax ceiba* L. on spermatogenesis, sexual behaviour and erectile function in male rats. Andrologia 2012;44 Suppl 1:474-8.

Original Article

Clinical Efficacy of *Zarūr-i-Kath* (Pharmacopoeial Preparation) in Case of *Qulā'* (Stomatitis) – An Open-label Clinical Trial

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Abstract

Background and Objective: The study aims to validate the pharmacopoeial formulation *Zarūr-i-Kath* for its efficacy and safety profile in the treatment of *Qulā'* (recurrent aphthous stomatitis). **Methodology:** An open-label clinical trial was conducted on 92 patients with *Qulā'*, adhering to Good Clinical Practice guidelines. *Zarūr-i-Kath* was applied locally twice daily for 7 days. Clinical assessment was performed on the 3rd and 7th days of treatment. **Results:** The overall clinical response was 89.14%, with 36.95% of patients achieving complete relief, 27.17% showing significant relief, 25% showing partial relief, and 10.86% not responding to the treatment. No adverse effects were reported, and laboratory investigations remained within normal limits throughout the study. **Conclusion:** The clinical validation of *Zarūr-i-Kath* in the treatment of *Qulā'* demonstrates its efficacy and safety, supporting the traditional claims of Unani physicians. Future studies should focus on improving the formulation's ease of use, potentially as a lotion or gel, to increase its clinical acceptability.

Keywords: *Oral ulcers, Qulā', recurrent aphthous stomatitis, Unani medicine, Zarūr-i-Kath*

Introduction

Recurrent aphthous stomatitis (RAS) is a prevalent ulcerative condition affecting the oral mucosa, characterized by painful lesions that can occur on the cheeks, gums, tongue, lips, and both the roof and floor of the mouth.[1,2] RAS is classified based on the morphological characteristics of the ulcers into three types: major, minor, and herpetiform. Minor aphthous ulcers, which are <1 cm in diameter, are well-defined, shallow, and typically heal within 15 days without scarring. In contrast, major ulcers exceed 1 cm in diameter, are deeper, can take a minimum of 6 weeks to heal, and often result in scarring. Herpetiform ulcers, though smaller (3–6 mm), appear in clusters and also require several weeks to heal.[1]

Prevalence rates for RAS vary significantly, reported to be between 2% and 50% across different populations.[3] The exact etiology of RAS remains unclear; however, several predisposing and aggravating factors have been identified. These include genetic predisposition, immune dysfunction, infections from bacterial and viral agents, chemical irritants, allergies, certain medications, hormonal changes such as menstruation, psychological factors like stress and fatigue, as well as lifestyle factors such as tobacco use and vitamin deficiencies. Notably, genetic factors appear to play a significant role, with studies indicating that up to 90% of patients report a family history of RAS. Despite being self-limiting, RAS can lead to persistent ulcerations that significantly affect patients' quality of life by causing difficulties in speaking, eating, and swallowing.[4]

In classical Unani literature, *Qulā'* is described as *Tafarruq-i-Ittiṣāl*, denoting a loss of continuity in the oral mucosa. These lesions are typically multiple and scattered throughout the oral cavity. The etiology of *Qulā'* is attributed to *Sū'-i-Hazm* (dyspepsia), the predominance of *Ḥarārat* (hot temperament), and an imbalance in one or more of the four *Akhlāṭ* (humors): *Dam* (blood), *Ṣafrā* (yellow bile), *Balgham* (phlegm), and *Sawdā* (black bile). The clinical presentation of *Qulā'* varies depending on the predominant *Khilt* (humor); for example, *Qulā-i-Balghamī* manifests with milder symptoms, while *Qulā-i-Saudāvī* results in more severe presentations. Common clinical features include difficulties in eating, chewing, and swallowing, along

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with burning pain in the mouth, excessive salivation, halitosis, and a coated tongue.[5]

The treatment principles for *Qulā'* focus on *Tanqiya-i Mawād* (evacuation of morbid matter), followed by *Tabrīd* (cooling) and *Taskīn* (analgesic) actions. Various single agents, including *Kāfūr* (*Cinnamomum camphora*), *Māzū* (*Quercus infectoria*), *Kabāb Chīnī* (*Piper cubeba*), *Hīl Khurd* (*Elettaria cardamomum*), *Samagh-i ʿArabī* (*Acacia arabica*), *Gulnār Fārsī* (*Punica granatum*), *Tabāshīr* (*Bambusa arundinacea*), and *Gul-i-Surkh* (*Rosa damascena*), have been employed locally in Unani medicine for the management of *Qulā'*.[5,6] *Zarūr-i-Kath*, a compound formulation highlighted in classical Unani texts, is traditionally used to alleviate pain and associated symptoms of *Qulā'* while promoting the healing of oral mucosal ulcerations.[7]

This study aims to evaluate the efficacy and safety of *Zarūr-i-Kath* in patients diagnosed with *Qulā'*, contributing to the empirical validation of Unani medicinal practices.

Drug review

Zar-i-Ward (Rosa damascena Mill.*)*

Rosa damascena, commonly known as *Gul-i-Surkh*, is recognized in Unani medicine for its unique temperament, described as *Murakkab al-Quwā*, embodying both laxative and astringent properties.[8] This plant belongs to the Rosaceae family and is rich in active constituents, primarily phenyl ethyl alcohol (71%), with notable compounds including citronellol, nonadecane, and geraniol. Historical evidence indicates that Ibn Sīnā first extracted rose essential oil in the 10th century A.D., employing it for various therapeutic applications.[9] Desqūrīdūs suggested that *Gul-i-Surkh* is particularly effective in oral diseases, functioning as a dusting powder due to its astringent and anti-inflammatory actions.[10]

Kath Safaid (Acacia catechu [Linn. F.] Willd.*)*

Acacia catechu, a member of the Mimosaceae family, possesses a cold and dry temperament.[8] It is widely used to treat various conditions, including loose motions, dysentery, gastric ulcers, gingivitis, and stomatitis. The plant contains several bioactive compounds, such as catechin, tannins, phlobatannins, catechutannic acid, and flavonoids, including quercetin, quercitrin, and fisetin. Notably, catechin is recognized for its hemostatic and styptic properties, making it beneficial for controlling bleeding and facilitating the healing of ulcers.[11]

Dāna Hīl Khurd (Elettaria cardamomum [L.] Maton*)*

Dāna Hīl Khurd, or cardamom, belongs to the Zingiberaceae family and is characterized as a perennial herb indigenous to India, Pakistan, Myanmar, and Sri Lanka. It is classified as having a hot and dry temperament.[8,12] Cardamom is used medicinally to address a variety of ailments, including halitosis, indigestion, asthma, constipation, colicky pain, diarrhea, and epilepsy. Its pharmacological properties include being bactericidal, fungicidal, antiviral, digestive, carminative, diuretic, and stomachic.[12]

Ṭabāshīr (Bambusa arundinacea [Retz.] Roxb.*)*

Ṭabāshīr is a plant-derived material characterized by its white, solid, and transparent appearance, obtained from the nodal joints of *Bambusa arundinacea*. This perennial tree belongs to the Poaceae family and thrives in warm climates. Unani physicians agree on its cold and dry temperament, and it is considered highly effective for treating *Qulā'*.[8,13]

Kāfūr (Cinnamomum camphora [Linn.] Nees and Eberm.*)*

Kāfūr, or camphor, is derived from the steam distillation of the wood and leaves of the camphor tree. It is classified as having a cold and dry temperament. In Unani medicine, *Kāfūr* is valued for its efficacy in treating *Qulā'* and is frequently used for its analgesic and anti-inflammatory properties.[8,13]

Study rationale

Despite the self-limiting nature of RAS, many patients experience persistent ulcers that affect their quality of life. Conventional treatments often have adverse effects, making herbal alternatives like *Zarūr-i-Kath* increasingly relevant. Given the lack of scientific data on its efficacy and safety, this study aims to validate *Zarūr-i-Kath* following clinical research guidelines outlined by AYUSH.

Mouth ulcers are a common complaint among patients in outpatient departments, often exacerbated by the widespread use of tobacco products. While these ulcers are typically self-limiting, many individuals experience persistent ulcerations, leading to a cycle where a new ulcer appears before the previous one has healed. Patients may present with various clinical features, including difficulty in speaking, eating, and swallowing; burning pain; excessive salivation; coated tongue; and fibrosis. These symptoms can significantly impact the quality of life and, in some cases, may lead to malignancy. Given the diverse etiology of mouth ulcers and the array of available treatments, this condition has garnered considerable clinical and research interest. *Zarūr-i-Kath,* a traditional formulation in Unani Medicine, is believed to effectively address the clinical features of *Qulā',* thanks to its pharmacological properties. However, a major drawback of such highly regarded compound formulations is the lack of robust scientific data regarding their efficacy and safety.

To ensure the effectiveness and safety of these formulations, it is crucial to validate them according to AYUSH clinical research guidelines. This validation will help establish a comprehensive efficacy and safety profile for compound formulations, ultimately improving patient care and outcomes.

Methodology

Study type

An open-label clinical trial was conducted at the Regional Research Institute of Unani Medicine (RRIUM), Chennai, from 2014 to 2016. The study was approved by the Institutional Ethics Committee of RRIUM, Chennai. Patients were recruited to the trial after getting a voluntary informed signed consent form. Altogether 100 subjects were enrolled of which 92 completed the study.

Selection criteria

Inclusion criteria

Patients of either gender in the age group of 10–65 years and who were having single or multiple ulcerations with or without the presence of difficulty in eating/chewing, uneasiness in speaking, burning pain in mouth, excessive salivation, and coated tongue were included in the study.

Exclusion criteria

Known cases of Crohn's disease, ulcerative colitis, celiac disease, lupus erythematosus, Behcet's disease, cyclic neutropenia, immunodeficiency disorders, carcinoma, patients with hemoglobin level below 8 g%, and pregnant and lactating women were not included in the study.

Sample size, duration of the treatment, and follow-up

Ninety-two patients were studied and received treatment for 7 days. The patients were assessed clinically on the 3rd and 7th days of the treatment.

