



Review Article

Role of Unani Medicine in Prevention and Treatment of Waba (Epidemics) including COVID-19: A Review

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Abstract

Mankind has faced many hardships like natural disaster, drought and epidemics. Study focuses on epidemics caused by microbes. Unani medicine has a long experience in treating epidemic diseases because its history is as old as the history of human being itself. More or less entire of the civilisations throughout the history became the basis for evolution of Unani medicine. Hippocrates (460- 380BC) regarded it as both art and science, discussed the epidemics and wrote a book on Epidemics. Body is assumed healthy when the humours are balanced. So, Unani scholars have rightly said Fa'il (Active agent) is not able to produce any change (Actions & Reactions) in the body without the prior presence of Munfa'il (Pertinent) having the capacity to accept it like in Waba (epidemic). The aim is to explore the fundamental concept of Waba from the Unani literature and understand COVID-19 in reference to existing literature of Unani medicine. The literature of Unani medicine was surveyed for concept of Waba (Epidemic) & related concepts. Internet was used to access indexed papers using search engines like Medline, PubMed, Science Direct, etc. Logical preventive strategies like quarantine, and use of fumigants, prophylactic drugs are mentioned in Unani literature that have been used in epidemics with flue like symptoms. This knowledge and experience may be used for achieving methods for prophylaxis, cure or add on therapeutic measures for COVID-19 epidemic.

Keywords: Controlling measures, COVID-19, Philosophy, Waba.

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1. Introduction

The pathogenesis and symptoms of epidemics were first described by Hippocrates (460-380 BC) in his book *Kitab ul Ahwiya, wal Miyah wal Buldan* (The Book on Water, Air & Places) wherein he used the term 'visiting' translated by later physicians as

Amrazwafida. It means the disease affects a large group of a city at the same time.^{1,2} The disease is caused as a result of changes in air that is contrary to *Tabiyat* (Physis/Phusis) of human body. The changes of air either of *Jauhar Hawa* (Air substance) or transformation of the quality of air takes place.³ Hippocrates termed the constitution instead of season and these are four in numbers.

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He ascribes their distinguished character by variable changes of each season. Also, he entitled the diseases that occur frequently in a particular constitution on the basis of their gross variability. In second constitution there is a continual fever of a serious character, which did not come to a crisis until after it had run a long course.⁴ In fourth constitution the Galen and other authorities entitled it pestilential and has attracted great attention as being supposed to have derived its peculiar characters from the great plague which prevailed during the Peloponnesian war, and epidemical diseases, which are noticed by Hippocrates as having prevailed during this constitution.⁴ Moreover the description of various kind of fevers by Hippocrates in his 'Epidemics' are exactly the same as those which are now described as still prevailing in the land of Greece; that they correspond very well with those described by Cleghorn as occurring in Majorca.⁴

Among all kinds of existing fevers, the fever that belongs to buboes is bad with the exception of ephemerals; although the bubo is also the class of phlegmons as stated by Hippocrates.⁴ As per the 'Fragment' of Rufus' The buboes called pestilential are most fatal and acute, especially those which are seen about Libya, Egypt and Syria, and which are mentioned by Dionysius Curtis.⁴

The concept of changing merely in physical properties of air indicates deteriorated composition of air such condition of air called *Waba*.^{3,5} In other word *Waba* is a special type of infection that is caused through air in similar way as stagnant water becomes corrupted.^{3,5} In Unani literature the basic element, air is treated as *Baseet* (Simple) not *Murakkab* (Compound) then question arises as how it gets altered and becomes corrupted.^{3,5} The explanation provided by Unani physicians is that the surrounding air of the atmosphere is not *Baseet* but it is compound. It can be said that the air in atmosphere stands for that body which contains *AjzaiMaiya* (Droplets), *AjzaiArziya* (Dust), and *AjzaiNariya* (Fire part) along with the *AjzaiHawaia* (Air part) which is predominant.^{3,5} Here the changes are affected in the *AjzaiHawaia* and makes the environment susceptible to *Waba*. The *Ufoonat* (Putrefaction) occurs mostly in the end of season of summer and autumn.^{3,5}

