



HUMMA WABAIYA (EPIDEMIC FEVER) AND COVID-19: AN INTEGRATIVE ANALYSIS FROM UNANI AND MODERN MEDICAL VIEWPOINTS

Unani Medicine

Dr. Mohd Saad Yusuf* PG Scholar, Dept Of Moalajat, Govt. Tibbi College And Hospital (GTCH), Patna.
*Corresponding Author

Dr. Md. Najibur Rahman Associate Professor Cum HoD-Moalajat, Govt. Tibbi College And Hospital (GTCH), Patna.

Prof. Dr. Shahnawaz Akhtar Professor Cum Medical Superintendent, Govt. Tibbi College And Hospital (GTCH), Patna

ABSTRACT

Objective: This review aims to explore the correlation between COVID-19 and Humma Wabaiya as described in classical Unani texts. It further evaluates Unani preventive, promotive, and therapeutic approaches in the light of contemporary biomedical evidence, proposing an integrative framework for disease understanding and management. **Methods:** Classical Unani texts such as Al-Qanun fi al-Tibb by Ibn Sina, Kitab al-Hawi by Razi, and Zakhira Khwarzam Shahi by Jurjani were reviewed to delineate the Unani nosology and pathophysiology of epidemic fevers. Government guidelines from CCRUM and the Ministry of AYUSH were studied to analyze Unani interventions advised during COVID-19. Peer-reviewed biomedical literature, along with case-based reports from Unani hospitals and dispensaries, was also examined for integrative correlations. **Results:** COVID-19 shares striking similarities with Humma Wabaiya in terms of its epidemic nature, respiratory tract involvement, and systemic manifestation. In Unani thought, such diseases are attributed to environmental corruption, atmospheric imbalance, and the spread of infectious matter (Ufoonat). Management strategies are centered on the principles of Hifz-e-Sehat (preservation of health), Tanqiya (detoxification), Taqwiyat-e-Muqawwiat-e-Badan (strengthening of immune power), and symptomatic relief through Munzij (concoctives), Mukhrij (evacuatives), and Muqawwi Aza (organ tonics). Preparations like Joshanda Unnab, Laooq-e-Katan, Sharbat-e-Toot Siyah, and Khamira Marwareed have shown potential for symptomatic relief and immunomodulation. Modern parallels include antiviral treatment, immune boosters, and supportive care, which resonate with the Unani principle of supporting natural defense mechanisms (Quwwat-e-Mudabbira Badan). **Conclusion:** Unani medicine provides a holistic understanding of epidemic fevers like COVID-19 through its foundational theories of temperament, humoral imbalance, and environmental influences. Its preventive and therapeutic guidelines not only complement modern biomedical practices but also promote integrative strategies for enhancing community resilience. The convergence of Unani and modern perspectives may pave the way for effective, safe, and culturally accepted interventions in managing future epidemics.

KEYWORDS

COVID-19, Humma Wabaiya, Unani Medicine, Epidemic Fever, Ufoonat, Ilaj-bit-Tadbeer, Immunomodulation, Hifz-e-Sehat, Mizaj

1. INTRODUCTION

Epidemic diseases have been a recurring challenge throughout human history, often leaving profound impacts on public health, economy, and societal structure. In Unani medicine, epidemic illnesses are grouped under Amraz Wabaiya (epidemic diseases) with Humma Wabaiya (epidemic fever) being one of the most significant forms described in classical literature. These conditions are understood as being caused by Ufoonat (infectious miasmas) and Ikhtilal-e-Mizaj (disturbance in temperament) due to environmental corruption (Fasad-e-Hawa).[1-3]

COVID-19, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first emerged in Wuhan, China, in December 2019 and was declared a pandemic by the World Health Organization (WHO) in March 2020.[4] The disease exhibits a wide spectrum of clinical presentations, ranging from asymptomatic infection to severe respiratory failure and multi-organ dysfunction.[5] Its rapid global spread, high transmissibility, and significant morbidity and mortality have led to unprecedented public health measures, including lockdowns, quarantine, and mass vaccination campaigns.[6] In Unani nosology, Humma Wabaiya corresponds to epidemic fevers that arise due to Air pollution, climatic imbalance, and spread of pathogenic factors. Ibn Sina, in Al-Qanun fi al-Tibb, described that when air becomes contaminated due to putrefaction, astral influences, or environmental changes, it can alter the temperament of individuals, leading to the manifestation of epidemic diseases.[1] Zakariya Razi, in Kitab al-Hawi, further emphasized that such fevers can affect large populations simultaneously and are often accompanied by respiratory symptoms, systemic weakness, and a rapid progression if left untreated.[2]

