

Review Article

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***NUTOOL* (IRRIGATION): AN ANCIENT THERAPEUTIC REGIMEN OF UNANI SYSTEM OF MEDICINE IN LIGHT OF SCIENTIFIC EVIDENCES- A REVIEW**

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Abstract

In Unani system of medicine treatment is done by four modes, these are *Ilaj bi'l ghidha* (dietotherapy), *Ilaj bi'l dawa* (pharmacotherapy), *Ilaj bi'l tadbir* (regimenal therapy) and *Ilaj bi'l yad* (surgery). *Ilaj bi'l tadbir* include therapies such as *Irsal-i-'Alaq* (leeching), *Fasd* (venesection), *Dalk* (massage), *Nutool* (irrigation), *Qay'* (emesis), *Hijama* (cupping), *Idrar-i-bawl* (diuresis), *Ta'riq* (diaphoresis), *Mushil* (purgative), *Kaiyy* (cauterization), *Takmeed* (fomentation), *Hammam* (Turkish bath) etc. *Nutool* therapy or irrigation is a popular and effective mode of treatment in which continuously pouring or dripping of liquid from a certain height over specific sites of body in various diseases. The liquid used can be plain water, decoction of herbs, medicated oils, *khaisanda* (infusion) and milk. It is broadly classified into two types as *Nutool Harr* (hot irrigation) and *Nutool Barid* (cold irrigation). *Nutool* is used to achieve the dispersion of morbid matter, to alter the temperament, anti-inflammatory, tonic and to improve the defence mechanism of body to get the desired neurological, psychological and pharmacological effects. It also increases the local absorption of drugs through skin thus helps in getting the desired action of medicine

locally. *Nutool* therapy is most commonly used in treating out the neurological problem, musculoskeletal problem, renal and reproductive disease etc. Several Unani drug formulations have been prescribed in Unani literature which is used in *Nutool* therapy. This paper aims to review the benefits and uses of *Nutool* as in the classical literature, and its growing importance in present scenario in the light of scientific evidence.

Keywords: *Ilaj bi'l Tadbir*, *Nutool*, psychological, temperament, Unani

1. Introduction

Ilaj bi'l Tadbir (regimenal therapy) is one of the four modes of treatment in Unani system of medicine. The other three are *Ilaj bi'l ghidha* (dietotherapy), *Ilaj bi'l dawa* (pharmacotherapy) and *Ilaj bi'l yad* (surgery). Literally *Ilaj* means "treatment" or "therapy" and *Tadbir* which is an Arabic word means "regimen" or "systemic plan". Therefore *Ilaj bi'l Tadbir* means treatment through a regimen which is decided according to the pathogenesis of the disease. The goal of the *Ilaj bi'l tadbir* method is to attain total physical, mental, or spiritual well-being naturally, to strengthen the body's defence mechanisms and to improve the body's constitution through *tanqiya* (elimination) or *imala* (diversion) of morbid humours through the use of specific techniques, tools and procedures that have been prescribed by renowned Unani physicians like *Buqrat* (Hippocrates), *Jalinus* (Galen), *Zakariya Razi* (Rhazes) and *Ibn Sina* (Avicenna) etc like *Dalk* (Massage), *Hammam* (Turkish Bath), *Inkibab* (Inhalation), *Fasd* (Venesection), *Ta'liq* (Leeching), *Hijama* (Cupping), *Kaiyy* (Cauterization), *Qay'* (Emesis) etc (1, 2). These therapies can be utilized separately or in combination with one another or into other modes of treatment, these are the most well-known techniques of "detoxification." One of the well known methods of *Ilaj bi'l Tadbir* is *Nutool* (irrigation) which literally means to pour decoction or a liquid drug on affected site (3). *Nutool* is done by continuously pouring of water, liquid drugs e.g. *Joshanda* (decoction of herbs) or *khaisanda* (infusion), milk and medicated oils from a certain height over the specific sites of the body (4,5). It produces properties of *murattib* (moistness), *munawwim* (which induces sleep), and *muqawwi-i-a'da* (which strengthens the organ) which have led ancient physicians to try it with positive results (6). According to *Ibn Sina* (Avicenna) who was renowned Iranian philosopher and physician (980-1037 A.D) of USM, *Nutoolat* are also known as *Sakubat* (7). The primary difference between *Sakub* and *Nutool* is the distance at which the medications are dripped or poured; *Sakub* refers to the process where the liquid are poured from a short distance, while *Nutool* refers to a procedure where the distance is more (8).

