

Available online on 15.09.2015 at <http://jddtonline.info>**Journal of Drug Delivery and Therapeutics**

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## RESEARCH ARTICLE

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Received 25 June 2015; Review Completed 29 July 2015; Accepted 19 Aug 2015, Available online 15 Sep 2015

**ABSTRACT**

*Nutool* therapy, also known as irrigation is a popular mode of treatment in Unani medicine which refers to the pouring or dripping of drugs on body parts. Usually decoctions of drugs and medicated oils etc are used for this purpose. The benefits achieved are an amalgamation of neurological effects, psychological effects and pharmacological actions of the drugs used. *Nutool* plays an especially important role in diseases where it is required to alter the temperament of an organ, to disperse toxic humors or to strengthen an organ. The procedure is carried out on a daily basis for a fortnight to achieve sustained results. It is specifically useful as an adjuvant treatment in the management of CNS disorders like headache, insomnia, migraine, amnesia, melancholia, vertigo, epilepsy etc; also in certain other disorders like cystitis, mastitis, arthralgia etc. For this purpose, specific drug formulations have been prescribed in Unani texts to be used for *nutool* therapy. The need of the hour is to further evaluate these age-old prescriptions on modern parameters.

**Keywords:** *Nutool*, *Sukoob*, anxiolysis, temperament.**INTRODUCTION**

*Nutool* (irrigation) or pouring of medication over various body parts is one of the favoured modes of treatment in Unani medicine under *Ilaj bil Tadbeer*. It is a unique therapy in which medicated oils or decoction of herbs are poured continuously for a predetermined period of time over a specific area of the body.<sup>1</sup> The therapeutic effects are thought to be brought about, in part, by the medicinal action of the drug used, and more importantly, by the mechanical effect of the dripping of oil or decoction. The term *sukoob* is used synonymously with *nutool* at some places.<sup>2</sup> The basic distinction between *nutool* and *sukoob* is of the distance from which the drugs are dripped-if the drugs are poured from a close distance, the procedure is known as *sukoob*, and if the distance is increased, it is known as *nutool*.<sup>3</sup>

Ibn Sina states that it is one of the best treatment when resolution of inflammation is required; and also in those cases where the temperament of a part of the body has to be altered along with strengthening it. Therefore, *nutool-e-muqawwi* (*nutool* done for the purpose of strengthening an organ) is initiated with warm drugs if there is no sign of inflammation, and then *nutool* with cold drugs is done. However, if any inflammation is present, the therapy should be initiated with cold drugs so that the inflammation is resolved, and then warm drugs are used. For the same reason, the treatment of erectile dysfunction also includes the *nutool* of external genitalia alternatively with hot and cold water.<sup>2</sup> The

rationale behind this is that the warmth relaxes the tissues and helps in better oxygenation, while the cold drugs used after that helps in restoring normal tonicity.

For the purpose of *nutool*, the affected area should be kept uncovered. Wherever possible, *nutool* is preferably done in supine position. Then medication or oil at the recommended temperature is poured manually or with the help of newer apparatus available, continuously for about 20-45 minutes from a height of approximately 0.5 ft. If *nutool* is done on the forehead, care should be taken to cover the eyes with sterile gauze to prevent spilling of medication into the eyes.<sup>4</sup>

**PHYSIOLOGICAL EFFECTS OF *NUTOOL***

The basic underlying idea behind *nutool* therapy in Unani texts is that it helps in dissolution of wastes from the diseased part, modifies the local temperament and helps in dispersing toxic substances from the diseased area.<sup>1</sup> The clinical uses of *nutool* in Unani medicine usually comprise of one or more of the following indications: first, to disperse toxic matter, the drugs used for *nutool* for this purpose are always used at a warm temperature; second, for analgesia and relaxing of tissues, such drugs should be of a warm temperament; third, to cause vasoconstriction, for instance, *nutool* with cold water may be done on an injury to prevent the development of inflammation. The cold compression advised in modern day medicine for acute inflammations or after surgeries is done for the same

reason. Fourth indication is strengthening of tissues for which drugs are used at a lower temperature.<sup>2</sup>