Treatment details

Zarūr-i-Kath, a powdered drug applied locally twice a day. *Zar-i-Ward* (*Rosa damascena* Mill.), *Kath Safaid* (*Acacia catechu* [L.f.] Willd.), *Dāna Hīl Khurd* (*Elettaria cardamomum* [L.] Maton), *Ṭabāshīr* (*Bambusa arundinacea* [Retz.] Roxb.), and *Kāfūr* (*Cinnamomum camphora* [Linn.] Nees and Eberm.) were taken in equal ratios and prepared as a powder.[7]

Laboratory investigations

Hemoglobin, total leukocyte count, differential leukocyte count, erythrocyte sedimentation rate, serum bilirubin, serum glutamate-pyruvate transaminase, serum glutamic-oxaloacetic transaminase, serum alkaline phosphatase, blood urea, serum creatinine, and serum uric acid were investigated at baseline and at the end of the treatment.

Assessment of efficacy

The signs and symptoms were assessed according to the grading system (Grade 0: no ulcers, Grade 1: 1–3, Grade 2: 4–6, and Grade 3: >7) and Visual Analog Scale (Scale: 0–10). The result was also assessed as per the grading system such as complete relief, relief, partial relief, and not relieved.

Assessment of safety

Safety evaluation of *Zarūr-i-Kath* was done on the basis of any adverse events and laboratory parameters.

Statistics

All the values which were recorded in the study were statistically analyzed using Student's paired "*t*" test. The analysis was done using SYSTAT-13 software.

Significance level

The $P < 0.05$ was considered significant in the study.

Results

Out of 92 patients which completed the study, the overall response to the treatment observed was complete relief in 34 (36.95%) patients, relief in 25 (27.17%) patients, and partially relief in 23 (25%) patients while 10 patients (10.86%) were not relieved from the symptoms and signs of *Qulā'* [Table 1 and Figure 1].

Maximum 26 (28.26%) patients were from the age group of 31–40 years. Out of them, 8 (30.76%) patients were completely relieved, 9 (34.61%) patients were relieved, and 7 (26.92%) patients were partially relived while 2 (7.69%) patients were not relived. Male patients constituted majority of the cases (58.69%) studied. Out of the 54 male patients, 25 (46.29%) patients were completely relieved while 12 (22.22%) patients were relieved and 12 (22.22%) patients were partially relived while 4 (7.40%) patients were not relieved. Out of the 38 female patients, 9 (23.68%) patients were completely relieved while 13 (34.21%) patients have been relieved from the symptoms and signs of *Qulā'* and 11 (28.94%) patients were partially relived whereas 6 (15.78%) patients were not relived. Maximum 66 cases had the signs and symptoms of *Qulā'* since 11 months. Of them, 25 (37.87%) patients were completely relieved, 20 (30.3%) patients got relief, 16 (24.24%) patients have been partially relieved, while 5 (7.57%) patients had not been relived [Table 2 and Figure 2].

Table 1: Therapeutic response to the treatment

Response in completed cases				
Complete relieved	Relieved	Partially relived	Not relieved	Total
34	25	23	10	92

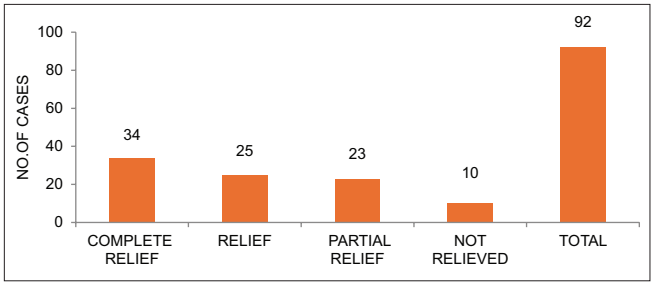

Figure 1: Therapeutic response to treatment

Maximum 41 (44.56%) patients had *Damwī mizāj* (sanguine temperament). Out of them, 16 (39.02%) patients were completely relieved, 10 (24.39%) patients were relieved, and 10 (24.39%) patients were partially relived while 5 (12.19%) patients had not been relieved. Out of the total 55 (59.78%) switched over cases, 16 (29.09%) patients were completely relived and 16 (29.09%) patients have been relieved, 17 (30.90%) patients partially relieved, while 6 (10.90%) patients were not relieved. Out of the total 37 (40.21%) fresh cases, 18 (48.64%) patients were completely relived, 9 (24.32%) patients were relieved, 6 (16.21%) patients were partially relieved, while 4 (10.81%) patients were not relived [Table 3 and Figure 3].

Hematological parameters were within the normal limits. There was no significant variation during the course of the trial [Table 4]. Biochemical parameters were also within the normal range, and no significant changes were observed at the end of therapy [Table 5].

Table 2: Response in relation to chronicity of the disease

Chronicity (months)	Completely relieved	Relieved	Partially relieved	Not relieved	Total
<11	25	20	16	5	66
12–24	4	4	7	4	19
25–36	2	-	-	1	03
37–46	-	-	-	-	-
47–56	-	-	-	-	-
57–66	-	1	-	-	1
>66	3	-	-	-	3
Total	34	25	23	10	92

Table 3: Response in relation to fresh cases or switched over patients from other systems of medicine

Cases	Complete relieved	Relieved	Partial relief	Not relieved	Total
Fresh cases	18	9	6	4	37
Switched over cases	16	16	17	6	35
Total	34	25	23	10	92

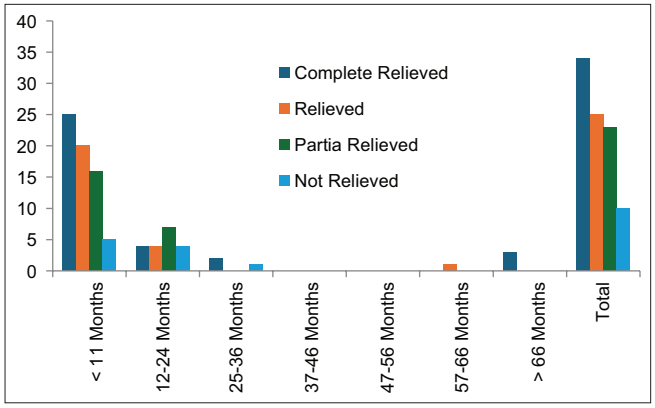

Figure 2: Response in relation to chronicity of the disease

Discussion

Unani Medicine is enriched with lot of compound formulations with least side effects for the treatment of mouth ulcers. According to Unani principle of treatment, these drugs have pharmacological actions of *Mubarrid* (refrigerant), *Musakkin* (analgesic), *Qābiḍ* (astringent), *Ḥābis* (styptic), *Mujaffif* (desiccant), *Mudammil* (healing) and *Dāfa'-i-'Ufūnat* (antiseptic), etc., which is suitably preferred in the treatment of *Qulā'*. *Zarūr-i-Kath* is one of the commonly used compound formulations claimed to be highly efficacious in the treatment of *Qulā'*. This compound formulation is composed with *Zar-i-Gul*, *Kāfūr*, *Ṭabāshīr*, *Dāna Hīl Khurd*, and *Kath Safaid* which most of them possessing *Qābiḍ*, *Ḥābis*, *Mujaffif*, *Mudammil,* and *Dāfa'-i-'Ufūnat* pharmacological actions. Thus, a herbal substitute may be chosen as an alternative therapy to minimize the adverse effects produced by conventional drugs.

The overall improvement was found to be highly significant after using *Zarūr-i-Kath* as local application for 1 week treatment in case of *Qulā.* Many scientific research studies have also been proved that the individual ingredients of *Zarūr-i-Kath* are much effective in the treatment of RAS. A study was revealed that an extract of *Rosa damascena* was found to be more effective to reduce the clinical features of RAS than placebo control.[10] Another randomized, double-blind, placebo-controlled clinical trial was conducted to assess the efficacy of aqueous extract of *Rosa damascena* which showed anti-nociceptive and anti-inflammatory effects in RAS.[14] One more randomized, double-blind, placebo-controlled clinical study was also reported to have significant effect of essential oil of *Rosa damascena* in canker sores.[15] *Cinnamomum camphora* has antiseptic, anti-inflammatory, antioxidant, immunomodulatory, and PGE2 suppressor activity which subside the inflammatory condition of oral mucosa.[16] *Bambusa arundinacea* is also possess anti-inflammatory and immunomodulatory actions which may useful in the treatment of RAS. Some

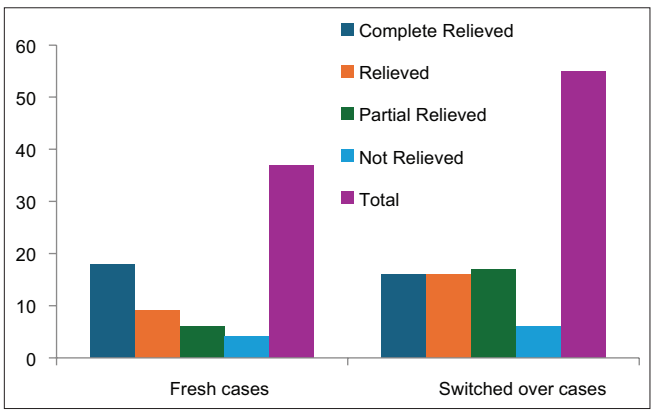

Figure 3: Response in relation to fresh cases or switched over patients from other systems of medicine

Table 4: Blood biochemistry results of *Qulā*‘ (stomatitis) patients treated with pharmacopoeial formulation *“Zarūr-i-Kath”*

Parameters	Statistic (n=76), mean±SD	Day of examination	
		Base line	After completion of 7 days treatment
Hemoglobin	g%	12.8±2.3	13±2.4
WBC	Cells/mm^3	7966±2123	7815±2082
DLC			
Polymorphs	%	58±7	57±7
Lymphocytes		35±7.5	36±7.1
Eosinophils		4.4±2.3	4.3±2.2
Monocytes		1.9±0.4	2±0.5
ESR - 1 h	%	22±17.5	21.3±17.3

No significance difference observed statistically in pathology investigations between base line and after treatment (P>0.05).
n: Number of observations, SD: Standard deviation, WBC: White blood cell, DLC: Differential leukocyte count