1.1 Types of *Nutool*

There are 2 types of *Nutool* according to the nature of liquid used are (9,10):

- *Nutool barid* (cold irrigation), when the temperature of the pouring liquid drug is low or has a cold temperament and cold water also.
- *Nutool harr* (hot irrigation), when the temperature of the pouring liquid drug is more or has hot temperament and hot water also.

Another type of *Nutool* that is mentioned is *Nutool-i-muqawwi* (tonic irrigation), which is used to nourish any weak organ and both *Nutool-i-harr* and *Nutool-i-barid* are used in this type of *Nutool* alternatively (11,12).

2. Physiological Benefits of *Nutool*

According to Unani Classical literature, it helps to attain the following benefits (5,13):

- To disperse the morbid matter from the affected part (*Tahlil-i-mawad*)
- To rectify the temperament of the organ (*Ta'dil-i-Mizaj*)
- To enhance the blood supply
- To relieve pain by softening of organs (*Musakkin-i-Alam/ Taskin al-Waja'*)
- To avoid congestion (*Imtila*)
- To relieve fatigue (*Waja' I'ya'i*)
- To evacuate waste products through skin/detoxifying effects (*Tanqia-i-Mawad*)
- As nerve tonic (*Muqawwi-i-a'sab*)
- As a antispasmodic (*Dafi'-i-Tashannuj*)
- To make the organ stronger (*Muqawwi-i-a'da*)
- Producing moisture in the organ (*Rutubat i-a'da*)
- To produce mental comfort and peace of mind (*Sukoon-i-nafsani*)

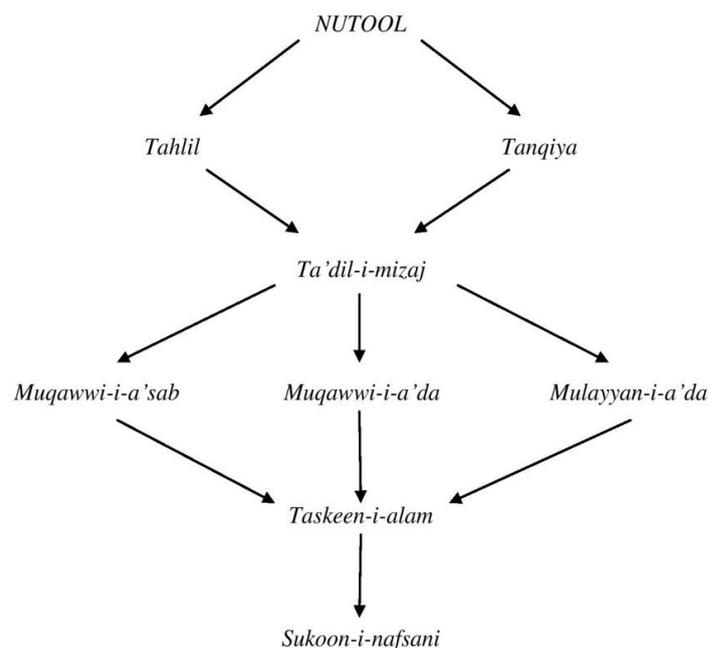


Figure 1: Flowchart showing the mechanism of action and physiological benefits of *Nutool* in psychological illness

3. Procedure of *Nutool*

Oil or any liquid drug e.g. *Joshanda* (decoction of herbs) or *khaisanda* (infusion), milk, plain water (hot or cold) is continuously poured in rhythmic flow on any specific organ from a height (approx.65cm) for 20-30 minutes (5, 7, 14), though the classical texts do not mention any specificity.

The specific site is kept uncovered in order to perform *Nutool*. *Nutool* should ideally be performed in a supine position whenever feasible. It is usually carried out on daily basis or on consecutive or alternate days to attain sustained results. Then, either done with a container or a pot kept above or with the aid of more recent equipment, medicine or oil at the appropriate temperature is poured. If done on forehead then eyes should be protected with gauze.