With the recent advances in medical science, however, there has been a much deeper understanding into the intricacies of physiological changes induced by *nutool*. The simple act of pouring of drugs from a distance has multidimensional effects which include stimulation of different nerve plexus, glands and brain cells<sup>5</sup>; it also induces relaxation similar to that in meditation which is reflected by decreased heart rate, bradycardia, lowered sympathetic tone, slowing of alpha waves on EEG, decreased tidal volume and CO<sub>2</sub> excretion.<sup>6</sup> *Nutool* on forehead is especially known to have psychoneuroimmunologic effects which lead to an altered state of consciousness which also leads to anxiolysis. Biochemical changes include suppression of noradrenaline, decrease of PMN/lymphocyte ratio and alpha receptors which suggest a sympathetic suppression rather than parasympathetic activation. The impulses from the forehead cause a stimulation of the trigeminal nerve and also a somato-autonomic reflex and changes in levels of various neurotransmitters including serotonin and catecholamine, resulting in sympathetic suppression and physioimmunologic changes of peripheral circulation and natural killer cell activity.<sup>7</sup>

A more detailed study into this effect reveals that the stimulus from the skin over the forehead is conveyed by the ophthalmic branch of trigeminal nerve to the reticulospinal neurons. A small fraction of this causes an immediate motor response and much of the remaining is stored for future control of motor activities. Therefore, repeated stimuli are needed for consolidation of this information which needs 5-10 minutes for minimal consolidation and about one hour for stronger consolidation. This explains the practice of carrying out *nutool* for about 45 minutes. Further, to achieve permanent effect of *nutool*, there must be change in response characteristics of different neuronal pathways, which may be brought about by regular therapy for a fortnight. Regular or continuous pressure input generates continuous impulse to the central nervous system (CNS) thereby continuously stimulating the CNS. Practicing this procedure regularly for 15 days may lead to long lasting stimulation of the CNS.<sup>5</sup>

Although proper scientific studies are not available on the therapeutic benefits of *nutool* on other body parts, it is observed that *nutool* induces a feeling of relaxation. Also, the decoction or oils used for *nutool* are absorbed through the skin which has curative benefits. Therapeutic benefits are also brought about by the use of specific drugs for *nutool*. It was observed in a recent study that lavender oil has better and more potent anxiolytic effects when dripped on forehead as compared to plain sesame oil. It was hypothesized that the difference is due to the presence of relaxing essential oils in lavender.<sup>8</sup> Another controlled study on *nutool* therapy compared the effects of *nutool* with *roghan-e-banafsha* and *roghan-e-gul* on primary insomnia patients. Although the severity of insomnia decreased in both the groups, yet it was observed that the use of the above-mentioned oils significantly

enhanced the efficacy of the therapy as evidenced by the improvement in sleep latency, day-time somnolence, dysfunctioning and mental stress and depression.<sup>9</sup>

## PRACTICAL APPLICATIONS IN UNANI MEDICINE AND SCIENTIFIC VALIDATION

Disease management in Unani medicine takes into account the nature and pathology of the disease, general constitution and nature of the patient; with special emphasis on the temperament. All diseases are known to produce certain specific humoral and temperamental changes in the human body which may be identified by the *ajnas-e-ashra* (ten signs) described in the texts.<sup>10</sup> Therefore, drugs are prescribed after taking into account the temperamental abnormalities of the patient, which is known as *ilaj bil zid*, i.e., the drugs to be prescribed are such that they produce a temperamental change opposite to that induced by the disease condition.<sup>11</sup> Below listed are some of the common disease conditions and the recommended formulations of *nutool* as an adjuvant therapy.

**Headache:** In *Suda'-e-haar* (headache caused due to increased heat/hot humors)-the following are recommended:

Make a decoction of *Jaw* (*Hordeum vulgare*), peel of *kadu* (*Laginia siceraria*), *Tukhme kahu* (*Lactuca sativa* Linn seed), *isapghol* (*Plantago ovate* seeds), *Banafsha* (*Viola odorata*), *Khatmi* (*Althea officinalis* seed), *neelofer* (*Nelumbium speciosum*) in water and pour it over the scalp. Another prescribed treatment is a decoction of *Banafsha* (*Viola odorata*), grinded *jaw* (*Hordeum vulgare*), ground seeds of *kadu* (*Laginia siceraria*), *Khurfa* (*Portulaca oleracea*), *Katan* (*Linum usitatissimum*), peel of opium (*papaver somniferum*), root of *luffah* (*Atropa belladonna*), *Khatmi* (*Althea officinalis* seed), *Tukhme Kahu* (*Lactuca sativa* Linn seed), *barg-e-bed* (leaves of *Salix alba*), rose (*Rosa centifolia*). The decoction is then poured over the scalp of the patient, and then followed by *nutool* with *roghan-e-banafsha* mixed in milk. This is especially recommended for headache caused by hot humors and associated insomnia.<sup>12</sup>

