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Overview: Unani-Dieto and pharmacotherapy as immuno modulator and prophylaxis for Covid-19

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Abstract
Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. The genome of 2019-nCOV has 89% nucleotide identity with bat SARS-like (Severe acute respiratory syndrome) and 82% with that of nucleotide identity with that human SARS-CoV. More or less the common symptoms of novel CoV-19 are severe dry cough, fever, dyspnoea, burning sensation in throat, pain in chest and in most severe cases the patient may develop pneumonia and organ failure in last. As there is no medicine for cure or no prophylactic vaccine so far as the virus is very new, so the experts are expecting some assistance from Unani traditional system of medicine to boost immunity as the virus deteriorates the immunity at high pace especially in co-morbid conditions of the patients. In Unani system of medicine there are various single drugs and few compounds that have been proved to be Immunomodulatory and those drugs can also work over various disorders of the respiratory system including the severe pneumonia found in later stages of CoV-19. Some of the diets especially consisting of the dry fruits may also work in multidimensional fashion in order to cure viral disorder and to boost immunity. Ilaj Bit Tadbeer is one of the ways of treatment in Unani, the Riyazat regimen is very essential to boost immunity, to fight various ailments as well as removing the various psychological pressures.

Keywords: Covid-19, SARS-CoV, Ilaj Bit Tadbeer, Unani, Immunomodulator, Riyazat, Regimen

Introduction
The year 2020 has brought so much distress in human society not only in one or few part of the world but have threatened and engulfed whole of the humanity surviving in this beautiful world. On December 31, 2019, WHO was informed of a cluster of cases of pneumonia of unknown cause detected in Wuhan city, Hubei Province of China. The coronavirus disease (COVID-19) was identified as the causative virus by Chinese authorities on 7 January [1]. As of January 24, 2020, at least 830 cases had been diagnosed in nine countries: China, Thailand, Japan, South Korea, Singapore, Vietnam, Taiwan, Nepal, and the United States. Twenty-six fatalities occurred, mainly in patients who had serious underlying illness. Although many details of the emergence of this virus — such as its origin and its ability to spread among humans-remain unknown, an increasing number of cases appear to have resulted from human-to-human transmission [2].

Microbiology
The genome of 2019-nCOV has 89% nucleotide identity with bat SARS-like (Severe acute respiratory syndrome) and 82% with that of nucleotide identity with that human SARS-CoV. The phylogenetic trees of their orf1a/b, Spike, Envelope, Membrane and Nucleoprotein clustered closely with those of the bat, civet (A civet is a small, lean, mostly nocturnal mammal) and human SARS coronavirus. Coronavirus are enveloped, positive sense, single-stranded RNA viruses that belong to the subfamily *Coronavirinae.* There are four genera of COVs, namely Alpha coronavirus, Beta coronavirus, Delta coronavirus and Gamma coronavirus. Evolutionary analyses have shown that bats and rodents are the gene sources of most αCOVs and βCOVs, while avian species are the gene sources of most δCOVs and γCOVs. The best known examples include severe acute respiratory syndrome CoV (SARS-CoV) which emerged in China in 2002-2003 and Middle East Respiratory syndrome CoV (MERS-CoV) which occurred in Arabian peninsula. Both of these viruses have likely originated from bats and they jumped into another amplification mammalian host. (Himalayan palm civet for SARS and dromedary camel for MERS.) [3, 4].

The routes of transmission of COVID-19

COVID-19 is transmitted via droplets and fomites during close unprotected contact between an infector and in fectee.

Signs, symptoms, disease progression and severity

The disease can range from no symptoms (asymptomatic) to severe pneumonia and death.

Typical signs and symptoms include

1. Fever (87.9%),
2. Dry cough (67.7%)
3. Sputum production (33.4%)
4. Shortness of breath (18.6%)
5. Sore throat (13.9%)
6. Fatigue (38.1%)
7. Headache (13.6%)
8. Myalgia or arthralgia (14.8%)
9. Chills (11%)
10. Nausea or vomiting (5%)
11. Nasal congestion (4.8%)
12. Diarrhea (3.7%)
13. Hemoptysis (0.9%) and
14. Conjunctival congestion (0.8%).

