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Review Article

## Nutūl as an effective and time tested regimenal modality in Unani system of medicine: An Overview

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### Abstract

*Ilāj bit tadbīr* is one of the treatment plans in the Unani system of medicine which includes the modification in *asbāb-i-sitta zarooriya* (six essential factors) through certain interventions. *Nutūl* or irrigation is a classical and effective method in regimenal therapy which refers to pouring or dripping of liquid slowly and steadily over the body part from a pre-fixed height. The benefits achieved are an amalgamation of neurological effect, psychological effect and pharmacological actions of the procedure and the drugs used. For this purpose, usually water, oil or medicated decoction is poured from a height over specific sites of body in certain diseases. Therapeutically, *nutūl* is effective in various ways such as dispersing the causative morbid matter from the part, normalizing the mal-temperament, relieving pain, increasing the circulation, etc. It is specifically useful as an adjuvant treatment in the management of central nervous system disorders like headache, insomnia, migraine, amnesia, melancholia, vertigo, epilepsy and also in certain other disorders like cystitis, mastitis, arthralgia, etc. These therapeutic effects are expected due to the *kafiyat* (quality) of liquid and the constituents of the formulation used in the procedure. *Nutūl* has an analgesic effect also, hence, recommended in several Musculoskeletal problems such as *waja-ul-mafasil* (osteoarthritis), *waja-uz-zahr* (low backache), *waja-ul-azlat* (myalgia), *irq-un-nasa* (sciatica), etc. The exact mechanism of action of *Nutūl* therapy is still not known but few preliminary reports suggested that it has an anxiolytic effect through decreasing the plasma noradrenaline and urinary serotonin excretion, decrease in rate of breathing, reduction in diastolic blood pressure and heart rate with lowered sympathetic tone.

**Keywords:** *Tahlīl; Kafiyat; Mizāj; Tadbīr; Joshānda*

## 1. INTRODUCTION:

*Tadbīr* is an Arabic word that stands for “Regimen” (systemic plan) while as *Ilāj* means “therapy” or “treatment”. Therefore, *Ilāj bit tadbīr* is a treatment through a regimen that is opted according to the pathogenesis of the disease. If the patient is having *su-i-mizāj* (Altered Temperament), lifestyle modifications in diet, sleep, physical activity, climate should be done. Interventions such as *dalk* (massage), *hammām* (turkish bath), *inkibāb* (inhalation), *nutūl* (irrigation), etc. should also be taken into account.

*Nutūl* is one of the classical and well-established regimenal modalities of *Ilāj bit tadbīr* which is considered very effective and useful in various diseases. It is a procedure of slowly and steadily dripping of medicated liquid from a pre-fixed height over selected body parts. It is also known as *Tarera* or *Dhaar*<sup>1-4</sup>. Some unāni physicians used the term *sukūb* synonymously with *nutūl*<sup>4</sup>, but the basic distinction between *nutūl* and *sukūb* is the distance from which the liquid is being poured. If the liquid is poured from a short distance, the procedure is called *sukūb* and if the height is more, it is

known as *nutūl*<sup>1,5</sup>. Some of the scholars separated the two with more distinguishing characters and that is continuity of pouring the liquid. The continuity of pouring the liquid remains intact in *nutūl* while interruption may occur in the procedure of *sukūb*<sup>1,6</sup>. Two types of therapeutic effects are expected from this therapy; one due to *kafiyat* of liquid and the second due to specific actions of drugs used<sup>1</sup>. An individual experiences a feeling of wellness, mental clarity, and comprehension after the procedure<sup>7</sup>.

## 2. MATERIALS AND METHOD

PUBMED, MEDLINE, and GOOGLE SCHOLAR databases were searched for the published articles with *nutool*, *nutul*, *shirodhara*, regimenal therapies, Unani medicine, *Ilāj bit tadbīr*, etc. Relevant clinical trials published in peer-reviewed journals in the English language were only included in this review article. Unani literature was extracted from the classical Unani books.

