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An Updated Review on Pandemic Corona Virus (COVID-19) and its Possible Treatment

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ABSTRACT

Corona virus disease (COVID-19) is an infectious disease caused by newly discovered corona virus. Corona virus is a group of related viruses that cause disease in bats. In humans it causes respiratory tract infections that can range from mild to lethal. The name 'Corona virus is derived from Latin word 'Corona' means 'Crown' or 'wreath'. Corona virus was first discovered in the 1930's. Human Corona virus was discovered in the 1960's. Novel Corona virus is the new type of corona virus which is not seen in human population till now. It belongs to family Nodaviridae and comes under large family of viruses. The name COVID-19 is abbreviated as corona virus disease 2019 after the outbreak took place in Wuhan, China. Corona virus outbreak is related to those that had caused outbreaks of Severe Acute Respiratory Syndrome (SARS) 2002-2004 and Middle East Respiratory Syndrome (MERS). The new Corona virus is known as SARS-COV-2. The corona virus vision is an enveloped particle containing the Spike (S), Membrane (M) and Envelope (E) proteins. The genome of Corona virus is linear, single stranded RNA molecule of positive m RNA polarity and has the conformation of helical RNA/Nucleocapsid structure. Virus replication is initiated by binding of the S-protein to specific receptors on the host cell surface. The WHO will continue to provide updated information as soon as clinical findings become available.

Keywords*: COVID-19, Corona Virus, Pandemic, Wuhan, China.*

CORONAVIRUS FACT SHEET

The corona virus (covid-19) receives its name from the halo or crown (corona) which is seen when the virus is viewed by an electron microscope.

This morphology is essentially accredited to the glycoprotein's the virus uses to attach to the host cell. Corona viruses also have an enveloped structure with a positive sense RNA genome [1].

In humans corona viruses infect cells of the upper respiratory and gastrointestinal tract and are responsible for about one third of all common colds. Other corona viruses are also serious agricultural threats because they are known to infect cattle, pigs, birds, dogs, cats and rodents.

The most publicized type of corona virus is the virus that causes Severe Acute Respiratory Syndrome or SARS. The virus that causes SARS is known as SARS- CoV [2].

The cases of corona virus up-till now all 24 July 2020 over the world is 15,675,770 and death rate is 636,941 and recovery of patient is 9,562,416 active cases of 5476413 in mild condition 5410239 (99%) and in critical condition 66174 (1%) and in India corona positive case is 12.9 lakh recovery of the patient 8.17 lakh and death rate is 30601 up till July 24 2020.

