

UNANI ADJUVANT THERAPY FOR CORONAVIRUS DISEASE 2019 (COVID-19): A REVIEW

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ABSTRACT

The pandemic of coronavirus disease (COVID-19) caused by the novel coronavirus severe acute respiratory syndrome 2 (SARS-CoV-2) poses an unparalleled difficulty in the evaluation of appropriate drugs for prevention and treatment. Due to the unavailability of vaccine and antiviral medicine, there is an urge to look for the scope of traditional therapy for this fatal disease. Despite rigorous global containment and quarantine efforts, the incidence of COVID-19 continues to rise. Currently, no antiviral medication is recommended to treat COVID-19. Treatment is directed at relieving symptoms so a formulation after a comprehensive literature review of Unani literature is being hypothesized as adjuvant therapy for the management of coronavirus disease based on the symptoms associated.

KEYWORDS: COVID-19, SARS CoV-2, Pandemic, Antiviral, Unani literature, Adjuvant.

1. INTRODUCTION

Pneumonia-like outbreak of unknown etiology emerged in Wuhan, China in December 2019 and spread rapidly across the world.^[1] The World Health Organization (WHO) and the Center for Disease Control and Prevention (CDC) defined this condition as an inflammation of the respiratory tract, caused by a newly discovered coronavirus, a novel beta-coronavirus, named 2019-nCoV, now officially known as Coronavirus 2 (SARS-CoV-2), a severe acute respiratory syndrome.^[1,2,3]

WHO was deeply concerned the unprecedented swift global spread and severity of the outbreak, therefore announced it as a pandemic on 11 March, 2020 and also named the disease COVID-19, short for "coronavirus disease 2019" on 11 February 2020.^[3]

2. METHODOLOGY

The authors searched the Unani medicine books available in the library of the National Institute of Unani Medicine. Five important textbooks of Unani medicine were reviewed. Al-Qanoon fil Tib (Cannon of Medicine) by Ibn Sina, Zakhira Khwarzam Shahi (Treasure of Khwarazm Shah), Kamilus Sana by Ali Ibne Abbas al

Majusi, Haziq by Ajmal Khan, Kitab al-Hawi (The Comprehensive Book of Medicine) of Zakariya Razi, Kitab al-Kulliyat (The Complete Book on Medicine) by Ibn Rushd, Kitab al-Mansoori (Book dedicated to Caliph Mansoor) by Zakariya Razi. Other published books and journals were also consulted for further details. For information on SARS-CoV-2 and Covid-19, the author searched major scientific databases namely PubMed, Science Direct and Springer for the most recent information regarding the pandemic. The search words used were 'SARS-CoV-2', 'Covid-19', 'history', 'prevalence', 'symptoms', and 'transmission'. An Internet search on the same search engines and also Google Scholar was also done to search for scientific evidence regarding Unani drugs.

3. A brief description of coronavirus disease-2019 Virology and origin

The name coronavirus derives from the Latin word "corona," which means crown or halo, and this refers to the "crownlike" fringe of projections seen on the surface of virus particles when viewed under the electron microscope. (virology) Coronavirus belongs to the subfamily Ortho Coronaviridae in the family of Coronaviridae in the order Nidovirales. The genome of the newly discovered CoV consists of a single, positive-

stranded RNA that is approximately 30k nucleotides long. The overall genome organization of the CoV is similar to that of other coronaviruses. Based on genome sequencing, 2019-nCoV is about 89% identical to bat SARS-like-CoVZXC21, 82% identical to human SARS-CoV, and about 50% to MERS-CoV.^[5,6]

3.1. Epidemiology

The pandemic escalated exponentially at the beginning of 2020, which might only be the tip of the iceberg due to delayed case reporting and deficiency in testing kits. As of 20 February 2020, a cumulative total of 75,465 COVID-19 cases were reported in China. Reported cases are based on the National Reporting System (NRS). Among 55,924 laboratory-confirmed cases reported as of 20 February 2020, the median age is 51 years with the majority of cases (77.8%) aged between 30–69 years. Among reported cases, 51.1% are male, 77.0% are from Hubei and 21.6% are farmers or laborers by occupation.

