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# CONCEPT OF WABA (EPIDEMIC) AND PREVENTION AND TREATMENT OF COVID-19 IN VIEW OF TIBB-E-UNANI

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#### ABSTRACT

Background and Objective: The world's focus has been on exploring ways to strengthen host defenses due to the lack of availability of clinically validated prophylaxis and specific coronavirus medicines (COVID-19). The Unani system of medicine is one of the conventional systems of medicine that is being explored for the provision of preventive, therapeutic and rehabilitative treatment to patients. Hippocrates (460-380BC), the father of medicine, authored books on Epidemics. Unani scholars identified the host as an important determinant of disease dynamics and placed significant emphasis on host defense. The purpose of this article was therefore to provide an outline of the fundamental concept of Waba and to explain COVID-19 in relation to the existing literature on Tibb-e-Unani. Materials and Methods: To gather the data on the steps recommended for disease control, a manual literature survey of classical Unani texts was performed. In addition, electronic databases such as PubMed, Google Scholar, and Science Direct were searched to identify researches conducted on Unani drugs listed in the article as well as to obtain recent information about COVID-19 outbreak. The keywords used were "Unani Medicine," "Epidemic," "Immunomodulator," "Antiviral," "Antimicrobial," "Prevention," and "COVID-19." Results: The literature review shows that Unani scholars have given an elaborate description of the epidemic including its definition, etiological factors, susceptible host, clinical presentation of infected individuals, and the containment measures. Conclusion: The aforesaid Unani literature and contemporary materials seem to be of much relevance in today's context. These preventive measures have been considered useful in reducing the risk of contracting the infection during epidemics. Hence, in our opinion, it is worth assessing them in the current outbreak.

KEYWORDS: COVID-19, epidemic, host defense, immunomodulator, Unani medicine.

# INTRODUCTION

Coronavirus disease 2019 (COVID-19) is questionably the 21st century's largest global pandemic in the world. It is an infectious disease caused by the recently discovered severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) of family coronaviridae.

Alternatively, it is known as:

- The coronavirus
- 2019-nCoV acute respiratory disease
- Novel coronavirus pneumonia
- Severe pneumonia with novel pathogens

The disease was unknown until the epidemic started in Wuhan, Hubei Province, Central China, in December 2019 after a cluster of pneumonia cases with unknown etiology was reported. The World Health Organisation (WHO) announced an outbreak of COVID-19 as a Public Health Emergency of International Concern (PHEIC) on

30 January 2020 and a pandemic on 11 March 2020. It is a sophisticated pandemic with an unusual and swift rate of transmission and has affected almost 218 countries and territories around the world and 2 international conveyances without respecting any border. [1,2,3]

Globally, 4.1 million new cases have been reported in the last week, 15 percent down from last week, and the number of new deaths registered was just under 96 000, in comparison to the previous week. This brings the cumulative number of reported cases to over 98.2 million and more than 2.1 million worldwide since the onset of the pandemic.<sup>[4]</sup>

India announced the first case of COVID-19 on 30 January 2020. Currently there are the greatest number of cases in Asia and the second-highest number of confirmed cases in the world after the United States. To

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date, 9.68 million cases and 140,182 fatalities have been recorded. [5,6,7]

#### MODES OF TRANSMISSION

The virus that triggers COVID-19 spreads primarily when an infected person is in near contact with another person (~1.8m). [7,8] Tiny droplets and aerosols containing the virus can spread from the nose and mouth of the infected person as he breathes, coughs, sneezes, sings, or talks. Other people are infected if the virus gets into their mouth, nose or eyes. The virus may also spread through fomites (contaminated surfaces) but it is not considered to be the main route of transmission. [8] The precise route of transmission is rarely found to be definitive, [9] but infection occurs mostly when individuals are close to each other for a long time (~15 minutes). It can spread as early as two days before infected persons show symptoms (presymptomatic), from asymptomatic individuals. People remain infectious for up to ten days in moderate cases, and two weeks in severe cases.<sup>[3]</sup>

#### **Incubation** period

The median incubation time for COVID-19 is 4 to 5 days. [10] Most patients develop symptoms within two to seven days after exposure, and nearly all symptomatic people experience one or more symptoms by day twelve. [10,11]