People with Covid-19 generally develop signs and symptoms; including mild respiratory symptoms and fever, on an average of 5-6 days after infection (mean incubation period range 1-14 days). Most people infected with Covid-19 virus have mild disease and recover. Approximately 80% of laboratory confirmed patients have had mild to moderate disease, which include non-pneumonia and pneumonia cases, 13.8% have severe disease (dyspnoea, respiratory frequency>30/minute, blood oxygen saturation < 93%.). About 6.1% patients go critical (respiratory failure, septic shock, and/or multiple organ dysfunction/failure). Individuals at highest risk for severe disease and death include people aged over 60 years and those with underlying conditions such as hypertension, diabetes, cardiovascular disease, chronic respiratory disease and cancer [5].

In severe pathological condition, the infection goes down the lungs to the lining of the respiratory tree that also becomes injured, causing inflammation. This goes past the lining of the airway and goes to the gas exchange units. If they become infected they respond by pouring out inflammatory material into air sacs that are at the bottom our lungs. If the air sacs then become inflamed, this causes an outpouring of inflammatory material into the lungs and we end up with pneumonia. Lungs become filled with inflammatory material are unable to get enough oxygen to the bloodstream, reducing the body's ability to take on oxygen and get rid of carbon dioxide [6].

Overall description about the signs and symptoms shows us that the virus shows symptoms similar to cough and cold or influenza like symptoms or flu like symptoms i.e. fever, cough that may dry or rarely some study shows productive, coryza, lethargy, throat infection resulting in burning and irritation of throat, dyspnoea and lastly the severe condition leads to pneumonia. Some other miscellaneous signs and symptoms may also be present.

Unani literature regarding epidemic diseases

The classical literatures of ancient Greece and Egypt revealed the prevalence of some diseases such as meningitis, tuberculosis, Hansen's disease and smallpox in those days [7]

Many Unani physicians wrote topic regarding epidemic disease. Few important books of Unani medicine which have topics regarding epidemic diseases are *Al-qanoon fit tibb*(The law in Medicine) of *Ibne Sina*, *Kitab-al-Hawi*(The comprehensive book of medicine) of *Zakariya Razi*, *Kitab al-Kulliyat* by *Ibne Rushd*, *Kitab al-Mansoori* by *Zakariya Razi and Kitab al-Mukhtarat fit tibb*(The book of Choice of Medicine) by *Ibne Hubal Baghdadi* [8].

Hippocrates (460-377 B.C.) the excellent scientist brain in *Greek* medicine was probably the first physician to record the different clinical signs of several contagious diseases which are presently termed as influenza, diphtheria, tuberculosis, mumps and malaria [9]. *Zakariya Razi* (*Rhazes* 865-925 A.D.), one of the renowned Unani physician, the world knows it, he gave great contributions in the field of Unani Medicine. Regarding Amraze-e Wabaiya (Infectious disease) he mentioned about various infectious diseases. In one of his book *Kitab-al-Judri-wa-al-Hasbah*, in this he mentioned about clinical manifestations and management of small pox and measles [10]. He not only mentioned about various signs and symptoms of this infectious disease but also mentioned about Regimenal therapies, dietetic plans. He also mentioned about acute respiratory infectious diseases in one of his book.[11] Razi also mentioned details of several infectious diseases such as meningitis, ear infections, throat infections, chest infections including pulmonary tuberculosis, pneumonia and pleuritis, intestinal infections, urinary tract infections and wounds caused by uofoonat (infections) etc [10].

Shaikh-ur-Raees (Avicenna) was one of the pioneers in Unani Medicine. He wrote so many books over various topics. One of his famous writing is Alqanon (Al qanoon-fit-tibb) which have five parts. He also describes about infectious disease according to Unani point of view. In management of infectious fevers, he described about Munzij and mushil therapy, along with diet. He had told while describing of one of the bilious form of infectious fever, restrict fruit juices at least for one week and only Maaus sheer (Barley water) is given [12].

There are various Unani single drugs as well as compound formulations that have been used for centuries against various epidemic ailments. In the present times whole of the world is combating with nCoV-19 which probably thought to be originated in Wuhan of China and there is no prophylactic and curative treatment yet. The only way of minimizing the effect of virus in the community is social distancing; using the face masks, washing of hands on frequent basis and some other precautions have to be taken in and outside the homes. In India, Honourable Prime Minister, told to use AYUSH medicines and therapies to boost your immunity so that we can fight with virus. He told us about using the home remedies and herbal medicines.

