

## ROLE OF UNANI MEDICINE IN THE PREVENTION OF CORONAVIRUS DISEASE-2019 (COVID-19): A REVIEW AND RESEARCH PERSPECTIVE

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### ABSTRACT

In December 2019 some patients with symptoms very much similar to SARS and MERS emerged in Wuhan city of China. In January 2020 a new type of coronavirus was isolated and name as 2019-nCoV, which later termed 'SARS-CoV-2'. WHO declared the Covid-19 outbreak a Public Health Emergency of International Concern, and on March 11, the epidemic was upgraded to the pandemic. As on 02.04.2020, 827,419 confirmed cases are officially reported in more than 200 countries or territories with 40,777 deaths. The history of epidemiology typically starts with 'Hippocrates' in about 400 BC; he in his valuable book, *Of the Epidemics* introduced several concepts of epidemiology. In Unani Classical texts, both epidemics and pandemics have been described under a common term 'Waba'. Unani medicine have described *Nazla Haar* by the name of *Nazla-e-Wabaiya* (epidemic influenza) which is characterized by body ache, sore throat, nasal irritation, burning sensation in eyes sneezing & cough, and fever. Unexplained general weakness is an early feature of *Nazla-e-Wabaiya* and the disease is often complicated by pneumonia and pleurisy, therefore, *Nazla-e-Wabaiya (Nazla Haar)* is very much similar to that of Covid-19. In such conditions *Ibn Sina* advised that houses should be sanitized daily by spraying different *arqiyat*, he recommended the use of *Bukhoor* (incense) of some anti-infective drugs. *Zakariya Razi* has prescribed several aromatic Unani drugs for prevention of *Waba*. For prophylaxis of epidemic diseases, Unani scholars also prescribed several drugs to augment the immunity (*Quwwat-e-Mudabbira Badan*). There is a long list of drugs suggested by Unani scholars to be used in different ways to combat epidemic and pandemic situations that need to be validated on current scientific parameters.

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### INTRODUCTION

Beginning in late December 2019, some patients with pneumonia of unknown aetiology have successively emerged in Wuhan City, Hubei Province, Central China. Most of these cases had a common exposure to the Huanan seafood market in Wuhan that also traded live animals.<sup>1, 2</sup> At the end of December 2019, the Wuhan became the centre of the pneumonia outbreak and on December 31, 2019, China notified the outbreak to the World Health Organization. From 31 December 2019 through 3 January 2020, a total of 44 such cases were reported to the WHO by the national authorities in China. During this reported period, the causal agent was not identified.<sup>3</sup> An immediate investigation of these clustered cases to identify and control its spread by isolating the suspected patients, closely monitoring their

contacts, obtaining detailed clinical and epidemiologic data aided Chinese scientists in pinpointing a new type of coronavirus, which was isolated on 7 January 2020<sup>4,5,6</sup> that had >95% homology with the bat coronavirus and > 70% similarity with the SARS-CoV. The virus was initially named 2019-nCoV but is now termed 'SARS-CoV-2' and the disease (Wuhan pneumonia) was named 'Coronavirus Disease-2019 (Covid-19)' by the World Health Organization on Feb 11, 2020.<sup>7</sup> On 30 January 2020, the World Health Organization (WHO) declared the Covid-19 outbreak a Public Health Emergency of International Concern, and on March 11, the epidemic was upgraded to the pandemic.<sup>8</sup> Up to 14<sup>th</sup> March 2020, over 140,000 cases were reported worldwide with over 5,400 deaths, surpassing the combined number of cases and deaths of two previously emerging coronaviruses, severe acute respiratory syndrome-related coronavirus

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(SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV).<sup>9</sup> At present, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) now termed as Covid-19, originated in Wuhan City of Hubei Province of China has spread rapidly to the rest of the world.<sup>10</sup> As of 02.04.2020, 827,419 confirmed cases are officially reported in more than 200 countries or territories with 40,777 deaths.<sup>8</sup>