Table 5: The biochemical results of *Qulā*‘ (stomatitis) patients treated with pharmacopoeial formulation “*Zaroor-e-Kath*”

Parameters	Statistic (n=76), mean±SD	Day of examination	
		Base line	After completion of 7 days treatment
Total bilirubin	mg/dL	0.6±0.2	0.6±0.2
Blood urea	mg/dL	20±6	20.2±6.1
Creatinine	mg/dL	1.3±0.32	1±0.30
SGOT	Units/L	26±7.4	27±7.7
SGPT	Units/L	27±15	26.5±14.8
Alkaline phosphatase	KA units	82±23	78±21
Uric acid	mg/dL	5±1.64	5.2±1.67

n: Number of observations, SD: Standard deviation, SGOT: Serum glutamate-pyruvate transaminase, SGPT: Serum glutamic-oxaloacetic transaminase

studies showed that the major component cineole of cardamom essential oil is known to have antibacterial and fungicidal effects against *Streptococcus mutans* and *Candida albicans* which develop infections and ulcers in oral mucosa.[17] Scientific studies have been revealed that catechin is used as hemostatic while taxifolin has anti-inflammatory, bactericidal, and fungicidal effects which are much useful in the treatment of inflammatory conditions of oral mucosa.[18] *Acacia catechu* also contains mucilage (6.8%) which has astringent property and can heal ulcers, if applied externally.[19]

The response of the *Zarūr-i-Kath* in the treatment of *Qulā‘* in relation to the age of patients was found that middle-aged patients were significantly cured which may be due to *Ṭabī‘iyat* (immunity). *Ṭabī‘iyat* is considered the supreme planner of our body and whose sole function is to maintain *E’itedāl-i-Mizāj* in the body. In middle age, the quantity of *Rutūbat-i-Gharīziyah* is equal to the quantity sufficient for preservation of *Ḥarārat-i-Gharīziya* for the continuance of normal metabolism. The supreme planner plays a key role in curing of diseases.[20] Those patients who had acute disease were significantly cured which may be due to the acute nature of the disease.

The study has certain limitations which include lack of controls, drug in powder form, and photographic evidence. Future trials may include these discrepancies to overcome the limitations.

Conclusion

The clinical validation of Unani pharmacopoeial formulation *Zarūr-i-Kath* carried out in the treatment of *Qulā‘* has amply proved the beneficial nature and utility of the drug without any adverse effects. The study has once again vindicated the claims and wisdom of ancient Unani physicians in mitigating the sign and symptoms of *Qulā‘*. The drug may be modified in a lotion or gel form for easy use and wider acceptability of the formulation.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Malayil S, Thomas J, Rani Mol P, Vineet DA, Thomas S, Vivek V. Frequency of patients presenting with recurrent aphthous stomatitis: A pilot study. J Dent Med Sci 2014;13:63-6.
2. Fernandes R, Tuckey T, Lam P, Allidina S, Sharifi S, Nia D. The best treatment for aphthous ulcers: An evidence based study of literature. J Am Dent Assoc 2008;134:200-7.
3. Gavanji S, Larki B, Bakhtari A. The effect of extract of *Punica granatum* var. pleniflora for treatment of minor recurrent aphthous stomatitis. Integr Med Res 2014;3:83-90.
4. Andishe Tadbir A, Pourshahidi S, Ebrahimi H, Hajipour Z, Memarzade MR, Shirazian S. The effect of *Matricaria chamomilla* (chamomile) extract in orabase on minor aphthous stomatitis, a randomized clinical trial. J Herb Med 2015;5:71-6.
5. Sina I. Al Qanoon Fil Tibb. Vol. 1. New Delhi: Book Printers; 1992.
6. Samarqandi N. Sharah Asbab. New Delhi: Aijaz Publishing House; 2010.
7. Department of AYUSH. National Formulary of Unani Medicine. Part. 1. 1st ed. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2006.
8. Ghani N. Khazain Al Advia. Vol. 4. Lucknow: Munshi Nawal Kishore; 1926.
9. Mahboubi M. *Rosa damascena* as holy ancient herb with novel applications. J Tradit Complement Med 2016;6:10-6.
10. Wadhawan R, Sharma S, Solanki G, Vaishnav R. Alternative medicine for aphthous stomatitis: A review. Int J Adv Case Rep 2014;1:5-10.
11. Khare CP. Indian Medicinal Plants: An Illustrated Dictionary (Google eBook). Berlin: Springer Science and Business Media; 2007.
12. Khan AU, Khan QJ, Gilani AH. Pharmacological basis for the medicinal use of cardamom in asthma. Bangladesh J Pharmacol 2011;6:34-7.
13. Baitar I. Al-Jame’ Al-Mufradat Al-Advia Wa-Al Aghzia.

Vol. 3. New Delhi: Central Council for Research in Unani Medicine; 1999.
14. Barrons RW. Treatment strategies for recurrent oral aphthous ulcers. Am J Health Pharm 2001;58:41-53.
15. Hoseinpour H, Peel SA, Rakhshandeh H, Forouzanfar A, Taheri M, Rajabi O, *et al.* Evaluation of *Rosa damascena* mouthwash in the treatment of recurrent aphthous stomatitis: A randomized, double-blinded, placebo-controlled clinical trial. Quintessence Int 2011;42:483-91.
16. Fazmiya MJ, Sultana A, Rahman K, Heyat MB, Sumbul, Akhtar F, *et al.* Current insights on bioactive molecules, antioxidant, anti-inflammatory, and other pharmacological activities of *Cinnamomum camphora* Linn. Oxid Med Cell Longev 2022;2022:1-23.
17. Muniappan M, Sundararaj T. Antiinflammatory and antiulcer activities of *Bambusa arundinacea*. J Ethnopharmacol 2003;88:161-7.
18. Kováč J, Slobodníková L, Trajčíková E, Rendeková K, Mučaji P, Sychrová A, *et al.* Therapeutic potential of flavonoids and tannins in management of oral infectious diseases-a review. Molecules 2022;28:158.
19. Singh M, Sharma E. Novel and secure trend for photo protection – A hallmark of plant metabolites as UV filters. Int J Recent Sci Res 2014;5:322-5.
20. Ahmed SI. Introduction to Al-Umur Al-Tab'iyah. Delhi: Saini Printers;1980:32, 44.

Original Article

Standardization and Phytochemical Screening of Herbomineral Formulation *Ḥabb-i-Zīqun Nafas* Used in the Treatment of Asthma with High-performance Thin-layer Chromatography Fingerprinting

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Abstract

Background: *Habb-e-Zeequn Nafas* (HZN) is a Unani polyherbal powder formulation used to treat asthma, composed of five ingredients, i.e., Dhatura safed (*Datura metel* L.), Revand-chini (*Rheum australes* D. Don), Zanjabīl (*Zingiber officinale* Rosc.), Gond safed (*Vachellia nilotica* (L.) P. J. H. Hurter and Mabb., and Warq-i-Nuqra (*Silver foil*). The main aim of the present study was to standardize HZN on the basis of organoleptic characteristics and physico-phytochemical analysis. **Materials and Methods:** The study formulation HZN was evaluated on pharmacopoeial standards using organoleptic analysis, powder microscopy, physicochemical parameters, i.e., ash values, extractive values, pH values, etc., phytochemical evaluation, thin-layer chromatography (TLC) and high-performance thin-layer chromatography (HPTLC) fingerprinting, and quality control measures using UPI and WHO guidelines. **Results:** Organoleptic characteristics of the formulation are a light brown color with a silver foil coating, a characteristic odor, a bitter taste, and a moderately rough texture. The values for physicochemical parameters as total ash 12.776%–12.945% w/w, acid-insoluble ash 8.571%–8.724% w/w, alcohol-soluble extractive 18.165% w/w, water-soluble extractive 26.244% w/w, and hexane soluble extractive (6.979% w/w) were established with LOD at 105°C (5.549% w/w) and the pH of 1% and 5% suspension as 6.93 and 7.02, respectively. The disintegration time of pills was around 13 min, with friability of about less than 1% and uniformity of weight in mg of 54.0. Phytochemical screening revealed the presence of such constituents as alkaloids, glycosides, flavonoids, carbohydrates, phenols, etc. The HPTLC fingerprint showed various component spots under ultraviolet (UV) λ = 254 nm, UV λ = 366 nm, upon exposure to iodine vapors, and upon derivatization with anisaldehyde sulfuric acid reagent at λ580 nm. The safety profile showed that the formulation HZN was free from microbes, aflatoxins, the trace of heavy metals, and pesticide residues found below the quantification level. **Conclusion:** The standardization data obtained above for the formulation would serve as a reference standard in future studies.