### 3. HISTORICAL BACKGROUND

*Ibn Sina* considered *nutūl* therapy as one of the best treatment modalities when *Tahlīl-i-warm* (dissolution of inflammation) is required. He also advocated its use in those patients having temperamental abnormalities as well as for strengthening body parts <sup>6, 8</sup>. *Nutūl* with *bābūna* for inflammatory condition and *khashkhāsh* for mental relaxation is recommended by *Ismail Jurjāni* <sup>9</sup>.

#### 3.1. Definition

*Nutūl* is a unique method in which plain water, *joshānda/khaisānda* of specific drugs or oil is being poured slowly and steadily over the specific body part from a pre-fixed height for a predetermined period of time.

#### 3.2. Aims and Objectives <sup>10-12</sup>

**3.2.1. *Tahlīl-i-Mawād*** – to disperse the *akhlāt-i-fāsida* (morbid humours) from the affected part

**3.2.2. *Ta'dīl-i-Mizāj*** – to normalize the *su-i-mizaj* (Altered Temperament) of an organ

**3.2.3. *Taskīn-i-Alam*** – to relieve the painful condition through *imālah-i-akhlāt-i-fāsida* (diversion of morbid humours)

**3.2.4. *Muqawwi-i-A'sāb*** – to strengthen the nerves through increasing circulation and nutrition

**3.2.5. *Daf'-i-Tashannuj*** – to relieve spasm

**3.2.6. *Tanqia-i-Mawād*** – to evacuate the morbid matter locally

**3.2.7.** To enhance or improve the blood circulation

**3.2.8.** To relieve the fatigue

**3.2.9.** To relieve chronic condition like *sarsām, fālij, waja'-ul-mafāsil*, etc.

#### 3.4. List of Equipment:

<i>Nutūl</i> table	<i>Nutūl</i> pot	Cotton	Gas stove
Container for liquid collection	Pot for heating the liquid	Rubber sheet	Towel

#### 3.5. Procedure <sup>15, 16</sup>

##### 3.5.1. Pre-procedure care:

- Blood pressure and pulse rate should be recorded prior to the procedure.
- The patient should be asked to lie in a supine/ prone/left or right lateral position on the *nutūl* table as required for the access of the target area for the procedure.
- The target area for *nutūl* should be sufficiently exposed while other body parts remain covered.
- Small pillows or bundles of sheets are put under the neck/ back/ or another required area to keep the patient comfortable.
- The recommended amount of liquid (water, oil, or *joshānda*) is poured into the *nutūl* pot and mounted on a height-adjustable stand.
- The eyes are covered with cotton pads to abstain from spilling oil into them for safety purposes while doing *nutūl* on the forehead.

##### 3.5.2. Technician's preparation:

#### 3.3. Classification <sup>8, 11-13</sup>

##### 3.3.1. *Nutūl-i-Hār* (Hot Irrigation)

##### 3.3.2. *Nutūl-i-Bārid* (Cold Irrigation)

##### 3.3.3. *Nutūl-i-Muqawwi* (Tonic Irrigation)

##### 3.3.1. *Nutūl-i-Hār* (Hot Irrigation):

A *joshānda* or oil consisting of *hār advia* or plain lukewarm water is used in this type of *nutūl* which acts as *muḥallil-i-awrām* (anti-inflammatory). *Tahlīl-e-awrām* is the main aim of this type of *nutūl*. Two therapeutic effects may be achieved; one due to the *ḥarārat* of the liquid and the second due to the specific actions of the drugs used. *Bārid akhlāt-i-fāsida* (cold morbid humours) should be eliminated through *nutūl-i-hār* (hot irrigation) irrespective of the temperament of the organ followed by *nutūl-i-bārid* (cold irrigation) for toning up the loosened organs. The rationale behind this is that the heat of *nutūl-i-hār* relaxes or loosens the structures of the particular organ, while *nutūl-i-bārid* helps in restoring the normal tonicity of the organs <sup>1,3,14</sup>.

##### 3.3.2. *Nutūl-i-Bārid* (Cold Irrigation):

A *joshānda/khaisānda* or oil consisting of *bārid adviah* or plain cold water is used in this type of *nutūl* which acts as *mubarrid* (coolant). Main aim of this kind is *tahlīl-e-ḥarārat*. The therapeutic effect may be achieved due to the *barūdat* of the liquid and the active constituents of the liquid used <sup>1,3,14</sup>.

