

Narcolepsy And Akhlāt-E-Badan: A Critical Integrative Review Of Pathophysiological Correlations And Therapeutic Approaches

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ABSTRACT

Narcolepsy is a chronic neurological sleep disorder characterized by excessive daytime sleepiness, cataplexy, sleep paralysis, and disrupted nocturnal sleep. Contemporary biomedical research attributes narcolepsy^[2] primarily to hypocretin (orexin) deficiency^[1] resulting from autoimmune-mediated destruction of hypothalamic neurons. In Unani medicine, sleep (Nawm) is governed by the equilibrium of Akhlāt-e-Badan (body humors), and its disturbances are associated with Sū'-i-Mizāj, particularly Ghalaba'-i-Balgham^[15] (phlegmatic predominance) and Ruṭūbat-e-Dimāgh (cerebral moisture). This review critically examines narcolepsy from both biomedical and Unani perspectives and proposes a conceptual integrative framework linking humoral imbalance with neurochemical dysregulation. Therapeutic approaches, including pharmacological, regimen, and dietary interventions, are evaluated, highlighting the potential for integrative management. The study also identifies gaps in evidence and proposes directions for future clinical and translational research.

Keywords: Narcolepsy, Unani Medicine, Akhlāt, Balgham^[15], Orexin, Integrative Medicine, Sleep Disorders.

INTRODUCTION

Narcolepsy is a lifelong neurological disorder affecting approximately 0.02–0.05% of the global population. It commonly presents during adolescence or early adulthood and significantly impairs quality of life due to persistent sleep disturbances. The disorder is clinically classified into narcolepsy^[2] type 1 (with cataplexy and hypocretin deficiency) and type 2 (without cataplexy).

Modern medicine identifies narcolepsy^[2] as a disorder of sleep–wake regulation associated with dysfunction of orexin-producing neurons in the lateral hypothalamus. In contrast, Unani medicine conceptualizes sleep as a physiological state governed by the balance of humors and the interaction of Ḥarārāt (innate heat) and Ruṭūbat (moisture).

Classical Unani scholars, including Ibn Sīnā^[8], described sleep as a state of quiescence resulting from the predominance of cerebral moisture. Disturbances

in sleep (Amrād-e-Nawm) are attributed to humoral imbalance, particularly the dominance of Balgham^[15], which is characterized by cold and moist qualities.

METHODOLOGY

This narrative review synthesizes evidence from both classical Unani texts and contemporary biomedical literature. Databases including PubMed, Scopus, and Google Scholar were searched using keywords such as “narcolepsy^[2],” “orexin,” “sleep disorders,” “Unani medicine,” and “Akhlāt.” Articles published between 2000 and 2025 were prioritized for modern insights, while authoritative classical texts were included to represent Unani perspectives. Inclusion criteria comprised peer-reviewed articles, systematic reviews, and standard Unani references. Non-English and non-relevant studies were excluded.

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Historical Review of Sleep in Unani Medicine

Buqrāt^[12] (460–370 BC): Linked sleep to humoral balance and emphasized the role of phlegm and blood in sleep–wake cycle.

Jālīnūs^[11] (129–200 AD): Discussed sleep as a natural function needed for the restoration of faculties.

Rāzī^[9] (865–925 AD): In Kitāb al-Hāwī, he described conditions of excessive sleep (Kathrat-e-Nawm) due to excess moisture in the brain.

Ibn Sīnā^[8] (980–1037 AD): In Al-Qānūn fī'l Ṭibb, he detailed the physiology of sleep and classified its disturbances.

Jurjānī^[10] (1042–1137 AD): In Dhakhīra Khawārīzm Shāhī, described narcoleptic-like symptoms as “sudden overpowering sleep due to Balgham^[15] dominance.”

Akbar Arzānī^[13] (18th century): In Ṭibb-ī-Akbar, he highlighted the relation of brain phlegm with abnormal sleepiness.

Pathophysiology of Narcolepsy in Modern Medicine

Narcolepsy is primarily characterized by hypocretin (orexin) deficiency^[1], resulting from the selective loss of neurons in the lateral hypothalamus. The major mechanisms include:

- Autoimmune hypothesis: T-cell-mediated destruction of orexin neurons^[7]
- Genetic predisposition: Strong association with HLA-DQB1*0602 allele
- Neurochemical dysregulation: Instability of REM sleep transitions
- Neuroinflammation: Emerging evidence suggests inflammatory pathways contribute to neuronal loss
- Recent advances include the development of orexin receptor agonists^[3,4] and

immunomodulatory approaches, reflecting a shift toward targeted therapies.