Keywords: *High-performance thin-layer chromatography fingerprinting, phytochemical screening, standardization, Unani, Zeequn Nafas*

Introduction

The Unani system of Medicine, one of the Indian Systems of Medicine, has a long and impressive development record in India. The manufacturing and processing of Unani medicine are regulated by the Drugs and Cosmetics Act of 1940, amended in 1964 and 1982. In view of the large-scale commercialization of Unani drugs, the Government of India, with a consideration to ensure safety and efficacy by maintaining standards of Unani products, acquired a number of steps to ensure quality control and good manufacturing practices (GMP) of Unani medicine.[1] The most common reasons for using traditional medicine are that it is more affordable; more closely corresponds to the patient's ideology, allays concerns about the adverse effects of synthetic modern medicines, satisfies a desire for more personalized health care, and allows greater public access to health information.[2] In the present advanced era, an increased demand for compound formulations suggests a great need for standard criteria for the development and quality control of herbal formulations. Standardization is an important aspect of maintaining and assessing the quality and safety of herbal formulations, as these are combinations of more than one herb to attain the desired therapeutic effect. Standardization

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minimizes batch-to-batch variation, and assure the safety, efficacy, quality, and acceptability of the polyherbal formulations.[3] The authentication, characterization, and identification of adulterants from genuine medicinal ingredients of Unani formulations to ensure reproducibility in the manufacturing of the formulations make the formulations scientifically valid. These are essential for both manufacturing companies and public health to ensure the reproducible quality of herbal medicines.[4,5] Methods of standardization should take into consideration all aspects that contribute to the quality of the herbal drugs, namely the correct identity of the sample, organoleptic evaluation, pharmacognostic evaluation, quantitative evaluation (ash values, extractive values, phytochemical evaluation, microbial and aflatoxin contamination, heavy metals and pesticidal residue analysis).[6]

The Unani compound formulation taken for the present study was *Habb-e-Zeequn Nafas* (HZN) mentioned in Unani pharmacopoeia-*Qarābadīn-i-Majīdi*[7] and National Formulary of Unani Medicine (Anonymous, 2008).[8] HZN was indicated in *Dīq al-Nafas* and acting as an antiasthmatic, expectorant, and bronchodilator. The formulation consists of five single drugs, i.e., *Tukhm-e-Dhatura Safed-Datura metel* L., *Revand-chini-Rheum australe* D. Don, *Zanjabīl-Zingiber officinale* Rosc., *Gond Safed-Vachellia nilotica* (L.) P. J. H. Hurter and Mabb., and *Warq-i-Nuqra*-Silver foil).[8] The formulation was prepared on a laboratory scale to standardize and establish standard operating procedures and pharmacopeia standards. Analysis was carried for organoleptic parameters, microscopic studies, physicochemical parameters, phytochemical screening, safety profiles for quality assurance, and high-performance thin-layer chromatographic studies. This paper describes the main features of formulation preparation, physicochemical and phytochemical screening, safety profile studies, and high-performance thin-layer chromatography studies.

Materials and Methods

Collection and identification of drugs

The formulation ingredients, i.e., *Tukhm-e-Dhatura Safed, Revand-chini, Zanjabīl, Gond Safed*, and *Warq-i-Nuqra* [Table 1] were procured from the Pharmacy of National Research Institute of Unani Medicine for Skin Disorders (NRIUMSD) and local market/ herbal dealers in Hyderabad. The ingredients were authenticated and identified by the botanist at NRIUMSD, Hyderabad, with a separate voucher number for each ingredient (*Tukhm-e-Dhatura safed:* SMPU/CRI-Hyd14144, *Revand-chini:* SMPU/CRI-Hyd14145, *Zanjabīl:* SMPU/CRI-Hyd14146 and *Gond Safed:* SMPU/CRI-Hyd14147), and deposited in herbarium for further future reference.

Chemicals and instruments used

Instruments used to determine the quality control analysis of HZN are calibrated instruments such as soxhlet extraction, orbital shaker, water bath, hot air oven, hotplate, laboratory muffle furnace, etc., for qualitative and quantitative analysis. The chemicals and solvents that are used for analysis are of analytical grade.

Method of preparation of *Habb-e-Zeequn Nafas*

The formulation HZN was prepared in the pharmacy (GMP certified) of NRIUMSD, Hyderabad, according to the composition of the formulation given in Unani Classical Pharmacopoeia *Qarābadīn-i-Majīdi*.[7] Formulation ingredients were cleaned separately and were free from contamination and foreign matter. Ingredients were grounded to a fine powder and passed through sieve no. 80 mesh. The powdered mixture was mixed with water as a vehicle (rabeta) to make lubdi (dough). Then, the dough was rolled into stick form to make pills. The pills were coated with silver foil over the surface. In the same manner, three different batches of HZN are prepared and used for the study [Figure 1].

Development of quality standards: Quality standards for the formulation were developed based on the following parameters:

Figure 1: Formulation (*Habb-e-Zeequn Nafas*)

Table 1: Formulation composition of *Habb-e-Zeequn Nafas*[9]

Name of drug	Botanical name	Family	Part used	Quantity
Tukhm-e-Dhatura Safed	*Datura metel* L.	Solanaceae	Seed	45 g
Revand-chini	*Rheum australe* D. Don	Polygonaceae	Root	30 g
Zanjabīl	*Zingiber officinale* Rosc.	Zingiberaceae	Rhizome	15 g
Gond Safed	*Vachellia nilotica* (L.) P.J.H. Hurter and Mabb.	Fabaceae	Gum	15 g
Warq-i-Nuqra	Silver foil	-	Foil	Quantity sufficient

Morphological evaluation: Morphological and organoleptic characterization of the formulation HZN was done, and taxonomical features that include appearance, color, odor, taste, and texture were recorded.[1] Determination of foreign matter: The foreign matter is determined as the material present other than what is required (i.e., other than medicinal plant parts / from mineral or synthetic origin such as such as sand, silica, soil in the representative sample of whole lot, and sometimes insects present). The analysis was carried out by taking 100 grams of HZN and disbursed in a petridish as a flat thin layer and observed for foreign matter by the naked eye.[10]

Powder microscopic evaluation: HZN powder was evaluated for microscopic characters. The HZN powder was boiled with chloral hydrate for removal of coloring content and stained with reagents such as phloroglucinol 1% and conc. HCL, iodine solution, H_2SO_4, Sudan Red G in acetic acid and ethanol to observe lignified structures such as stone cells, starch, calcium oxalate crystals, oil, resin fats, xylem fibers, tracheid, sclereids, and parenchymatous cells.[1,11]

Physicochemical parameters: Physicochemical evaluation of HZN was done on parameters, i.e., total ash and acid insoluble ash; extractive values as alcohol, water, and hexane soluble matters; pH values at 1% and 5% of aqueous suspension; loss of weight on drying at 105°C; disintegration time; friability test; and uniformity of weight. Physicochemical analysis of the HZN was carried out as per the standard procedures of the Unani Pharmacopoeia of India, WHO Guidelines, etc.[1,9-12]

Preliminary phytochemical analysis was performed using various HZN solvent extracts, i.e., alcoholic, aqueous, and chloroform extracts, to establish the different classes of compounds present. The procedures and methods for phytochemical screening were followed as per the method described by Kokate *et al*. and Trease and Evans.[9,13,14]

High-performance thin-layer chromatography (HPTLC) analysis: The alcoholic extract of HZN was used, for which 5 g powdered HZN was taken and refluxed on a water bath for 30 min with 200 mL of alcohol using Soxhlet apparatus. The extract was then filtered and concentrated to 5 mL, and the obtained HZN was used for thin-layer chromatography. The chromatographic profile of HZN was studied in three different batches and detected under four detection systems, i.e., ultraviolet (UV) 366 nm, UV 254 nm, iodine vapors, and anisaldehyde sulfuric acid reagents.

HPTLC method conditions: The alcoholic extract of HZN was spotted on a precoated aluminum plate of silica gel 60 F_{254} about 0.2 mm in thickness (Merck) as an absorbent with the help of the automatic TLC applicator system of the DESAGA Sarstedt Gruppe. After trying with different solvent systems as mobile phase having variable volume ratios, the final suitable solvent system was selected yielding better separation as toluene, ethyl acetate, methanol 7:2:1, v/v/v in its selected proportional ratio. The TLC plate was then developed in the twin through chamber using the mobile phase solvent system as toluene, ethyl acetate, methanol 7:2:1, v/v/v respectively, to the height of 80 mm for the separation of the components on the polar phase of silica gel from that of the mobile phase of the solvent system.[15-18] The developed TLC plates were thoroughly dried and detected with the appropriate detection system, such as the UV Cabinet system for spot detection at 366 nm, 254 nm, and also under iodine vapors, and after derivatization with anisaldehyde sulfuric acid reagent as shown in Figure 2 and scanned with the densitometer DESAGA Sarstedt Gruppe's. Densitograms obtained by scanning under the densitometer under the specific conditions for the abovementioned detection system were shown to show which peaks appeared for the corresponding spots of component separation. The peak areas and the Rf values in the densitograms correspond to the component concentration in the sample and were recorded.[14,19]

The safety profile of HZN, namely, microbial load, aflatoxins analysis, heavy metal contamination, and pesticidal residues, was carried out as per the Unani Pharmacopeia of India and WHO guidelines[1,10,20] to develop a safety evaluation of HZN**.** The estimation of microbial load, namely, total bacterial count, total fungal count, Enterobacteriaceae, *Escherichia coli*, *Salmonella* spp., and *Staphylococcus aureus;* aflatoxins contamination estimation was performed to identify the presence of B1, B2, G1, and G2 in HZN; and heavy metals were analyzed at DSRI, Ghaziabad, on atomic absorption spectrophotometer. HZN was analyzed for pesticidal residue at the Bureau Veritas Testing Laboratory, Hyderabad. The procedure and methods for analysis were followed according to the protocol of WHO issued guidelines and pharmacopeia.[1,20]

Results and Discussion

Organoleptic properties

HZN was evaluated for organoleptic properties, which is an important parameter for identification and quality assurance. The HZN was grayish brown color with a silver coating round pill with a rough texture, which helped as a means of quick recognition of the drug. The presence of no odor and the pungent taste determined the characteristic of HZN, which eventually helped to define its consistency. HZN was prepared from the specified part of the plant and was free of all foreign bodies. HZN was inspected for foreign matter and found to be devoid of any foreign material.