##### 3.3.3. *Nutūl-i-Muqawwi* (Tonic Irrigation):

Both *nutūl-i-hār* and *nutūl-i-bārid* are used in this type of *nutūl* alternatively to improve the circulation of the part or organ of the body. It provides nutrition to the weak organ and acts as a *muqawwi-i-a'sāb* (nervine tonic) <sup>1</sup>.

- The technician washes the hands and wears sterile gloves.
- The technician remains polite, cooperative, and attentive during the procedure.

##### 3.5.3. Procedure:

- The whole procedure is explained to the patient and reassured of safety.
- The *nutūl* pot hangs exactly over the targeted body part at a recommended height and a calibrated stream of plain water/oil/*joshānda* is allowed to fall on that targeted body part (figure 1).
- A continuous stream of recommended liquid is poured over the targeted body part.
- The used oil or medicated decoction is collected in a container.
- The collected liquid is reheated to warm and put in the pot to repeat the *nutūl* procedure if required.
- If there is any irritation or rashes on the skin after liquid contact, the *nutūl* is immediately stopped.

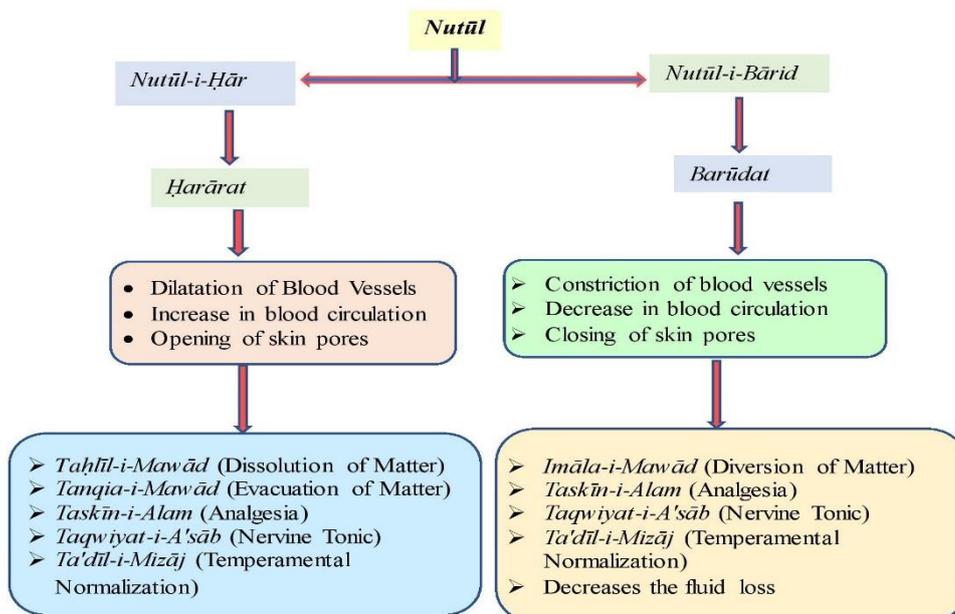


**Figure 1: Procedure of *nutūl***

**3.5.4. Post-procedure care:**

- After *nutūl*, the oil or decoction is wiped off from the body part.

- The patient is advised to take rest for 15 minutes and observed for any untoward effect.
- The patient may be advised to take bath with medicated water or lukewarm water after 30 minutes.



**Figure 2: Flowchart showing the mechanism of action of *nutūl***

**3.6. Indications and Specific Formulations:**

Unani physicians mentioned *nutūl* therapy in various kinds of diseases with specific poly-herbal formulations. Below is

the list of most common diseases in which *nutūl* has been recommended with their specific formulations (Table 2.).