Unani concept in Infectious diseases

Epidemic referred to as '*Waba'* in Unani medicine. Unani system of medicine adopts the holistic approach in the treatment of a disease. The cause is being traced and rooted out to cure an ailment. Unani physicians proposed few important line of treatment for various diseases. The important ways that are employed for the treatment of an infectious disease are:

1. Preventive measures.
2. Drug management.
3. Dietary measures.
4. Sanitization.

Preventive measures

Renowned Unani physicians like *Zakariya Razi* (*Rhazes*) said one should not visit a place where an epidemic is spread. If epidemic is present in an area then a person is advised to live in good ventilated room. Care must be taken while interacting with an infectious patient, air currents must not flow from the patients to towards the healthy person [8] similarly many Unani (*Greek*) physicians told about various kinds of preventive measures that must be taken during the outbreak of an epidemic.

In preventive measures we can also adopt the various regimens of Ilaj-Bit-Tadbeer (Regimenal therapies) but the most beneficial for all age group of people is Riyazat. Regimenal therapies are one of the therapies that can be highly beneficial in the prevention of the disease, especially Riyazat (Bodily exercise) is one of the best regimen to control and prevent some of the ailments and it can also play great role in boosting the immunity thus combating the nCoV-19 or it can fairly help to minimize its invasion over the body of people even with compromised immunity and can be benefited by Riyazat's good effects.

Riyazat (Exercise)

Riyazat is any bodily activity that enhances or maintains physical fitness and overall health and wellbeing. It is performed for various reasons; including strengthening muscles and the cardiovascular system, weight loss, to prevent the diseases such as cardiovascular diseases, Type 2 diabetes and obesity.

The objectives of Riyazat are: To improve istehala (Metabolism) for proper functioning of the body, to remove waste product from the body, to tone up individual organs, to maintain or improve flexibility of the body.

Various Unani Physicians like *Avicenna*, *Ismail Jurjani*, *Zakariya Razi*, *Rabban Tabri*, *Buqrat* and various others described about employment of exercise for various parts of the body like exercise for eyes, ears, chest and respiratory organs, digestive system, various muscular exercises were also explained by them.[13]

Riyazat (exercise): A part of ilaj bil tadbeer and its role in prevention of Diseases

Drug Management

Tiryaq-e-Wabayee

It is one of Unani compound formulation that has been in use as a drug of choice for prevention from an epidemic. During the outbreak of an epidemic, Tiryaq-e- Wabayee is used as prevention from the infectious disease. It can be taken 2 to 3 times in a week for prevention. It is indicated in Plague, Cholera and small pox. Many Unani physicians appreciate the preventive effect of Tiryaq-e-Wabayee. Renowned Unani Physician, *Galen* (*Jalinoos*), recommended the use of Tiryaq-e-Wabayee in epidemic. He also said that the people, who used Tiryaq-e-wabayee as preventive drug, were not affected by the epidemic.

Composition of Tiryaq-e-Wabayee

S. No.	Name of the Drug	Weight of the drug
1.	Sibr-e-zard (*Aloe barbadensis*)	20 gm
2.	Mur makki (*Commiphora myrrh*)	10 gm
3.	Zafran (*Crocus sativus*)	10 gm

Grind all these drugs in Arqe Gulab (100 ml) properly. Then make Pills of the size of Nakhood (Chickpeas). Sibr-e-zard is quite bitter in taste so put the silver coating over the pills.

Dose

1-2 pills morning or evening with 60 ml Arqe Gulab or with 120 ml Arqe Badyan two or three times in week [14].

One of the studies was done for the evaluation of Tiryaq-e-Wabayee as an immune-modulator in elderly person. The formulation was given as mentioned above to a test group for 45 days thrice in a week and the response was assessed by total leucocytes count (TLC), lymphocyte percentage, absolute lymphocyte count (ALC), CD4 and CD8 count [15].

The process of aging is attributed mostly to the excessive oxidants produced in the body. Reactive oxidant species and immune dysfunction are major causes of age-related diseases, immune-senescence, attributed partly to the reduction in number of T-lymphocytes and loss of their functions. Such loss increases the prevalence of infectious diseases in the elderly [16-18].

