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Review Article

Etiopathogenesis of Chronic Bronchitis: A Symptom-Based Correlation with *Sūʿāl* and Its Management in Unani Medicine

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Abstract

Chronic bronchitis is a major phenotype of chronic obstructive pulmonary disease (COPD), characterized by a persistent productive cough and excessive mucus secretion resulting from chronic airway inflammation. In Unani medicine, the term *Waram-i- shoab Muzmin* has been used in later writings as a literal translation, though the clinical description more closely resembles *Sūʿāl*, particularly *Sūʿāl Aṣlī* mentioned in classical sources. The present review explores the etiopathogenesis, symptomatology, and management of chronic bronchitis in both modern and Unani frameworks. Modern medicine attributes its development mainly to cigarette smoking, air pollution, and oxidative stress, which trigger airway remodelling, mucus hypersecretion, and epithelial injury. Unani physicians described similar mechanisms in terms of *Sū'-i-Mizāj*, *Waram*, *Yubūsat*, and accumulation of *Mawād-i-Fāsida*, often precipitated by cold, dust, and irritants, especially in individuals of *Balghamī Mizāj* . Preventive strategies, lifestyle regulation, and holistic management form the core of Unani practice, including *Ilāj bi'l-Tadbīr* (regimenal therapy), *Ilāj bi'l-Ghizā* (dietotherapy), and *Ilāj bi'l-Dawā* (pharmacotherapy). Various single drugs such as *Asl-us-Soos* (*Glycyrrhiza glabra*), *Arusa* (*Adhatoda vasica*), *Behidana* (*Cydonia oblonga*), and compound formulations like *Laʿūq-e-Sapistān* and *Joshānda-e-Munḍij* are employed, along with preventive measures such as avoiding phlegm-producing foods and exposure to cold air. Importantly, recent clinical evidence has validated the efficacy of licorice-based formulations in chronic cough, further supporting the relevance of Unani interventions. These insights demonstrate that Unani intervention can be effectively applied in clinical practice as a complementary option, offering safer and more sustainable strategies for managing chronic bronchitis.

Keywords: Chronic bronchitis, COPD, *Sūʿāl,* Unani medicine, Etiopathogenesis

Introduction:

Obstructive lung diseases comprise a diverse group of conditions characterized by airflow limitation, which is usually progressive and not completely reversible. This limitation occurs due to increased resistance to airflow, particularly during expiration, resulting from partial or complete obstruction of the airways. [1,2] Within this spectrum, chronic obstructive pulmonary disease (COPD) is the most widely recognized entity, incorporating chronic bronchitis, emphysema, and small airways disease (bronchiolitis). Other important disorders, such as bronchial asthma and bronchiectasis also fall under this category. [1,3]

Among these, chronic bronchitis (CB) remains a key phenotype of COPD and is an important cause of global respiratory morbidity and mortality. [4] The term was first introduced by Charles Badham in 1808 to describe an inflammatory condition of the bronchial mucous membranes, manifesting with chronic cough and excessive mucus secretion. These clinical features continue to define the disease today.[5] Chronic bronchitis is clinically diagnosed when a persistent productive cough lasts for at least three months in two successive years, provided no other underlying cause is present.[1,6] Globally, COPD ranks as the third leading cause of death, with chronic bronchitis making a major contribution to this burden.[7] Its prevalence varies across populations, ranging from 2.6% to 16% in general populations and from 7.4% to over 50% among individuals with COPD. In the United States alone, nearly 10 million adults, primarily between the ages of 44 and 65, are affected. Notably, chronic bronchitis may also be seen in individuals with relatively preserved lung function, underscoring its independent clinical and public health relevance.[4,7]

In Unani medicine, the clinical entity resembling chronic bronchitis is described under the term *Waram-i- shoab*