The changes in quality only mean unbearable of heat or cold thereby the crops and generations become destroyed and corrupted.^{3,5} It occurs in two ways *IstihalaMujanisa* (Likeness) and *IstihalaMuzaddah* (Antagonism/Contrast).^{3,5} In *IstihalaMujanisa* when the quality of season is too much hazardous i.e. the heat during the summer season is too much. Whereas, in *IstihalaMuzaddah* the quality of season becomes contrary to the quality it naturally has. It becomes much hazardous for instance; air becomes too cold in summer. When the air is about to alter then many complications are observed in inhabitants, because *Akhlato*f the body get corrupted.^{3,5}

Earlier *Ta'oon* was broadly intended to all kinds of epidemics,

spread in very short period and killed up to large scale of populace, now it is exclusively proposed to a particular type of fever, caused by *Yersinia Pestis*, transmitted by fleas via rats.⁶ Ibn Sina says that it occurs by a toxic substance which produces fatal swelling in moist organs and glands of the body specially gland in the areas of armpit and groin.⁶

2. Historical Background

Justinian plague: One of the deadliest plagues, the outbreak initially started in Egypt in sixth century AD and in very short span of time it extended to Constantinople, which was the capital of the Eastern Roman (Byzantine) Empire. It was named after the then "Byzantine Emperor Justinian". The outbreak was very severe and killed up to 25 to 100 million people.⁷

Ta'oon, in 18 Hijri, there was outbreak of epidemics in Syria, 55 thousand were killed even Governor of Syria was not spared. This outbreak started from then Amwas town (located in between *Baitul Muqaddas* and *Ramla*) and it extended across the Rome, Makkah, Hijaz, Baghdad and Khurasaan. Then the genius man- Amar' bin Aas ordered the people to make distance among them and be dispersed across hills and towns and this way pandemic was controlled.⁸

Ta'unJarif, in 69 hijri, named due to excessive death in that epidemics persisted for three days.⁹

Ta'unFatayat, in 87 Hijri, it was spread in Iraq and Syria; initially it afflicts females and young girls before males hence, named as *Fatayat*. Some called it as *Ta'unAshraaf* because the death was observed mostly in lavish society.⁹

Ta'un Muslim b. Qutaiba, in 131 Hijri named because the first person killed by this disease. It happened in Basra and persisted for three months. It was so severe that in the month of Ramdhan thousands of deaths were recorded.⁹

In 422 Hijri, there was an outbreak of pandemic in most of the region of India, ghazna, Khurasaan, Ray, Asbahaan, surroundings of Moosal and Baghdad in the season of summer- autumn (June-September). In a few days forty thousand of peoples were killed.¹⁰

In 597 Hijri, there was outbreak of epidemics in Unza city (located between Hijaz and Yaman) there were 20 villages, 18 of them were plundered.¹⁰

In 656 Hijri/ 1258 AD there was outbreak of pandemic persisted for 40 days in Baghdad, people of entire city were overthrown rarely anyone of them was spared. It extended up to Syria where a lot of deaths were registered due to presence of infection in atmospheric air.¹¹

In 748 Hijri, *Ta'un- al-Aazam* named because of its pace of

spread and high mortality rate. This *Ta'uoona* had killed the inhabitants of Halb, Dimashq, Quds and their coastal regions. Likewise, great disease "*Al Fanaul Azeem*" in 795 Hijri happened and 150 thousand were killed in Halab city alone.¹²

1798 AD *Ta'uoona* was spread in Europe through the travellers of Alexandria extended up to Tunis, Aljazair.¹³ Spanish Flue broke out during the last phase of First World War, was deadliest pandemic of the last century that killed up to 50 million people.⁷

3. Causes

The following are the identified causes of epidemic as stated in Unani medicine. Impure and wet nature air, excessive coitus, somebody retains *Akhlatraddiya* (Morbid matter), having widened pores, wet tempered body, having the history of excessive use of *Hammam* (bath), *Bukharat* (Putrefactive vapour) produced by refuge/litter of cities, slaughter house, industries, cremation ground, ditch/moth, improper biological waste management, global warming, deforestation, urbanisation, uncontrolled industrialisation and urbanisation etc.^{2,5,14}