Microscopic examination

The powder microscopical evaluation of HZN was carried out to identify the microscopical characters of the ingredients of HZN. The study revealed characteristic features such as the presence of abundant fragments of endosperm filled with aleurone grains with thin-walled colorless cells containing simple starch grains and prisms

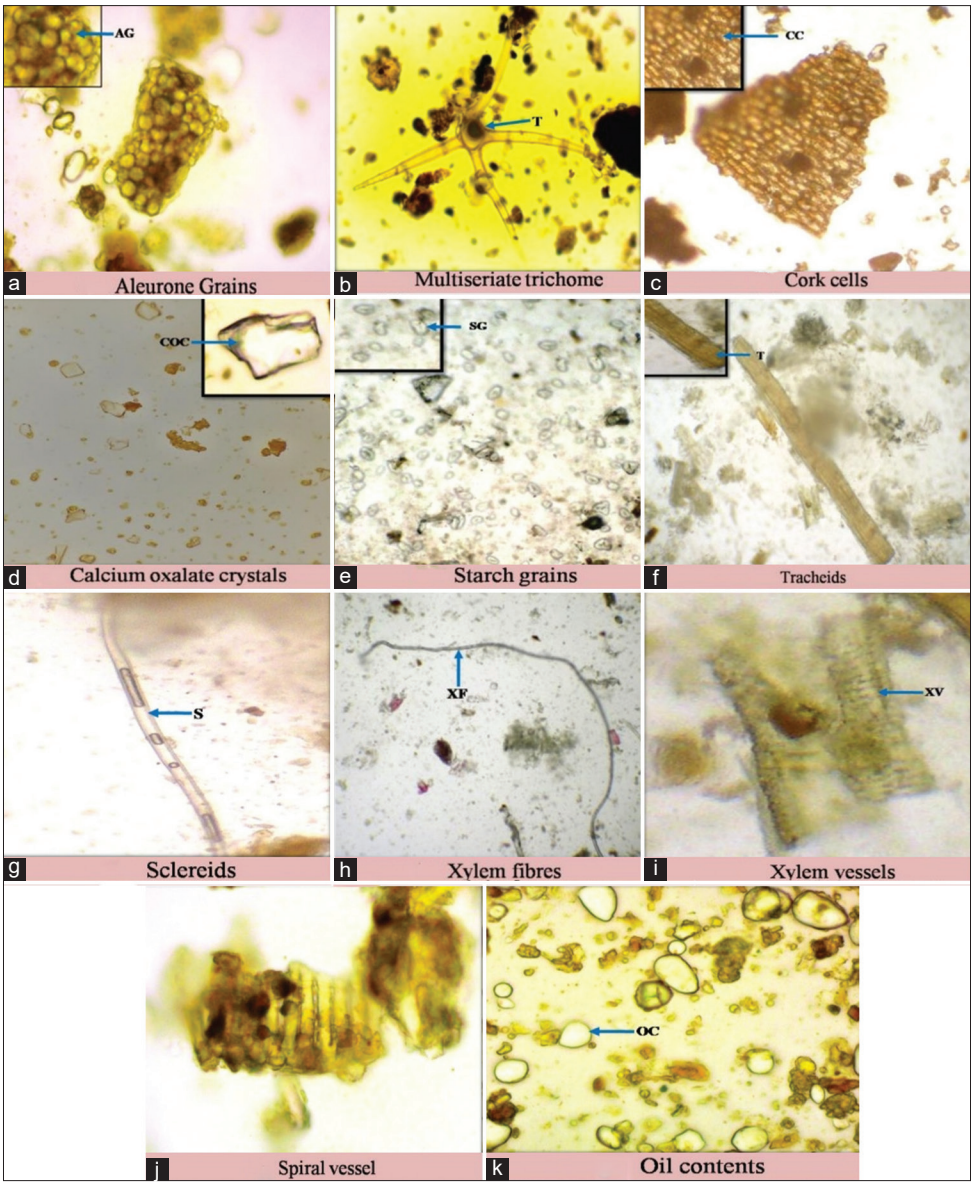

Figure 2: Microscopical study of powder of *Habb-e-Zeequn Nafas* (a) Aleurone grains, (b) Trichome, (c) Cork cells, (d) Calcium oxalate crystals, (e) Starch grains, (f) Tracheid, (g) Sclereid, (h) Xylem fiber, (i) Xylem vessels, (j) Spiral vessels, (k) Oil contents

of calcium oxalate crystals. In the cork cells of the cortex, xylem fibers, tracheids, and sclereids of various sizes and thickness are embedded. The thick-walled trichomes were observed to unicellular multiseriate. The features are depicted in Figure 2. Powder microscopic analysis is required to ensure the identity as well as quality of formulated drugs to avoid adulteration with either exhausted material or with other same appearance.[1,11]

Physicochemical parameters

The physicochemical evaluations of HZN were determined in three different batches, and the data presented in Table 2 expresses the mean ± standard deviation (SD) values of the three readings calculated. The total ash content was found to be in the range of 12.77%–12.94% w/w and acid insoluble ash 8.57%–8.72% w/w. Ash assessment provides a framework for determining a drug's identity and cleanliness and provides details about inorganic adulteration in drugs.[1] Alcohol, hexane, and water-soluble matter play an important role in drug's quality and purity assessment. Less extractive value means the inclusion of exhausted material adulteration.[10,11] Alcohol soluble matter in terms of %w/w is found to be 17.64–18.16, water-soluble matter as 25.60–26.24, and hexane soluble matter as 6.94–6.97 [Table 2]. The pH value for 1% and 5% aqueous suspension were found in the ranges of 6.93–6.94 and 7.01–7.02, respectively. The moisture content, i.e., loss of weight on drying at 105°C was found to be in the range of 5.37%–5.549% w/w. Disintegration analysis is required to assess the specified time for a pill to disintegrate when inserted in a liquid medium under experimental conditions.[21] The time duration of disintegration of HZN

in aqueous medium was found to be about 13 min. The friability test assesses the ability of tablets to withstand mechanical stress during manufacturing, distribution, and handling by the consumer.[22] The mean percentage of friability of HZN was found to be in the range of 0.0008–0.0009. Uniformity of pill weight was carried out for HZN and the mean value of randomly selected 20 pills with weight approximately 53 mg was found to be 54.0 ± 0.800 (mean value ± SD).

Phytochemical screening

The preliminary phytochemical screening of HZN was carried in alcoholic, aqueous, and chloroform extracts of HZN to check qualitatively different groups of compounds present, which showed the presence of alkaloids, glycoside, amino acids, carbohydrates, flavonoids, phenols, proteins, and tannins which are presented in Table 3.

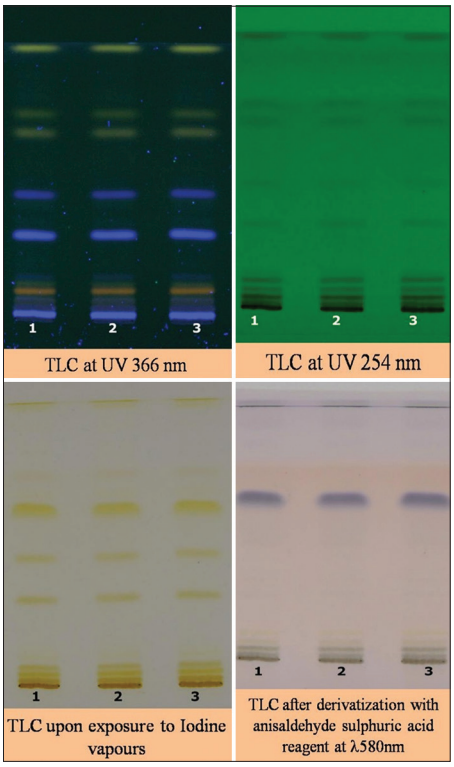

Figure 3: Thin-layer chromatography of alcoholic extract of *Habb-e-Zeequn Nafas*. TLC: Thin-layer chromatography, UV: Ultraviolet

High-performance thin-layer chromatography fingerprint profiling

The HPTLC fingerprint profiling analysis of the alcoholic extract of HZN was carried out using toluene: Ethyl Acetate: Methanol (7:2:1, v/v/*v*) as mobile phase in three different batches, as shown in Figure 3. The TLC plate was developed and detected under four detection systems, namely UV 366 nm, UV 254 nm, upon exposure to iodine vapors and after derivatizing with anisaldehyde sulfuric acid reagent at 580 nm. The spotted TLC plate of alcoholic extract of HZN under UV 366 nm showed nine major spots at Rf values 0.03 (light blue), 0.06 (pink), 0.11 (dark yellow), 0.14 (light blue), 0.31 (light blue), 0.45 (blue), 0.68 (yellow), 0.75 (yellow), and 0.99 (yellow). The TLC plate under UV 254 nm showed nine black spots at Rf values 0.03, 0.06, 0.08, 0.11, 0.31, 0.45, 0.68, 0.75, and 0.99. Under iodine vapors showed eight brown spots at Rf values 0.03, 0.06, 0.08, 0.31, 0.45, 0.68, 0.75, and 0.99 and after derivatizing with anisaldehyde sulfuric acid reagent and heating at 105°C showed four spots under 580 nm at Rf values 0.03 (gray), 0.06 (gray), 0.63 (purple), 0.99 (gray), the results of which are depicted in Figure 3. The information generated with TLC and HPTLC has a potential application in identifying an authentic drug, excluding the adulterants and maintaining the drug's quality and consistency. The corresponding Rf values of the major spots under UV 366 nm, under UV 254 nm, upon exposure to iodine vapor and after derivatizing with anisaldehyde sulfuric acid reagent and heating at 105°C are further positioned at Rf values in densitogram of HPTLC as shown in Figures 4–7 and Table 4.

Safety profile

The safety evaluation parameters such as microbial contamination, aflatoxins contamination, heavy metals, and

Table 2: Physicochemical parameters

Parameters	Values of three batches		
	Batch I (*n*=3), mean±SD	Batch II (*n*=3), mean±SD	Batch III (*n*=3), mean±SD
Total ash (%w/w)	12.776±0.165	12.803±0.091	12.945±0.023
Acid insoluble ash (%w/w)	8.724±0.134	8.571±0.19	8.690±0.07
Alcohol soluble matter (%w/w)	18.036±0.18	17.648±0.14	18.165±0.15
Water soluble matter (%w/w)	26.244±0.39	25.870±0.36	25.605±0.30
Hexane soluble matter (%w/w)	6.946±0.070	6.97±0.120	6.951±0.125
pH of 1% aqueous suspension	6.937±0.006	6.940±0.010	6.933±0.006
pH of 5% aqueous suspension	7.013±0.006	7.020±0.010	7.010±0.010
Loss of weight on drying at 105°C (%w/w)	5.549±0.048	5.442±0.098	5.373±0.086
Friability test	0.0009±0.0	0.0008±0.0	0.0009±0.0
Disintegration time (min)	12	15	13
Uniformity of weight (mg)	53.7	52.9	54.5

SD: Standard deviation

Table 3: Phytochemical analysis results

Phytoconstituents	Test/reagents	Inferences		
		Alcoholic extract	Aqueous extract	Chloroform extract
Alkaloids	Dragendroff's reagent	++	+	−
	Mayer's reagent	+	+	−
	Hager's test	++	−	−
	Wagner's reagent	+	+	−
Glycoside	NaOH test	+	−	−
	Anthraquinone glycoside test	+	−	−
	H_2SO_4 test	+	−	−
Carbohydrates	Fehling's test	++	++	+
	Tollen's test	+	+	−
	Benedict's test	+	+	−
Phenols	Ferric chloride test	++	++	−
	Lead acetate test	+	−	−
	Liebermann's test	+	+	−
Protein/amino acids	Millon's test	+	+	−
	Biuret test	+	−	−
Flavonoids	Shinoda test	+	+	−
	Alkaline reagent test	+	+	−
Tannin	Ferric chloride test	+	+	−
	Lead acetate test	+	−	−
Saponin	Frothing with $NaHCO_3$	+	−	−
Steroids	Salkowski test	+	−	+
	Liebermann-Burchard test	+	−	+
Starch	Potassium iodide solution	+	+	−
Fixed oil		−	−	−

Note: + indicates present, ++ indicates adequately present, − absent.