GRAPHICAL REPRESENTATION OF CORONA CASE AROUND THE WORLD

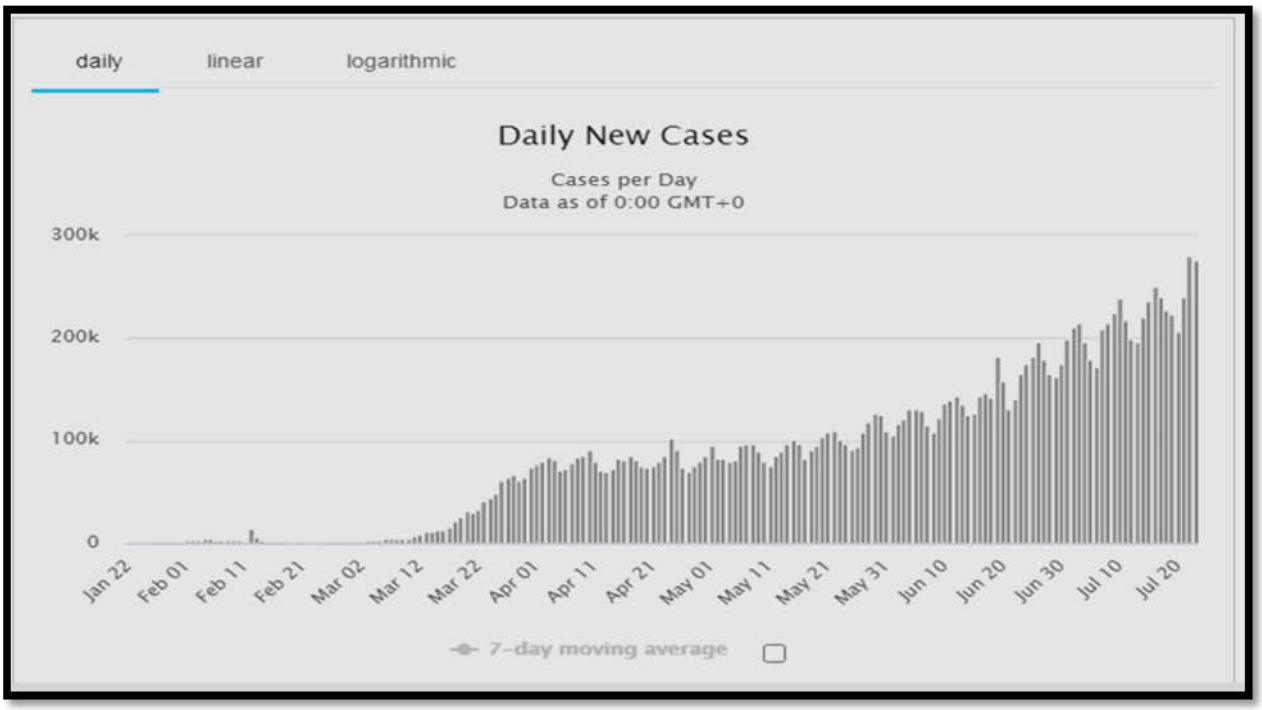

Fig.1. Daily New Cases Report Up Till

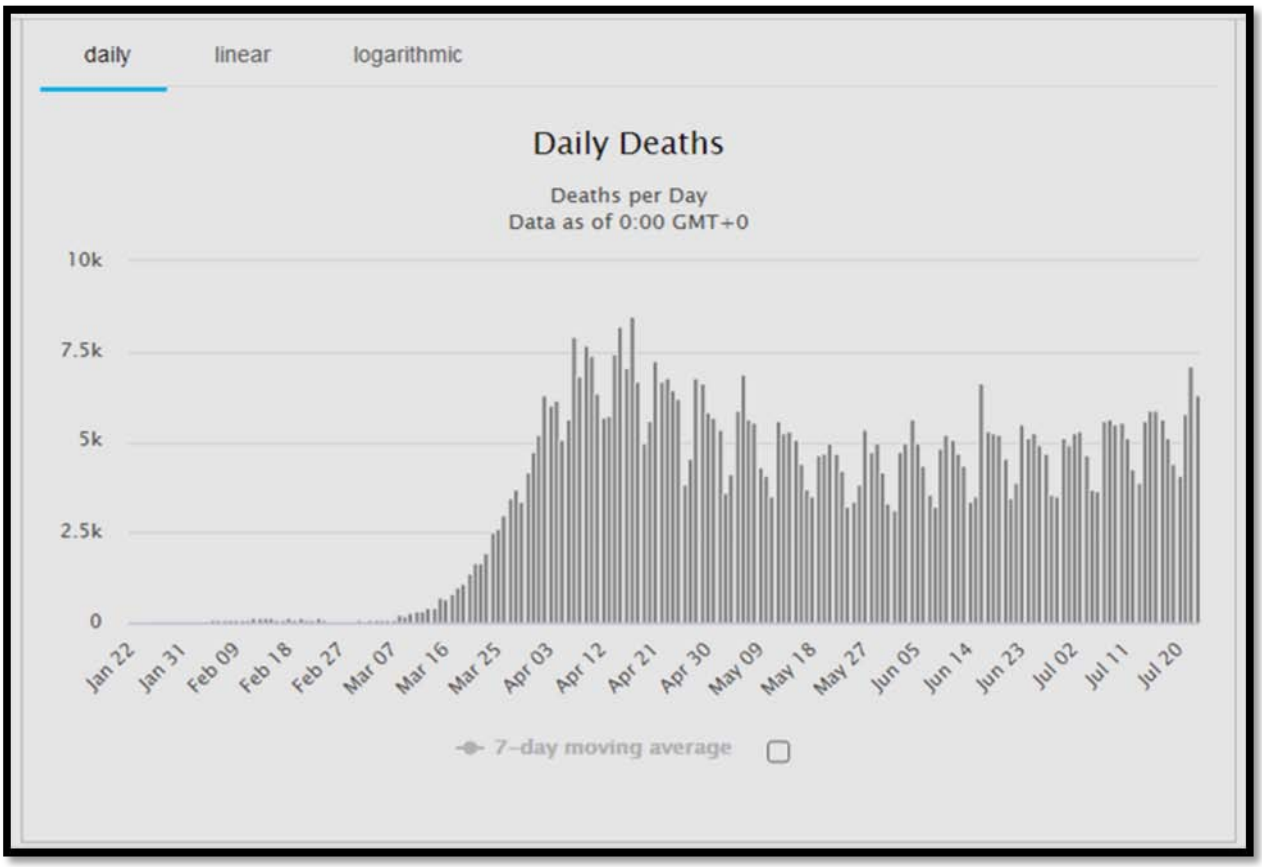

Fig.2. Daily Death Rate of Corona Patient Report Up Till

TRANSMISSION

Corona viruses including SARS-CoV are spread by close person to person contact most commonly during the winter months. The virus is most frequently spread by respiratory droplets produced when someone infected coughs or sneezes [3]. The droplets containing the virus can be propelled generally up to three feet and can land onto the mouth, nose or eyes of people nearby. The infectious droplets can also land on objects and surfaces where someone can then pick them up and touch his/her mouth, nose or eye(s) [4].

SYMPTOMS

The symptoms of most corona viruses are similar to those of a common cold, including sneezing, stuffy or runny nose, sore throat, coughing, watery eyes [4], mild headache and mild body aches. In the case of SARS, most patients develop a high fever that is sometimes associated with chills, headache, body aches and a general feeling of discomfort [5]. After two to seven days, SARS patients may develop a dry, nonproductive cough which can lead to low oxygen levels in the blood. Most patients with SARS develop pneumonia [6].

PREVENTION

The best way to prevent infection is by taking simple precautions that can apply to many infectious diseases, such as frequent hand washing with soap and water or use of an alcohol based hand rub [7]. Avoid touching your eyes, nose and mouth with unclean hands and encourage others to cover their nose and mouth with a tissue when coughing or sneezing [8].

TREATMENT

The Centers for Disease Control (CDC) recommends [9] that patients with SARS receive the same treatment that would be used for a patient with any serious community-acquired pneumonia. Testing is being conducted to determine if antiviral drugs or vaccines would be an effective treatment or prevention option [10].