Muzmin, denoting chronic inflammation of the mucous lining of the bronchioles, which manifests as persistent cough and excessive expectoration. Although this exact terminology is a modern adaptation provided by contemporary Unani scholars, the symptomatology is already well reflected in classical Unani texts under conditions such as *Su'āl* (cough), also known as *Surfa*.[8,9] Unani physicians defined *Surfa* as an abnormal movement of the lungs and associated respiratory organs, serving as a natural mechanism by which *Ṭabī'at'* (the innate faculty) expels irritating or morbid matter from the chest. They compared the function of coughing in the lungs, to sneezing in the brain or hiccups in the stomach, each representing a protective reflex designed to restore balance.[8-11]

According to *Ibn Sīnā*, cough and its related disorders are more common during winter and spring and are observed with greater frequency in men.[10] Eminent unani scholar described the condition as particularly affecting elderly individuals with a predominance of *Balghamī Mizāj* (cold and moist temperament), which renders them more susceptible to chronic respiratory afflictions.[8,10] Thus, while modern medicine recognizes chronic bronchitis as a well-defined clinicopathological condition within COPD, Unani scholars interpreted it as a disorder of altered temperament and humoral imbalance, manifested clinically as *Su'āl* and *Waram-i-shoab Muzmin*

Methodology:

This paper is a narrative review based on both classical Unani and modern biomedical sources. Primary Unani references were extracted from standard texts such as *Al-Qānūn fi'l Ṭibb* by Ibn Sīnā, *Kāmil al-Ṣanā'a al-Ṭibbiyya* by Majūsī, *Ṭibb-i-Akbar* by Arzānī, and *Dhakhīra Khwarizm Shāhī* by Jurjānī. Contemporary commentaries and translations published by CCRUM and other institutes were also consulted. For the modern perspective, a literature search was conducted using PubMed, Google Scholar, and StatPearls databases, along with standard textbooks such as *Textbook of Pathology* and *Pulmonary Pathology*. Search terms included "chronic bronchitis", "COPD", "etiopathogenesis", "cough", and "Unani medicine". Relevant articles published between 2000 and 2025 were considered, with emphasis on clinical features, pathogenesis, and management. Sources that did not directly relate to chronic bronchitis or its correlation with cough were excluded.

Etiopathogenesis:

The development of chronic bronchitis is multifactorial, resulting from a complex interaction of environmental exposures and host susceptibility. Cigarette smoking is the most important and well-documented cause, with the risk increasing in proportion to cumulative exposure.[12] Tobacco smoke, composed mainly of gaseous compounds with a smaller fraction of particulate matter, injures the airways through persistent inflammation, structural remodeling, and oxidative stress. It induces hypertrophy and hyperplasia of submucosal glands and an increase in goblet cells, leading to excessive secretion of mucins such as MUC5AC and MUC5B, impaired mucociliary clearance, and progressive airway obstruction.[13] In addition, cigarette smoke generates reactive oxygen species, including superoxide anions, hydrogen peroxide, and hypochlorous acid, that damage epithelial cells, disrupt repair mechanisms, and sustain inflammation. This oxidative stress recruits neutrophils and macrophages, which further release proteolytic enzymes and reactive species, amplifying epithelial injury and mucus hypersecretion.[14,15] Other forms of tobacco use, such as bidi, hookah, pipes, and cigars, confer comparable risks, while passive exposure to environmental tobacco smoke also increases susceptibility to chronic respiratory disease.[16] Beyond smoking, occupational exposure to dust, vapours, and fumes, along with indoor air pollution from biomass fuels like firewood and cow dung, remains a significant contributor, particularly in low and middle-income countries.[17]