Global data provided by the WHO Health Emergency Dashboard (May 4, 2020, 10:00 CEST). According to the 105th situation report of WHO, total confirmed cases globally are 34,35,894 since the beginning of the epidemic; among these cases, 2,39,604 deaths have been reported with the death rate of 6.97%. In India as on May 5th, 2020, (08:00 GMT+5:30), 32138 active cases and 1568 death have been reported with the death rate of 4.87%.^[7,8,9]

3.2. Pathogenicity and virulence

The total number of deaths from this pneumonia-like disease accounts for less than 3%. In addition, most of those who have died had underlying health conditions such as hypertension, diabetes, or cardiovascular disease that compromised their immune systems. Although the fatality rate will continue to change until all infected people recover, it appears that 2019-nCoV is less pathogenic than SARS-CoV and much less than MERS-CoV.^[10]

3.3. Route of transmission

Person-to-person transmission has been documented and is presumed to occur by close contact, probably via respiratory droplets. It is not known when in the course of infection, a person becomes contagious to others. Community transmission (without apparent contact chains) has raised suspicion that the virus may be transmitted before symptoms develop, and case and cluster reports from various countries have been published; if such transmission exists, its frequency is not yet known. Additional means of transmission like contact with infected environmental surfaces, feco-oral have not been ruled out yet.^[11,12]

4. Understanding coronavirus disease in Unani perspective

In the Unani system of medicine, we can understand such type of pneumonia-like and respiratory illness epidemic conditions in terms of *Wabā'*, *Dhabah wa*

Khunāq, *Dhāt al-Ri'a*, *Humma wabaiya* and *Nazla wabaiya*.

- ***Wabā'***:^[13,14,15]

Wabā' is the vast terminology used when atmospheric air gets putrefied or contaminated with admixed miasma or polluted air vapours; when a large community or population gets involved it leads to epidemic as air (infected) easily transmitted from one person to other.

Though the description of microbes in terms of bacteria or viruses is not given in Unani literature, several terms like *Abkharoon* (Miasma or vapours) and *Ajsame e khabisa* (contaminators) have been mentioned in classical literature which may result in the air to be infected or contaminated.

While one goes through the clinical features of coronavirus disease such as fever, dry cough, shortness of breath, sore throat, tiredness, aches and pains and in rare cases diarrhoea, nausea and running nose;^[16,17] the explanation of this pneumonia-like disease become more obvious under the headings of *Dhāt al-Ri'a*, *Khunāq wa Dhabah*, *Humma wabā'iyya* and *Nazla wa Zukām wabā'i*.

- ***Dhāt al-Ri'a***:^[13,14,15,18]

It is a pneumonia-like condition caused due to the *Warme Harr* (acute inflammation) of *Ri'a* (lungs) having clinical features like *Humma harr* (Acute febrile condition), Cough, Shortness of breath due to *Warmi kafiyat* (an inflammatory condition) leads to constriction of air passage, Heaviness and pain felt at the anterior region of the chest because of accumulation of morbid matters, Flushing of face, redness of eyes, Excessive thirst and dryness of tongue. The severity of these features may vary according to the involvement of humor (*Akhlāt*).

- ***Dhabah wa Khunāq***:^[13]

Dhabah is defined as an inflammatory condition of *Halāq* (throat) which manifests clinically as a sore throat due to involvement of laryngeal muscles and its associated ligaments. It may cause difficulty in breathing i.e. *Khunāq*. A renowned ancient physician Ahmad Al-husn Al Jurjani said that *Khunāq* in its late stages may convert into *Dhāt al-Ri'a* (pneumonia-like disease)

- ***Nazla wa Zukām wabā'i***:^[18]

According to Hakeem Ajmal Khan "*Zukām*" is the inflammatory condition of the mucous membrane of the nasal cavity and when it spreads to the throat it termed "*Nazla*." If not treated properly it may get converted into some serious conditions like Influenza, pneumonia, etc. Sometimes it may spread as an epidemic condition termed as *Nazla wa Zukām wabā'i*.