Modern medicine attributes the spread of COVID-19 to human-to-human transmission via respiratory droplets, aerosols, and contaminated surfaces.[7] Preventive strategies such as mask usage, hand hygiene, and social distancing are central to its control.[8] Interestingly, these measures parallel Unani recommendations for epidemic control, such as environmental purification (Tahleel-e-Hawa), isolation of patients (Taqlaed), and strengthening the body's

innate defense mechanism (Quwwat-e-Mudabbira Badan).[9]

An integrative approach that combines the preventive and curative wisdom of Unani medicine with the diagnostic precision and therapeutic advancements of modern medicine may offer a more comprehensive framework for epidemic preparedness and management. This paper explores the theoretical basis, clinical correlation, and therapeutic strategies of Humma Wabaiya in relation to COVID-19, highlighting points of convergence between the two medical paradigms.

2. Historical Overview Of Humma Wabaiya In Unani Medicine

In the Unani system of medicine, Humma refers to fever, and Humma Wabaiya denotes epidemic fever that affects large populations within a short time due to an infective agent and environmental factors. The etymology of Humma is derived from the Arabic word "iāġ" meaning heat or elevated body temperature, and Wabaiya refers to a condition of epidemic nature. [1,2] Classical physicians such as Hippocrates (Buqrat), Galen (Jalinoos), and later Ibn Sina (Avicenna) described epidemic fevers as diseases caused by fasad-e-hawa (corruption of air) due to putrefaction of moist vapors in the environment, often arising after climatic disturbances, seasonal transitions, or accumulation of decaying matter. [1,3]

Ibn Sina, in Al-Qanun fi al-Tibb (Book I, Kitab al-Umur al-Tabi'yyah), explains that epidemic fevers occur when the hawa (air) is altered in quality and becomes unsuitable for inhalation, transmitting pathogenic qualities to the ruh (vital spirit) via respiration.[1] This alteration may be due to miasma, sudden temperature shifts, or celestial influences. Similarly, Zakariya Razi, in Kitab al-Hawi, described that Humma Wabaiya often appears in densely populated areas with poor ventilation and sanitation, particularly after flooding or famine.[2]

The clinical features of Humma Wabaiya in Unani texts include sudden onset of high-grade fever, chills, generalized malaise, headache, respiratory distress, and sometimes gastrointestinal symptoms — all of which bear resemblance to the symptomatic spectrum of COVID-19.[10] In Zakhira Khwarzam Shahi, Jurjani noted the contagious nature

(Sarayat) of certain epidemic fevers, stating that proximity to an infected person or inhalation of their breath could transmit the disease. [3]

Preventive Measures Against Humma Wabaiya In Unani Classics Included:

Isolating affected individuals (Hajr).

Purifying air through aromatic fumigation (Bakhoor) using vinegar, sandalwood, camphor, and rose [1, 10].

Strengthening the body's mizaj through tonics (Muqawwi Badan) and immune boosters like Sharbat-e-Unnab, Joshanda, and Khameera Marwareed.[11]

The alignment of these historical concepts with present-day public health measures — isolation, quarantine, environmental disinfection, and immune enhancement — illustrates the foresight of Unani scholars. Such correlations pave the way for reinterpreting COVID-19 within the framework of Humma Wabaiya.

3. Etiology And Pathogenesis (Unani And Modern Perspectives)

3.1 Etiology — Unani Perspective

In Unani nosology, epidemic fevers (Humma Wabaiya) arise from external and internal causes that disturb the body's temperament (mizāj) and humoral balance (akhlāt). Classical authors explain the principal etiologic factors as:

Fasād-e-Hawā (Polluted air): Polluted or putrefied air carrying madda wabā'iyya (epidemic matter) is the primary external cause. Inhalation of such air is believed to transmit pathogenic qualities to the ruh and tabīyat, initiating febrile and systemic disturbance [1].