The disease Covid-19, caused by SARS-CoV-2 (incubation period-2-14 days) is characterized by a range of symptoms, including Fatigue, fever, cough, dyspnoea, and myalgia in most of the cases.<sup>11</sup> The less common manifestations are sore throat, nasal congestion, headache, runny nose, vomiting and diarrhoea.<sup>2</sup> In severe cases, bilateral lung involvement with ground-glass opacity is the most common chest CT finding.<sup>12</sup> The elderly people and people with comorbidity or low immune function are more likely to become severe cases<sup>1</sup>, although severe disease is not limited to these risk groups.<sup>13</sup> Pregnant women and newborn infants infected with SARS-CoV-2 are also prone to develop severe pneumonia.<sup>1</sup>

#### **Unani viewpoint of Epidemics and Pandemics**

Epidemics and pandemics of highly infectious diseases have distressed mankind since ancient times. The history of epidemiology typically starts with the renowned Unani Physician and Philosopher 'Hippocrates' in about 400 BC. The medical treatises collected under Hippocrates's name are essential sources of information about the practice of medicine in antiquity and about Greek theories concerning the human body. Hippocrates, in his valuable book, *Of the Epidemics* introduced several concepts of epidemiology and attributed the diseases to climate, seasonal variations, and location. He also discussed modes of disease transmission and recognized that certain "genetic" predispositions could lead to disease.<sup>14</sup> The book *Of the Epidemics* consists of seven discourses that cover many infectious and contagious diseases like mumps, smallpox, herpes, and many upper and lower respiratory tract diseases and their symptoms in the Greek terminology. Details of specific epidemics are also recorded in this book, for example in *Epidemics-I*, there is a precise description of the disease about an epidemic of mumps that occurred on the island of Thasos in the 5th century B.C. In the Books *Epidemics-II, IV, VI, and VII* the 'cough of Perinthos' epidemic, an influenza-like outbreak in the 5th century B.C., is also recorded and several cases complicated with pneumonia or fatal outcomes are discussed.<sup>15</sup>

In Unani Classical texts, both epidemics and pandemics have been described under a common term 'Waba' which

spreads in a large geographical area involving large populations. Unani physicians were well acquainted with respiratory and influenza-like pandemics, discussed under the title 'polluted air' (*Haway-e-Wabai*). *Ibn Sina* (980–1037 CE), in *Al-Qanun fil-Tib* gave clear indication on causes of the epidemics, he considered seasonal changes and geographical variation as the most critical causes that include sudden sunny weather or sudden rainfall in winter and drought in the rainy season. *Ibn Sina* considered *Waba* to mean the pandemic-like spread of disease. He identified the presence of some unseen microbes (*Ajsam-e-Khabisa*) in the air or water. He opined that these *Ajsam-e-Khabisa* might contaminate and change the quality of air or water and cause fever in a large group of the population in a very short period of time. He also mentioned that epidemics spread from one person to another, and from one to another city.<sup>16</sup>

*Abu Bakr Mohammad Bin Zakariya Razi* (850-923 CE) in his scientific compilation *Kitab al-Judari wa al-Hasbah* not only mentioned the clinical manifestations and management of smallpox and measles but also covered descriptive epidemiology and infectious diseases. In the fourth chapter of *Kitab al-Mansoori* he discussed infectious diseases which are more common in the rainy season.<sup>17</sup> The various volumes of his famous comprehensive compilation '*Kitab al-Hawi fi al-Tibb* encompass description of several infectious diseases such as meningitis, ear and throat infections, chest infections including pulmonary tuberculosis, pneumonia and pleuritis, intestinal infections and urinary tract infections etc.<sup>18</sup>

#### **Unani concept of prevention of epidemics and pandemics**

In Unani medicine, several recommendations have been described for the preservation and restoration of health under the umbrella of *Asbab-e-Sittah Zarooriyah* (six essential principles). Various general preventive measures have also been recommended to prevent epidemic diseases and pandemics.