It is also advisable to make a decoction of *gul-e-neelofer* (*Nelumbium speciosum*), *khubbazi* (*Malva sylvestris*), peel of opium (*papaver somniferum*) and ground *Jaw* (*Hordeum vulgare*) and use it for *nutool* on the head. In all types of headache, *nutool* is done on the basis of *ilaj bil zid*, i.e., if headache is caused due to humors having a hot temperament, medications having cold temperament should be used for *nutool*.<sup>12</sup>

In *suda-e-barid* (headache caused due to a predominance of cold temperament or cold humors), the following medications are recommended for *nutool* on the head:

*Ustokhuddoos* (*Lavendula stoechas*), *barg-e-ghaar* (*Laurus nobilis*), *Qaisoom* (*Artemisia abrotanum*), *Hulba* (*Trigonella foenum* seed), wheat husk, table salt, *babuna* (*Matricaria chamomile*), *barg-e-turanj* (*Citrus modica* leaves), *Badranjboya* (*Melissa parviflora* herb), *Sazij* (*Cinnamomum obtusifolium* leaf), *qaranfal*

(*Syzygium aromaticum*), *badyan* (*Foeniculum vulgare* Mill), *bekh-e-badyan* (root of *Foeniculum vulgare* Mill), *bekh-e-karafs* (root of *Carum roxburghianum*), *rose*, *puđina* (*Mentha arvensis*), *sudab* (*Ruta graveolence*) and *hasha* (*Thymus vulgaris*)-take all medicines in equal amount and boil them in water. Use this water for *nutool* on the forehead, it can also be used for inhalation of vapours, fomentation after dipping a cloth in it, and the medicine left after boiling can be made into a paste and used for anointing on the head.<sup>12</sup>

**Migraine:** In a patient of migraine having a hot temperament (*shaqiqa haar*), it is advisable to first expel the disease-causing matter with the prescribed medicines, if the disease still persists, then make a decoction of *kashkhash* (*Papaver somniferum*), *banafsha* (*Viola odorata*), and wheat husk and use it for *nutool* on the head.<sup>12</sup>

**Meningitis:** For *Sarsam saudavi* (meningitis predominated by melancholic humors), since melancholic humor has a dry temperament, the *nutool* should be done by medications having a moist temperament; however, they may be used after medical expulsion of vicious humors has been done. For *nutool*, prepare a decoction of 10 gm each of *babuna* (*Matricaria chamomile*), *shibt* (*Anethum sowa*), *barg-e-rehan* (*Ocimum sanctum*), *banafsha* (*Viola odorata*), *gul-e-nargis* (*Narcissus tazetta* flowers) and add *roghan-e-babuna*, *roghan-e-kunjad*, *roghan badam* and milk. When it is lukewarm, use for *nutool* on the forehead.<sup>12</sup> For meningitis, the drugs used for *nutool* should not be having astringent properties. Ibn Sina recommends the use of *kashkhash* as *nutool* to induce relaxation and the addition of *babuna* (*Matricaria chamomile*) so that the inflammation is resolved.<sup>13</sup>

**Insomnia:** A decoction of *banafsha* (*Viola odorata*), *neelofer*, *rose*, grinded seeds of *kahu*, *kishneez sabz* (*Coriandrum sativum*), *kashkhash*, and crushed seeds of *jaw* may be used for *nutool* on the head.<sup>12</sup> Since a dry temperament leads to insomnia and vice versa, any *nutool* which is prescribed for insomnia should always contain medicines having a moist temperament.<sup>14</sup>