#### Clinical picture

Symptoms of COVID-19 are variable, ranging from asymptomatic to severe illness. [12] Common symptoms include fever, cough, fatigue, breathing difficulties, and loss of smell and taste. People with the same infection may have different symptoms, and their symptoms may change over time. For example, one person may have a high fever, a cough, and fatigue, and another person may have a low fever at the start of the disease and develop difficulty breathing a week later. However, in people without prior ears, nose, and throat (ENT) disorders, loss of taste combined with loss of smell is associated with COVID-19 with a specificity of 95%. [13]

Around one in five infected individuals does not develop any symptoms. [14] while most people have mild symptoms, some people develop acute respiratory distress syndrome (ARDS). ARDS can be precipitated by cytokine storms, [15] multi-organ failure, septic shock, and blood clots. Longer-term damage to organs (in particular, the lungs and heart) has been observed. There is concern about a significant number of patients who have recovered from the acute phase of the disease but continue to experience a range of effects-known as long COVID-for months afterwards. These effects include severe fatigue, memory loss and other cognitive issues, low-grade fever, muscle weakness, and breathlessness. [16]

Gastrointestinal symptoms such as abdominal pain, vomiting, and loose stools were also reported by few patients.  $^{[10]}$ 

With increasing age, its severity increases. It tends to occur more in older individuals, those who are immunocompromised and people with comorbid conditions. Studies have found that the virus causes poorer effects and greater mortality in men than in women. Higher mortality rate is commonly seen in individuals of more than 75 years old or persons with any comorbid conditions.

Diagnosis is usually performed by the identification of SARS-CoV-2 RNA via reverse transcription polymerase chain reaction (RT-PCR) most commonly obtained from nasopharyngeal (NP) or oropharyngeal swabs. Chest X-ray and CT imaging has been used to detect COVID-19 in suspicious patients with an adverse molecular diagnosis. [18]

### Unani perspective

Unani is a traditional medicine system of Hellenistic origin, founded on Hippocratic principles (460–370 BC). The father of medicine gave humoral theory which presupposes the presence of four bodily senses of humour, *dam* (sanguine), *balgham* (phlegm), *safra* (yellow bile) and *sawda* (black bile) with their corresponding temperamental qualities of hot-moist, cold-moist, hot-dry and cold-dry respectively. He further specifies that infection chiefly affects akhlat (humor) and due to the action of hararat ghariba (abnormal temperature); it deforms their physiological functions in such a way that individuals become diseased. [20]

Later, Arab and Persian physicians, propounded another theory namely umoore tabi'iyya (basic physicochemical components of the human body) which is called as the Doctrine of the seven naturals viz. arkan (elements), mizaj (temperament), akhlat (humour), a'da' (organs), arwah (pneuma), quwa (faculties) and af'al (functions). [21,22] The survival of the living body is not possible in the absence of any one of these components. Furthermore, any qualitative or quantitative derangement in the constituents of the components as mentioned above may cause disease condition. Thus the main aim of Unani physician during treatment of diseases is to bring back the homeostasis or equilibrium primarily by aiding bodily faculties' viz. *tabi`at mudabbir-i-badan* (*medicatrix naturae*). [23] It is an inherent power of the body which provides self-preservation or adjustment and restore any disturbance in the constitutional state of an individual.[21,24]

Hippocrates is considered as the first epidemiologist of the world. He was the first scholar who has defined epidemic and endemic nature of diseases. He postulated that disease was a natural process, and its symptoms were the reactions of the body to the disease. [21] He is the author of three most famous treatises, Epidemic I,

Epidemic III and Airs, Waters and Locations. These manuscripts of Hippocrates explain illnesses from a logical and hypothetical viewpoint rather than from a supernatural philosophy. The eminent Greco-Roman physician Galen projected that the miasma hypothesis of disease spread, such as cholera, chlamydia or plague, was caused by miasma (pollution), a noxious form of bad air. Miasma was air pollution caused by noxious vapours containing toxic elements caused by decaying putrid matter. It was spread by the wind and so could spread quickly; it could reach humans by breathing and through the pores of the skin. [25] He also said that diseases are caused by three factors viz. predisposing, exciting and environmental factors.