Asbāb-e-sitta Zarūriyya (Six Essential Factors): Changes in climate, diet, water quality, habitation, sleep/wake cycles, and exercise that predispose to temperament derangement and increase susceptibility. Unfavourable seasonal shifts are repeatedly cited in classical texts as precipitating epidemics. [2]

Weakness Of Quwwat-e-Mudabbira-e-Badan (Innate Regulating Power): Individuals with diminished vital faculty (due to age, malnutrition, chronic disease, or extreme psychological stress) are considered more susceptible to invasion by madda and thus more likely to develop severe disease. [3]

Transmission By Proximity And Fomites: Classical authorities recognized that proximity to an infected person, inhalation of their breath, or contact with contaminated objects could propagate an epidemic — described in terms of sarayat (contagion) and intiqaal (transmission). Preventive measures such as isolation (hajr), fumigation, and air purification are prescribed. [1-3]

Mechanistically, Unani texts explain that once the impure air or epidemic matter enters the body it alters the balance of humours (commonly dam and balgham in respiratory epidemics), produces abnormal morbid matter (maddā ghair ṭabī'ī), and weakens the quwā, leading to fever, respiratory distress and systemic symptoms. [1-3]

3.2 Etiology — Modern Perspective (SARS-CoV-2/ COVID-19)

Modern biomedical science identifies SARS-CoV-2, an enveloped positive-sense single-stranded RNA virus of the Coronaviridae family, as the etiologic agent of COVID-19. Key etiologic and transmission facts are:

Primary Agent And Reservoir: SARS-CoV-2 likely originated as a zoonotic spillover and is transmitted among humans. [13]

Modes Of Transmission: Respiratory droplets (close contact), aerosols (especially in poorly ventilated spaces), and fomite transmission (indirect contact) are the principal routes; airborne spread has been demonstrated under certain conditions. [7,14]

Incubation And Infectious Period: Incubation typically 2–14 days (median ~5 days); infectivity may begin 1–2 days before symptom onset. [8]

Host Factors: Age, comorbidities (diabetes, cardiovascular disease, COPD), and immunosuppression increase risk of severe disease. [8,13]

On a molecular level, SARS-CoV-2 binds ACE2 receptors on

respiratory and other epithelial cells to gain entry; viral replication initiates innate immune responses, and in some patients dysregulated inflammation (cytokine release) causes lung injury, endothelial dysfunction, and multisystem disease (ARDS, coagulopathy). [13,15]

3.3 Pathogenetic Correlation: Unani ⇔ Modern

Although Expressed In Different Conceptual Languages, Several Unani Etiologic Ideas Align With Modern Mechanisms:

Fasād-e-Hawā ≈ Airborne/aerosol transmission: The Unani notion of impure air carrying epidemic matter parallels airborne/droplet transmission of viral particles. Both frameworks emphasize the environment (air quality, ventilation) in propagation. [1,7]

Madda wabā'iyya ≈ Viral particles / infectious inoculum: The concept of a harmful “epidemic matter” that disturbs humours is analogous to exposure to a biological pathogen (virus) that perturbs host homeostasis. [1,13]

Quwwat-e-Mudabbira (host resistance) ≈ Innate/adaptive immunity: Unani's focus on the strength of the tabīyat corresponds to modern recognition that immune competence determines susceptibility and disease severity. [2,8]

Humoral imbalance ≈ Inflammatory dysregulation: Unani descriptions of accumulation of morbid humours and resultant systemic toxicity can be mapped conceptually to cytokine-mediated systemic inflammation and organ dysfunction in severe COVID-19. [3,15]

The integrative view suggests that Unani preventive measures aimed at restoring mizāj and strengthening quwā (diet, regimens, fumigation, tonics) address host-environment interactions that modern medicine identifies as determinants of infection risk and outcome.