Here are Eleven Fast Facts about Corona Viruses from the Centers for Disease Control

1) Scientists know of seven different corona viruses that can infect people and make them sick [11].
2) Most people get infected with at least one common human corona virus at some point in their lives [12].
3) Most human corona viruses cause only mild to moderate illness in people worldwide [13].
4) Symptoms often mimic the common cold or upper respiratory virus. They may include runny nose, headache, cough, sore throat, fever or a general feeling of being unwell [14].
5) Infants, older adults and people with underlying medical issues and/or weakened immune systems are more likely to get lower-respiratory tract illnesses, such as pneumonia or bronchitis [15].
6) Human corona viruses are usually spread through: [16]
   - ✓ The air by coughing or sneezing
   - ✓ Close personal contact, such as touching or shaking hands [18]
   - ✓ Touching an object or surface with the virus on it, then touching your mouth, nose or eyes before washing your hands [17].

7. There are currently no vaccines or specific treatments for illnesses caused by human corona viruses. Researchers at UTMB in Galveston are working on a vaccine.

The best ways to reduce your risk include: [19]

1) Wash your hands often with soap and water for at least 20 seconds [20].
2) Avoid touching your eyes, nose or mouth with unwashed hands [21].

3) Avoid close contact with sick people.

Facts On Corona Viruses [22]

1) There is no cure for the common cold.
2) A corona virus causes both SARS and MERS.
3) Corona viruses infect many different species.[23]
4) There are six known human corona viruses.[24]

They are associated with the common cold, pneumonia, and severe acute respiratory syndrome (SARS) and can also affect the gut.[25] These viruses are responsible for between 15 and 30 percent of common colds. Over the last 70 years, scientists have found that corona viruses can infect mice, rats, dogs, cats, turkeys, horses, pigs, and cattle [26].