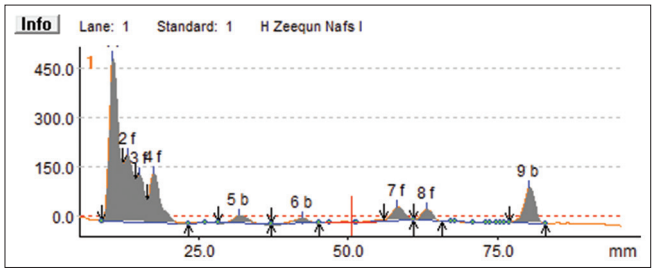

Figure 4: Densitogram of alcoholic extract of *Habb-e-Zeequn Nafas* at ultraviolet 366nm

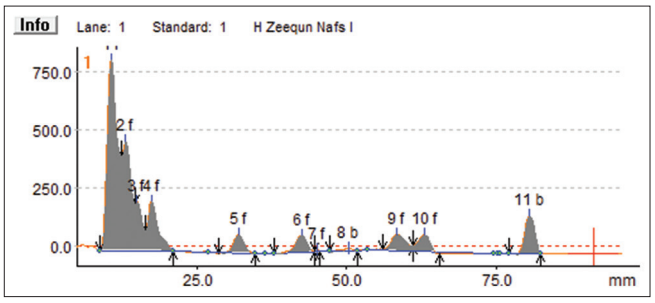

Figure 5: Densitogram of alcoholic extract of *Habb-e-Zeequn Nafas* at ultraviolet 254nm

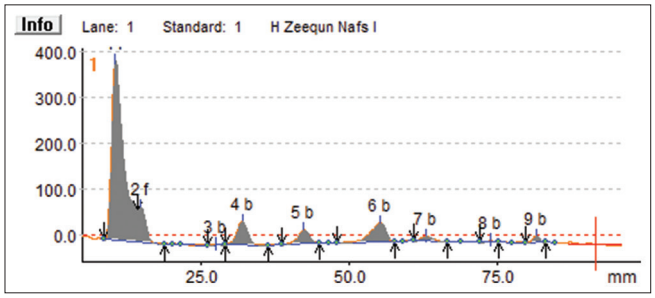

Figure 6: Densitogram of alcoholic extract of *Habb-e-Zeequn Nafas* upon exposure to iodine vapour

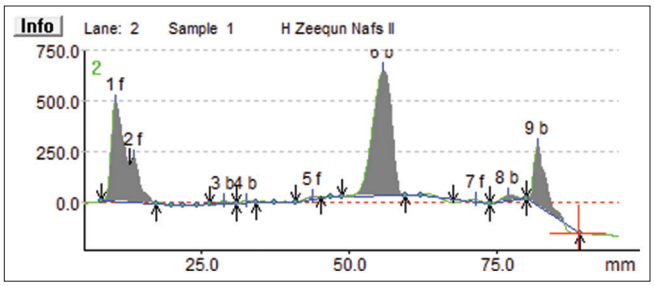

Figure 7: Densitogram of alcoholic extract of *Habb-e-Zeequn Nafas* upon derivatized with anisaldehyde sulfuric acid reagent

pesticide residues ensure the quality, purity, and safety of herbal medicines. The results of total bacterial load were within the permissible limits, and the other parameters were found to be absent in the drug. The analysis of aflatoxins contamination and heavy metal analysis showed that the drug was free from any contaminations. The results

Table 4: Peak list of alcoholic extract of *Habb-e-Zeequn Nafas* under densitogram detection systems

Peak number	Detection systems							
	At UV 366 nm		At UV 254 nm		Upon exposure to iodine vapor		Upon derivatization with anisaldehyde sulfuric acid reagent at 580 nm	
	Y-Pos	Rf	Y-Pos	Rf	Y-Pos	Rf	Y-Pos	Rf
1	10.6	0.02	10.7	0.02	10.6	0.02	10.4	0.02
2	13.1	0.06	13.2	0.06	14.9	0.08	13.4	0.06
3	15.0	0.08	15.0	0.08	27.5	0.25	28.8	0.27
4	17.5	0.12	17.5	0.12	32.0	0.32	32.5	0.32
5	31.8	0.32	32.0	0.32	42.4	0.46	43.7	0.47
6	42.3	0.46	42.5	0.47	55.2	0.63	55.8	0.64
7	58.2	0.68	45.1	0.50	62.9	0.74	71.4	0.85
8	63.1	0.75	50.4	0.57	73.8	0.89	77.0	0.93
9	80.3	0.99	58.4	0.69	81.5	0.99	82.0	0.99
10	-	-	63.0	0.75	-	-	-	-
11	-	-	80.5	0.99	-	-	-	-

Table 5: Microbial load contamination

Parameter analyzed	Results			Permissible limits as per WHO
	Sample I	Sample II	Sample III	
Total bacterial load	9×10^2	9×10^2	10×10^2	Not more than 10^5/g
Salmonella spp.	Nil	Nil	Nil	Nil
Escherichia coli	Nil	Nil	Nil	Nil
Total fungal count	Nil	Nil	Nil	Not more than 10^3/g

Table 6: Aflatoxin contamination

Parameters analyzed	Results			Permissible limits as per WHO
	Sample I	Sample II	Sample III	
B1	Not detected	Not detected	Not detected	Not more than 0.50 ppm
B2	Not detected	Not detected	Not detected	Not more than 0.10 ppm
G1	Not detected	Not detected	Not detected	Not more than 0.50 ppm
G2	Not detected	Not detected	Not detected	Not more than 0.10 ppm

Table 7: Heavy metal estimation

Parameters/ standards analyzed	Results	UPI limits
Lead (Pb)	Not detected	Not more than10\0.0 ppm
Cadmium (Cd)	Not detected	Not more than 0.3 ppm
Arsenic (As)	Not detected	Not more than 3.0 ppm
Mercury (Hg)	Not detected	Not more than 1.0 ppm

UPI: The Unani Pharmacopoeia of India (Anonymous (2016)

of the sample complies within the prescribed limits of UPI and WHO which indicates that the study formulation HZN is safe and can be used therapeutically. These results for microbial load, aflatoxins contamination, and heavy metal analysis are given in Tables 5-7, respectively.

HZN was analyzed for several pesticide residues such as alachlor, aldrin, azinphos methyl dieldrin, bromoprophylate, chlordane (sum of cis and trans), chlorfenvinphos, chlorpyrifos, chlorpyrifos-methyl, cypermethrin (and isomers), DDT (sum of p, p-'DDT, o, p-'DDT, p, p-'DDE, and p, p-'TDE), deltamethrin, diazinon, dichlorvos, dithiocarbamates, endosulfan (sum of isomers and endosulfan sulfate), endrin, ethion, fenitrothion, fenvalerate, fonofos, heptachlor (sum of heptachlor and heptachlorepoxide), hexachlorobenzene, hexachlorocyclohexane isomers (other than ã), lindane (gamma-hexachlorocyclohexane), malathion, methidathion, parathion, parathion-methyl, permethrin, phosalone, piperonyl butoxide, pirimiphos-methyl, pyrethrins and quintozene (sum of quintozene, pentachloroaniline, and methyl, which were detected below the level of quantification (<0.01 mg/kg), as limits are mentioned in The Unani Pharmacopeia of India and WHO guidelines. Therefore, HZN was safe from pesticidal contamination.

Conclusion

There is a surge of interest regarding traditional medicines, and the exponential growth in the industry has led to the rise of demand for these medicines globally. Consequently, the lacunae in maintaining the quality standards of the drug are a major menace, and the solution to this is a

standardization of drugs. HZN was prepared at a laboratory scale to study and generated the standardization data for ascertaining its quality standard. The obtained data determine its identity, purity for quality control and may be used as standards of HZN for future evaluation. The present study explored an integrated approach in respect of HZN that limits the irrational use of the formulation, minimizing quality breach, thereby contributing a step further in enhancing health standards.

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Conflicts of interest

There are no conflicts of interest.