4. Pathogenesis

Once the man breathes in such form of air which is not in good state, then there is an admixture of this with the already corrupted *Akhlat* (Humour) present in the body. The consequence, of this admixture affects the *Arwaah* (Spirit) of the body as well and leads to development of *AmrazRaddiya* (Dreaded diseases).² Jalinoos has mentioned/describes in his book *Kitab alHummiyat* (Book on Fever) that it is not possible for any agent to bring about any change in the body unless and until there is any proficiency of acceptance of that particular cause already.^{2,15} Similarly, *Fa'il* (active agent) is not able to produce any change (actions and reactions) in the body without the prior presence of *Munfa'il* (pertinent) having the capacity to accept the change like in *Hummai Waba* (Epidemic fever).^{5,14}

Once the season changes from its natural state like the winter season will have changed to dry and hot and there will be either no rain or excessive raining. Similarly, in hot season or spring season there will be coldness and dryness. In case of autumn season, there will be hotness and wetness. So, there will be a change in each season from its natural form, especially the summer air will be replaced by winter air and there would be abundant raining and southern winds will blow leading to spread of epidemics like fatal kind of fevers, varieties of plagues and many other diseases. These epidemics would not spare even animals whether domestic or wild. The reason behind this being the corruption and vitiation of body fluids and *Arwah*. The plants, the trees, herbs and shrub would also get affected and there will be a deposition of a thick material like *SheeraiAngoor* (Grapes juice), on the trees. There will

be dust on leaves, the fruits will be affected both in pulp and its covering.²

When the air is much hot, it upsets the digestion by dissolution of *HararatGhareeziyah* (Innate heat), dissolving the *AkhlatDamviyya* (Sanguine) and changing the body colour to yellow by dominating *KhiltSafra* (Bilious) over other *Akhlat*. and there occurs changes in the *Qalb*(Heart) as the flowing *Akhlat* get corrupt and vitiation occur. Consequently, they are accumulated in spaces causing the weakness of organs.³

5. Signs and Symptoms

Dry cough, *Tanaffusazeemwamutawatir* (Difficulty in breathing) disorientation, feeling of various kinds of pain, sweating, cold extremities, burning in chest, dryness of tongue, fetid odour, thirsty, stretching and tensing in hypochondrium, nausea, bilious vomiting and diarrhoea, flatulence, stool is odorous and frothy, sometimes blackish. Urine is sometimes concentrated or diluted, and its colour is blackish, or yellowish, its *Rusoob* (Precipitate) has got *QashrwaLakhte* (Cast) in it, and odorous.^{2,14,16} Those patients are accustomed to fetid breath they are on high risk, and having poor prognosis. Even they don't realise that there is as much warmth in their body and or they have apparent manifestations because of *Ufoonat*. Pulse is *Mutwatir* (Continuous) and *Sagheer* (Small) often, splenomegaly, lethargy, and loss of appetite.^{2,5,14} Externally neither feeling cold nor hot so fever cannot be easily detected while person having bad prognosis for the disease.^{5,16} Running out of insects from their dwellings is the typical signs of epidemics.⁵

6. Management of Epidemics

6.1 General anticipatory method

The aim of general anticipatory method is to eliminate the morbid matter from the body and improve the immunity.^{5,14,15} Stay in well ventilated home thereby reduces the chances of contact amongst people and avoid cold air/ air-conditions.¹⁶ Ensure body dryness by practising *Fasdwalshaal* (Bloodletting and purgation), if there is predominance of blood *Fasd* is indicated, *Istifragh*(Elimination) of remaining *Khilt* may be practiced.^{5,14,15} No *Hammam* (Bath), no exercise.^{5,17} *TaqleelGhiza* (Less amount of food) since it has tendency of corruption.^{5,14,16,18} Consumption of meat, alcohol, sweets, wet fruits, coitus during the period of *Waba* should be avoided.^{15,16,17,18}

Use of fish is not indicated in times of outbreak.^{15,18} Ensure cleanliness of surroundings by proper disposal off waste/ refuges/litters in their appropriate places.¹⁴ Head cover or turban prevents air born infection or minimize air born epidemics as stated by Indian scholars.¹⁷