Human corona viruses cannot be cultivated in the laboratory easily, unlike the rhinovirus, another cause of the common cold.[27] This makes it difficult to gauge the corona virus' impact on national economies and public health. There is no cure up till so treatments include taking care of yourself and over-the-counter (OTC) medication:

1) Rest and avoid overexertion [28].
2) Drink enough water.
3) Avoid smoking and smoky areas.[29]
4) Take acetaminophen, ibuprofen or naproxen to reduce pain and fever.
5) Use a clean humidifier or cool mist vaporizer.[30]

The virus responsible can be diagnosed by taking a sample of respiratory fluids, such as mucus from the nose, or blood.

How it will Spread Throughout the Country

There has not been a great deal of research on how a human corona virus spreads from one person to the next. However, it is believed that the viruses transmit using secreted fluid from the respiratory system. Corona viruses can spread in the following ways:

1) Coughing and sneezing without covering the mouth can disperse droplets into the air, spreading the virus.[30]
2) Touching or shaking hands with a person that has the virus can pass the virus from one person to another.
3) Making contact with a surface or object that has the virus and then touching your nose, eyes, or mouth.[31]
4) On rare occasions, a corona virus may spread through contact with feces.[32]

According to the WHO, signs of infection include fever, cough, shortness of breath and breathing difficulties. In more severe cases, it can lead to pneumonia, severe acute respiratory syndrome, kidney failure and even death. The incubation period of the corona virus remains unknown. Some sources say it could be between 10 and 14 days.

How Are Corona Virus Infections Spread

Human corona viruses usually spread from an infected person to others through

1) The air by coughing and sneezing
2) Close personal contact, such as touching or shaking hands
3) Touching an object or surface with the virus on it, then touching your mouth, nose, or eyes before washing your hands
4) Rarely, feces (poop)

HOW ARE CORONA VIRUS INFECTIONS DIAGNOSED?

To make a diagnosis, your health care provider will

1) Take your medical history, including asking about your symptoms
2) Do a physical exam
3) May do blood tests

4) May do lab tests of sputum, a sample from a throat swab, or other respiratory specimens

What Are the Treatments for Corona Virus Infections?

There are no specific treatments for corona virus infections. Most people will get better on their own. However, you can relieve your symptoms by

1) Taking over-the-counter medicines for pain, fever, and cough. However, do not give aspirin to children. And do not give cough medicine to children under four.
2) Using a room humidifier or taking a hot shower to help ease a sore throat and cough
3) Getting plenty of rest
4) Drinking fluids

References/Agency Providing Precautions and Safety Guidelines

1) World Health Organization (WHO)
2) National Center for Immunization and Respiratory Diseases (NCIRD)
3) Centers for Disease Control and Prevention (CDC)
4) National Institutes of Allergy and Infectious diseases
5) NSW Government Health Care

STRUCTURE

Corona virus is a helical or spherical in shape and a diameter is about 60-200 nm. Total RNA without segmentation, positive sense, surface antigens are glycoproteins and nucleoproteins internally.

Glycoproteins were characterized:

E1. Tran membrane.

E2. Adhesion to the cell membrane.

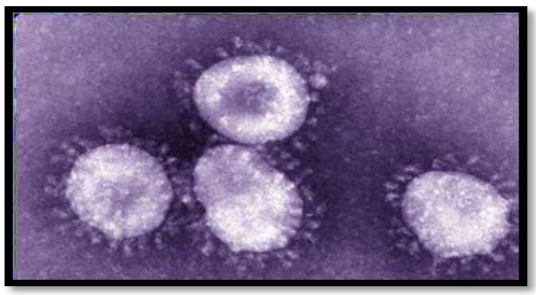

Fig. 3.Electron microscopy picture of corona virus

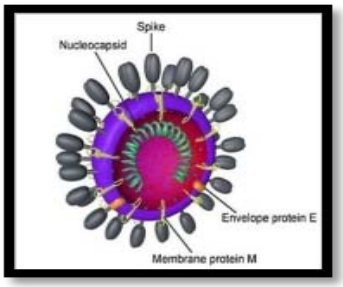

Fig. 4. Corona Virus

INFECTION

It can be transmitted through aerosols secretions respiratory. It has an incubation period of 2 days to a week, eliminating virus for one week. The virus replicates in the cytoplasm of the cell host, end in the endoplasmic reticulum and pass the Golgi cisternae until they are finally released by exocytose. Are responsible for up to 15% of colds, taking more often in the winter and beginning of the spring with a characteristic periodicity of 2-4 years

REPLICATION

Corona virus begins with entry to the cell which takes place in the cytoplasm. Entry to the cell the virus particle is uncoated and the RNA genome is deposited into the cytoplasm. Corona virus have single positive strand RNA genome, they can directly produce their protein and new genome in the cytoplasm. The Corona virus genome has a 5’ methylated cap and a 3’polyadenylated tail. This allows the RNA to attach to ribosomes for translation.