The duration of therapy varies depending on how chronic the disease is. It is then gradually tapered off as signs and symptoms improve.(15)



Figure 2: Procedure of Nutool

4. Equipments Required For *Nutool* in Modern Times

Following equipments are generally required for performing *Nutool* now-a-days (16):

- Gas stove to heat the liquid in case of *harr Nutool*.
- Container for collecting leftover liquid below the table to reuse this on same patient.
- A pot or container to heat the liquid on gas stove.
- *Nutool* table to lie down patient in supine position.
- Rubber sheet to spread on *Nutool* table.
- *Nutool* pot above the table for dripping of liquid from it onto affected organ.
- Towel or clean cotton cloth to wipe the excess liquid from body part after the procedure.
- Cotton swab to cover eyes if done on forehead.
- Gloves for doing *Nutool*.
- Apron for doctor.

5. Mechanism of Action

In *Harr Nutool* (hot irrigation) process, the affected region warms up leads to dilatation of blood vessel so increase in blood circulation and opening of skin pores to achieve *tahlil-i-mawad* (dissolution of matter) and *taghziy-i-a'da* (allows more nutrients to enter the organ), *tanqiya-i-mawad* (evacuation of matter), *taskin-i-alam* (analgesia), *tanqiya-i-a'sab* (nervine Tonic), *ta'dil-i-mizaj* (temperamental normalization) (16).

In *Barid Nutool* (cold irrigation) process, the affected region temperature decreases which leads to constriction of blood vessels so decrease in blood circulation and closing of skin pores to achieve *imala-i-mawad* (diversion of matter), *taskin-i-alam* (analgesia), *taqwiyyat-i-a'sab* (nervine tonic), *ta'dil-i-mizaj* (temperamental normalization), decrease the fluid loss (16).

In *Nutool-i-muqawwi* (tonic irrigation) both *Nutool-i-harr* and *Nutool-i-barid* are used in this type of *Nutool* alternatively to improve the circulation of the part or organ of the body. It provides nutrition to the malnourished organ by improving circulation and also acts as a *muqawwi-i-a'sab* (nervine tonic) (11).

Nutool induces feeling of relaxation similar to meditation which is shown by decreased heart rate, bradycardia, slowing of alpha waves on EEG, lowered sympathetic tone, CO₂ excretion, and decreased tidal volume. *Nutool* have psychoneuroimmunologic effects which causes altered state of consciousness which also leads to anxiolysis when done on forehead (12).

6. Drugs Used in *Nutool* in Different Diseases & Sites

SYSTEM	DISEASE	DRUGS	SITE
CENTRAL NERVOUS SYSTEM	<i>Suda'harr</i> (choleric Headache)	<i>Tukhm-i-Kahu</i> (<i>Lactuca sativa</i> Linn), <i>Isapghol</i> (<i>Plantago ovate</i> seeds), <i>Jau</i> (<i>Hordeum vulgare</i>), peel of <i>Kaddu</i> (<i>Laginaria siceraria</i>), <i>Banafsha</i> (<i>Viola odorata</i>), <i>Khatmi</i> (<i>Althea officinalis</i>), <i>Gul-i-Nilofar</i> (<i>Nelumbium speciosum</i>). <i>Banafsha</i> (<i>Viola odorata</i>), <i>Jau</i> (<i>Hordeum vulgare</i>), <i>Kaddu</i> (<i>Laginaria siceraria</i>), <i>Khurfa</i> (<i>Portulaca oleracea</i>), the root of <i>Luffah</i> (<i>Atropa belladonna</i>), <i>Khatmi</i> (<i>Althea officinalis</i>), <i>Tukhm-i-Kahu</i> (<i>Lactuca sativa</i> Linn), <i>Katan</i> (<i>Linum usitatissimum</i>), peel of opium (<i>Papaver somniferum</i>), <i>Barg-i-Bed</i> (<i>Salix alba</i>), <i>Gul-i-Gulab</i> (<i>Rosa centifolia</i>) (17). <i>Jau</i> (<i>Hordeum vulgare</i>), <i>Gul-i-Nilofar</i> (<i>Nelumbium speciosum</i>), <i>Khubbazi</i> (<i>Malva sylvestris</i>) and peel of opium (<i>Papaver somniferum</i>). Oil of <i>Rogan-e-gulab</i> (<i>Rosa damascena</i>), <i>Gul-e-surkh</i> (<i>Rosa damascena</i>) and vinegar (<i>Sirka</i>) (9).	Forehead
	<i>Suda'barid</i> (Phlegmatic headache)	<i>Barg-i-Ghar</i> (<i>Laurus nobilis</i>), <i>Qaisum</i> (<i>Artemisia abrotanum</i>), <i>Hulba</i> (<i>Trigonella foenum</i>), wheat husk, salt, <i>Babunah</i> (<i>Matricaria chamomile</i>), <i>Ustukhuddus</i> (<i>Lavendula stoechas</i>), <i>Barg-i-turanj</i> (<i>Citrus modica</i>), <i>Badranjboya</i> (<i>Melissa parviflora</i>), <i>Beikh-i-karafs</i> (<i>Carum roxburghianum</i>), <i>Gul-i-Gulab</i> (<i>Rosa centifolia</i>), <i>Sazij</i> (<i>Cinnamomum obtusifolium</i>), <i>Qaranfal</i> (<i>Syzygium aromaticum</i>), <i>Badyan</i> (<i>Foeniculum vulgare</i> Mill), <i>Beikh-i-badyan</i> (<i>Foeniculum vulgare</i> Mill), <i>Pudina</i> (<i>Mentha arvensis</i>), <i>Suddab</i> (<i>Ruta graveolence</i>), <i>Hasha</i> (<i>Thymus vulgaris</i>) (17).	Forehead
	<i>Suda'khumari</i> (Alcoholic headache)	Mixture of <i>Gulab</i> (<i>Rosa damascena</i>), <i>Vinegar of Sirka angoori</i> (<i>Vitis vinefera</i>) (18).	Forehead