- ***Humma wabā'iyya***:^[14,15]

There are some febrile conditions described in Unani literature that spread like epidemic due to the

putrefaction of atmospheric air and water by various causes. A renowned physician Hippocrates stated that this spread very rapidly. The Patient felt a kind of burning sensation and heat inside the body, deep breathing and breathlessness, excessive thirst, dry tongue, dry cough, tiredness, lethargic condition and most of the time end will be fatal if not treated properly.

5. Adjuvant therapy for the symptomatic management of COVID19:

To date, there is no vaccine and no specific antiviral medicine to prevent or treat COVID-2019. However, those affected should receive care to relieve the

5.1. Formulation^[18]

S. No.	Ingredients	Botanical Name	Dose
1.	<i>Unnab</i>	<i>Zizyphus jujubi Mill.</i>	5 dana
2.	<i>Sapistan</i>	<i>Cordia latifolia Wall.</i>	9 dana
3.	<i>Behidana</i>	<i>Cydonia oblonga Mill.</i>	3 masha

5.2. Method of preparation

After cleaning, the drugs are crushed and soaked in water with a ratio of 1:3 for a while or overnight. Then give a nice boil till the water quantity has become one third in respects of initial, thereafter it is filtered through a sieve and add *Sharbat-e-banafsha* (2 tola) in it. Decoction should be consumed fresh and warm for twice daily.

5.3. General description of drugs

1. Unnab

Mizāj: Mu'tādil,^[19]

Chemical constituents:^[20] Alkaloids, Cyclic peptide alkaloids, Antibacterial peptide alkaloid, Glycosides, Saponins, Terpenoids.

Action and Therapeutic use:^[19,20] Antitussive and anti-asthma, Hoarseness of voice, sore throat, Emollient of chest, Expectorant, Blood and bile refrigerant.

Scientific studies:^[20,21,22] Antimicrobial activity, Anti-inflammatory, Anti-allergic, Immunostimulant.

2. Behidana

Mizāj: Cold and moist temperament.^[23]

Chemical constituents:^[23] Fixed oil, Steroid, Protein, tannin Volatile oils, Iron, Calcium, phosphorus, Magnesium, Potassium, glucoside.

Action and Therapeutic use:^[23] Antipyretic, Antitussive, Anti catarrhal activity, Inflammatory conditions of throat and chest.

Scientific studies:^[24,25] Antioxidant activity, Immunological and antiallergic effects, Antimicrobial effect, Anti-inflammatory effect, Antispasmodic effect on respiratory smooth muscles, Anticancer effect.

3. Sapistan

Mizāj: Mu'tādil.^[23]

symptom. Some western, traditional, or home remedies may provide comfort and alleviate symptoms. There are several ongoing clinical trials that include both western and traditional medicines. WHO is coordinating efforts to develop vaccines and medicines to prevent and treat COVID-19.

The Unani physician Hakeem Ajmal Khan in his book *Haziq* mentions a formulation the same for the treatment of **pneumonia-like condition** and *Nazla wa Zukām wabā'i*.^[18] Hence, a hypothesis may be generated for the effective use of this formulation in the symptomatic management of COVID-19 as adjuvant therapy.

Chemical constituents:^[23] Glycosides, flavonoids, sterols, saponins, terpenoids, alkaloids, phenolic acids, coumarins, tannins, resins, gums and mucilage.

Action and Therapeutic use:^[23] Dry cough, fever, inflammatory condition of throat, excessive thirst, chest pain. It has been taken to suppress cough and for the treatment of respiratory infections and a sore throat, as it has demulcent properties.