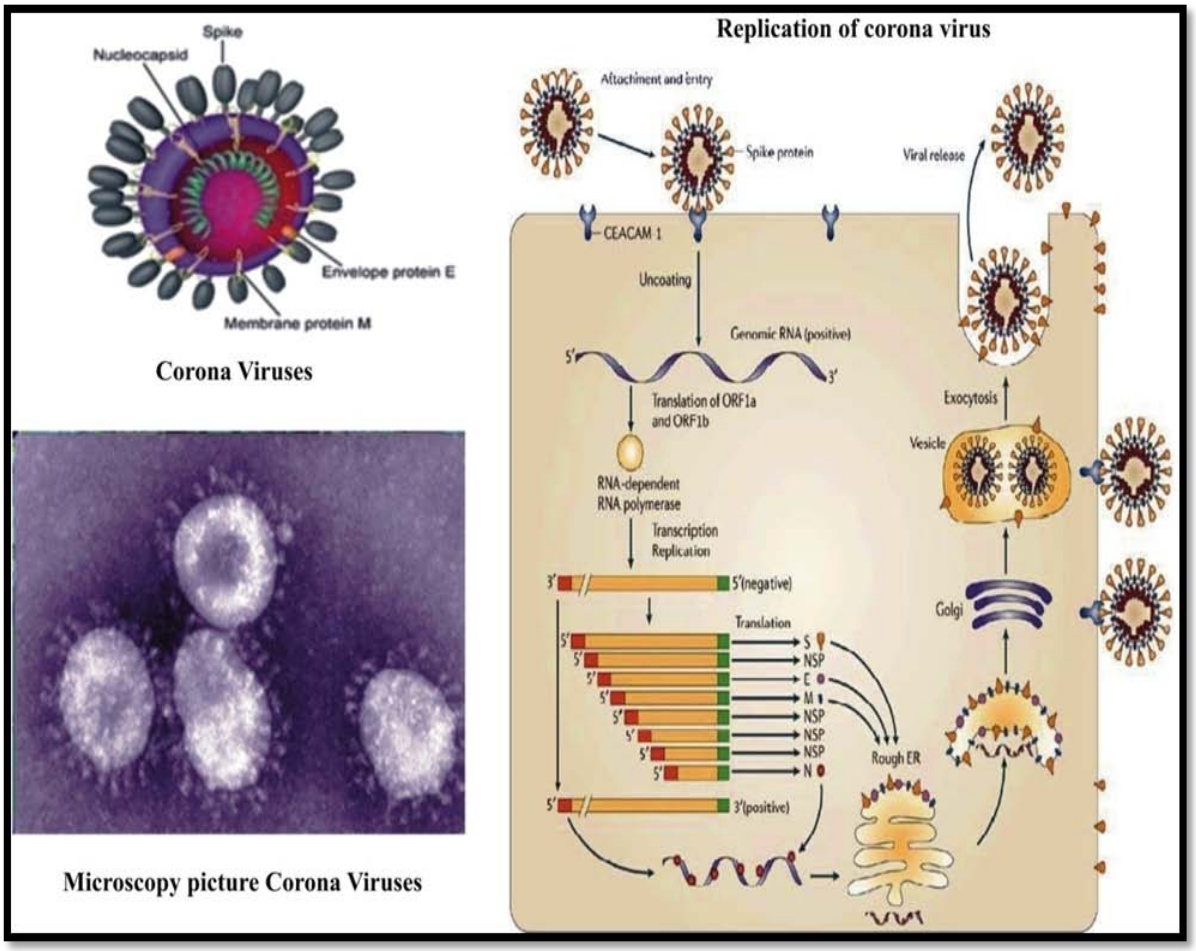

Fig. 5. Structure of Corona Virus, Microscopy picture of Corona Viruses and Replication of Corona Viruses.