<i>Sakta</i> (Shock)	<i>Soya (Anethum sowa), Barg-i-utraj (Citrus medica vartydica), Sudaab (Ruta graveolans), Satar (Zatoria multiflora), Marzangosh (Origanum majorana), Babunah (Matricaria chamomilli), Aklelul mulk (Trigonella uncata), Pudina (Mentha piperita) and Hasha (Thymus vulgaris)</i> are taken in equal quantity (18).	Forehead
<i>Shaqiqqa</i> (Migraine)	<i>Banafshah (Viola odorata), Khashkhash (Papaver somniferum)</i> and wheat husk (17).	Scalp and head
<i>Sarsam</i> (Meningitis)	<i>Barg-i-rehan (Ocimum sanctum), Shibt (Anethum sowa), banafshah (Viola odorata), Babunah (Matricaria chamomile), Gul-i-nargis (Narcissus tazetta)</i> are the ingredients of a decoction prepared and mixed with <i>Roghan-i-babunah, Roghan-i-kunjad, Roghan-i-badam</i> and milk (17). <i>Joshanda of Khashkhash (Papaver somniferum) as Nutool</i> is suggested for inducing mental relaxation and for reducing inflammation when combined with <i>Babunah (Matricaria chamomile)</i> (19).	Forehead
<i>Malankhuliya</i> (Malenchoia)	<i>Susan (Iris florentina), Shibt (Anethum sowa), nakhunah (Trigonella uncata) and babunah (Matricaria chamomile).</i> A lukewarm decoction of <i>Nakhunah (Trigonella uncata), Babunah (Matricaria chamomile), Barg-i-badranjboya (Nepeta hindostana), flowers of henna (Lawsonia alba), Barg-i-saru (leaves of Cupressus semepervirens), Jauzal-saru (Fruit of Cupressus semepervirens), Ushna (Permelia perlata), Barg-i-khubazi (Malva sylvestris), Barg-i-khatmi (Althea officinalis)</i> and wheat husk (17).	Head
<i>Sahr</i> (Insomnia)	<i>Gul-i-Nilofar (Nelumbium speciosum), Gul-i-Gulab (Rosa centifolia), Banafshah (Viola odorata), Tukhm-i-Kahu (Lactucasativa Linn), Kishniz Sabz (Coriandrum sativum), Khashkhash (Papaver somniferum) and Jau (Hordeum vulgare)</i> (16,20).	Forehead
<i>Falij</i> (Hemiplegia)	A hot mixture of <i>Roghan-i-gul</i> and <i>Sirka</i> (21).	Head
<i>Nisyan</i> (Amnesia)	<i>Nakhuna (Trigonella uncata), Babunah (Matricaria chamomile), Qurtum kofta (Carthamus tictorious, ground), Tukhm-i-khatmi (Althea officinalis seeds) or Barg-i-khatmi (leaves</i>	Head