The contribution of Razi in the field of medicine is immense and unparallel. The great Unani scholar, physician and epidemiologist, has described the concept of epidemic in his various books. He emphasised that there would always be something unique in epidemic patients, whether a place, food, drink or travel history. He further stated that droplets inhalation is more contagious and an infected person should avoid visiting the houses of others which seeds the idea of quarantine or isolation. [27]

Ibn Rushd points out that not all individuals are affected by an outbreak, those with a poor constitution or those who follow a sedentary lifestyle are more likely to fall victim to it. [28]

Dawood antaki stated that "Waba spreads commonly to a large population due to the fact that they breathe in polluted air, drinks contaminated water, eat fruits that have been affected by ajsam-e-khabisa, use the meat of animals that have been affected due to epidemic. [29]

In unani literature, infection is referred by the term 'ufoonat' and infectious diseases are termed as Amraḍ-i-muta`ddiya, whereas epidemics are known by the term waba and the diseases occurring in waba are known as Amrad-i-wabaiya. "Waba" is defined as putrefied changes in the air, water, soil or environment which lead to alteration in the homeostasis of humour thus conducive to putrefaction of humour in the body in a large population at a very short period. The outbreak of an infectious disease in a wide geographic area of the world is called waba-umumi, which is synonymous to the pandemic. [24]

Razi stated that people who have excess morbid material in their body and those who live sedentary lifestyle, and perform excessive coitus are usually affected with waba. Whereas, symptoms of waba are less pronounced in those who live their life according to Asbab e satta zarooriya. [29]

Ibn Sina stated that sometimes the ajsam khabitha (pathogenic organisms) contaminates the water, air and soil which may ultimately change the quality of air and causes fever in a large group of the population at a very

short period. He mentioned that the air become putrified when the bodies died during an epidemic are not disposed of properly. Such contaminated air can produce infection in the human being which manifests as body pain, excessive sweating, halitosis, bilious vomiting and diarrhoea, changes in urine etc. He also stated that epidemics spread from one person to another and from one city to another like a message. [20]

Another scholar, Ibn Khatima (1369 CE) stated that the human body is surrounded by minute bodies which when entered in the human body may cause disease.<sup>[30]</sup> At the present time, this ajsam-e-khabitha or minute bodies can be referred as microbes, viruses, fungi etc.

Ibn Hubal Bagdadi (1121–1213 CE) stated in his treatise Kitab al-Mukhtarat fil-Tib (The Book of Choice of Medicine) that, if southern winds are replaced by northern winds, catarrhal diseases would occur in abundance.<sup>[31]</sup>

Razi mentioned that temperamentally barid (cold) and yabis (dry) individuals enjoy the advantage of remaining hale, when the danger of epidemic lurks around, provided that appropriate preventive measures are taken to retain their buroodat (coldness) and yuboosat (dryness). He also mentioned that tajfeef (desiccation) is an excellent approach to take care of temperamentally harr-ratb (hot and moist) individuals, who often affected during epidemics. [29]

The unani system does not provide a specific description of COVID-19, but symptoms shown under the heading Amraz-i-wabaiya or Humma wabaiya or nazal-wabaiya such as fever, headache, dry cough, sore throat, myalgia, nasal irritation, malaise, dyspnoea, extreme thirst, loss of appetite, insomnia, nausea, vomiting, diarrhea, abdominal pain, nabz mutawatir etc. may be somewhat correlated with symptoms of the current pandemic of COVID-19. [29,32,33,34]

Unani system of medicine mentioned the concept of Buhraan (Crisis of the diseases). Buhran is called as the critical phase of the disease. It is defined as "The sudden change in acute diseases. It can be in the direction of health or diseases. In fact this is a fight between medicatrix naturae and the disease causing material. In the crisis period either this material is expelled out totally from the body or it becomes dominant in the body due to which the whole body becomes weak." [24]

It is further divided as:

- Buhran Jayyid A state when the disease causing material is expelled from the body paving the way for recovery.
- Buhran Radi A state when the disease causing material becomes dominant in the body causing the death of an individual.
- Buhran Intiqali A state when the crisis of a disease transforms into other diseased condition.