In Unani medicine, *Sū'āl* (cough) is described as a physiological defence mechanism governed by the *Quwwat Dāfi'a* (expulsive faculty), which helps eliminate irritants and excessive secretions from the lungs.[8-11] *Sū'āl Aṣlī* originates directly from the bronchi and lungs due to underlying pathological conditions affecting these structures. Its causes are attributed to both *Asbāb Bādiya* (external factors) and *Asbāb Wāṣila* (internal factors). Common internal factors include *Waram* (inflammation), *Yubūsat* (dryness), *Buthūr* (eruptions), and the accumulation of *Mawād-i-Fāsida* (morbid matter) within the pulmonary passages. Additionally, *Sū'-i-Mizāj* (derangement of temperament) whether *Sāda* (simple) or *Māddi* (associated with morbid matter), as well as the descent of pathological fluids from the *Dimāgh* (brain) or *Ḥalq* (throat) into the lungs, are considered important contributors. External triggers such as cold air, cold diet, dust, smoke, and other environmental allergens or irritants often precipitate symptoms, particularly in individuals predisposed to *Bārid* (cold) or *Raṭb* (moist) temperaments.[8,9,10,11,18] The spongy and delicate structure of the lungs makes them prone to absorb excess *Ruṭūbat* (moisture) from the head or neighbouring organs, or to produce hypersecretions locally. When such accumulations exceed physiological limits, the *Quwwat Dāfi'a* attempts to evacuate them through coughing.[19] From a pathophysiological perspective, the act of coughing is mediated by coordinated expansion and contraction of the chest with diaphragmatic movements.[10]

Unani scholars further classified as clinical or symptomatic types of coughs, namely productive cough and dry cough. Productive cough is more common in individuals with moist temperament and the elderly, characterized by *Balgham Ghalīẓ* (thick phlegmatic expectoration) and nocturnal crepitations. Dry cough, on the other hand, is marked by little or no expectoration, aggravation with exertion or movement, and relative relief with rest, food intake, or sleep. The clinical picture varies with *Mizāj* (temperament). Individuals with *Mizāj Balghamī* (phlegmatic) typically present with a productive cough, whereas those with *Mizāj Ṣafrawī* (bilious) experience a dry, irritative cough associated

with *ʿAlāmāt Ḥārr* (heat signs) such as thirst, restlessness, and yellow sputum.[8,9,10,11,18,20]

Management:

1. Complete smoking cessation [21,22,23]
2. Prompt respiratory infection with antibiotics [21,22]
3. Bronchodilator for reducing dyspnoea [22,23]
4. Mucolytic agents [24]
5. Glucocorticoid [21,23]

Unani Principle of Treatment:

In Unani medicine, the management of *Sūʿāl* (cough) involves a holistic approach combining *Ilāj bi'l-Tadbīr* (regimenal therapy), *Ilāj bi'l-Ghizā* (dietotherapy) and *Ilāj bi'l Dawa* (pharmacotherapy). Regimenal measures such as *Inkibāb* (steam inhalation), *Takmīd* (fomentation) over the chest, and *Tadhīn* (oil massage) are employed to relieve airway obstruction, soften morbid matter, and facilitate expectoration.[18] Dietotherapy plays a vital role in restoring balance and supporting recovery. Moist and easily digestible foods, goat's milk, *Māʾal-Shaʿīr*, chicken soup, nuts, figs, and linctus preparations are commonly recommended for their soothing, nutritive, and expectorant properties, thereby strengthening the respiratory system and promoting overall health.[18,19]

Ilāj bi'l Dawa:

In the management of *Suʿāl* (cough), Unani physicians advocate the use of single as well as compound formulations, some of which are outlined below.