6.2 Sanitization and decontamination of surroundings

Sanitize and disinfect the surroundings by means of spray and

fumigation. Hence it serves important medium for spreading and dissemination of virus. For this purpose, many drugs are mentioned as summarised in Table No. 1 as a mode of fumigants and spray. The curtains of the door, wearing cloths, and entire house will be sanitized and fumigated. Even branches of the trees; *Bed Mushk* (*Salix caprea*, Linn.), grape are placed in vicinity of house most of them are aromatic basis because the aromas/scents protect from infection.^{5,14} Commonly used fumigant/spray is vinegar of sugarcane or onion, garlic, and *Sandal* (*Pterocarpus santalinus*, Linn.), *Kafoor* (*Cinnamomum camphora*), *UoodKhaam* (*Aquilaria agallocha*, Roxb.), *Bed Mushk*, *Qustshirin* (*Saussurealappa*), *Zafraan* (*Crocus sativus*), *Chadela* (*Parmeliaperlata*, Arch.), *Ghaar* (*Laurus nobilis*, Linn.), *Nagar moth* (*Cyperus rotundus*), *Izkhar* (*Andropogon schoenanthus*, Linn.), *Ab'hal* (*Juniperus communis*, Linn.), *BadaamTalkh* (*Prunus amygdalus*), *Post Anaar* (*Punicagranatum*, Linn.), *Hilteet* (*Ferula asafoetida*) is recommended.^{5,14,16,17}

Peel of pomegranate, leaves or juice of lemon, leaves or orange juice, rose water, *Sandal*, *Gul neelofar* (*Nymphaea alba* Linn.), *Gul bed mushk* etc. also recommended.^{14,16,17,18} A few last mentioned drugs has not only to produce exhilarant effects but also having antimicrobial effects.^{5,14,17} *Lakhlakha* (burning incense used for medicinal purposes); *Kafoor and Arqgulab* is practiced.^{14,17} *BargJhau* (*Tamarix gallica*), purify the wetness of air and hot and subtle nature's drug i.e. ginger cleanse the heaviness of air.¹⁷ *Lobaan*, (*Styrax benzoin* W.G.Craib), *Me'asaila* (*Liquidamberorientalis miller*), *Chandroos*, *Qaranfal* (*Eugenia caryophyllata*, Thunb.), *Kundur* (*Boswellia serrata*), *Murmaki* (*Commiphora myrrh*), *Sibr* (*Alovebarbadensis*), *Ratinaj* purify the dry air.^{5,14,17}

Even though Unani medicine has a lot of repository of drugs which act as antimicrobial, antiviral, anti-inflammatory and antipyretics but their clinical and pharmaceutical effects are not yet validated and reported in different journals.

6.3 Recommendation for diets and drinks

Cold extracts; *Ma'urRaib* (Curd water), *chhaachh* (Diluted curd), *Arq Gulab* (Rose water), *MislHaamiz* (Cheese water), drinking of *Sirka* (Vinegar) along with water, drinking of cold water in abundant quantity, *Masoor* (Lentil), onion, apple, *Aas*, *Zafraan* etc.^{5,14,16,17} *RoghanBadamshirin* and *RoghanGau* eating and massaging to body parts daily, greased *Haleela* (*Terminalia chebula*), *Tamar Hindi* (*Tamarindusindica*, Linn.), *Orange*, *Aabanar*, *Aab lemon*, *MaghzFloosKhayarShanmbar* (*Cassia fistula*, Linn.), *Sheer Khisht* (*Fraxinousornus*, Linn.).¹⁸ In case of loss of appetite forced eating is advised because whoever has to be patient would survive otherwise disheartened ones will loss the battle of life.¹⁷ Consuming of *TurshwaMujaffifaghziya* (citrus and desiccant diet) in less quantity since diet gets corrupted

easily.^{5,14,16,18} Meat should be cooked with citrus things, *Hullam* (Kind of animal jelly), *Qarees* (a variety of meat cooked with vinegar, vegetables and cumin), and that *Masoos* (a variety of meat dish) cooked with vinegar or prepared with other citrus i.e. *Sumaq* (*Rhuscoriaria*, Linn.), *AabAngoorKhaam* (Unripe grapes water), *Aab Lemon* (lemon water), or *AabAnar* (Pomegranate water), guava, apple, *Behi* (*Cydonia vulgaris*), *Heeng*, *Kushkushshayeer* (Dried barley) etc., cold and exhilarant based fruits, are indicated.^{14,16} *Mukhallilat* (Pickles) i.e. *KibrMukhallal* is very much useful that prevents *Ufoonat*. Jalinoos states that drinking of *Gil Armani* with vinegar and water is very much useful.¹⁹ Consumption of chicks, lamb meat, *Teetar*, calf meat is used with vinegar/*AabHasram* and *Sumaq*, and chews the meal or food thoroughly.^{16,17}