## Management of COVID-19 through unani pathy

The unani system is recognized as an alternative traditional system of medicine by the World Health Organization to cater to the health care needs of the population. [19]

As reported by Jalinoos 'a physician should always keep an eye on changes of weather and air'. This system acknowledges the effect of the climate and the natural factors on human wellbeing. Apart from curing illness, Unani Medicine puts great focus on the prevention of disease and the promotion of current health by the concepts of the six key factors (Asbab-e-Sitta Zarooriyah) of life. It imposes considerable importance on maintaining a healthy ecological balance and on keeping air, water and food free from any potential pollutants and pathogens. [36] In addition to the general measures of sanitation and health maintenance, safety during epidemics is based on a three-pronged approach: air purification, enhanced immunity and specific medications in the event of disease.

As of date, there is no specific treatment available for COVID-19, hence the emphasis is being laid on preventive and symptomatic treatment.

### Usool-e-ilaj

- Screening of the suspect
- Eliminate the cause (Asal sabab ka izala): For this purpose containment measures as given by unani scholars must be followed.
- Cause-centric approach- It is applied at the environment level. To eliminate the pathogens present in the environment, fumigation of medicinal herbs to purify the air and spraying the solution of medicinal herbs as a environment surface disinfectant is done.
- 2. Host-centric approach- applied at individual level. To strengthen the host defense, Health Promoting drugs, Diet and lifestyle modifications are done.
- Monitor the patient's strength/ Immunity.
- Consider the strength of vital organs.
- Use of Mufarrehat wa muqawwiyat qalb.
- Use of Tiryaqs as an antidote such as tiryaaq-ewabai, tiryaq-e-kabeer,tiryaaq-e-arba, tiryaaq-e-Afayi.
- For supportive symptomatic relief use Daf-ehumma, daf-e-su'al, mohallilat adwia.

Unani scholars recommended many single medications as well as compound combinations for the prevention and control of infectious diseases in general. More focus was focused on the use of such medications proven to enhance host immunity during outbreaks of epidemics, endemics and pandemics. Ismail Jurjani (1041-1136 CE) said that the use of Tiryaqs during epidemics protects the heart and keeps the faculties of the body strong. [36]

The four principles of treatment adopted in Unani medicine are:

➤ *Ilaj bi'l-Tadbir* (regimenal therapy)

- ➤ *Ilaj bi'l-Ghiza* (dietotherapy)
- ➤ *Ilaj bi'l-Dawa* (pharmacotherapy)
- > *Ilaj bi'l-Yad* (surgery).

*Ilaj bi'l-Tadbir* (**Regimenal therapy**): To keep the body free from free radicals and restores bodily health one should live his life in accordance with asbab-e-sitta zarooriya and ghayr zarooriya.

#### • Asbab-e-sitta zarooriya

- 1. **Hawa (Air):** Air should be free from physical, chemical and biological pollutants / contaminants. As mentioned by various scholars that infections occur due to putrefied air. So purify the air at regular intervals with Fumigation (Bakhur) of Sandal (Santalum album) and Kafur (Cinnamomum camphora). Avoid staying in air conditioner for long and maintain room temperature.
- 2. **Makul-o-Mashroob** (Food and drinks): Nutritive and easily digestible food should be taken. Use of seasonal fruits and vegetables should be preferred. Zakariya Razi prescribed the use of astringent and citrus fruits such as rubb-e-Anar, rub-e-bahi, utranj, amla, angoor, lemu etc. in epidemics. [37]
- 3. Naum wa yaqza (Sleep and wakefulness): Take adequate sleep at least for 8 hour because during sleep, type of cytokine released that fights infection and too little sleep lower the amount of these cytokines and other immune cells.
- 4. Harkat wa sukoon o badni (Bodily movement and repose): To maintain good health and enhancement of immunity, the body requires both exercise and rest. So, do moderate exercises daily.
- 5. Harkat wa sukoon nafsani (Psychic movement and repose): Try to minimize stress because stress can lead to lowered immunity and make more prone to illness.
- 6. **Istafragh wa ihtibas (Evacuation and retention):** For maintaining good health, unani system believed that *isitafgragh* and *ihtibas* of substances is very important, so proper and normal functioning of excretory processes must be ensured.