The primary method to prevent the incidence of disease during pandemics is to move from the focus of the disease to healthy regions. At this time of coronavirus pandemic too, the first step that the World Health Organization took towards declining the coronavirus positive infection curve was to emphasize employing the method of quarantine. *Ibn Sina* was the first who gave the concept of quarantine, in *Al Qanoon Fit Tib*, he discussed that a 40-day period of quarantine was essential to check the spread of contiguous diseases.<sup>19</sup>

*Lisan Al-Din Ibn Al-Khatib* (1313-1374 CE), in his treatise on the plague, stated that the existence of

contagion is established by experience, investigation, the evidence of the senses, and trustworthy reports. He considered that contaminated air is one of the main causes for the spread of the infection (plague).<sup>20</sup>

Zakariya Razi had an understanding of the prevention of epidemics by advocating the methods of quarantine; he advised to stop public transportation and avoid overcrowding during the time of epidemics<sup>17</sup>

**Preventive aspects of Covid-19 in the light of Unani Medicine**

The eminent scholars of Unani medicine have described *Nazla Haar* by the name of *Nazla-e-Wabaiya* (epidemic influenza). *Nazla-e-Wabaiya* is characterized by body ache, sore throat, nasal irritation, burning sensation in eyes sneezing & cough, and fever. Unexplained general weakness is an early feature of *Nazla-e-Wabaiya* and the disease is often complicated by pneumonia and pleurisy.<sup>21</sup> The clinical picture of *Nazla-e-Wabaiya* (*Nazla Haar*) is very much similar to that of Covid-19, in which the most common symptoms include fever, dry cough, dyspnoea, chest pain, fatigue, and myalgia. Less common symptoms include headache, dizziness, abdominal pain, diarrhoea, nausea, and vomiting.<sup>11</sup>

The primary course of action during epidemics of *Nazla-e-Wabaiya* as recommended by ancient Unani scholars is to stay in a properly ventilated place, avoid excessive food and constipation. It is also advised to maintain good hygienic practices, frequent use of tea, and supplementation of a nutritious diet to improve immunity. The patients of *Nazla-e-Wabaiya* should be kept in self-quarantine in closed environments such as the house and to correct the internal environment as advocated by Razi to prevent epidemic diseases.<sup>17</sup>

Sleeping in prone position should be encouraged to avoid the entry of nasal secretions in the throat and lungs.<sup>22</sup> *Ibn Sina* advised that houses should be sanitized daily by spraying *Arq Gulab* (*Rosa damascene*), *Arq Bed Sada* (*Salix caprea*), or *Arq Nilofer* (*Nymphaea alba*). For removal of moisture from the living places, he recommended the use of *Bukhoor* (incense) of *Sa'ad Kufi* (*Cyperus rotundus*), *Habb-ul-Aas* (*Myrtus communis*), *Kundur* (*Boswellia serrata*), and Sandalwood (*Santalum spp.*) *Ibn Sina* also introduced the use of vinegar as a restraint of polluted air.<sup>19</sup>

*Zakariya Razi* has prescribed several aromatic Unani drugs like *Sa'ad Kufi* (*Cyperus rotundus*), *Qust* (*Saussurea lappa*), *Hilteet* (*Ferula foetida*), *Ood* (*Aquilaria agallocha*) to fumigate and disinfect the dwellings.<sup>23</sup>

*Kafoor* (*Cinnamomum camphora*), *Mushk* (*Musk*), *Murr* (*Commiphora myrrh*), *Lobañ* (*Styrax benzoin*), *Izkhar* (*Cymbopogon jwarancusa*), *Waj* (*Acorus calamus*), *Tagar* (*Valeriana wallichii*), and *Safarjal* (*Cydonia oblonga*) have also been recommended for purification of air.<sup>24,25</sup>

For prophylaxis of epidemic diseases, Unani scholars also prescribed several drugs to augment the immunity (*Quwwat-e-Mudabbira Badan*) e.g. *Tiryaaq-e-Arba*, *Tiryaaq-e-Wabai*, *Tiryaaq-e-Farooq*, *Khamira Marwareed*, *Khamira Abresham*, *Khamira Gaozaban* etc.<sup>26,27</sup>