The study suggests that Tiryaq wabayee has immune modulating capabilities and this drug found quite encouraging in the treatment of immune-compromised elderly persons [15].

Let's see the various Pharmacological effects of the single drugs in the formulations and whether the research work is indicative of any good effect in nCoV-19 prevention, treatment or not.

The very first and important drug in the formulation is *Aloe barbadensis*, this drug is regarded as the *Universal panacea*. The Egyptians called Aloe the plant of immortality.

Aloe Barbadensis has

Vitamins: A, C and E which are anti-oxidants. Some studies say it is important to use anti-oxidants in nCoV-19. It also contains vitamin B12, folic acid and choline.

Enzymes: It contains 8 enzymes like, bradykinase, lipase etc. Bradykinase helps to reduce excessive inflammation, as occurs in Pneumonitis in nCoV-19, irritation or inflammation in pharynx. Lipase present in Aloe may also be able to break the lipid portion of the virus if studied and given.

Minerals: Zinc, Magnesium etc. Serve as anti-oxidants and helps in various metabolic activities.

Anthraquinones: These are phenolic compounds which have analgesic, antibacterial and anti-viral activities.

Hormones: Like Auxins and gibberellins may also helps in the damage cause by the virus in the respiratory system and may help as Aloe helps in wound healing and have anti-inflammatory action.

Some of the alkaloids present in Aloe such as Alprogen can inhibit the antigen antibody mediated release of histamine and leukotrienes from mast cells. If study could be done then it may also show that hyper-inflammatory mechanisms that occur in nCoV-19 can be minimised and thus severe pneumonia can be prevented. Aloe showed anti viral activity against herpes simplex, varicella zoaster and influenza viral infections.

Several other pharmacological actions can also be studied in nCoV1-19 research. The research of Aloe shows that it may work in novel corona virus disease as preventive or may be curative drug [19].

Second drug is *Commiphora myrrh*, which have got traditional use like antiseptic, carminative, anti-

inflammatory etc. Ethanolic and ether extracts of C. M. works against organisms like *Escherichia coli* and *Pseudomonas aeruginosa*, *Bacillus subtilis* and *Staphylococcus albus*. It also had anti fungal activity [20].

The antiviral activity of *Commiphora africana* essential oil was also seen in one of the study conducted at veterinary research institute virology section towards Newcastle virus (NDV). The pure and ethanol oil shows high and clear antiviral activity. It also possessed anti-inflammatory, anti-tumour activity, anti bacterial activity and fungal activity [21].

C.M is commonly used for the treatment of infections in mouth such as mouth ulcers, gingivitis, pyorrhoea as well as the catarrhal problems of pharyngitis and sinusitis.

The oil of C.M. has formed the basis of many applications, including raw and processed food preservation, pharmaceuticals, alternative medicine and natural therapies [20].

We can see that C.M. can protect us from various other infections that could further deteriorate our immunity. Simultaneous existence of any kind of infection may lead to easy entry of the nCoV-19 virus and can lead to serious consequences.

Cancer effected patients are immune-compromised and are more prone to infection by nCoV-19. One of the study shows that C.M. extracts and its resinous compound showed activity against human gynaecologic cancer cells [22].

Third ingredient in Tiryaq-e-Wabayee is *Crocus sativus*, which have the ingredients such as crocin, crocetin, safranal, picrocrocin, etc. *Avicenna* described various uses of saffron as an antidepressant, hypnotic, anti-inflammatory, hepatoprotective, bronchodilatory, aphrodiasiac, emmenagogue [23]. One of the studies shows the antioxidant, Immunomodulatory effects; it modulates humoral immunity, and cell-mediated immunity [24]. Lung cancer is the most common form of cancer, worldwide. One study shows the potential of saffron to induce cytotoxic and apoptotic effects in lung cancer cells (A549). The anticancer activity of the aqueous extract of saffron could be attributed partly to its inhibition of the cell proliferation and induction of apoptosis in cancer cells through caspase-dependent pathways activation [25].