Table 1: Single Drugs

S.NO	Drug	Botanical Name	Temperament	Part used	Action
1	*Arusa*	*Adhatoda vasica*	Hot[1]Dry[1]	Leaf	Expectorant, Antispasmodic, Sedative, Analgesic [25]
2	*Asl-Us-Soos*	*Glycyrrhiza glabra*	Hot[2]Dry[1]	Root	Expectorant, sedative Demulcent, Concoctive of phlegm [26]
3	*Atees*	*Aconitum heterophyllum*	Hot[1]Dry[1]	Root	Antipyretic, Nervine tonic, Astringent [25]
4	*Anjir*	*Ficus carica*	Hot[1]Moist[2]	Fruit	Concoctive, Laxative, Expectorant, Resolving [25,27]
5	*Behidana*	*Cydonia oblonga*	Cold[2]Moist[2]	Seed	Exhirant, Demulcent, Antitussive, Anticold [25,27]
6	*Gul-e-Banafsha*	*Viola ordata*	Cold[1]moist[1]	Flower	Expectorant, Laxative [25,27,28]
7	*Kateera*	*Cochlospermum religiosum*	Hot[1]Dry[1]	Gum	Glutinous, Demulcent, Sedative [25,27,28]
8	*Katan*	*Linum usitatissimum*	Hot[1]Dry[1]	Seed	Resolving, concoctive, Demulcent, Expectorant [25,27,28]
9	*Khobazi*	*Malva sylvstris*	Cold[1]Moist[1]	Fruit	Concoctive, Glutinous, Demulcent, Expectorant [25,27,28]
10	*Kheyar shambar*	*Cassia fistula*	Hot[1]Moist[1]	Pulp	Resolving, Purgative, Expectorant [25]
11	*Sapistan*	*Cordia latifolia*	Balanced	Fruit	Demulcent, Glutinous, Expectorant [25,27]
12	*Unnab*	*Ziziphus jujuba*	Cold[1]Moist[1]	Fruit	Concoctive, Expectorant, Antipyretic [25,28]
13	*Zanjabeel*	*Zingiber officinale*	Hot[2]Dry[3]	Rhizome	Concoctive, Antitussive [25]
14	*Zufa Yabis*	*Hyssopus officinalis*	Hot[3]Dry[3]	Flower	Resolving, Expectorant [25,28]
15	*Zafaran*	*Crocus sativus*	Hot[2]Dry[1]	Stigma	Exhilarant, Antitussive [25,28,29]

Table 2: Compound Drugs [30,31]

Sr.No.	Drug Name	Dosage Form	Dose
1	*Ḥabb-e-Su'al*	Solid	125-25mg
2	*Ḥabb-e-Surfa*	Solid	125-250mg
3	*Ḥabb-e-Sadar*	Solid	3-5g
4	*Joshānda-e-Munḍij*	Liquid	7g
5	*Laʿūq-e-Sapistan*	Semisolid	4g
6	*Laʿūq-e-Khashkhash*	Semisolid	5-10g
7	*Qurṣ-e-Tabasheer Kafoori*	Solid	4.5g
8	*Sharbat-e-Ejaz*	Liquid	20ml
9	*Sharbat-e-Zufa*	Liquid	20ml
10	*Sharbat-e-Unnab*	Liquid	20ml

For the management of cough, several compound formulations are described in classical Unani medicine. One such preparation involves finely powdered roasted *Buzr-e-Katan* (flax seeds) mixed with a decoction of *Anjir* (figs) and subsequently blended with honey to form a *Laʿūq* (linctus), which is administered orally. Another recommended formulation consists of *Rubb-us-Soos* (extract of licorice) 9g, with 2.25g each of *Afyoon* (opium) and *Zafaran* (saffron), prepared according to traditional methods in *Shīra-e-unnab* (sweet grape syrup), and converted into *Ḥubūb* (pills). These formulations are reported to serve as *Musakkin* (soothing) remedies for cough. Take 18g of *Rubb-us-Soos* (licorice extract), 7g each of *Filfil Quroomana* (long pepper), *Murmakki* (myrrh) and bitter almond oil, along with 3.5g of Hing (asafoetida). Prepare pills of these ingredients by mixing them with honey. Keeping these pills in the mouth is highly beneficial for cleansing the chest from thick morbid matter.[18,19]

Prevention:

1. Foods that cause *Nāfikh* (flatulence) and *Qabz* (constipation) should be avoided.

2. Diets with a cold and moist temperament promote sputum production; therefore, fat, curd, cold water, and citrus fruits are discouraged.