In insomnia caused due to old age, daily *nutool* is prescribed with a decoction of *kashk-e-jaw* (A special preparation of *Hordeum vulgare* seeds in which they are boiled in water, then the seeds are strained and boiled in fresh water again. Then they are grinded into a paste), *babuna* (*Matricaria chamomile*), and *Uqhuwan* (*Pyrethrum parthenium*).<sup>12,15</sup>

For insomnia associated with melancholia: A decoction of *kashkhash* (*Papaver somniferum* seeds), *babuna* (*Matricaria chamomile*), and *Uqhuwan* (*Pyrethrum parthenium*) is beneficial for insomnia.<sup>12, 13</sup>

**Melancholia:** For a patient of melancholia, *nutool* on the head is also recommended to expel the *saudavi* matter from the brain and also to correct the abnormal temperament. For this purpose, the drugs like *shibt* (*Anethum sowa*), *sosan* (*Iris florentina*), *babuna* (*Matricaria chamomile*) and *nakhuna* (*Trigonella uncata*) are recommended.<sup>14</sup> If a patient of melancholia shows signs of cold temperament, then *nutool* with oils

having a hot temperament and the following drugs is recommended: *babuna* (*Matricaria chamomile*) 25 gms, *nakhuna* (*Trigonella uncata*) 25 gms, *barg-e-badranjboya* (*Nepeta hindostana*), *barg-e-saru* (leaves of *Cupressus semepervirens*), *jauz al-saru* (Fruit of *Cupressus semepervirens*), flowers of henna (*Lawsonia alba*)-25 gms each, *ushna* (*Permelia perlata*), *barg-e-khubazi* (*Malva sylvestris* leaves), *barg-e-khatmi* (leaves of *Althea officinalis*) and wheat husk. Boil all drugs and pour on the head continuously when warm.<sup>16</sup>

**Amnesia** (complete loss of memory): A decoction of *babuna* (*Matricaria chamomile*), *nakhuna* (*Trigonella uncata*), *qurtum kofta* (*Carthamus tictorius*, grinded), *khatmi* (*Althea officinalis*) or *barg-e-khatmi* (leaves of *Althea officinalis*) may be used for *nutool*. While doing *nutool*, the scalp should be gently massaged continuously with any soft object.<sup>16</sup>

**Paralysis:** Take 450 gms of vinegar and add 35 gms of rose oil. Then heat this mixture on slow flame till the vinegar is burnt off. Strain the mixture and use it for *nutool* on the head.<sup>16</sup>

**Vertigo** caused due to phlegmatic humors: *Nutool* on the head with a decoction of *babuna* (*Matricaria chamomile*), *nakhuna* (*Trigonella uncata*), *marzanjosh* (*Origanum majorana*), *saatar* (*Thymus serpyllum*) and *nammam* (*Ocimum basilicum*) is prescribed.<sup>12</sup>

**Epilepsy:** To help in the release of vicious humors, decoction of *mulattif* (attenuant) drugs such as *babuna* (*Matricaria chamomile*), *nakhuna* (*Trigonella uncata*) and *marzanjosh* (*Origanum majorana*) may be used for *nutool* on the head.<sup>12</sup> In addition, *shibt* (*Anethum sowa*) and *branjasiif* (*Artemisia abrotanum*) may also be added while making the decoction. However, if the disease is caused due to bile, then drugs used for *nutool* should be of cold temperament.<sup>17</sup>

**Mania:** For treatment of mania, frequent *nutool*, upto five times a day is effective, especially if done after expelling vicious matter with medicines. The drugs included for *nutool* should be moist and cold in temperament.<sup>13</sup> For *nutool*, *banafsha* (*Viola odorata*), *neelofer* (*Nelumbium speciosum*), flowers of *khatmi* (*Althea officinalis*), sweet basil (*Ocimum basilicum*), *kashk-e-jaw* (*Hordeum vulgare*), leaves of *bed* (*Salix alba*), rose petals, leaves of *kahu* (*Lactuca sativa*), fresh leaves of *maurid* (*Myrtus communis*), leaves of *mako* (*Solanum nigrum*)-all are taken in equal quantity and decoction is prepared. This is used for *nutool* while the patient is in hammam.<sup>14</sup> For treating mania, the following *nutool* is also effective: dried *banafsha* 25 gms, fresh *banafsha* 25 gms, *sapistana* 25 gms, grinded *jaw* 50 gms, wheat husk 50 gms, rose 50 gms, *barg-e-kamni* (*Murraya paniculata* leaves)-2 fistful (approx 50 gms), *barg-e-isapghol* or *barg-e-khubazi*-1 fistful (approx 25 gms)-boil all drugs and pour over the soft palate so that the effect reaches brain.<sup>16</sup>