Table 2: Indications &amp; specific formulations

Indication	Specific formulations
Şuda'-i-hār (Headache)	Jau ( <i>Hordeum vulgare</i> ), peel of Kaddu ( <i>Laginaria siceraria</i> ), Tukhm-i-Kāhu ( <i>Lactuca sativa</i> Linn), Isapghol ( <i>Plantago ovate</i> seeds), Banafshah ( <i>Viola odorata</i> ), Khatmi ( <i>Althea officinalis</i> ), Gul-i-Nilofar ( <i>Nelumbium speciosum</i> ) <sup>17</sup> Banafshah ( <i>Viola odorata</i> ), Jau ( <i>Hordeum vulgare</i> ), Kaddu ( <i>Laginaria siceraria</i> ), Khurfa ( <i>Portulaca oleracea</i> ), Katān ( <i>Linum usitatissimum</i> ), peel of opium ( <i>papaver somniferum</i> ), the root of Luffāh ( <i>Atropa belladonna</i> ), Khatmi ( <i>Althea officinalis</i> ), Tukhm-i-Kāhu ( <i>Lactuca sativa</i> Linn), Barg-i-Bed ( <i>Salix alba</i> ), Gul-i-Gulāb ( <i>Rosa centifolia</i> ) <sup>17</sup> Gul-i-Nilofar ( <i>Nelumbium speciosum</i> ), Khubbāzi ( <i>Malva sylvestris</i> ), peel of opium ( <i>papaver somniferum</i> ), and Jau ( <i>Hordeum vulgare</i> ) <sup>17</sup>
Şuda-i-bārid (Headache)	Ustukhuddūs ( <i>Lavendula stoechas</i> ), Berg-i-Ghār ( <i>Laurus nobilis</i> ), Qaisūm ( <i>Artemisia abrotanum</i> ), Hūlba ( <i>Trigonella foenum</i> ), wheat husk, salt, bānūnah ( <i>Matricaria chamomile</i> ), barg-i-turanj ( <i>Citrus modica</i> ), badranjboya ( <i>Melissa parviflora</i> ), sazij ( <i>Cinnamomum obtusifolium</i> ), qaranfal ( <i>Syzygium aromaticum</i> ), bādīyān ( <i>Foeniculum vulgare</i> Mill), beikh-i-bādīyān ( <i>Foeniculum vulgare</i> Mill), beikh-i-karafs ( <i>Carum roxburghianum</i> ), Gul-i-Gulāb ( <i>Rosa centifolia</i> ), pudina ( <i>Mentha arvensis</i> ), suddāb ( <i>Ruta graveolence</i> ), hashā ( <i>Thymus vulgaris</i> ) <sup>17</sup>
Shaqīqa (Migraine)	Patients of shaqīqa-i-hār should be treated with bārid adviah first. If the symptoms persist, a Joshānda of khashkhāsh ( <i>Papaver somniferum</i> ), banafshah ( <i>Viola odorata</i> ), and wheat husk is used as a nutūl over the scalp and forehead <sup>17</sup>
Sarsām (Meningitis)	A Joshānda of bānūnah ( <i>Matricaria chamomile</i> ), Shibt ( <i>Anethum sowa</i> ), Berg-i-reḥān ( <i>Ocimum sanctum</i> ), banafshah ( <i>Viola odorata</i> ), gul-i-nargis ( <i>Narcissus tazetta</i> ) is prepared and mixed with roghan-i- bānūnah, roghan-i-kunjad, roghan-i-bādām and milk and used for nutūl over the forehead <sup>17</sup> Joshānda of Khashkhāsh as nutūl is recommended to induce mental relaxation and mixed with bānūnah for the resolution of inflammation <sup>8</sup>
Mālankhūliya	A Joshānda of shibt ( <i>Anethum sowa</i> ), susan ( <i>Iris florentina</i> ), bānūnah ( <i>Matricaria chamomile</i> ), and nakhūnah ( <i>Trigonella uncata</i> ) is recommended as nutūl over the scalp for Mālankhūliya <sup>9,17</sup> A lukewarm Joshānda of Bānūnah ( <i>Matricaria chamomile</i> ) nakhūnah ( <i>Trigonella uncata</i> ) barg-i-bādranjboya ( <i>Nepeta hindostana</i> ), barg-i-saru (leaves of <i>Cupressus sempervirens</i> ), jauz al-saru (Fruit of <i>Cupressus sempervirens</i> ), flowers of henna ( <i>Lawsonia alba</i> ), ushna ( <i>Permelia perlata</i> ), berg-i-khubāzi ( <i>Malva sylvestris</i> ), berg-i-khatmi ( <i>Althea officinalis</i> ) and wheat husk should be used as nutūl over the head continuously in the patients of Mālankhūliya Bārid <sup>17</sup> .