6.4 Prophylactic drugs

Unani scholars advocate about health protection by employing certain drugs during *Waba*. Both are single herbs/ shrubs and compound formulations are suggested in this respect. *Imli* (*Tamarindusindica*), *Revandchini* (*Rheum emodi*), *Banafsha* (*Viola odorata*, Linn.), *HaleelaZard* and *Haleelasiyah* (*Terminalia chebula*), *Amaltas/ KhayarShanbar* (*Cassia fistula* Linn), *Turanjbeen* (*Hedy sarumAlhagi*, Linn), *Lablab/ Ishqpechan*, *Aabanar* (water of pomegranate) these drugs have preventive effect on body as stated by Ibn Rushd.¹⁵

Elwa two parts, *Zafraan* one part and *Murmaki* one part are pulverized and eaten a little amount daily along with *SharabaRaihani* (*Ocimumpilosum*, Wild.) 300ml. Raufas says I didn't see anyone ever who expired.^{14,16,17,19}

Sikanjabeen prepared from *Arq Gulab*, contains ingredients having the properties of diuretics, and cold nature are advised.¹⁵ *Tiryag Kabeer* is indicated in a dose of 4 mg to 4gm, after taking it no food is taken up to 9 hours till it metabolised completely.^{15,17} Steam inhalation by following drugs; *Kafoor*, *Qust*, *Kundur*, *Uood*, *Mushk*, *Murmaki* are also recommended during epidemics.¹⁶

Administration of *Gil Armani* (*Arminina bole*) and *Gil Makhtoom* (Marl, Sealivg clay) along with vinegar is also useful.¹⁵ Jalinoos states that if in the season of epidemics *Gil Armani*, *sirka* and *Namak* used together are useful.¹⁶

If there is respiratory illness, then *SharbatBanafsha* 20ml and *SharbatKhashkhash* 20ml morning and evening are beneficial. If the patient has sore throat, then it could be replaced by *Sharbat Toot siyah* instead of *Sharbat banafsha*.²⁰

Table 1: List of drugs used as fumigants during epidemics

S.no.	Botanical name & Family	Unani name	Part used	Mode of Action
1.	<i>Viola odorata</i> , Linn. (Violaceae) ^{14,21,22,23,24}	Banafsha	Whole	Antimicrobial, Mosquito repellent
2.	<i>Nymphaea alba</i> , Linn. (Nymphaeaceae) ^{5,14,16,17,25}	Neelofar	Flower, Seed, Root	Antimicrobial
3.	<i>Salix alba</i> , Linn. (Salicaceae) ^{5,14,16,17,26}	Bed sada	Flowers, Leaves	Antimicrobial
4.	<i>Rosa damascena</i> , Mill. (Rosaceae) ^{5,14,15,16,17,27,28}	GuleSurkh	Distillate of petals	Antiviral, Antibacterial
5.	<i>Pterocarpus santalinus</i> L(Santalaceae) ^{5,14,15,16,17,18,29}	Sandal	Heartwood	Antimicrobial
6.	<i>Styrax benzoin</i> ^{5,14,15,16,17,18,30}	Loban	Resin	Antimicrobial
7.	<i>Cinnamomum camphora</i> . (Lauraceae) ^{5,14,15,16,17,18,31}	Kafoor	Crystal, Oil	Antimicrobial
8.	<i>Aquilaria agallocha</i> , Roxb. ^{5,14,16,17,18}	Ood	Wood	Antimicrobial
9.	<i>Saussurealappa</i> (Compositae) ^{5,14,16,17,18,32,33}	Qust	Root	Antimicrobial, Pesticidal
10.	<i>Liquidamberorientalis miller</i> (Altingiaceae) ^{14,16,17}	Measaila	Resin	Antimicrobial
11.	<i>Hymenaea verrucosa Gaertn.</i> (Leguminosae) ^{5,14,16,17}	Sandarooos	Resin	Antimicrobial
12.	<i>Ferula asafoetida</i> (Umbelliferae) ^{5,14,16,17,34,35}	Hilteet	Gum, Resin	Antiviral, Antimicrobial, Antiseptic
13.	<i>Eugenia caryophyllata</i> , Thunb. (Myrtaceae) ^{5,14,16,17,36,37}	Qaranfal	Dry buds	Antiviral, Antimicrobial
14.	<i>Crocus sativus</i> (Iridaceae) ^{5,14,16,17,18,38,39,40}	Zafran	Stamen	Antimicrobial
15.	<i>Boswellia serrata</i> (Burseraceae) ⁴¹	Kundur	Oleo gum resin	Antimicrobial
16.	<i>Commiphora myrrha</i> (Burseraceae) ^{42,43}	Murmaki	Oleo gum resin	Antiviral
17.	<i>Cyperus rotundus</i> (Cyperaceae) ^{44,45,46,47}	Nagarmotha/ Saad Kofi	Root	Insecticidal, Antibacterial, Repellent
18.	<i>Cymbopogon schoenanthus</i> , Linn. (Gramineae) ^{48,49}	Izkhar	Aerial parts of the plant	Insecticidal, Antimicrobial
19.	<i>Tamarix gallica</i> ^{50,51,52}	Jhau	Leaves & Flower	Antimicrobial
20.	<i>Punicagranatum</i> (Lythraceae) ⁵³	Post Anar	Shell	Antimicrobial
21.	<i>Zingiber officinalis</i> (Zingiberaceae) ⁵⁴	Zanjabeel	Rhizome	Antimicrobial, Antiviral
22.	<i>Alovebarbadensis</i> (Liliaceae) ^{55,56,57}	Elva	Leaves aqueous extract	Antimicrobial, Antiseptic, Antiviral