There are several single herbal Unani drugs that can be recommended on the basis of scientific evidence for the prophylaxis of Covid-19 and other epidemic diseases, as listed below:

Unani Name	Botanical Name	Part Used	Indication	Mode of Use	Pharmacological activity/ evidence
<i>Afsantin</i>	<i>Artemisia absinthium</i> L.	Leaf	Epidemic fever, cold, and catarrh, tonsillitis, hepatitis <sup>28</sup>	Oral	Antiviral, anti-inflammatory, immunomodulatory, antioxidant, antipyretic <sup>29</sup>
<i>Amaltas</i>	<i>Cassia fistula</i> L.	Pulp	Cough, pharyngitis, hoarseness of voice, paralysis <sup>28</sup>	Oral	Antiviral, antioxidant, immunomodulatory <sup>30</sup>
<i>Amla</i>	<i>Emblica officinalis</i> Gaertn.	Fruit	Excessive thirst, diarrhoea, palpitation, cardiac & cerebral asthenia <sup>28</sup>	Oral	Antiviral, antioxidant, immunomodulatory, anti-inflammatory, cardioprotective, neuroprotective <sup>31</sup>

<i>Anar</i>	<i>Punica granatum</i> L.	Fruit Juice	Nausea, vomiting, excessive thirst <sup>28</sup>	Oral	Immunomodulatory, antioxidant <sup>32</sup>
<i>Anjir</i>	<i>Ficus carica</i> L.	Fruit	Cough, asthma, constipation <sup>28</sup>	Oral	Immunomodulatory, antioxidant, anti-inflammatory, hepatoprotective <sup>33</sup>
<i>Arusa</i>	<i>Adhatoda vasica</i> Nees.	Leaf	Cough, asthma, bronchiectasis <sup>28</sup>	Oral	Immunoprophylactic, antioxidant <sup>34</sup>
<i>Aslus Soos</i>	<i>Glycyrrhiza glabra</i> L.	Root	Pharyngitis, Cough, hoarseness of voice <sup>28</sup>	Oral	Anti-inflammatory, antioxidant, immunomodulatory, bronchodilator <sup>35</sup>
<i>Asgand</i>	<i>Withania somnifera</i> L.	Root	General debility, mental tension, joint pain <sup>28</sup>	Oral	Antioxidant, anti-inflammatory, immunomodulatory <sup>36</sup>
<i>Atees</i>	<i>Aconitum heterophyllum</i> Wall.	Root	Malaria and other fever, diarrhoea, neurological disorders <sup>28</sup>	Oral	Cytotoxic, antiviral, antioxidant, immunostimulator <sup>37</sup>
<i>Banafsba</i>	<i>Voila ordata</i> L.		Fever, Cough & cold, pharyngitis, Pneumonia, pleurisy <sup>28</sup>	Oral	Anti-septic, anti-inflammatory <sup>38</sup>
<i>Brinjasif</i>	<i>Achillea millefolium</i> L.	Whole plant	Fever, inflammation <sup>28</sup>	Oral	Anti-inflammatory, immunomodulatory <sup>39</sup>
<i>Khaksi</i>	<i>Sisymbrium irio</i> L.	Seed	Fever, measles, cough and cold <sup>28</sup>	Oral	Antioxidant, antiinflammatory, hepatoprotective <sup>40</sup>
<i>Kbatmi</i>	<i>Althaea officinalis</i> L.	Seed/ root	Cough and cold, burning micturition <sup>28</sup>	Oral	Antiviral, antibacterial, antifungal, antioxidant, immunostimulant <sup>41</sup>
<i>Khubazi</i>	<i>Malva sylvestris</i> L.	Seed	Cough and cold, sore throat, hoarseness of voice pleurisy <sup>28</sup>	Oral	Anti-inflammatory, antioxidant <sup>42</sup>
<i>Kundur</i>	<i>Boswellia serrata</i> Roxb.	Resin	Externally for wound cleansing, internally for cough due to chronic bronchitis, bronchactasis <sup>28</sup>	Fumigation	Anti-inflammatory, antioxidant, antimicrobial, analgesic <sup>43</sup>