Unani Conceptual Framework of Sleep Disorders

In Unani medicine, sleep is regulated by the balance of Akhlāt (humors):

Humor	Temperament	Effect on Sleep
<i>Dam</i> (Blood)	Hot & moist	Restlessness, disturbed sleep
<i>Balgham</i> (Phlegm)	Cold & moist	Excessive sleepiness
<i>Ṣafrā'</i> (Yellow bile)	Hot & dry	Insomnia
<i>Sawdā</i> (Black bile)	Cold & dry	Fragmented sleep, anxiety

Narcolepsy may be understood as a manifestation of Ghalaba'-i-Balgham^[15], where excess coldness and moisture in the brain lead to reduced neural activity and impaired wakefulness.

Autoimmune trigger → Orexin neuron loss → REM dysregulation → Narcolepsy

↓ (Integrative link)

Ghalaba'-i-Balgham → *Ruṭubat -e-Dimāgh* → CNS hypoactivity → Excess sleep

Integrative Pathophysiological Correlation

A theoretical bridge between Unani and modern concepts can be proposed:

Unani Concept	Classical Description	Modern Correlation	Scientific Interpretation
<i>Ghalaba'-i-Balgham</i>	Cold and moist dominance	CNS hypoactivity	Reduced neuronal firing
<i>Ruṭūbat -e-Dimāgh</i>	Excess brain moisture	Neurochemical imbalance	Neurotransmitter dysregulation
<i>Su-i-Mizāj Bārid Raṭb</i>	Altered temperament	Functional disorder	Neuro-immunological dysfunction
<i>Ḥarārat Gharīziyya suppression</i>	Reduced innate heat	Hypothalamic dysfunction	Metabolic decline

These correlations are interpretative and require empirical validation through interdisciplinary research.

Clinical Features

Narcolepsy presents with:

- Excessive daytime sleepiness
- Cataplexy
- Hypnagogic hallucinations
- Sleep paralysis

➤ Slowness of movement and speech

➤ Tendency towards stillness and quietness

- History of excessive sleep linked to Balgham^[15] ghālib mizāj.

In narcolepsy^[2], the dominance of Balgham^[15] leads to excessive Ruṭūbat (moisture) in the brain, causing the nervous system to become hypoactive, hence promoting sudden and uncontrollable sleep episodes.

- **Observation of Ruṭūbat and Sukūn of A'ḍā'.**

- *Ruṭūbat* (Moisture):

It refers to increased moistness in organs, especially the brain and nerves. It leads to dullness, heaviness, and impaired functioning. In narcolepsy^[2], excessive ruṭūbat in the brain contributes to sleepiness by dulling wakeful responses.

- *Sukūn* (Stillness/Inactivity) of A'ḍā':

The organs, particularly the brain and nervous system, become inactive or sluggish. This *Sukūn* is a result of cold and moist *Mizāj*, which dampens nerve impulses. Clinically manifests as sudden muscle relaxation (as seen in cataplexy) or general physical inactivity.

Diagnosis

Tashkhees based on Mizāj (temperament) assessment.

- Balgham^[15] Ghālib Mizāj (Dominance of Phlegm)
- **Dominant Qualities:** Cold (*Bārid*) and moist (*Raṭb*)
- **Clinical Presentation:**
 - Excessive sleepiness
 - Laziness or lethargy
 - Weak digestion

• Polysomnography

PSG is often the first step in diagnosing narcolepsy^[2]. It helps determine the amount and quality of night time sleep and can identify other sleep disorders, such as sleep apnea, that may coexist with narcolepsy.

In individuals with narcolepsy^[2], PSG can reveal abnormal patterns, such as shortened REM sleep latency (the time it takes to enter REM sleep) and increased REM sleep episodes. These patterns are significant indicators of narcolepsy.