References

1. Anonymous. The Unani Pharmacopoeia of India. Part. 2. Pharmacopoeia Commission for Indian Medicine and Homoeopathy, Ghaziabad: Government of India, Ministry of AYUSH; 2016.
2. Wachtel-Galor S, Benzie IF. Herbal medicine: An introduction to its history, usage, regulation, current trends, and research needs. In: Herbal Medicine: Biomolecular and Clinical Aspects. 2nd ed. Boca Raton (FL): CRC Press/Taylor & Francis; 2011.
3. Sharma AK, Gaurav SS, Balkrishna A. A rapid and simple scheme for the standardization of polyherbal drugs. Int J Green Pharm 2009;3:134-140.
4. Patil A, Patil D, Ansari A, Koli S. Standardization of Unani polyherbal formulation Sufoof-e-mohazzil. Indian J Tradit Knowl 2013;12:265-71.
5. Gupta M, Chaudhary PH, Tawar MG, Shrivastava B. Need and scope of standardization of herbal medicines – A review. Int J Green Pharm 2021;15:346.
6. Nikam PH, Kareparamban J, Jadhav A, Kadam V. Future trends in standardization of herbal drugs. J Appl Pharm Sci 2012;2:38-44.
7. Latif H. Qarabadīn-E-Majīdi. All India UnāniTibb′i Conference; 1986. p. 89.
8. Anonymous. National Formulary of Unani Medicine. New Delhi: AYUSH. Ministry of Health and Family Welfare, Govt. of India; 2008. p. 18.
9. Evans WC. Quality control. In: Trease and Evans Pharmacognosy. 16th ed. SAUNDERS. Edinburgh London New York Philadelphia St Louis Sydney Toronto 2009.Elsevier Limited.; 2009. p.122-6.
10. Mukharjee PK. Quality Control and Evaluation of Herbal Drugs. New Delhi: Business Horizon Pharmaceutical Publication; 2019.
11. Anonymous, World Health Organization. Quality Control Methods for Herbal Materials. Geneva: World Health Organization; 2011.
12. Khandelwal KR. Practical Pharmacognosy. 10th ed. Nirali Prakashan, Abhyudayapragati, 1312, Off J M Road, Shivaji Nagar-411005, Pune; 2002. p. 12-20.
13. Kokate CK, Purohit AP, Gohkale SB. Text book of Pharmacognosy. Nirali Prakashan, Abhyudayapragati, 1312, Off J M Road, Shivaji Nagar-411005, Pune; 2012. p. 107-10.
14. Rasheed NM, Gupta VC. Standardization of a compound Unani herbal formulation "Qurs-e-Luk" with modern techniques. Pharmacognosy Res 2010;2:237-41.
15. Rasheed NM, Nagaiah K, Mehveen A, Rehana A, Waheed MA, Shareef MA. Phytochemical evaluation and quantification of beta-sitosterol in geographical variation of *Withania coagulans* Dunal by HPTLC analysis. Ann Phytomed 2012;1:14-22.
16. Rasheed NM, Srividya GS, Nagaiah K. HPTLC method development and quantification of curcumin content in different extracts of rhizomes of *Curcuma longa* L. Ann Phytomed 2017;6:74-81.
17. Naikodi MA, Nagaiah K, Waheed MA. Phytochemical standardization of oleo resin of *Shores robusta* Gaertn f. (Dipterocarpaceae) with modern analytical technique. Int J Phytomed 2012;4:503-10.
18. Naikodi MA, Waheed MA, Shareef MA, Ahmad M, Nagaiah K. Standardization of the Unani drug – *Myristica fragrans* Houtt. (Javetri) – With modern analytical techniques. Pharm Methods 2011;2:76-82.
19. Rasheed NM, Rehana A, Ahmed M, Husain K, Waheed MA, Arfin S, *et al*. Standardization and HPTLC fingerprinting of a Unani compound formulation Habb-e-Paan. Hippocratic J Unani Med 2014;9:141-52.
20. Anonymous, WHO. Guidelines for Assessing Quality of Herbal Medicine with Reference to Contamination and Residues. India: WHO; 2007.
21. Cid E, Jaminet F. Influence of adjuvants on the dissolution rate and stability of acetylsalicylic acid in tablets. II. Effect of lubrication agents. J Pharm Belg 1971;26:360-8.
22. Saleem M, Shahin M, Srinivas B, Begum A. Evaluation of tablets by friability apparatus. Int J Res Pharm Chem 2014;4:837-40.

Case Report

Effect of *Naṭūl* in the Management of Hypertension (*Ḍight al-dam Qawī*)

Abstract

A sedentary lifestyle has affected the health of people globally, leading to a rise in metabolic disorders such as diabetes mellitus, thyroid, obesity, and hypertension. Contemporary Unani literature correlates the disease with *Imtilā'*, which has symptoms and complications similar to hypertension. Unani medical texts assert that disease arises from imbalances in temperament, treatable through therapeutic methods such as regimen modifications, dietary changes, and pharmaceuticals. *Naṭūl* is a crucial regimen that alleviates stress and facilitates the evacuation of morbid matter (*Ikhrāj-i-mawād*) from various diseases. The present study deals with a male patient age of 42 years, who visited the outpatient department of Ajmal Khan Tibbiya College and Hospital, AMU, Aligarh, UP, India, complaining of knee pain for 1 month, routinely blood pressure (BP) was monitored, and the patient came out hypertensive, patient complains of slight heaviness in head and disturbed sleep occasionally. A 7-day course of plain water *Naṭūl* was administered to the patient, resulting in multiple positive effects, including reduced BP, diminished sensations of heaviness, and enhanced sleep quality.

Keywords: *Hypertension, Imtilā', Naṭūl, Unani*

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Introduction

Hypertension, also known as systemic arterial hypertension, is the most common chronic illness seen in primary care and is a global public health concern. Early death, disability, renal failure, stroke, and cardiovascular problems are all exacerbated by it.[1] The World Health Organization indicates hypertension is determined when blood pressure (BP) readings on 2 separate days consistently show elevated levels.[2] Hypertension is divided into two distinct forms: primary and secondary. Primary hypertension, alternatively referred to as essential hypertension, has an unknown etiology. In contrast, secondary hypertension stems from a variety of medical conditions, including but not limited to chronic renal insufficiency, renovascular disorders, and aberrations in aldosterone production.[3] Ninety-five percent of all instances of hypertension are primary hypertension. Essential hypertension is the result of a chronic increase in arterial pressure caused by a confluence of hereditary or acquired metabolic abnormalities that affect BP regulation and may interact with environmental variables such as lifestyle and nutrition. Insulin resistance, elevated oxidative stress, decreased nitric oxide bioavailability, altered renin–angiotensin system, endothelial dysfunction, increased peripheral vascular resistance, and reduced sodium excretion are some of the metabolic processes that affect BP.[4,5]

Although the Unani medical system makes no explicit reference to hypertension, the literature indicates that Unani practitioners are aware of the condition's origin, clinical signs, and associated conditions. Unani doctors treated conditions such as *Imtilā'* (plethora), which had symptoms and consequences including headache, vertigo, dizziness, and epistaxis comparable to those of hypertension. *Imtilā*' is described as a rise in vascular pressure brought on by either a reduction in the lumen of blood vessels or an increase in blood volume or both.[6] Globally, hypertension is a significant contributor to the disease burden and death from cardiovascular disease. One of the primary objectives of the World Health Organization's 2013 global noncommunicable disease agenda was to reduce the prevalence of hypertension from 2010 to 2025 by 25%.[7] Hypertension is a significant threat to humanity, and allopathic medicines used for its treatment, such as beta-blockers, ACE inhibitors, and calcium channel blockers, produce severe

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side effects, such as bradycardia, sleeplessness, electrolyte imbalance, hyperglycemia, cramps, depression, and vomiting.[8,9]

The six requirements, known as *Asbāb Sitta Ḍarūriyya*, have been modified to incorporate the Ilaj bit Tadbeer. This therapeutic approach is highly successful in both preventing and managing hypertension and *Imtilā'*. Reducing mental strain and worry, getting enough sleep, and increasing physical activity can all help lessen the clinical effects of "*Imtilā'*." For the treatment of *Imtilā'*, the following are some typical regimenal therapies: *Is-hāl* (purgation), *Faṣd* (venesection), *Ta'līq* (leeching), *Ta'rīq* (diaphoresis), and *Naṭūl* (pouring).[10-12] *Naṭūl* is a treatment regime, *Tadbīr* is an Arabic term that means regimen (systematic plan), whereas *'Ilāj* denotes "therapy" or "treatment." Therefore, *'Ilāj bi'l Tadbīr* represents a therapeutic protocol or treatment regimen formulated based on the specific nature or pathophysiological mechanisms of a given ailment. This approach encompasses the management of various lifestyle factors, including nutritional habits, sleep patterns, physical activity, and environmental conditions. Additionally, it incorporates interventional techniques such as *Dalk*, which involves massage therapy, and *Ḥammām*, a traditional Turkish bathing practice.[13] Among these, *Naṭūl* represents a specialized therapeutic approach wherein a concentrated infusion of selected pharmacological agents, plain water, or medicinal oils is applied to specific body regions from a prescribed elevation, targeting particular medical conditions; this is known as *Tanṭīl* (irrigation).[14] This therapy is widely classified into two variants based on the composition of liquids employed for the intended actions: *Naṭūl Ḥār* and *Naṭūl Bārid*. Implementing *Naṭūl* (irrigation) methods improves the efficiency of removing pathological substances (*Ikhrāj-i-Mawād*) and maintaining physiological homeostasis (*Ta'dīl-i Mizāj-i-A'ḍā*). This therapy has beneficial neurological, psychological, and pharmacological effects on various medical conditions. It also improves the local absorption of drugs, which assists in attaining the intended action of the medicine locally.[15,16] The study's conception and execution preserved the *Naṭūl's* traditionally safe and successful therapeutic application (irrigation treatment) while providing a scientific justification. This case report highlights an atypical case of hypertension that was identified during a routine checkup.

Case Report

A 42-year-old male visited the outpatient department of Ajmal Khan Tibbiya College and Hospital AMU in Aligarh, Uttar Pradesh, India, complaining of knee pain lasting for 1 month. Routine BP was monitored during the visit. The patient came out hypertensive after taking a detailed history of symptoms. The patient complained of mild heaviness in the head and occasionally disturbed sleep, which was more of a case of asymptomatic hypertension. The patient was not taking any antihypertensive medicine. The patient underwent treatment for knee joint pain while simultaneously addressing asymptomatic hypertension through the application of plain water *Naṭūl* (irrigation) to the forehead area. The procedure followed good clinical practice guidelines and maintained glycemic levels within normal ranges. *Naṭūl* (irrigation) was applied consistently for 7 days, and the patient was advised to reduce sodium intake as part of his treatment.

General examination: Pulse: 96/min, respiratory rate: 22/min, BP: 170/106 mmHg, temperature: 98.6°F, general condition: fair, pallor: absent, icterus: absent, lymphadenopathy: absent, cyanosis: absent, clubbing: absent, edema: absent.