Sahar (Insomnia)	A Joshānda of banafshah ( <i>Viola odorata</i> ), Gul-i-Nilofar ( <i>Nelumbium speciosum</i> ), Gul-i-Gulāb ( <i>Rosa centifolia</i> ), Tukhm-i-Kāhu ( <i>Lactuca sativa</i> Linn), Kishniz Sabz ( <i>Coriandrum sativum</i> ), Khashkhāsh ( <i>Papaver somniferum</i> ), and Jau ( <i>Hordeum vulgare</i> ) is considered effective as a nutūl on the forehead in the patients of insomnia.
Nisyān (Amnesia)	A Joshānda of bābūna ( <i>Matricaria chamomile</i> ), nākhūna ( <i>Trigonella uncata</i> ), qurtum kofta ( <i>Carthamus tictorius</i> , ground), Tukhm-i-khatmi ( <i>Althea officinalis</i> seeds) or berg-i-khatmi (leaves of <i>Althea officinalis</i> ) is recommended for nutūl over the scalp <sup>17</sup> .
Fālij (Hemiplegia)	A hot mixture of Sirka and roghan-i-gul is recommended for the patient of falij as a nutūl.
Dawār (Vertigo)	A Joshānda of bābūna ( <i>Matricaria chamomile</i> ), Nākhūna ( <i>Trigonella uncata</i> ), Marzanjosh ( <i>Origanum majorana</i> ) sa'tar ( <i>Thymus serpyllum</i> ), and rehān ( <i>Ocimum basilicum</i> ) is recommended as a nutūl for the patients of vitiligo <sup>17</sup> .
Sara' (Epilepsy)	A Joshānda of Bābūnah ( <i>Matricaria chamomile</i> ), Nākhūnah ( <i>Trigonella uncata</i> ), and Marzanjosh ( <i>Origanum majorana</i> ) is recommended as nutūl in the cases of epilepsy <sup>17</sup> . Shibt ( <i>Anethum sowa</i> ) and Branjasif ( <i>Artemisia abrotanum</i> ) may also be added <sup>19</sup> .
Mānia	A Joshānda of banafsha ( <i>Viola odorata</i> ), nilofar ( <i>Nelumbium speciosum</i> ), gul-i-khatmi ( <i>Althea officinalis</i> ), sweet basil ( <i>Ocimum basilicum</i> ), jau ( <i>Hordeum vulgare</i> ), berg-i-baid ( <i>Salix alba</i> ), Gul-i-Gulāb ( <i>Rosa centifolia</i> ), Berg-i-Kāhu ( <i>Lactuca sativa</i> ), Berg-i-Makoh ( <i>Solanum nigrum</i> ) is used for the patients of mania <sup>9,17</sup>
Dhat-ul-Janb (Pleurisy)	Nutūl of warm water is prescribed on the affected site which gives relief in pain <sup>17</sup> .
Warm-i-Mathāna (Cystitis)	Nutūl with Roghan-i-Gul (Rose oil) is found useful if done on the pelvic region <sup>17</sup> .
Hişāt-i-Kulliyya (Renal Stone)	A Joshānda of gul-i-teisu ( <i>Butea monosperma</i> ), gul-i-kasam ( <i>Carthamus tictorius</i> ), tukhm-i-kharpaza ( <i>Cucumis melo</i> ), tukhm-i-khyārāin ( <i>Cucumis sativus</i> seed), khār-i-khasak ( <i>Tribulus terrestris</i> ) is prepared and poured over the site of pain <sup>9,17</sup> .
Hişāt-i-Mathāna (Urinary Bladder Stone)	A Joshānda of bābūnah ( <i>Matricaria chamomile</i> ), nākhūnah ( <i>Trigonella uncata</i> ), khatmi ( <i>Althea officinalis</i> ), and wheat husk is recommended over the pelvic region for Hişāt-i-Mathāna <sup>17</sup> .
Waja'-ul-Mafāşil (Arthralgia)	A Joshānda of makoh ( <i>Solanum nigrum</i> ) and khār-i-khasak ( <i>Tribulus terrestris</i> ) is recommended and followed by dalk-i-layyin of the affected area or joint with Roghan-i-Gul <sup>5</sup> .
Warm-i-Sadi (Mastitis)	A Joshānda of bābūnah ( <i>Matricaria chamomile</i> ), shibt ( <i>Anethum sowa</i> ), hūlba ( <i>Trigonella foenum graecum</i> ), qaisūm ( <i>Artemisia absinthium</i> ) and Jund baidastar ( <i>Castoreum</i> ) is advocated as nutūl over the affected area <sup>5</sup> .