3. Avoid exposure to cold water and cold environments.

4. Phlegm producing foods must be avoided in cases of cough associated with a cold.

Discussion:

The present review establishes that although the literal term *Waram-i- shoab Muzmin* is not found in early Unani texts, the symptom-based entity *Suʿāl*, particularly *Suʿāl Aṣlī*, closely parallels the modern concept of chronic bronchitis. Both systems recognize environmental irritants such as smoke, dust, and cold air as primary triggers. Modern medicine explains the condition through airway inflammation, goblet cell hyperplasia, oxidative stress, and mucociliary dysfunction. In contrast, Unani scholars attributed the pathology to *Sū'-i-Mizāj*, *Waram*, *Yubūsat*, and deposition of *Mawād-i-Fāsida*, with *Quwwat Dāfiʿa* attempting to expel these through cough. The differentiation of cough types in Unani medicine, productive in *Balghamī Mizāj* and dry in *Ṣafrawī Mizāj*, illustrates a nuanced clinical understanding that resonates with the recognition of disease heterogeneity in modern medicine.

Management approaches in both systems emphasize prevention. Smoking cessation, pollution control, and vaccination remain the pillars in modern medicine, while Unani physicians stressed avoiding phlegm-producing diets, cold environments, and irritants. Pharmacologically, modern therapies rely on bronchodilators, mucolytics, and corticosteroids, which though effective, carry long-term risks. Unani management integrates regimenal therapies like *Inkibāb* (steam inhalation), dietary regulation, and safe, time-tested herbal drugs with expectorant, demulcent, and anti-inflammatory actions. Notable among these are *Asl-us-Soos*, *Zufa*, *Behidana*, and compound drugs like *Laʿūq-e-Khashkhash* and *Sharbat-e-Unnab*.

Several clinical trials have explored the role of herbal and traditional interventions in cough management with encouraging results. Ghaemi et al. (2020) conducted a randomized controlled trial in which a traditional Persian medicine preparation was evaluated for chronic cough, showing significant improvement compared with placebo. Similarly, Jabbari et al. (2020) investigated the role of Persian medicine approaches in the management of acute cough and reported favorable therapeutic effects.[26,28]

In addition, Aslani et al. (2023) studied crocin, a bioactive constituent of *Crocus sativus* L., in patients with COPD, focusing on its impact on inflammatory mediators such as IL-6 and TNF-α. Their results demonstrated a significant reduction in these markers, suggesting that crocin may exert an anti-inflammatory effect that contributes to symptom relief in chronic respiratory disorders.[29]Collectively, these studies provide supportive evidence that herbal medicines, including Persian medicine formulations and plant-derived

compounds, hold promise as adjunctive therapies in both acute and chronic cough. They also emphasize the need to integrate traditional approaches with modern clinical research to establish safe, effective, and standardized treatments for respiratory diseases.

Conclusion:

Chronic bronchitis, although not explicitly described in Unani classics, can be closely correlated with *Suʿāl*, particularly *Suʿāl Aṣlī*. Both Unani and modern frameworks recognize similar causative factors, such as smoke, dust, and exposure to cold, while differing in their explanatory models. Modern medicine, however, emphasizes airway inflammation and oxidative stress. In contrast, Unani medicine attributes the condition to humoral imbalance and altered *Mizāj*. Preventive and therapeutic strategies show notable convergence, though Unani care extends further by emphasizing holistic approaches, including regimenal therapies, dietary regulation, and pharmacotherapy with single and compound herbal formulations. Evidence from clinical studies suggests that herbal and traditional interventions, including Persian medicine formulations and crocin from *Crocus sativus* L., can have beneficial effects in managing both acute and chronic cough, highlighting their potential as complementary therapies in respiratory care. Integrating these interventions with modern evidence-based care may offer safer and more sustainable options for managing chronic bronchitis.

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