Scientific studies:^[26,27] Antibacterial, Antimicrobial, Antiviral, Analgesic, Anti-inflammatory, Immunomodulatory activity.

Sharbat-e-Banafsha^[28]

- Gul-e-Banafsha* (*Viola odorata L.*) 125gm.
- Qand safaid* (Sugar) 1 kg

Method of preparation: Sharbat (syrup) is made by preparing the decoction of gul-e-banafsha with water which thereafter is mixed with sugar and boiled on a low flame to get required consistency.

Therapeutic Use:^[28] Fever, Cough, and coryza.

Dose: 25-50 ml.

6. Preventive measures^[15,29,31,32]

The Unani system of medicine explicitly states that health care is superior to treatment so the best way to prevent illness is to avoid being exposed to this virus.

- The virus is thought to spread mainly from person-to-person who are in close contact, through respiratory droplets produced when an infected person coughs, sneezes, or talks.
- The first line of defence should always be regular and thorough hand washing.
- Avoid touching your eyes, nose, and mouth with unwashed hands.

- It is advised to avoid large crowds and crowded places during an epidemic
- Unani physician's emphasis on a general measure of isolation, quarantine, and distancing.
- Besides, other health promotion steps during epidemics include a balanced diet, reducing hunger, reducing meat and fish, and keeping hydrated.
- Consumption of oil, milk, and alcohol should be avoided.

If the air becomes infected and putrefied, one should take precaution by avoiding damp and wet areas better to choose a well ventilated high location for residence and, use of aromatic products like galingale, oliban (*Boswellia serrata*), myrtle, roses, and sandalwood for home refreshing has also been advised by Unani physician.

7. OBSERVATION

- The coronavirus pandemic is the most challenging public health crisis of this generation the world faces.
- Most SARS-CoV-2 infected patients have developed mild symptoms such as dry cough, sore throat, and fever. The majority of
- cases have spontaneously resolved.
- The large number of researches including both western and traditional medicine initiated to investigate alternative COVID-19 therapies demonstrate both the need and the capacity to deliver high-quality evidence even in the midst of a pandemic.
- The treatment modality in the Unani system of medicine based according to the temperament of a person.
- The generalization of any single drug or compound formulation is difficult because every person has its unique temperament and the mode of action of every drug varied accordingly.

8. DISCUSSION

Coronavirus disease is a potentially severe acute respiratory infection. The clinical presentation is that of respiratory infection with a symptom severity ranging from a mild common cold-like illness to severe viral pneumonia leading to acute respiratory distress syndrome that is potentially fatal. In the Unani system of medicine, several drugs are being used in the management of such type of respiratory illness since antiquity. Although, above mentioned formulation is being used by Unani physician since long for the treatment of pneumonia-like illness and *Nazla wa Zukaam wabai* but the efficacy of this formulation has not been scientifically evaluated so far particularly for this coronavirus disease. At present, there is no specific vaccine or medicine available for this disease hence we may generate a hypothesis that this formulation may be used as adjuvant therapy in the patient suffering from coronavirus disease. Apart from this formulation, there

are various drugs like **Anjeer** (*Ficus carica L.*), **Zoofa** (*Hyssopus officinalis L.*), **Khatmi** (*Althea officinalis Linn.*), **Gul-e-surkh** (*Rosa damascena Mill*), **Zanjabeel** (*Zingiber officinale Roscoe*), **Khubazi** (*Malva sylvestris L.*), **banafsha** (*Viola odorata L.*), **khaskhash** (*Papaversomniferum*), **Gaozabaan** (*Borago officinalis Linn*), **Zafran** (*Crocus sativus L.*), **Aloe** (*Aloe barbedensis L.*), **Kateera** (*Tragacanth gum*) etc. given in the context of **Dhāt al-Ri'a**, **Nazla wa Zukām wabā'i**, **Humma wabā'iyya** and **Khunāq wa Dhabah** which may be prescribed symptomatically in a compound formulation.^[13,14,15]

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