**Conjunctivitis:** If conjunctivitis is caused by cold humors, the *nutool* on the head with a decoction of *babuna*, *rose* and *marzanjosh* (*Origanum majorana*).<sup>17</sup>

**Pleuritis:** For relief of pain in pleuritis, *nutool* with hot water on the affected area helps in relieving pain.<sup>12</sup>

**Renal stones:** Take 6 gms each of *gul-e-tesu* (flowers of *Butea monosperma*), *gul-e-kasam* (*Carthamus tictorius* flowers), *tukhm-e-kharpaza* (*Cucumis melo* seed), *tukhme khayarain* (*Cucumis sativus* seed) and *khar khasak* (*Tribulus terrestris*) and make a decoction; this is used for nutool over the area of pain.<sup>18</sup> For calculi in the urinary bladder, nutool with a decoction of *babuna* (*Matricaria chamomile*), *nakhuna* (*Trigonella uncata*), *khatmi* (*Althea officinalis*) and wheat husk is recommended over the pelvic region.<sup>14</sup>

**Cystitis:** Nutool with warm *roghan-e-ward mukarrar* (a special type of concentrated rose oil) on the pelvic region is effective in resolving the inflammation, especially if it involves the neck of bladder.<sup>19</sup>

**Dysuria:** If dysuria is caused due to any wound in the urinary tract, then nutool on the pelvic region with a decoction of *babuna* (*Matricaria chamomile*), *nakhuna* (*Trigonella uncata*), *pudina* (*Mentha arvensis*), *qaisoom* (*Artemisia abrotanum*) and wheat husk is recommended to accelerate healing.<sup>14</sup>

**Alopecia:** If alopecia has been caused due to excessive heat, then nutool with a decoction of *jaw* (*Hordeum vulgare*) and *khshkahsh* (*Papaver somniferum* seeds) may be done.<sup>16</sup>

**Deafness:** The following medicines are prescribed for nutool in partial or complete deafness

Make a decoction of *Banafsha* (*Viola odorata*), *neelofer* (*Nelumbium speciosum*), *babuna* (*Matricaria chamomile*), *nakhuna* (*Trigonella uncata*), *marzanjosh* (*Origanum majorana*), peeled *jaw* (*Hordeum vulgare* seeds peeled off after boiling in water), *kali tulsi* (*Ocimum canum*), and *sosan* (*Iris florentina* flowers) and use it for nutool on the head.<sup>20</sup>

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**Arthralgia:** The given drugs are effective in painful conditions of the joints when used as nutool: *Cuscuta reflexa* (2 parts), *Solanum nigrum* (1 part)-boil both drugs in water and use for nutool on the affected joints. This should be followed by massage of the area with *Roghan-e-gul*.<sup>3</sup>

**Mastitis:** In mastitis caused due to accumulation on milk in the breasts after weaning etc, use a decoction of 6 gm each of *babuna* (*Matricaria chamomile*), *shibt* (*Anethum sowa*), *hulba* (*Trigonella foenum graecum*), *qaisoom* (*Artemisia absinthium*), *jund-bedstar* (*Castoreum*). Boil these drugs in two liters of water till only 1.5 liters are left. This may be used for nutool on the affected area.<sup>3</sup>

## CONCLUSION

There is a vast amount of literature in Unani medicine on the therapeutic effects of nutool in several disease conditions. Furthermore, the gentleness of this therapy and the immediate relaxing effects add to the benefits. Nutool therapy has shown promising results in many clinical studies and is a practitioner's delight mainly due to the holistic and calm nature of treatment. With the increasing prevalence of psychiatric and nervous disorders in the recent years, the search for an all-inclusive therapy continues which can provide both physical and psychological benefits. Nutool therapy is one such treatment which is easy to administer, cost-friendly and may be employed in low-resource settings also. However, to reap maximum benefits out of this age-old treatment, it is necessary to carry out further detailed researches on the efficacy of the prescribed compound formulations in Unani medicine.

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