3.4 Comparative Table-Etiology & Pathogenesis

Aspect	Unani Concept	Modern Mechanism	Interpretive Correlation
Agent	Madda wabā'iyya (epidemic matter) [1]	SARS-CoV-2 viral particles [13]	Both denote a transmissible harmful agent
Transmission	Fasād-e-hawā, proximity, contaminated objects [1–3]	Droplet/aerosol, fomites, close contact [7]	Environmental inhalation and contact spread align
Entry point	Inhalation → affects rīya (lung) and tabīyat [1]	Viral entry via ACE2 on respiratory mucosa [13]	Common primary respiratory portal
Host susceptibility	Weak quwwat (age, malnutrition, sue-mizāj) [2]	Elderly, comorbidities, immunosuppression increase risk [8]	Host vulnerability conceptually equivalent
Disease progression	Accumulation of morbid akhlāt, systemic toxicity [3]	Viral replication → immune dysregulation → ARDS, multi-organ dysfunction [15]	Humoral toxicity ≈ inflammatory cascade and organ injury

4. Clinical Features

4.1 Unani Perspective

In the Unani system, Humma Wabaiya is described as an acute febrile condition spreading rapidly within a population, often associated with foul air (Hawa-i-Fasid) and seasonal imbalances. Ibn Sina notes that such fevers are characterized by sudden onset, high-grade fever, severe headache, generalized body aches, dryness of the tongue, excessive thirst, restlessness, and in some cases respiratory distress. [1] Al-Razi in Kitab al-Hawi mentions shivering, rapid pulse, heaviness in the chest, cough, and difficulty in breathing, sometimes accompanied by delirium in severe forms. [2]

Jurjani in Zakhira Khwarzam Shahi describes persistent fever, loss of appetite, weakness, and a feeling of suffocation, often worsening at night. [3]

These classical descriptions bear remarkable similarity to the clinical picture of COVID-19, particularly in its moderate to severe presentations, where fever, cough, breathlessness, and systemic

symptoms predominate.

4.2 Modern Perspective (COVID-19)

According to WHO and peer-reviewed studies, COVID-19 presents with a wide spectrum of symptoms ranging from asymptomatic infection to severe pneumonia and multi-organ failure. The common symptoms include:

- Fever (83–98%)
- Dry cough (59–82%)
- Fatigue (44–70%)
- Myalgia (11–44%)
- Shortness of breath (31–40%)
- Sore throat (14–20%)
- Loss of smell and taste (15–30%)
- Gastrointestinal symptoms (nausea, vomiting, diarrhea) in ~10% of patients. [16]

In severe cases, patients may develop acute respiratory distress syndrome (ARDS), septic shock, and multi-organ dysfunction. [17] Post-acute COVID-19 syndrome (“long COVID”) includes fatigue, dyspnea, chest pain, cognitive impairment, and psychological disturbances. [18]

4.3 Comparative Symptom Analysis

Symptom	Humma Wabaiya (Unani Sources)	COVID-19 (Modern Medicine)
Fever	Sudden onset, high-grade, persistent [1]	High-grade, persistent, common in >80% [16]
Cough	Often productive, with chest heaviness [12]	Usually dry, may become productive in pneumonia [17]
Breathlessness	Feeling of suffocation, worse at night [3]	Dyspnea, especially on exertion; may progress to ARDS [17]
Headache	Severe, with heaviness in head [1]	Common, sometimes with photophobia [5]
Weakness/Fatigue	Extreme lassitude [3]	Fatigue in >60% [16]
Loss of appetite	Almost always present [12]	Frequently reported [5]
Anosmia/Ageusia	Not explicitly described	Characteristic symptom [16]

5. Diagnosis

Here We Can Structure It Into Two Perspectives:

5.1 Diagnosis in Unani Medicine

Principles of Tashkhis (diagnosis) in Humma Wabaiya

- Pulse examination (Nabz)
- Examination of tongue (Lisan)
- Urine (Baul)
- Stool (Baraz),
- Overall Temperament (Mizaj).
- Role of Clinical history
- Signs of Epidemic spread (intishar),
- Prodromal Symptoms (alamat-e-mubtadia).
- Based on Observation (Mushahida).[1-3]

5.2 Diagnosis in Modern Medicine (COVID-19)

Clinical diagnosis — Based on WHO and ICMR case definitions for suspected, probable, and confirmed COVID-19 cases.