7. Possible Preventive measures in Unani medicine for COVID19

In the light of above observations, the COVID 19 has the manifestation like that of *Nazlawabaiya* and *Hummai Wabaiya* which are thoroughly mentioned by Unani scholars in their classical texts. Initially it exhibits fever, corrhya, cough, tingling sensation and or fatigue, headache, sore throat, dyspnoea and digestive troubles etc. sometimes mild and sometimes severe.⁸⁶ Similar signs and symptoms are also suggested by various Unani scholars like Ibn Sina and other scholars describe under *Hummai Wabaiya*.^{5,14,17,18} Whereas under the head of *Nazlai Wabaiya* by Samarqandi and other scholar.^{18,87} Jalinoos has mentioned in his book *Kitab alHummiyat* that it is not possible for any agent to bring about any change in the body unless and until there is any potentiality of acceptance of that particular cause in the body already.^{2,15} It means epidemic affect ones whose constitution is weak. It is clear with the present mode of transmission of COVID-19 that it affects mostly those who have the co-morbidity. In addition, modes of transmission of infection, the detailed description of quarantine concept are also mentioned in Unani and its related literature.^{8,16} In the light of Unani medicine herewith the following measures are suggested to be adopted for the safeguard of epidemics.

Table 2: Drugs prescribed for prevention from Epidemic outbreak.

S.no	Botanical name/ Scientific name and family	Unani name	Part used	Mode of action
1.	<i>Citrus limon</i> (Rutaceae) ^{58,59}	Limu	Juice	Antimicrobial, Anti-inflammatory
2.	<i>Rhuscoriaria</i> , Linn.(Anacardiaceae) ⁶⁰	Sumaq	Fruit	Antimicrobial, Antioxidant
3.	<i>Punicagranatum</i> (Lythraceae) ⁵³	Anar	Juice	Antimicrobial, Anti-inflammatory, Antioxidant
4.	<i>Ferula Asafoetida</i> (Umbelliferae) ^{5,14,16,17,36,37}	Hilteet	Gum, Resin	Antiviral, Antimicrobial, Antiseptic, Immunostimulent, Antioxidant
5.	<i>Zizyphusvulgaris</i> , Lam. (Rhamnaceae) ^{61,62}	Unnab	Fruit	Antimicrobial, Anti-inflammatory, Antioxidant
6.	<i>Cordia Latifolia</i> , Roxb. (Boragi) ^{63,64}	Sapistan	Fruit	Anti-inflammatory, Antioxidant, Antimicrobial
7.	<i>Viola odorata</i> , Linn. (Violaceae) ^{14,21,22,23,24}	Banafsha	Whole	Antimicrobial, Mosquito repellent, Anti-inflammatory
8.	Vinegar ⁶⁵	Sirka	Whole	Antimicrobial, Antioxidant
9.	<i>Vitis vinifera</i> . (Vitaceae) ^{66,67,68}	Angoor	Juice	Anti-inflammatory, Immunomodulatory, Antiviral, Antipyretic, Antioxidant
10.	<i>Origanum vulgare</i> , Linn. (Labiatae) ^{69,70}	Marzanjosh	Flowering branches, Leaves, Seeds	Anti-inflammatory, Immuno booster, Antitussive, Antioxidant, Antiviral
11.	<i>Matricaria chamomilla</i> , Linn. (Compositae) ^{71,72}	Babuna	Flower, Root	Antipyretic, Antiviral, Anti-inflammatory
12.	<i>Trigonillafoenum graecum</i> , Linn. (Papilionaceae) ^{73,74,75}	Hulba	Seeds	Antimicrobial, Anti-inflammatory, Antioxidant.
13.	<i>Hyssopus officinalis</i> , Linn. (Labiatae) ⁷⁶	Zoofa	Flower and Leaves	Antimicrobial, Antiviral, Antioxidant, Anti-inflammatory