Booster of Immune System is a Best Way to Fight against COVID -19

It is observed that early deaths were in older people, probably because of the poor immunity, which fosters faster progress of COVID-19. Therefore, it is significant to boost our immune system. It is important to suggest that people should use some supplements to boost their immune systems. Healthy people should take plenty of citrus fruits having various vitamins. Some dry fruits (almonds, walnuts, and dates) are also useful to improve the immune system. However, older people and the patients may take vitamins and zinc supplements with the consultation of medical practitioners [33]. The important vitamins are A, C, D and E. It is also advisable to take zinc and iodine intakes. It is too wise not to smoke and take other narcotic products. Always an adequate sleep is essential to boost up the immune system. Avoid any stress and do proper and regular exercises [34].

STEAM THERAPY [35]

Group 1 was consisting of asymptomatic patients exposed to covid-19 patients either through travel or direct contact. This group included doctors and Nurses. These patients were advised to take steam twice daily by inhalation through ordinary steamers available on the market or by simple boiling of water and inhalation of resulting steam. This study was conducted at Seven Hills Hospital which is a Dedicated Covid-19 Hospital managed by Municipal Corporation of Greater

Mumbai. Group 2 patients were further divided into Mild and Moderate Mil symptoms were of only 1 area like nasal, throat or bronchial. Moderate symptoms were where 2 or more areas were involved severe patients were where there was dyspnea and required ventilator or oxygen support. Severe symptoms patients were excluded from the trial. The patients continued the treatment as per hospital protocol Patients were tested for COVID-19 after steam therapy after 5 days and till covid was negative for 2 consecutive tests. Group 2 consisted of Symptomatic patients tested positive on the standard Covid-19 test

Group 1- Steam twice daily or more for 5 minutes by nasal route with intermittent breathing by oral route.

Group 2- Steam inhalation was administered by nasal and oral route every 3 hours for 5 minutes.

RESULTS

None of the patients in Group 1 showed any sign of progression to Covid symptoms after a follow-up ranging from 14 days to 2 months. In group 2 Mild symptoms regressed in 3 days to normal and in moderate symptoms it took 7 to 10 days to return to normal. The covid-19 test done after 10 days was negative in 65 cases. In 13 cases it took 14 days for Covid test to return to negative. In 2 cases it took 18 days for Covid test to return to

ALLOPATHIC THERAPY AGAINST COVID-19

During the SARS-CoV-2 spread in Wuhan, allopathic therapy was used for COVID-19 treatment in the Wuhan Jinyintan Hospital (based on 99 patients), including antiviral treatment (76%), antibiotic treatment (71%), oxygen therapy (75%), and intravenous immunoglobulin therapy (27%),14 although no COVID-19 drug has been approved by the US Food and Drug Administration. There is also no effective pharmacologic treatment against COVID-19.17 Determining the drug target requires an understanding of the viral lifecycle. SARS-CoV-2 is a single-stranded RNA-envel oped virus. 18 SARS-CoV-2 and SARS-CoV-1 share similar host-entry mechanisms. It targets the cells by using the viral structural spike (S) protein bind with angiotensin-converting enzymes 2 (ACE2) receptor forming endosomes which enter the cells. TMPRSS2 is a host type 2 transmembrane serine protease helping virus enter through S protein. After the virus enters the cell, it synthesizes viral polyprotein, and RNA subsequently assembles and releases the new virus particles. Inhibiting viral cell entry and replication and modulating the immune system could be a potential target for drug therapy.19 Current clinical tries on COVID-pharmacological treatments includes hydroxychloroquine and remdesivir. Hydroxychloroquine, which reduces the viral load in COVID-19 patients, appears to be more effective when used in combination with azithromycin. Remdesivir proved its potential against COVID-19 by displaying clinical improvement. While many clinical trials aimed at discovering a potential effective COVID-19 drug are ongoing, using herbal medicines with well-known antiviral activity might be a complementary SARS-CoV-2 preventive therapy.

Immunomodulatory effect of foods and herbs and their antiviral activities against influenza, SARS-CoV-1, and SARS-CoV-2 Corona virus can be treated using nutrition; for instance, treating influenza with very large amounts of vitamin C has been practiced for decades. The common cold, SARS-CoV-1, and SARS-CoV-2 fall under the same corona virus family; hence, are regarded as the same viral type.22 Therefore, vitamin C may be effective against.

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