Other single drugs of Unani that can be used as pharmacotherapy for prevention or may be as curative treatment for nCoV-19. The following drugs are:

1. Sapistan (*Cordia latifolia*)
2. Tukhme Khatmi (*Althaea officinalis*)
3. Tukhme Khubazzi (*Malva sylvestris*)
4. Unnab(*Zizyphus jujube*)
5. Gaozaban (*Borage officinalis*)
6. Banafsha (*Viola odorata*)
7. Tukhme khashkhash (*Papaver somniferum*)
8. Khaksi (*Sismbrium irio*)
9. Bihi dana (*Cydonia oblonga*)
10. Neelofar (*Nymphea lotus*)
11. Zafran (*Crocus sativus*)
12. Qaranfal (*Syzygium aromaticum*)
13. Amaltas (*Cassia fistula*) [26].

We have discussed few things about *Crocus sativus*, now we will collectively discuss about the remaining drugs also.

S. No.	Unani Name of Drug	Scientific name of Drug	Parts to be used	Form of the compound in Unani	Chemical constituents	Pharmacological actions	Causative organisms against which drug acts
1.	Amaltas	*Cassia fistula*	Leaves, Pulp of Legumes, Seeds	Can be used in the form of decoction, Infusion or semisolid preparation like Laoq, liquid preparation like Syrups	Phenolics, Proanthocyanin, flavonoid contents.	Antibacterial, Antifungal, Wound healing, Antitumor, Antioxidant, Hypoglycaemic, Hepatoprotective, Anti diabetic.	*Staphylococcus aureus, Streptococcus pyogens, P.aeruginosa, E. coli, Aspergillus niger, Aspergillus clavatus, Candida albicans* .[27-29]
2.	Banafsha	*Viola odorata*	Leaves and flowers, stem	Pill, decoction, sweet syrup, and confection or semisolid oral preparations	Flavonoids, saponins, and alkaloids, Contains an alkaloid, glycoside, saponins, methyl salicylate, mucilage, and vitamin C.	Anti-inflammatory, analgesic, antioxidant, diuretic, antihypertensive, and antibacterial activities, Antipyretic, hepatoprotective activity, used in bronchitis and cough, urinary infections, cancer.	*Trichomonas vaginalis, B. Subtalis, E.coli, Staphylococcus aureus, P aeruginosa, K pneumonia.*[30-32]
3.	Bihi dana	*Cydonia oblonga*	Fruits, seeds, leaves.	Decoction, infusion, Syrups, Semisolid preparations	Aromatic aldehyde, fatty acid, oxygenated monoterpene, sesquiterpene, hydrocarbon and aromatic aldehyde. The quince fruits contained protein, carbohydrate, lipids, and high levels of mineral elements such as Na, K, Ca, Mg, Fe, Cu, Zn and Mn.	Immunological and ant allergic effects, Antioxidant effects, Antimicrobial effect.	*Pseudomonas aeruginosa, Staphylococcus aureus, Staphylococcus epidermidis, Kleibsella pneumonia, Escherichia coli, Entrobacter aerogenes.*[33]
4.	Gaozaban	*Borage officinalis*	Leaves and flowers	Decoction, infusion, syrups, Khameera	Mucilage, tannin, saponins, essential oil, alkaloid (pyrrolizidine), vitamin C, calcium and potassium.It has tannins, resins, ascorbic acid, beta-carotene, niacin, riboflavin, thiamine, silicic acid, choline arabinose.	Cold, bronchitis, respiratory infections, anti-inflammatory properties. Used in cardiovascular disorders. It has anti-oxidant properties.	*Listeria monocytogenes, Staphylococcus aureus, Enterobacter, Salmonella enterica,S. enteritidis, S.veneziana, Enterobacter hormaechei, Enterobacter cloacae, Enterobacter sakazakii etc.*[34-36]
5.	Khaksi	*Sismbrium irio*	Seeds, leaves.	Decoction, infusion, syrups etc.	Important alkaloid is pyridine.	Antipyretic, analgesic, anti-microbial and anti-oxidant properties, It is used to treat coughs, chest congestion, rheumatism, to detoxify liver and spleen, reduce swelling and clean wounds.	*Staphylococcus aureus, Enterococcus faecium, Klebsiella pneumonia, Acinetobacter baumanni , Enterobacter cloacae, Pseudomonas aeruginosa, Candida albicans.*[37-38]
6.	Neelofar	*Nymphea lotus*	Flowers	Decoction, infusion, syrups	Tannins, flavonoids, alkaloids, anthraquinones,saponins, cardiac glycosides, phenolics.	Antibacterial.	*E.coli, Klebsiella Pneumonia, Pseudomonas aeruginosa*. MRSA(Methicillin resistant *Staphylococcus aureus*), VRSA(Vancomycin resistant *Staphylococcus aureus*).[39-40]
7.	Qaranfal	*Syzygium aromaticum*	Flower buds	Decoction, Powder, Khameera, Jawarish, Majoon etc.	Phenolic compounds as flavonoids(quercetin, kaempferol), Eugenol, Gallic acid, Caffeic, ferulic, elagic and salicylic acids, eugenol in oil, limonene etc.	Antioxidant activity, Antimicrobial activity, Antiviral Larvicidal activity	*E.coli, Staphylococcus aureus, Bacillus cereus. H.pylori*. Antifungal against Trichophyton mentagrophytes, *Trichophyton rubrum, Epidermophyton floccosum, Microsporum gypseum*. Antiviral against herpes simples virus type-I(HSV-1) when combines with acyclovir. Work against *Aedes aegypti* larvae.[41]
8.	Sapistan	*Cordia latifolia*	Fruits, leaves	Decoction, Infusion, Laoq, Syrups.	Sterols, fatty acids, carbohydrates, flavonone and flavanone glycosides, triterpenoids and glycosides and pyrolizidine alkaloids. Tannins, resins, coumarins,terpenoids, etc.	Larvicidal activity against *Aedes aegypti*. Analgesic, anti-inflammatory, Immunomodulatory, antimicrobial, ant parasitic, insecticidal, cardiovascular, respiratory, gastrointestinal and	Larvicidal. *E.coli, Staphylococcus aureus, Pseudomonas aeruginosa*. It has no action against some of the fungus. It showed weak action against HIV.[42-43]