• Multiple Sleep Latency Test (MSLT)

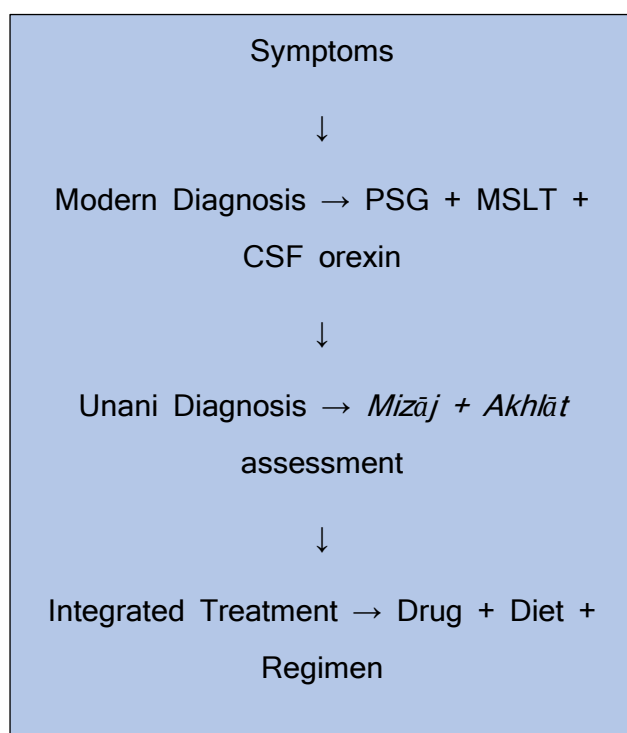
The Multiple Sleep Latency Test (MSLT) is a diagnostic tool used to measure excessive daytime sleepiness and diagnose sleep disorders like narcolepsy^[2] and idiopathic hypersomnia.

• CSF Hypocretin levels

Cerebrospinal fluid (CSF) hypocretin levels are crucial for diagnosing narcolepsy^[2], particularly type 1 narcolepsy with cataplexy^[6], as low levels indicate a deficiency associated with this condition

An integrative diagnostic model combining subjective Unani assessment with objective biomedical tools may enhance diagnostic precision.

Management



Modern Pharmacotherapy

- Modafinil and other stimulants
- Sodium oxybate
- SSRIs/SNRIs for cataplexy management

Unani management of narcolepsy^[2]

1. *Ilāj bi'l Tadbīr* (Regimenal Therapy)

Ta'dīl-i-Nawm: Regulation of sleep–wake cycle.

Dalk (Massage): With *Roghan-e-Baiza Murgh*, *Roghan-e-Narjeel*, or stimulating oils.

Hammām (bath/steam bath): To mobilize excess *ruṭūbat*.

Qay' (emesis) & *Ishāl* (purgation): To eliminate excess *Balgham*^[15].

2. *'Ilāj bi'l Taghdhiya* (Dietotherapy)

Avoid *Balgham*^[15]-producing foods: milk, fish, rice, cucumber, excessive sweets.

Include warm, dry temperament foods: ginger, garlic, black pepper, honey, whole grains.

Light, easily digestible diet to reduce cerebral vapors.

3. *'Ilāj bi'l Dawā'* (Pharmacotherapy)

Ustukhuddus (*Lavandula stoechas*): Clears *Balgham*^[15], strengthens brain.

Zafran (*Crocus sativus*): Stimulant, improves alertness.

Asgandh (*Withania somnifera*): Nervine tonic.

Jund Bedastar (*Castoreum*): Used for neurological weakness .

Sibr (*Aloe vera*): Mild purgative for balancing *Balgham*^[15].

4. *Lifestyle Corrections*

Regular sleep timing.

Mild physical exercise.

Avoiding daytime oversleeping.

Meditation and mental stimulation.

Therapeutic Comparison

Aspect	Modern Medicine	Unani Medicine
Etiology	Orexin deficiency	<i>Balgham</i> dominance
Diagnosis	PSG, MLT	<i>Mizāj</i> assessment
Drug therapy	Modafinil	<i>Ustukhuddus</i>
Approach	Symptomatic	Holistic

Discussion

Narcolepsy is increasingly understood across both modern and traditional medical systems as a disorder of sleep–wake regulation, characterized by excessive daytime sleepiness, sudden sleep attacks, and, in some cases, cataplexy (a sudden loss of muscle tone often triggered by emotions). While the clinical features are broadly recognized, the underlying etiological explanations and therapeutic approaches differ significantly between modern biomedicine and traditional systems such as Unani medicine.