		of <i>Althea officinalis</i>) (17,21).	
	<i>Duwar</i> (Vertigo)	<i>Marzanjosh</i> (<i>Origanum majorana</i>), <i>satar</i> (<i>Thymus serpyllum</i>), <i>Babunah</i> (<i>Matricaria chamomile</i>), <i>Nakhuna</i> (<i>Trigonella uncata</i>) and <i>Rehan</i> (<i>Ocimum basilicum</i>) (17).	Head
	<i>Sar'</i> (Epilepsy)	<i>Marzanjosh</i> (<i>Origanum majorana</i>), <i>Babunah</i> (<i>Matricaria chamomile</i>) and <i>Nakhunah</i> (<i>Trigonella uncata</i>) <i>Shibt</i> (<i>Anethum sowa</i>) and <i>Branjasif</i> (<i>Artemisia abrotanum</i>) may also be added (22).	Head
	<i>Maniya</i> (Mania)	<i>Banafsha</i> (<i>Viola odorata</i>), <i>Gul-i-khatmi</i> (<i>Althea officinalis</i>), Sweet basil (<i>Ocimum basilicum</i>), <i>nilofar</i> (<i>Nelumbium speciosum</i>), <i>Jau</i> (<i>Hordeum vulgare</i>), <i>Barg-i-baid</i> (<i>Salix alba</i>), <i>Gul-i-Gulab</i> (<i>Rosa centifolia</i>), <i>Barg-i-Kahu</i> (<i>Lactuca sativa</i>), <i>Barg-i-Makoh</i> (<i>Solanum nigrum</i>) (17,23).	Head
RESPIRATORY SYSTEM	<i>Dha al-Janb</i> (Pleurisy)	Waram water <i>Nutool</i> is prescribed which gives relief in pain (17).	Affected site
GENITO-URINARY SYSTEM	<i>Waram al-Mathana</i> (Cystitis)	<i>Roghan-i-Gul</i> (Rose oil) (17).	Pelvic region
	<i>Hisat-i-Kulliya</i> (Renal Stone)	<i>Gul-i-teisu</i> (<i>Butea monosperma</i>), <i>Tukhm-i-kharpaza</i> (<i>Cucumis melo</i>), <i>Gul-i-kasam</i> (<i>Carthamus tictorius</i>), <i>Khar-i-khasak</i> (<i>Tribulus terrestris</i>), <i>tukhm-i-khyarain</i> (<i>Cucumis sativus</i> seed) (17).	Site of pain
	<i>Hisat-i-Masana</i> (Urinary Bladder Stone)	<i>Babunah</i> (<i>Matricaria chamomile</i>), <i>Khatmi</i> (<i>Althea officinalis</i>), <i>Nakhunah</i> (<i>Trigonella uncata</i>), and wheat husk (17).	Pelvic region
	<i>Waram al-thadi</i> (Mastitis)	<i>Babunah</i> (<i>Matricaria chamomile</i>), <i>Hulba</i> (<i>Trigonella foenum graecum</i>), <i>Shibt</i> (<i>Anethum sowa</i>), <i>Qaişum</i> (<i>Artemisia absinthium</i>) and <i>Jund baidastar</i> (<i>Castoreum</i>) (8) <i>Sirka</i> (<i>Vinegar</i>) with hot water (24).	Affected area

	<i>Waram ghudda-i-madhi</i> (Prostatitis)	<i>Nakhunah (Trifolium indicum), Babunah (Matricaria chamomilla), Namaklahori (Sodium Chlorate), Makoh (Solanum nigrum) & Gule tisu (Butea monosperma)</i> (25).	Prostate
MUSCULO-SKELETAL SYSTEM	<i>Waja 'al-Mafaşil</i> (Arthralgia)	<i>Makoh (Solanum nigrum)</i> and <i>Khar-i-khasak (Tribulus terrestris)</i> is used and followed by <i>dalk-i-layyin</i> of <i>Roghan-i-Gul</i> (8).	Affected area or joint
OTHERS	<i>Sa'fa</i> (Alopecia)	<i>Nutool</i> with a decoction of <i>jaw (Hordeum vulgare)</i> and <i>khashkahsh (Papaver somniferum seeds)</i> can be done if it is due to excessive heat (21).	Head