						protective effects.	
9.	Tukhme Khatmi	*Althaea officinalis*	Fruits	Decoction, Infusion, Laoq, Syrups.	Starch, Mucilage, Flavonoids, isoquercitrin, kaempferol, caffeic, coumarins, scopoletin, phytosterols, tannins, asparagine and many amino acids.	Antibacterial, Anti inflammatory, Immunomodulatory effects, Demulcent and soothing, Anti tussive effects.	*Pseudomonas aeruginosa, Proteus vulgaris, Staphylococcus aureus, E. Coli, Kleibsella pneumoniae, Bacillus subtilis, Enterococcus faecalis, Aspergillus niger, Candida albicans, Saccharomyces*, Adenovirus, Coxsackie B2 virus, Herpes virus type1, measles virus, poliovirus1, Herpes virus type 2, Influenza virus A2 etc.[44]
10.	Tukhme Khubazzi	*Malva sylvestris*	Seeds, fruits.	Syrups, Laoq, decoction, infusion etc.	Carbohydrates, flavonoids, tannins, phenolic compounds, ascorbic acid, carotenoids and tocopherols, Vitamin-C, Vitamin-E, beta carotene etc.	Antioxidant, anti inflammatory, anticancer, wound healing, hepatoprotective, antimicrobial etc.	*Staphylococcus aureus, E.coli, Aspergillus niger*.[45-47]
11.	Tukhme khashkhash	*Papaver somniferum*	Fruits latex, seeds.	Syrups, Majoon, Decoction, Infusion.	Morphine, Codeine, oripavine and thebaine, Sanguinarine. It also contains flavonoids, triterpenoid, steroid phenylpronoid.	Antioxidant, Analgesic, sedative, Anti-inflammatory.[48-49]	
12.	Unnab	*Zizyphus jujube*	Fruit	Syrups, decoction, infusion, Laoq	Tritepenoic acids such as colubrinic acid, alphitolic acid. Flavonoids and saponins, cerebrosides, phenolic acids, alpha tocopherol, beta carotene and polysaccharides. It has vitamins such thiamine, riboflavin, niacin, vitamin B6 and vitamin A. It also contains magnesium, phosphorus, potassium, sodium and zinc.	Antifungal, anti termite, insecticidal. Human cancers, ovarian cancer.	*Aspergillus niger, Trichoderma harzianum*, anti termite against *Heterotermes indicola*, insecticidal against *Rhizopertha dominica, Callosbruschus analis* etc.[50-52]

1. Studies on the chemical constituents of the fruits
2. of Cordia latifolia

Dieto-Therapy in Unani for nCoV-19:

Various fruits and dry fruits can be used as the preventive and curative treatment against Covid. These dietary supplements have enormous amount of phyto-chemicals present in them that could boost your immunity and they have shown various pharmacological properties as proven by the research being done and can fight against nCoV. Here has been discussed few Unani Dieto-therapy substances.