Certain non-essential factors (**Asbab Ghayr Zaruriya**) e.g. Massage (Dalk) and Turkish Bath (Hammam) may also help to increase immunity. [38]

## *Ilaj bi'l-Ghiza* (dietotherapy)

Diet that is easily digestible and nutritive should be taken.

Rhazes indicated that "switch to a diet of boiled vegetables" during an outbreak and stop being thirsty. A diet low in calories is preferable. It is also recommended that citrus and sour fruits be eaten, especially grapes, apples, pomegranate, lemon, etc. It is suspected that oxymel prepared with Arq-e-Gulab provides adequate weapon during epidemics. [29,39] As mentioned by modern researchers that citrus fruits are rich source of vitamin c

that help in combating COVID-19 through improvement in immunity.

Ibn-e-Sina said that both overeating and under-eating are considered dangerous because they have detrimental impacts on the constitution of the body. It was also understood that remaining thirsty was prejudicial. [40]

Meat, hot and sweet edibles should not be consumed. [39] The Unani physicians have recommended that barley water which is prepared with one part of barley and 10/14/20 parts of plain water should be taken daily during epidemics to boost the immune system of the body. [21]

# Ilaj bi'l-Dawa (pharmacotherapy)

Pharmacotherapy is based on the type of cases whether asymptomatic, mild or severe.

### Asymptomatic cases

**Asymptomatic unexposed cases:** Tiryaaq should be given as prophylactics.

**Asymptomatic exposed cases:** Immunomodulators such as khameerah gauzaban, khameera marwareed.

**Symptomatic mild and moderate cases:** A policy is advocated to increase immunity and offer symptomatic relief from upper respiratory tract infection.

### Unani Single Drugs: Decoction of

**Behi dana (Cydonia oblonga):** Antioxidant, antiallergic, immunomodulator, and anti influenza. (Dose is 3-5 gm)

**Unnab** (**Zizyphus jujuba**): Anti-influenza, antioxidant, and immunomodulator (Dose is 5 pcs.)

**Sapistan** (**Cordia myxa**): Immunomodulator, antioxidant and tracheal smooth muscle relaxant. (Dose is 9 pcs.)

**Karanjwa** (Caesalpinia bonducella): Antimicrobial, Antipyretic, immunomodulator and anti-inflammatory. (Dose is 3 to 5 gm)

#### **Unani Formulation**

*Tiryaq-e-Arba* has *Dafae Sumoom* (antidote) and *Dafae Tashannuj* (anti-spasmodic) properties and used in the dose of 3-5 gm with lukewarm water. (Not recommended for diabetics).<sup>[41]</sup>

AYUSH Joshanda: Prepare decoction by boiling *barg e Rehan / Tulsi* (Ocimum sanctum) 4 parts, *Dar Chini* (Cinnamomum zeylanicum) 2 parts, *Zanjabeel* (Zingiber officinale) 2 parts, *Filfil Siyah / Kali Mirch* (Piper nigrum) fruit 1 part in 250 ml water until it reduces to half. Add jaggery or lemon juice into decoction for taste and take sips in evening or as and when required.<sup>[41]</sup>

#### **Local Application**

Local use of *Roghan-e-Babuna Sada* or *Qairooti arad kirsna* on the chest is advocated in case of respiratory distress.

## Inhalation

2-5 drops of *Arq-e-Ajeeb* 

#### **Antivirals**

The Unani herbs listed below have reported few findings in some antiviral activities. They can be used under the guidance of a trained medical doctor from Unani.

- 1. Seer (Allium sativum): 2-3 gm
- 2. Tukhm-e-Kasoos (Cuscuta reflexa): 15 gm (seeds)
- 3. Aslassus (Glycyrrhiza glabra): 5-10 gm
- 4. Kalonji (Nigella sativa): 1-2 gm
- **5.** Afsanteen (Artemisia absinthium): 3-5 gm
- 6. Zanjabeel (Zingiber officinale): 5 gm
- 7. Khayarshamber (Cassia fistula): 10-20 gm (pulp) for gargle
- 8. Gilo (Tinospora cordifolia): 5-10 gm

### **Immunity Enhancers**

Khameera Marwareed in the dose of 3-5 g (Not recommended for diabetics) Safoof Asgndh in dose of 5 g  $\,$ 