<i>Loban</i>	<i>Styrax benzoin</i> Dryand	Resin	Externally for wound cleansing, and bleeding internally for cough due to chronic bronchitis, bronchiectasis <sup>28</sup>	Incense & fumigation	Styrax benzoin contains the compounds like benzoic acid, benzaldehyde and benzyl benzoate which are most effective bactericidal, germicidal <sup>44</sup> antiviral substances and fungicidal
<i>Mur Makki</i>	<i>Commiphora myrrha</i> (Nees) Engl.	Resin	Externally for wound cleansing & aphthous ulcers, internally for cough due to chronic bronchitis, bronchiectasis <sup>28</sup>	Incense & fumigation	Antitumor, Anti-inflammatory, Analgesic, Antioxidant <sup>45</sup>
<i>Murad (Aas)</i>	<i>Myrtus communis</i> L.	Leaf essential oil	Blood purifier, wound healing <sup>28</sup>	Fumigation	Antiseptic & disinfectant <sup>46</sup>
<i>Neem</i>	<i>Azadirachta indica</i> A. Juss	Leaf and Seed essential oil	Blood purifier and antiseptic for wound healing, piles <sup>28</sup>	Incense & fumigation	Antibacterial, antifungal, antiseptic <sup>47</sup>
<i>Parsiyaosban</i>	<i>Adiantum capillus-veneris</i> L.	Whole	Fever, Cough & cold, asthma <sup>28</sup>	Oral	Antimicrobial, anti-inflammatory antioxidant <sup>48</sup>
<i>Sambhalu</i>	<i>Vitex angus-castus</i> L.	Leaf	Leaf oil is used in arthritis leaf juice is used for wound healing <sup>28</sup>	Fumigation (Leaf oil)	Antiseptic, vermifugal <sup>28</sup> Antimicrobial, anti-inflammatory, antimutagenic, cytotoxic <sup>49</sup>
<i>Sandal safaid</i>	<i>Santalum album</i> L.	Wood	Palpitation, chronic cough, bronchiectasis, gonorrhoea <sup>28</sup>	Incense	Antiseptic <sup>28</sup> Antimicrobial <sup>50</sup> , antibacterial, antiviral, antifungal, anti-inflammatory <sup>51</sup>
<i>Toot</i>	<i>Morus nigra</i> L.	Fruit	Pharyngitis, tonsillitis, hoarseness of voice <sup>28</sup>	Oral	Antimicrobial, anti-inflammatory, antioxidant, hepatoprotective <sup>52</sup>
<i>Tulsi/ Reban</i>	<i>Ocimum sanctum</i> L.	Leaf	Fever, cold & catarrh <sup>28</sup>	Oral	Antibacterial, antiviral, anti-inflammatory, antioxidant <sup>53</sup>

### CONCLUSION

Covid-19, which emerged as pandemic in 2020, has the symptoms almost similar to that of SARS and MERS, but affecting the respiratory system predominantly. There are many descriptions in Unani medicine about infective diseases, epidemic and pandemic given by

Hippocrates, *Ibn Sina*, *Zakariya Razi*, *Ismail Jurjani* and many others. Since the symptoms of Covid-19 are very much similar to that of *Nazla-e-Wabaiya* (*Nazla Haar*), therefore, Covid-19 can be effectively prevented by the use of drugs mentioned in Unani medicine. A comprehensive list of drugs is available, and many



studies suggest their efficacy in different diseases, and different clinical conditions. This is the need of the hour to validate the efficacy of such drugs as single drug or by combining some of these into a new formulation for the purpose of sanitization in the form of spray, fumigation and to boost the immunity by oral use of some drugs in order to prevent Covid-19.

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