Systemic examination: The central nervous system, concurrent versions system, Gastrointestinal (GIT), respiratory, and musculoskeletal examinations were normal.

Preparation of the patient

Patient was asked to empty the bowel and bladder before the procedure. A sturdy cotton cord was tied around the head, above the eyebrows and ears, to prevent the oil from reaching the eyes. Cotton pads protected the eyes, and cotton swabs blocked the ear canals. Patient layed in supine position on a table connected to the apparatus with a towel rolled around neck for support.

Therapeutic intervention (during procedure)

During procedure, the medicine was poured smoothly and consistently in a continuous, uniform stream, maintaining a distance of 9 inches (12 angula) between the instrument's tip and the patient's body. The pouring should be done from above, moving downward.

Water was allowed to flow through the gadget on the forehead, producing a continuous stream. The procedure involved maintaining a continuous flow while collecting water extracted from the head. *Naṭūl* was administered for 30 min daily for 7 days. The procedure was performed each day from 10:00 am to 11:00 am. The improvement in BP is recorded and depicted in Table 1 and Figure 1.

Postprocedure

The cords and earplugs were adequately removed. The patient's head was soaked, BP was measured, and instructions were given to wait 30 min before bathing with optimal water. The rest were advised, along with consuming a light, easily digestible meal.

Results and Discussion

This case report describes a patient who presents with knee pain. During the vital examination, the patient was diagnosed with hypertensive with mild heaviness and occasionally disturbed for the last 3 months. The patient, not on any hypertensive medication, was administered

Table 1: Blood pressure record during treatment

Day and time	Systolic blood pressure (before *Naṭūl*) - mmHg	Diastolic blood pressure (before *Naṭūl*) - mmHg	Systolic blood pressure (after *Naṭūl*) - mmHg	Diastolic blood pressure (after *Naṭūl*) - mmHg
Day 1st 10.30 am	155	106	145	96
Day 2nd 10.30 am	156	96	145	90
Day 3rd 10.00 am	145	100	140	95
Day 4th 11.00 am	140	90	135	85
Day 5th 10.30 am	130	85	125	80
Day 6th 10.00 am	125	85	120	80
Day 7th 11.00 am	125	85	125	75

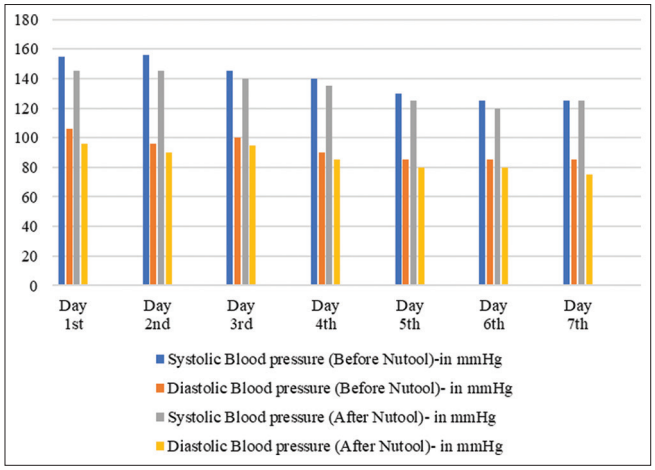

Figure 1: Blood pressure record of the patient during treatment

Naṭūl to evaluate its effectiveness in treating hypertension. It effectively lowered BP, improved sleep quality, and lightened headache. There was a significant difference in both systolic and diastolic BP.

According to previous studies, the autonomic nerve system modified toward parasympathetic dominance shortly after *Naṭūl*.[17] Furthermore, sleep quality improves, as do heart rate and systolic and diastolic BP levels.[18,19] The pressure and vibration that *Naṭūl* administers to the forehead offer therapeutic effects for lowering anxiety, tension, and other negative emotions.[19,20]

Naṭūl has psycho-neuro-immunological effects, including a reduction in noradrenaline levels, a sympatholytic impact, a rise in natural killer cells, and a stimulation of peripheral skin circulation.[17] According to Xu *et al*.'s study, the physiologic effect of Shirodhara, which involves dripping sesame oil on the forehead, may trigger a somatic-autonomic reflex using thermosensors or pressure sensors in the skin or hair follicles via the trigeminal cranial nerve. Due to the relaxed state this technique provided, the psycho-physiological balance was maintained.[21] Tokinobu *et al*. undertook a study to compare the effects of sesame oil Shirodhara (SOS) and warm water Shirodhara on enhancing sleep quality and quality of life (QOL). According to the findings of their investigation, SOS is a safe potential therapy for improving sleep quality and QOL in patients with sleep problems.[22] However, the Shirodhara reduced daytime fatigue.[18] Rajan *et al*. conducted a case study to investigate Shirodhara's impact on biological markers of stress. In their study, lukewarm oil was used as a treatment, resulting in reduced anxiety, irritable symptoms, and serum stress biomarkers.[23]

Conclusion

Research indicates that *Naṭūl* therapy is effective in eliciting relaxation responses and lowering systolic and diastolic pressure levels. In *Naṭūl* therapy, water and decoctions are absorbed via the skin and have curative and therapeutic effects. Further research is needed to determine the impact of *Naṭūl* on hypertension. Incorporating regimen therapy along with standard pharmacological treatments may enhance outcomes and reduce medication dependence in individuals with hypertension.

Informed consent

This single case study did not require approval from an ethical review committee. The patient provided written informed consent for publication of case facts.

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.

References

1. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, *et al.* 2014 evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA 2014;311:507-20.
2. WHO. Global Report on Hypertension: The Race Against a

Silent Killer. Geneva: World Health Organization; 2023. Licence: CC BY-NC-SA 3.0 IGO. World Health Organization; 2023.
3. Joshi UH, Dhabhi KR, Desai TR, Tirgar PR. Investigation of antihypertensive mechanism of Evolvulus alsinoides. J Pharm Res 2012;5:3613-7.
4. Oparil S, Zaman MA, Calhoun DA. Pathogenesis of hypertension. Ann Intern Med 2003;139:761-76.
5. Vasdev S, Stuckless J, Richardson V. Role of the immune system in hypertension: Modulation by dietary antioxidants. Int J Angiol 2011;20:189-212.
6. Razi Z. Kitabul Murshid. New Delhi: Taraqqi Urdu Bureau; 2000.
7. Zhou B, Perel P, Mensah GA, Ezzati M. Global epidemiology, health burden and effective interventions for elevated blood pressure and hypertension. Nat Rev Cardiol 2021;18:785-802.
8. Abid M, Khan S, Khan N, Nazli T, Sajid M. Concept of Zaght al-Dam-Qawi (Hypertension) and its management modalities in unani system of medicine. J Integr Community Heal (ISSN 2319-9113) 2021;10:11-6.
9. Afza S, Khan P, Rehman S, Ayub S, Singh R, Verma RS, *et al*. Comparative study of efficacy and safety of Unani coded drug UNIM-904 with allopathic drug amlodipine in the treatment of essential hypertension. IJUIM 2021;5:1-8.
10. Arif M. Clinical Study on Primary Hypertension and a Comparative Evaluation of Qurs-e-Dawa-us-Shifa with Amlodipine in its Management. Department of Moalejat, Aligarh Muslim University; 2008. p. 35-52.
11. Nisar SS. Clinical Study on Essential Hypertension and Evaluation of the Efficacy of Persiyoshan and Sankhahoi in its Management. New Delhi: Department of Moalejat, Jamia Hamdard; 2012. p. 58-65.
12. Jurjani AH. Zakhira Khowarezam Shahi" part 1 (Urdu translation). Matba Munshi Naval Kishore, Lucknow. 1903:24-5.
13. Nikhat S, Fazil M. A review on dalk (Massage) with special reference to the prescribed mediciations. Tradit Integr Med 2017;2:39-52.
14. Sina I. Al Qanoon Fil Tibb. Vol. 1. New Delhi: Munshi Nawal Kishore; 1879.
15. Azam R, Nisar S, Jabeen A, Jilani S, Jahangir U, Parveen S. Nutool therapy (irrigation) and its practical applications in unani system of medicine. World J Pharm Res 2016;5:599-607.
16. Nikhat S, Fazil M. An analytical review on nutool (Irrigation) therapy. J Drug Deliv Ther 2015;5:1-4.
17. Uebaba K, Xu FH, Ogawa H, Tatsuse T, Wang BH, Hisajima T, *et al.* Psychoneuroimmunologic effects of Ayurvedic oil-dripping treatment. J Altern Complement Med 2008;14:1189-98.
18. Tubaki BR, Chandrashekar CR, Sudhakar D, Prabha TNS, Lavekar GS, Kutty BM. Clinical efficacy of Manasamitra Vataka (an Ayurveda medication) on generalized anxiety disorder with comorbid generalized social phobia: A randomized controlled study. J Altern Complement Med 2012;18:612-21.
19. Kundu C, Shukla VD, Santwani MA, Bhatt NN. The role of psychic factors in pathogenesis of essential hypertension and its management by shirodhara and sarpagandha vati. Ayu 2010;31:436-41.
20. Pokharel S, Sharma AK. Evaluation of insomrid tablet and shirodhara in the management of anidra (Insomnia). Ayu 2010;31:40-7.
21. Xu F, Uebaba K, Ogawa H, Tatsuse T, Wang BH, Hisajima T, *et al*. Pharmaco-physio-psychologic effect of Ayurvedic oil-dripping treatment using an essential oil from Lavendula angustifolia. The Journal of Alternative and Complementary Medicine. 2008;14:947-56.
22. Tokinobu A, Yorifuji T, Tsuda T, Doi H. Effects of ayurvedic oil-dripping treatment with sesame oil versus with warm water on sleep: A randomized single-blinded crossover pilot study. J Altern Complement Med 2016;22:52-8.
23. Rajan S, Shamkuwar MK, Tanwar AK. Impact of shirodhara on biological markers of stress: A case study. J Ayurveda Integr Med 2021;12:178-81.

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Delight	Outward	Gradual
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Fear	Inward	Gradual

Control of Emotions and Restoring Harmony in Unani Medicine

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