#### 4. DISCUSSION

*Nutūl* or irrigation is done with a purpose of acceleration of process of *ikhraj-i-mawād* (evacuation of morbid material) and *ta'dil-i-mizāj-i-A'zā* (normalization of Altered Temperament of organ) and to improve the *quwat-i-mudāfiat* (defense mechanism of body), resulting in desired neurological, psychological and pharmacological effects in various diseases. It also enhances the local absorption of medicines thus helps in getting the desired action of medicine locally. *Nutūl* has multidirectional effects including *tehrīk-i-a'sāb* (nerve stimulation). It helps in the dissolution of causative pathological material from the diseased part of the body, modifies local temperature of the part, and also helps in *imāla-i-mawād-i-fāsida* towards the periphery or away from the diseased organs. In the case of *nutūl-i-har*, the temperature of the part is raised due to increased blood circulation in dilated vessels which removes the stagnant causative matter from its site of lodgement. It also increases the supply of nutrients at the diseased parts or organs resulting in improved recovery. *Nutūl* is effective by having *mussakin-i-alam* (analgesic), *mukhadir* (sedative), *muratib* (emollient), *mubarid* (cold), *munavim* (hypnotic), *muqawwie dimag* (brain tonic) properties (figure 2) <sup>1, 15,16,21</sup>.

Relaxation induced by *nutūl* therapy is reflected by bradycardia and lowered sympathetic tone. Sympathetic relaxation results in increasing blood circulation and skin temperature <sup>22</sup>. *Nutūl* over the forehead is especially known to have psychological effects which support the anxiolytic effect of the therapy. Biochemical changes include suppression of noradrenaline & alpha receptors which result in sympathetic suppression rather than parasympathetic activation. The impulses from the forehead cause stimulation of the trigeminal nerve and also a somato-autonomic reflex and change in levels of various neurotransmitters including serotonin and catecholamine, resulting in sympathetic suppression and psycho-neuro-immunologic effects <sup>23, 24</sup>.

It was explained in one study that the stimulus from the skin especially of the forehead is carried by the ophthalmic branch of the 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 *nutūl* for about 45 minutes. Further, to achieve the permanent effect of *nutūl*, there must be a 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 a 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>21</sup>.

Several studies were conducted to evaluate the efficacy of *nutūl* or medicated liquid dripping procedure in the treatment of insomnia <sup>16, 25-29</sup>. These studies showed improvement in insomnia which may be due to relaxation of the sympathetic nervous system <sup>30-33</sup>. However, properly randomized, controlled, blinded clinical trials on insomnia and other diseases are needed to be conducted.

#### 5. CONCLUSION:

*Nutūl* therapy is considered one of the effective methods of treatment in *Ilaj-bit-tadbeer* for various disorders and complications as documented in classical *Unani* literature. This technique is very safe, cost-effective, easy to administer, and may be employed in low-resource settings also, without

possible side-effects as compared to oral medication. *Nutūl* therapy irrespective of use of any kind of liquid exerts its own effect by the virtue of its sheer streaming effect on the body part. In addition to the inherent effect of *nutūl* therapy the efficacy is further enhanced by using drugs. Promising physical, psychological, neurological, as well as immunological benefits of this regimen were claimed through several preliminary studies. Further research is vital to clarify the full clinical and economic implications of *nutūl* therapy and to determine the true potential of this age old reliable regimenal therapy of *Unani* system of medicine. Therefore, conduction of more extensive, exhaustive, randomized clinical studies on a large sample size is the need of the hour to evaluate its efficacy in various diseases on reliable and validated scientific parameters.

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