Laboratory Diagnosis:

- RT-PCR: gold standard (target genes: RdRp, N, E).
- Rapid Antigen Tests (RATs) for point-of-care.
- Serology for antibody detection (IgM/IgG).
- Radiological diagnosis:
- Chest X-ray — bilateral patchy opacities.
- HRCT — ground-glass opacities, crazy paving, consolidation. [19,20]

Differential Diagnosis: Influenza, bacterial pneumonia, MERS, SARS-CoV-1.

5.3 Comparative Analysis Table

Feature	Unani Diagnosis (Humma Wabaiya)	Modern COVID-19 Diagnosis
Primary assessment	Pulse, tongue, urine, stool, temperament	Clinical examination, vitals, SpO ₂

Confirmation	Symptom pattern, epidemic nature	RT-PCR, RAT, HRCT
Staging	Based on severity of humma (mild/moderate/shadeed)	Mild, moderate, severe, critical
Public health role	Isolation (hijr) and prevention (tahaffuz)	Quarantine, contact tracing

6. Management In Unani Medicine

6.1 General Principles Of Management

In the Unani system, the management of Humma Wabaiya (epidemic fever) and analogous conditions such as COVID-19 is guided by the principles of Izala-e-Sabab (removal of cause), Tadeel-e-Mizaj (correction of temperament), and Quwwat-e-Mudabbira-e-Badan (augmentation of natural immunity). Classical scholars emphasize three major strategies:

- **Hifz-e-Schat (Preservation of Health)** through prevention and strengthening of immunity.
- **Tanqiya-e-Badan (Evacuation of morbid matter)** through regimental and pharmacological measures.
- **Ilaj-bil-Dawa (Pharmacotherapy)** with suitable drugs

Muqawwi (tonic), Muhallil (anti-inflammatory), possessing Musaffi (detoxifying) and Daf'-e-Humma (antipyretic) properties. [1]

6.2 Pharmacotherapy (Ilaj-bil-Dawa)

6.2.1 Classical Drugs for Epidemic Fevers

Tiryaaq-e-Wabai — a polyherbal preparation with reported Daf'-e-Sumoom (antidotal) and immune-boosting effects. [3]

Habbe Bukhar — for controlling fever and associated malaise. [11]

Sharbat-e-Banafsha — demulcent and soothing, used for throat irritation and dry cough. [21]

Laoq Sapistan — mucolytic and expectorant. [21]

These formulations are mentioned by Ibn Sina in Al-Qanun fi al-Tibb and Razi in Kitab al-Hawi, with emphasis on tailoring to the patient's mizaj (temperament). [1,2]

6.2.2 Modern Relevance Of Unani Drugs In COVID-19

Recent phytochemical studies reveal that ingredients of Tiryaaq-e-Wabai such as Zingiber officinale and Piper longum exhibit antiviral, immunomodulatory, and antioxidant activities.[22] Similarly, Glycyrrhiza glabra (found in Laoq Sapistan) shows in-vitro activity against SARS-CoV-2. [23]

6.3 Regimental Therapy (Ilaj-bil-Tadbeer)

Hammam (steam bath) with Baboona (Matricaria chamomilla) infusion for respiratory clearance [24].

Tanafus-e-Amdeep (deep breathing exercises) to strengthen lung capacity.

Inkibab (steam inhalation) with thyme or eucalyptus oil for nasal and throat mucosa soothing [25].

6.4 Dietary Management (Ilaj-bil-Ghiza)

Unani Scholars Recommend Light, Moist, And Easily Digestible Food During Epidemic Fevers. [1] Examples:

- **Yakhni (meat broth)** for nourishment.
- **Kushaada Ghiza (soft diet)** like barley water (Ma-ul-Sha'eer). Avoiding heavy, oily, and flatulent foods. [2]

6.5 Preventive Measures in Unani Medicine (Hifz-e-Schat)

Ibn Sina and Razi advised preventive regimens in epidemics:

Ta'feer (fumigation) of living spaces using vinegar, frankincense, and Sandal Safed. [1]

Maintaining social distancing and avoiding crowded places. [26]

Strengthening natural immunity with tonics such as Majoon-e-Falasifa. [11]

7.Preventive Approaches in Unani and Modern Medicine

7.1 Unani Perspective

Unani physicians have long emphasized the prevention of Amraz Wabaiya (epidemic diseases) through maintenance of Asbab-e-Sitta