Table 3: Drugs prescribed in Unani medicine for *WabaiAmraz*.

S.no	Botanical name/Scientific name and family	Unani name	Part used	Mode of action
1.	<i>Cinnamomumcamphora</i> . (Lauraceae) ^{5,14,15,16,17,18,31}	Kafoor	Crystals, Oil	Antimicrobial
2.	<i>Crocus sativus</i> (Iridaceae) ^{5,14,16,17,18,38,39,40}	Zafran	Stamen	Antimicrobial, Anti-inflammatory, Antioxidant, Antitussive
3.	<i>Commiphoramyrtha</i> (Burseraceae) ^{42,43}	Murmaki	Oleo gum resin	Antiviral
4.	<i>Alovebarbadensis</i> (Liliaceae) ^{55,56,57}	Elva	Leaves aqueous extract	Antimicrobial, Antiseptic, Antiviral, Antioxidant, Immunomodulatory, Anti-inflammatory
5.	<i>Rosa damascena</i> , Mill. (Rosaceae) ^{5,14,15,16,17,27,28}	GuleSurkh	Distillate of petals	Antiviral, Antimicrobial, Antitussive, Anti-inflammatory, Antioxidant
6.	Vinegar ⁶⁵	Sirka	Whole	Antimicrobial, Antioxidant
7.	<i>Citrus limon</i> (Rutaceae) ^{58,59}	Limu	Juice	Antimicrobial, Anti-inflammatory, Antipyretic
8.	<i>Punicagranatum</i> (Lythraceae) ⁵³	Anar	Juice	Antimicrobial, Anti-inflammatory, Antioxidant
9.	Yogurt/Butter milk ^{77,78}	Dahi/Maurraeb	Whole	Immunomodulatory
10.	<i>Arminina Bole</i> ⁷⁹	Gilearmani	Whole	Antimicrobial, Antiviral
11.	<i>Marl/ Sealivg clay</i> ⁷⁹	Gilemakhtum	Whole	Antimicrobial, Antiviral
12.	<i>Myrtuscommunis</i> , Linn. (Myrtaceae) ^{80,81,82}	Habbulaas	Fruit, Seeds, Leaves	Antiviral, Anti-inflammatory, Antioxidant
13.	<i>Citrus X sinensis</i> (Rutaceae) ^{83,84,85}	Santra	Fruit	Antioxidant, Anti-inflammatory, Antiviral

7.1 Management

Along with aforementioned general preventive measures the following inputs may also be considered for possible preventive/curative measure of COVID-19.

Produces dryness in the body by any calculus like practicing of

bloodletting and elimination of other morbid matter.^{5,14,15,16,17} *Qurs Kafoor* 2-tab BID orally and cold extracts advised.^{5,14,16,17} Advice decoction of following drugs *Behdana* 3gm, *Unnab* 5pieces, *Sapistan* 9pieces along with *SharbatBanafsha* 25 ml with lukewarm water morning and evening, for the fever *Khaksi* (*Sisymbriumirio*, Linn.) 5gm is added.^{20,88}

For relieving of headache and body ache given foot-bath by the composition of boiled *Gul banafsha* 12 gm, leaves of *Ziziphus jujuba* 60gms, eight litres water for ten minutes.²⁰ In case of cough *SharbatBanafsha* and *SharbatKhashkhash* each 12 ml morning and evening. If there is sore throat *Sharbat Toot Siyah* 24 ml added instead of *Sharbat Banasha*.^{20,88}

For strengthening to the body organs *KhamiraGauzaban Ambari Jawaharwala* 12 gm or *KhamiraGauzaban* 12 gm with silver foil paper.²⁰ The details of drugs are mentioned in Table 2 and Table 3.