From the perspective of Modern medicine, narcolepsy^[2] is most commonly associated with the loss of hypothalamic neurons that produce orexin (also known as hypocretin), a neuropeptide critical for maintaining wakefulness and stabilizing the sleep–wake cycle. This orexin deficiency^[1,2] is often considered to have an autoimmune basis, where the body’s immune system mistakenly attacks these critical neurons. Diagnostic advances, including polysomnography, multiple sleep latency testing (MSLT), and cerebrospinal fluid (CSF) analysis for orexin levels, have improved the identification and classification of narcolepsy into type 1 (with cataplexy and orexin deficiency) and type 2 (without cataplexy and with normal orexin levels). Treatment strategies in modern medicine typically involve pharmacological agents such as stimulants (e.g., modafinil, amphetamines), sodium oxybate, and selective serotonin/norepinephrine reuptake inhibitors (SSRIs/SNRIs) to manage symptoms and improve quality of life.

In contrast, Unani medicine, a Greco-Arabic system rooted in the teachings of Hippocrates and Galen and further developed by Islamic scholars like Avicenna (Ibn Sīnā^[8]), explains narcolepsy^[2] through the lens of humoral imbalance. Specifically, the condition is attributed to Ghalaba’-i-Balgham^[15], or the dominance of the phlegmatic humor, which is associated with cold and moist qualities. This excessive phlegm leads to increased ruṭūbat (moisture) and a cooling of the brain’s temperament, impairing its functional activity, especially related to alertness and consciousness. The Unani concept suggests that when the brain becomes overly moist and cold, its ability to regulate wakefulness diminishes, leading to symptoms reminiscent of narcolepsy.

Therapeutic approaches in Unani medicine

emphasize the restoration of humoral balance and the normalization of *Mizāj* (temperament). Treatment often begins with lifestyle and dietary modifications designed to reduce phlegmatic dominance. Foods that are considered cold and moist are restricted, while warm and dry foods are encouraged to counteract the imbalance. *Tadbīr* (Regimens) such as massage, cupping, moderate exercise, and sleep regulation are prescribed to improve circulation and brain function. Additionally, *Muqawwī-i-Dimāgh* (brain tonics)—herbal formulations that strengthen and stimulate the brain—are used to restore cognitive vitality and alertness. Common ingredients may include *Asrol* (*Rauwolfia serpentina*), *Ustukhuddus* (*Lavandula stoechas*), and *Bahman surkh* (*Salvia haematodes*), among others.

While the diagnostic frameworks and terminologies differ, there is a growing interest in integrative approaches that combine the symptomatic relief offered by modern pharmacotherapy with the systemic, temperament-based interventions of Unani medicine. The holistic nature of Unani interventions, particularly its emphasis on lifestyle correction, diet, and individualized regimens, may offer supportive benefits that align well with contemporary goals of personalized and patient-centered care.

CONCLUSION

Unani medicine, rooted in the humoral theory, interprets narcolepsy^[2] through the dominance of

Balgham^[15] (phlegm) and the resultant Ruṭūbat-e-Dimāgh (moisture of the brain). The concept of Ghalaba'-i-Balgham, characterized by cold and moist temperament, provides a framework for understanding not only the symptomatic profile of narcolepsy but also its chronicity and neurological underpinnings. Classical Unani physicians, including Ibn Sīnā^[8], Jurjānī^[10], and Rāzī^[9], have described conditions resembling narcolepsy under various terminologies such as Kathrat-e-Nawm and Sudden overpowering sleep, associating them with increased cerebral moisture, suppressed innate heat (Ḥarārat Gharīziyya), and sluggishness of vital faculties.

The diagnostic approach in Unani medicine, through *Mizāj* (temperament) assessment, offers a personalized perspective, identifying individuals predisposed to cold and moist imbalances. This is further corroborated by clinical signs such as *sukūn al-a'qā'* (inactivity of organs), heaviness in the head, mental dullness, and fatigue, which overlap with modern diagnostic criteria. While modern diagnostics such as polysomnography, MSLT, and CSF hypocretin testing provide objective confirmation, Unani diagnosis is more temperament and symptom-pattern driven, with a focus on systemic balance.

SCOPE FOR FUTURE RESEARCH

Future investigations should focus on:

- Clinical trials evaluating integrative treatment models
- Correlation of Mizāj with neurophysiological parameters
- Experimental validation of Unani drugs
- Biomarker-based studies linking humoral imbalance with neurochemical changes.

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