Zarooriya (six essential factors for health) and specific prophylactic measures. These include:

Tahleel-e-Hawa (Air purification): Fumigation with aromatic and antiseptic herbs such as Loban (Styrax benzoin), Sandal (Santalum album), and Ood (Aquilaria agallocha) to disinfect the environment. [1,3]

Qai bil 'Aqdamiya (Induced vomiting) and Hijamah: Recommended for humoral detoxification during epidemic threats. [2]

Immunomodulatory Tonics: Use of Tiryaaq Wabai, Tiryaaq Arba, and Tiryaaq Nazla for strengthening innate immunity (Quwwat-e-Mudabbira Badan). [27]

Dietary Regulation: Avoidance of cold and moist foods, preference for warm and dry temperament diet, and inclusion of honey, garlic, and ginger. [21]

Personal Hygiene: Frequent washing with vinegar-water solutions and wearing protective cloth coverings during outbreaks. [1]

7.2 Modern Perspective

Modern preventive approaches for COVID-19 focus on breaking the chain of transmission and enhancing host defense:

Public Health Measures: Mask wearing, physical distancing, adequate ventilation. [28]

Vaccination: mRNA, vector-based, and protein subunit vaccines shown to significantly reduce morbidity and mortality. [29]

Hygiene Practices: Frequent handwashing with soap or alcohol-based sanitizers. [30]

Nutritional Supplementation: Adequate vitamin D, vitamin C, and zinc intake for immune support. [31]

Mental Health Care: Psychological support to reduce stress-induced immunosuppression. [32]

7.3 Integrative Approach

A combination of Unani preventive principles (Asbab-e-Sitta Zarooriya, herbal prophylaxis, dietary regulations) with evidence-based modern measures (vaccination, masking, sanitation) offers a holistic and culturally acceptable prevention model for communities familiar with traditional medicine.

8. DISCUSSION

The COVID-19 pandemic has underscored the importance of an integrative medical approach that combines evidence-based modern interventions with traditional systems like Unani medicine. Classical Unani scholars, such as Ibn Sina, Razi, and Jurjani, have elaborated on epidemic diseases (Amraz-e-Wabaiya) and recommended preventive, promotive, and curative measures that align remarkably well with modern public health principles. [1,2,3]

Unani medicine conceptualizes epidemic diseases as resulting from the corruption of air (Fasad-e-Hawa), leading to imbalance in temperament (Sue Mizaj) and humoral disturbances (Ikhtilal-e-Akhlalat). [1,2] This concept parallels modern understanding of airborne viral transmission and the role of environmental factors in disease spread. [31,35]

The preventive strategies suggested in Unani literature — such as fumigation (Bakhoor), quarantine (Hajr-e-Sihhi), use of immune-boosting tonics (Muqawwi-e-Mana'at), and regulation of diet and lifestyle — find strong resonance with WHO guidelines for infection prevention and immune health. [31,35].

From a therapeutic perspective, Unani physicians emphasized the importance of Tahleel (detoxification), Taqwiyat (strengthening vital organs), and Tanqiya (detoxification), using drugs like Asgandh (Withania somnifera), Zanjabeel (Zingiber officinale), and Bahman Surkh (Salvia haematodes). [21,33,34] These have been studied for their immunomodulatory and antiviral properties in modern research, supporting their relevance in managing viral infections. [37,41]

The integration of Unani measures with standard modern care could enhance patient outcomes, particularly in terms of prevention,

symptom relief, and post-infection recovery. However, the absence of large-scale randomized controlled trials (RCTs) evaluating Unani interventions for COVID-19 remains a major limitation. [31]

The need for collaborative research between Unani scholars and modern scientists is therefore urgent. Furthermore, Unani's holistic focus on physical, mental, and spiritual health — including stress reduction techniques, balanced diet, adequate rest, and environmental hygiene — mirrors modern recommendations for resilience against infectious diseases. [34,37] This reinforces the notion that ancient systems like Unani, far from being obsolete, may offer valuable complementary strategies in contemporary pandemic response.