Atibba were well acquainted with such epidemics so they managed very well in those days by employing the concept of distancing, quarantine mode, preventive measures and novel plan of treatment. For instance, administration of Unani formulation like *Tiryaqwabai* is for two reasons immune modulating agent and antioxidant activity.^{5,14,15,16,17,18} It consists of three ingredients *Zafran* (*Crocus sativus*), *Sibr/Elwa* (*Alovebarbandensis*), and *Murmaki* (*Commiphora myrrh*). The formulation significantly showed the good result on immune compromised elderly patients as it evaluated on elderly patients for their immune stimulating effects.⁸⁹ *Elwa* has good effect of purgation as quoted by Hippocrates freely given, and a considerable proportion of the cases did well-purgatives brought about the fortunate results.^{4,5,14,15,17} Already these drugs undergone through animal study and proven antioxidant and immune stimulating effect of *A. barbdensis*, *C. myrrh* and *C. sativus*.^{37,38,39,47,48,60,61,89} *C. Sativus* also acts as antitussive due to containing of crocin and safranal.^{38,39}

Gulab (*Rosa Damascena*) has antitussive, bronchodilator, antioxidant and anti-inflammatory effects reported in animal trial.^{26,27} *Qust Shirin* (*S.Lappa*) is very much effective due to its anti-inflammatory, antiviral, and immunomodulatory activity as claimed by Kulsoomzohra et al.^{5,14,15,31,32} *Sumaq* (*Rhuscoriaria L.*) reported as antimicrobial, antioxidant, anti-inflammatory/chondroprotective by the review work of Arham Shabbir 2012.^{5,14,15,16,17,60} *GilArmani* (*Arminia Bole*) is white layer and *Gil Makhtoom* (Marl, Sealing clay) is pink layer reported as effective in epidemics.^{15,16,17,19} Since, Shehab et al worked on mineral clays (Gray clay, Yellow clay, White clay,) in vitro study, they found antibacterial effect against staphylococcus aureus that was isolated from the skin infection. On the other hand, pink mineral clay explained as antibacterial effect against *Pseudomonas aeruginosa*, and has low effect against *Staphylococcus aureus*.⁷⁹ *Sandal surkh* (*Pterocarpus santalinus*) reported as antioxidant, antimicrobial and anti-inflammatory activity by the review work of Bulle S et al.²⁹ Due to the presence of phenolic and polyphenolic compounds, such as flavonoids in edible plants exhibit anti-oxidant activity the free radical-scavenging activity of extracts of the leaves of *P.santalinus* has been evaluated in vitro studies. Pterostilbene, methyl ether of reserveratrol has promising effect against anti-inflammatory and antioxidants.²⁹

The above-mentioned immune modulatory drugs are easily available, cost effective, economical, and easy to administer to the patient. The mentioned regimens like starvation, *Tajfeef*, foot bath, *Lakhlakha*, *Istigragh* and *Fasd* can practiced easily and their credible history is very long.

8. Conclusion

The ancient physician commonly used the term Epidemic in the same sense as it is understood now, as applying to any disease which attacks a multitude of persons in a locality at any particular period. Study mentions the basic insights regarding epidemics about their causation and management strategies. It is quite clear not that the impure air of the Hippocrates means the mode of infection and the resistance to the disease as immune defence. The host factors that are strengthened using measures adopted by Unani medicine are insightful. There is a lot of scope to search for better management of the epidemics when the facts mentioned in Unani medicine are taken into consideration. Research is needed particularly for the drugs Unani medicine has suggested as they have mentioned their effect in prevention and treatment of the disease. In the light of above description literature of Unani medicine has got insights to manage the epidemics and the experience may prove beneficial in case of COVID-19 management.

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