**Severe cases:** They should be hospitalized and ventilated under the supervision of COVID warriors.

Symptom Specific Approach<sup>[42]</sup>

Symptoms	Formulations	Dose
Dry Cough	Habb-e-Surfa	250 mg pill twice daily
	Khamira-e-Banafsha	5 gm twice daily
	Khameera Khashkhaash	5 gm twice daily
	Laooq sapistan	5 gm twice daily
	Sharbat sadr	5 ml twice daily
Fever	Habb-e-Bukhar	1-2 pills twice daily
	Habb-e-Mubarak	1-2 pills twice daily
Sore throat	Sharbat-e-Toot Siyah	5 ml twice daily
	Laooq-e-Khyarshamber	5 gm twice daily
Breathlessness	Laooq-e-Katan	5 gm twice daily
	Sharbat zoofa	5 ml twice daily

**Mujarrib nuskha:** Prepare decoction of behidana (3gm), Unnab(5 pcs.), Sapistan (9 no.) in water then add Sharbat banafsha (2 tola) and sprinkle Khaksi (3masha) on it. Give this morning and evening. [43]

#### **Preventive measures**

As we all are very much aware of the aphorism "Prevention is better than cure". It fits correctly for this disease.

- Use face mask
- Maintain social distancing (2 ft)
- Avoid touching eyes, nose and mouth
- Frequent washing of hands with soap and water and use of alcohol-based sanitizer
- Practice good respiratory hygiene
- Isolation of vulnerable population like elderly people, pregnant women and people having comorbid conditions such as hypertension and diabetes mellitus.
- Maintain sanitation and general hygiene
- Stress relieving measures are equally important to follow. Certain Unani drugs like Sa'd Koofi (Cyperus rotundus) Ood Saleeb (Paeonia emodi) and Jadwar (Delphinium denudatum) may be beneficial.
- Fumigation (*Bakhoor*) of the house at frequent intervals with combination of Sandal (Santalum album) and *Kafoor* (Cinnamomum camphora).

Most of these preventive measures' date back more than 1,400 years ago, at the time of the Prophet Mohammad, who advised the people during the outbreak of any infectious pandemic in a land, "If you hear that there is a plague in a land, do not enter it; and if it (plague) visits a land while you are therein, do not go out of it" Furthermore, Prophet Mohammad always advised people to adopt good hygiene and stay clean all the time, and being clean is considered part of the Muslim faith.<sup>44</sup>

# Special care for elderly

Unani Medicine categorizes the elderly people under *Abdan-i Zaifa* (weaker bodies). Such population may have higher susceptibility for acquiring different illnesses. General guidelines are provided for maintaining their health:

- The diet should be in accordance with *Mizaj* (Temperament)
- Nutritive and easily digestible diet should be taken
- Frequent meals in small quantity
- Avoid drinking cold water
- Maintain good bowel habits
- Maintain adequate sleep
- Perform moderate exercises
- Use of immunity boosters that are mentioned especially for elderly are; Khameera abresham hakeem arshadwala, Khameera marwareed, Khameera gauzaban anbari, Jawarish jalinoos, Anooshdaroo luluwi, Jawarish anarin etc.<sup>[43]</sup>

#### CONCLUSION

Unani medicine has put a great deal of emphasis on the protection of wellbeing and the prevention of disease. While non-drug prophylaxis is one of the key assets of Unani medicine, the system does not undermine the use of prophylactic drugs to achieve the target of Taqaddum bil Hifz. The activation of intrinsic heat (Haraarat-eghariziya) and the rise in vital force of essential organs form a basic foundation for the prevention of diseases in the system. Tibb-e-Unani scheme prescribes a vast range of single and compound drugs for this purpose, such as Chobchini (Smilax chinesis), Zafran (Crocus sativus), Tiryaq e wabai, etc. Epidemic containment measures described in classical Unani treatises seem to be of much relevance in today's context. These measures have been considered useful in reducing the risk of contracting the infection during epidemics. Hence, in our opinion, it is worth assessing them in the current outbreak. Research is required in particular for the medications Tibb-e-Unani has proposed as they have indicated their effect on the prevention and treatment of the disease. Greater momentum in research in the Unani medicine will not only improve trade and the practise of herbal medicines, but will also further expand traditional Indian awareness to other areas of the world.

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