9. CONCLUSION

COVID-19, defined in modern medicine as an acute viral respiratory illness caused by SARS-CoV-2, shares notable conceptual parallels with Humma Wabaiya in Unani medicine. Classical Unani scholars such as Ibn Sina, Razi, and Jurjani provided a comprehensive framework for epidemic fevers, highlighting the role of environmental factors, humoral imbalance, and preventive measures including tahaffuz (protection), tanqiya (detoxification), and tadil al-mizaj (temperament correction). Management strategies in Unani practice—such as munafis-i-sadar (expectorants), muqawwi-man'a'at (immune enhancers), and mufatteh-i-sudad (deobstruents)—can complement modern antiviral, supportive, and critical care approaches. Additionally, dietary regimens (ilaj bil ghiza), regimen-based therapies (ilaj bit-tadbeer), and herbal pharmacotherapy (ilaj bid-dawa) provide holistic adjunctive measures for enhancing immunity and recovery. While further clinical research is required to validate the efficacy of these interventions, integrating Unani principles with contemporary medical strategies could offer a comprehensive, safe, and culturally relevant model for pandemic preparedness and management.

REFERENCES:

- Ibn Sina. (2007). *Al-Qanun fi al-Tibb* (Vol. 1, pp. 110–125, 190, 210–225, 214, 234–251; Vol. 2, p. 119). New Delhi, India: CCRUM.
- Al-Razi, Z. (1991). *Kitab al-Hawi* [Comprehensive book of medicine] (Vols. 1–3; Vol. 1, pp. 203–205, 312–320, 356–362, 314–316; pp. 172–175, 345–359, 342–343; Vol. 2, pp. 293–205). Hyderabad, India: Dairatul Maarif.
- Jurjani, I. (2010). *Zakhira Khwarzama Shahi* (Vols. 1–4; Vol. 1, pp. 98–104, 192–196, 201–204, 214–219, 334–336, 415–417; Vol. 4, p. 276; Vol. 5, pp. 415–417). New Delhi, India: Idara Kitab-us-Shifa.
- World Health Organization. (2020, March 11). WHO Director-General's opening remarks at the media briefing on COVID-19 – 11 March 2020. Geneva, Switzerland: WHO.
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., et al. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*, 395(10223), 497–506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5)
- Johns Hopkins University. (2021). *Coronavirus Resource Center: COVID-19 dashboard* by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University, Baltimore, MD: JHU. Retrieved from <https://coronavirus.jhu.edu>
- Morawska, L., & Milton, D. K. (2020). It is time to address airborne transmission of coronavirus disease 2019 (COVID-19). *Clinical Infectious Diseases*, 71(9), 2311–2313. <https://doi.org/10.1093/cid/cia939>
- Centers for Disease Control and Prevention. (2021). *How COVID-19 spreads*. Atlanta, GA: CDC. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>
- Central Council for Research in Unani Medicine. (2020). *Advisory on COVID-19: Unani preventive measures*. New Delhi, India: CCRUM.
- Kabiruddin, M. (2006). *Tarjuma wa Sharah Kuliyat-e-Nafisi* (pp. 49–51). New Delhi, India: Aijaz Publishing House.
- Central Council for Research in Unani Medicine. (2006). *National Formulary of Unani Medicine* (Part 1, pp. 78–80, 114–119). New Delhi, India: Ministry of AYUSH.
- Majosi, A. I. A. (2010). *Kamil al-Sana'ah al-Tibbiyah (Al-Mansuri/Kamil)* (pp. 226–230). New Delhi, India: CCRUM.
- Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., et al. (2020). A novel coronavirus from patients with pneumonia in China, 2019. *The New England Journal of Medicine*, 382, 727–733. <https://doi.org/10.1056/NEJMoa2001017>
- Corman, V. M., Landt, O., Kaiser, M., Molenkamp, R., Meijer, A., Chu, D. K., et al. (2020). Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Eurosurveillance*, 25(3), 2000045. <https://doi.org/10.2807/1560-7917.ES.2020.25.3.2000045>
- Tay, M. Z., Poh, C. M., Rénia, L., MacAry, P. A., & Ng, L. F. P. (2020). The trinity of COVID-19: Immunity, inflammation and intervention. *Nature Reviews Immunology*, 20(6), 363–374. <https://doi.org/10.1038/s41577-020-0311-8>
- Guan, W. J., et al. (2020). Clinical characteristics of coronavirus disease 2019 in China. *The New England Journal of Medicine*, 382(18), 1708–1720. <https://doi.org/10.1056/NEJMoa2002032>
- Wu, C., et al. (2020). Risk factors associated with acute respiratory distress syndrome and death in patients with COVID-19. *JAMA Internal Medicine*, 180(7), 934–943. <https://doi.org/10.1001/jamainternmed.2020.0994>
- Nalbandian, A., et al. (2021). Post-acute COVID-19 syndrome. *Nature Medicine*, 27(4), 601–615. <https://doi.org/10.1038/s41591-021-01283-z>
- World Health Organization. (2021). *Clinical management of COVID-19: Interim guidance* (pp. 3–15). Geneva, Switzerland: WHO.
- Ministry of Health & Family Welfare, Government of India. (2021). *Guidelines on clinical management of COVID-19* (pp. 5–18). New Delhi, India: MoHFW.
- Kabeeruddin, M. (2005). *Bayaz-e-Kabeer* (Vol. 1; Vol. 2, pp. 92–94, 264–268). New Delhi, India: CCRUM.
- Ahmad, S., et al. (2021). Phytochemistry and pharmacology of Piper longum. *Journal of Ethnopharmacology*, 275, 442–448. <https://doi.org/10.1016/j.jep.2021.114098>