Table 1: Formulation and sites of *Nutool* for various diseases

7. Some Other Clinical Uses of *Nutool*

Apart from the diseases mentioned in the table 1, *Nutool* is also done in the following diseases (22,26–28):

- Headache due to gaseous matter (*Suda'rihi*)
- Coma (*Subat*)
- Retention of urine (*Ihtibas al-bawl*)
- Dysuria (*Usr al-bawl*)
- Orchitis (*Waram al-Khusyatayn*)
- Endometritis (*Waram al-rahim*)
- Conjunctivitis (*Ashob-i-chashm*)
- Pleuritis (*Dhat al-janb haqiqi*)
- Deafness (*Waqr*)
- Anxiety & Depression (*Izterab-i-nafsani*)

8. Recent Researches to Demonstrate the Clinical Efficacy of *Nutool*

Scientific studies have demonstrated very promising results of *Nutool* due to its holistic, calming, relaxing effect with both physical and psychological benefits. The studies mainly show its effect on psychiatric illnesses and those involving nervous system. Some of them are as follows:

In Case Series to evaluate role of *Nutool* therapy on headache frequency, MIDAS (Migraine Disability Assessment Score) headache intensity by VAS in diagnosed cases of *Shaqiqa* (Migraine) in Delhi by Adil et al. in 2022, it was shown that use of *Roghan-e-Gul* for *Nutool*

over forehead induces a feeling of relaxation and effectively reduces the intensity of pain in migraine (29).

A study to find out the effect of *Nutool* in *Sahar* (Primary Insomnia) showed long time efficacy and safety in management of primary insomnia irrespective of liquid used in *Nutool*. But additional improvement was seen on patients where *Nutool* was done with medicated oil (*Roghan-e-banafsha*) due to its properties like *ta'dil-i-mizaj-i-a'da*, *tarteeb*, *tanwim*, *taskin*, *tahallul* which relaxes the patient done by Samreen Khan in 2019 (20).

A combination therapy of *Nutool* and *dalak* by *Roghan-e-Kaddu* and pharmacotherapy by using *Itrifal Ustukhuddus*, *Itrifal Kishnizi* and *Jawarish Shahi* has also shown complete relief from the sign and symptoms of migraine without aura in a study done by Athar Parvez Ansari et al. in 2018 (30).

In study of an interventional trial conducted to evaluate efficacy of *Nutool* therapy in control of Primary insomnia among elderly using Structured Insomnia schedule by Jahan M et al. in 2014 had shown comparable effects in various parameters of insomnia in both control and test group by the virtue of sheer streaming effect of *Nutool* on the forehead irrespective of the liquid used. In addition the efficacy was further enhanced in test group by using *Roghan-e-Banafsha* and *Roghan-e-Gul* (6).

In case study to find out the effect of *Nutool* in a case of chronic prostatitis/chronic pelvic pain syndrome by Ansari et al. in 2019 showed good results due to anti-inflammatory and soothing nature of lukewarm water and combination of herbs i.e. *nakhunah* (*Trifolium indicum*), *babuna* (*Matricaria chamomilla*), *namak lahori* (*Sodium Chlorate*), *makoh* (*Solanum nigrum*) & *gule tisu* (*Butea monosperma*) in *Nutool* over affected part (25).

9. Conclusion

It can be concluded that *Nutool* is a highly effective method of treatment in *Ilaj bi'l Tadbir* for a variety of illnesses especially neurological/psychiatric/psychological diseases. Compared to oral medication, this regimen is safe, affordable, easy to administer and less likely to cause side effects and hence it's a patient-friendly regimen. *Nutool* therapy has shown its benefit due to the sheer streaming effect of liquid on body part irrespective of the liquid used. The effect can be further enhanced by using drugs. It has also shown highly encouraging results in clinical studies due to its holistic, calming and relaxing nature of treatment. Now-a-days with the increasing prevalence of psychological and neurological disorder, further detailed research is needed for this age-old therapy to evaluate the

therapeutic efficacy in various other diseases. Additionally, evaluation of the efficacy of the Unani formulation used in this therapy should also be conducted.

Statement of conflict of interest-

The authors declare that they have no conflicts of interest.

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