Khajooor (*Phoenix dactylifera*)

Khajoor has been used by Unani physicians for various purposes. One of the uses is over the respiratory system as being told by *Greek* Physicians. One of the researches over Dates (Khajoor) and their constituents show a role in diseases prevention through anti-oxidants, anti-inflammatory, anti-bacterial activity. Dates fruits have high composition of carbohydrates, salts and minerals, dietary fibre, vitamins, fatty acids and amino acids gives a unique value in human nutrition.

Anti- oxidant activity of Khajoor

Anti-oxidants are the chemicals that interact and deactivate the free radicals, therefore preventing them from causing harm. A study showed that dates constitutes good source of antioxidant and another study shows that dates (Khajoor) have the highest concentration of polyphenols among dried fruits. The antioxidant activity of phenolic compounds is a result of their redox properties, which can play an important role in absorbing and neutralizing free radicals thus it lowers the prevalence and lower mortality rates of cancer and thus it can help in COVID-19 deaths due to co-morbidities like cancer. Another study showed that different varieties of Khajoor like khasab, khalas and fard especially Khalas have maximum phenolics and carotenoids which act as potent anti-oxidant [53].

Anti-Microbial effect

As we know that COVID-19 has pneumonia like symptoms so we need to focus over this effect of the virus. *Phoenix dactylifera(Khajoor*) inhibits various microbial growth but here we will show that it also inhibit the growth of *Klebsiella pneumonia* and also showed that it has also a good role in reducing the side effects due to the use of drugs as methylprednisolone.

Anti-Diabetic effect

Co-morbidity in COVID-19 patients may lead to disastrous effects over one of the metabolic disorder that is Diabetes mellitus. With the use of Khajoor Retinopathy complications can be subsided. Some study shows that it has significant effects to manage the function of pancreatic tissues and inhibit the intestinal absorption of glucose.

Anti-inflammatory effect

Transcription factors LOX and NF-kB play a significant role in the inflammation, cancer, diabetes and other diseases. Regulation of transcription factors is important and critical step in the prevention of disease. Inhibitors of transcription factors showed a vital role in the prevention of action of transcription factors. Natural products are a good remedy in the suppression of NF-kB and acts as anti-inflammatory agents. Earlier studies have shown that constituents of plants such as phenolics and flavonoids act as excellent anti-inflammatory agents [53].

Antiviral effect

A crude acetone extract of the pit of date palm (*Phoenix dactylifera L.*) showed antiviral activity against lytic *Pseudomonas*, *Pseudomonas aeruginosa* [54].

Chilgoza (*Pinus gerardiana*)

It is one of the calorie-rich edible nuts. They comprise of numerous health promoting phyto-chemicals, vitamins, antioxidants, and minerals. Medically seeds are regarded as energetic, carminative, expectorant, anodyne and stimulant. Oil from the seeds is used as a dressing on wounds and ulcers. Turpentine oil obtained is also very beneficial to the respiratory system and so is useful in treating diseases of the mucous membranes and respiratory complaints such as cough, cold, influenza and TB.

Pine nuts contain essential fatty acid, pinoleic acid. Recent research has shown its potential use in weight loss by curbing the appetite. Pinoleic acid triggers the release of hunger-suppressant enzymes cholecystokinin and glucagon-likepeptide-1 in the gut. Pines are an excellent source of vitamin E, and it is powerful lipid soluble antioxidant, required for maintaining the integrity of cell membrane of mucus membranes and skin by protecting it from harmful oxygen-free radicals. Pine nuts are excellent source of B-complex vitamins such as thaimin, riboflavin, niacin, pantothenic acid, vitamin B-6(pyridoxine) and folates. Pine also contains minerals such as manganese, potassium, calcium, iron, magnesium, zinc and selenium [55].