23. Cinatl, J., et al. (2003). Glycyrrhizin, an active component of liquorice roots, and replication of SARS-associated coronavirus. *The Lancet*, 361(9374), 109–110. [https://doi.org/10.1016/S0140-6736\(03\)12246-0](https://doi.org/10.1016/S0140-6736(03)12246-0)
24. Said, H. M. (1998). Hammam therapy in Unani medicine (pp. 321–325). Karachi, Pakistan: Hamdard Foundation.
25. Central Council for Research in Unani Medicine. (2014). *Standard Unani regimental therapies* (pp. 87–90). New Delhi, India: Ministry of AYUSH.
26. Rizvi, M. A. (2020). Preventive principles in Unani medicine during epidemics. *Hamdard Medicus*, 63(2), 48–54.
27. Kabiruddin, M. (2006). *Makhzanul Mufradat* (pp. 286–288). New Delhi, India: Aijaz Publishing.
28. World Health Organization. (2023). COVID-19: Advice for the public. Geneva, Switzerland: WHO. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
29. Polack, F. P., Thomas, S. J., Kitchin, N., Absalon, J., Gurtman, A., Lockhart, S., et al. (2020). Safety and efficacy of the BNT162b2 mRNA Covid-19 vaccine. *The New England Journal of Medicine*, 383(27), 2603–2615. <https://doi.org/10.1056/NEJMoa2034577>
30. Centers for Disease Control and Prevention. (2023). How to protect yourself and others. Atlanta, GA: CDC. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>
31. Calder, P. C., Carr, A. C., Gombart, A. F., & Eggersdorfer, M. (2020). Optimal nutritional status for a well-functioning immune system is an important factor to protect against viral infections. *Nutrients*, 12(4), 1181. <https://doi.org/10.3390/nu12041181>
32. Pfefferbaum, B., & North, C. S. (2020). Mental health and the COVID-19 pandemic. *The New England Journal of Medicine*, 383(6), 510–512. <https://doi.org/10.1056/NEJMp2008017>
33. Arzani, M. A. (2008). *Tibb-e-Akbar* (pp. 286–288). New Delhi, India: Idara Kitab-us-Shifa.
34. Kabeeruddin, M. (2006). *Kulliyat-e-Qanoon* (Vol. 1, pp. 178–180). New Delhi, India: Aijaz Publishing House.
35. World Health Organization. (2021). Infection prevention and control during health care when COVID-19 is suspected or confirmed. Geneva, Switzerland: WHO. Retrieved from <https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-2021.1>
36. Baghdadi, I. H. (2005). *Kitab al-Mukhtarat fi al-Tibb* (Vol. 1, pp. 315–318). Hyderabad, India: Dairatul Maarif.
37. Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *JAMA*, 298(14), 1685–1687. <https://doi.org/10.1001/jama.298.14.1685>