One of the article by NDTV on web shows

1. Pine nuts (Chilgoza) help to maintain your body's hormonal health as they are rich in zinc. Zinc aids in healing and stimulates the activity of about 100 enzymes in the body.
2. They are a rich source of magnesium too. Magnesium is also known as the Mood Mineral. It helps decrease anxiety, stress and depression. These vital nuts calm the body and improve your sleep and memory.
3. Pine nuts are rich in Iron, that helps your body transport and store oxygen. They are great for brain health too.
4. The unsaturated fats found in pine nuts help increase insulin sensitivity. In addition, when eaten as a part of the meal, they can reduce the overall glycemic index. This good news for diabetics.
5. Pine nuts are great for dieters. A handful of these seeds help in weight management. The Pinoleic Acid in pine nuts stimulates the intestine to produce a particular hormone that signals the brain to turn off Hungary Mode.
6. Being nutrient-dense, pine nuts are loaded with healthy fats, dietary fibres, plant sterols, arginine, anti-oxidants, vitamins and minerals that are heart protective. The high anti oxidant content in the seeds slows down ageing, making you feel younger.
7. Since pine nuts are rich in Vitamin A and lutein, their consumption on a regular basi will help develop sharp vision.
8. Get that glow with these anti-oxidants rich seeds. They help control how fast you age by Combating free radicals, which plays a part in age related deterioration [56].

Anjeer (*Ficus carica*)

One of the studies shows the traditional use of Anjeer in

various ailments such as gastric problems, inflammation, and cancer, cardiovascular, respiratory problems. Some of the therapeutic effects include anticancer, hepatoprotective, hypoglycaemic, hypolipidemic and antimicrobial activities. In respiratory system it is used in sore throats, cough, and bronchial problems.

Photochemical in *F. Carica*

Phenolic compounds, phytosterols, organic acids, anthocyanins, triterpenoids, coumarins and volatile compounds. Figs are excellent source of minerals, vitamins, carbohydrates and dietary fibres, contain high number of amino acids.

Biological activities

Antioxidant activity

The phenolic compounds present in fig act as antioxidant by different ways: reducing agents, hydrogen donators, free radical scavengers, singlet oxygen quencher etc. Fig contains highest levels of polyphenols, total flavonoids; anthocyanins exhibited the highest antioxidant method.

Hypoglycaemic activity

Aqueous extract of F. Carica has an obvious hypoglycaemic activity.

Antipyretic activity

The Ethanolic extract of F. Carica, showed significant dose-dependent reduction in normal body temperature.

Antituberculer activity

The 80% of methanolic extract from the leaves of F. Carica has been screened against Mycobacterium tuberculosis [57].

The Unani single drugs and many other formulations mentioned above have various photochemicals that contains phenolic compounds, tannins, resins, gums, carbohydrates, proteins, lipids, essential oils, active alkaloids etc. have Immunomodulatory effects, anti-microbial effects, antiseptic, anti-tussive, anti-viral, hypoglycaemic, works against obesity, works in hypertension, anti-cancer etc. all these conditions can be treated by these medicines. Various researches have been done over these drugs and they may prove to be effective in fighting against nCoV-19 though their animal and human trials must be done.

Conclusion

The corona virus existence has been prevailing since a long time but the way this virus has mutated to reside the human body has created a great confusion and agony about its origin, prevention and treatment. Scientists, doctors, researchers, people with scientific wisdom seem to be helpless to combat the situation. The virulence though may be of varying degree in different regions of the world but still it is fatal. Many researchers have suggested using various kinds of drugs such as antiviral, steroids, like Remdesivir, HCQ, and Dexamethasone etc. that is being currently used for one or the other ailment.

This paper has been written to inform and alarm the readers to use Unani herbs to boost immunity, to fight against various symptoms arising after infection from corona like cough, cold, fever, sore throat, difficulty in breathing, pneumonia, inflammation of the lung tissue, pleuritis etc. People must have faith over these Unani medicines because these are in use since centuries. They should not wait for discovery of any new drug against corona, and start using these above mentioned drugs, Unani formulations, diet and follow the regimens and preventive measures in order to boost immunity as these are very useful. Their chemical alkaloids are highly potent enough to fight against all kinds of problems from corona virus if taken timely. We must have faith in Unani medicines and if we have faith only in modern medicines then it will take a little more time to develop any drug or vaccine. The Unani system of medicine has long history of its existence and the pioneers of Unani medicine had dealt with pandemic like situation and also treated many infectious diseases. In today's world it becomes necessary to boost your immunity by using Unani medicines and it will have no adverse-affect over your body.

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