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### IMPACT OF COVID-19 PANDEMIC, MAJOR PRECAUTION AND TREATMENTS

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#### ABSTRACT

The outbreak of COVID-19 has caused concerns globally. On 30 January WHO has declared it as a global health emergency. Total 1290 people have died in the Central Chinese city of Wuhan after a coronavirus epidemic. At this time the world is facing an unprecedented pandemic of novel corona virus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2). According to the WHO, this disease has spread globally with 12,102,328 confirmed cases and 551,046 deaths as of July 10, 2020. Despite worldwide efforts to contain it, the pandemic is continuing to spread for want of a clinically-proven prophylaxis and therapeutic strategy. Corona Virus causes a number of causes a disease in mammals and birds but has also proved capable of infecting human in recent decades. In 2003, the outbreak of severe acute respiratory syndrome (SARS) and, more recently, the Middle-East respiratory syndrome (MERS) demonstrated CoV lethality when crossing the species barrier and infecting people. Coronaviridae family include a group of single, plus stranded RNA viruses from multiple species, causing previously identified diarrheal diseases and common cold. The seafood market was closed and decontaminated on 1 January 2020 the market for seafood was closed and decontaminated, while countries with travel links to Wuhan were on high alert for potential travellers with unexplained respiratory disease. National and International governments are profoundly divided over where traditional, complementary and inclusive practices have human value relative to COVID-19. The main aim of this review article is to access the present scenario of covid-19 and its major precaution and treatments in a defined manner according to WHO. Ayurveda, Yoga and meditation have a potential role in building a more positive health environment for the community and improvement of immunity. Another timely initiative to launch of the traditional, integrative and Complementary health and medicine registry COVID-19 to document practices and products.

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## INTRODUCTION

As of 09 June 2020, more than 7,271,132 cases of COVID-19 have been registered in 200 countries and territories, and approximately 411,578 deaths and recovered people are more than 3,581,077 [1-4]. The Wuhan municipal health commission first detected news reports of patients with unexplained pneumonia on 31st December. First COVID-19 pneumonia was reported in Wuhan in the province of Hubei, China, in December 2019. This was accompanied by an eruption around the province of Hubei and other parts of country [3,4]. The 2019 novel coronavirus disease (COVID-19) pneumonia happened is a highly communicable disease, and the extrovert outbreak has been announced by WHO (as a global public health emergency) [5,6]. In 2003, the outbreak of the sequence of acute respiratory syndrome (SARS) and, more recently, the Middle-East respiratory syndrome (MERS) showed the lethality of CoVs when breaching the boundary of the species and infecting humans. "Covid-19" announced covid-19 by the world health organization is a public health emergency in a world. AT currently 331,475 people died from coronavirus infection and nearly 31.48 lakh people are suffering from coronavirus. Nearly 3728 people die in India more than 1.03 million is quarantined. "coronavirus" is a single-stranded RNA virus which belongs to the family Coronaviridae. This virus causes disease in birds and rodents at the outset, but before it is capable of infecting humans in the last few months.

Corona virus (CoV) belongs within the order Nidovirales to the family Coronaviridae. *Coronaviridae* family includes a group of single, large, plus-stranded RNA viruses from several species, causing previously identified diarrheal diseases and common cold. Coronaviridae are enveloped RNA viruses following their crown or corona n- like projection seen on electron microscopy. The name "coronavirus" derives from the Latin word corona, meaning Coronaviruses (CoVs), or halo or crown, according to various studies, firstly infection of Coronaviruses (CoVs) in mammals and birds, but, now in fresh days these viruses revealed infection in humans. So many humans were affected [7-11].

**TYPES:** The family *Coronaviridae* mainly divided into four genera

1. Alpha Corona Virus- The ( $\alpha$ -CoVs) are organized as feline FCoV, FIPV (Feline Infectious Peritonitis Virus), FECV (Feline Enteric Coronavirus), Porcine PEDV (Epidemic Diarrhea Virus), PRCoV (Porcine Respiratory Coronavirus), Porcine TGEV (Transmissible Gastro- Enteritis Virus) and canine CCoV.
2. Beta Corona Virus - ( $\beta$ -CoVs) are (lay out)/spread by animals such as mice, humans with HCoV-OC43, SARS-CoV, MERS-CoV and HCoV-HKU1, Bovine Coronavirus (BCoV) and Murine coronavirus (MHV).
3. Gama Corona Virus- ( $\gamma$ -CoVs) are transferred through the birds, with one exception being beluga whale.
4. Delta Corona Virus- The genus ( $\delta$ -CoVs) was formed in 2012, and the minor group is (HKU13, HKU12, HKU11). In mammals the casualty case is 50 [12-14].

## VIROLOGY

Corona viruses are covered by a single stranded positive-sense RNA virus, with a size of nearly 30 kb genome, [15] CoV protein is short (77–108 amino acids integral membrane protein) [16]. Other proteins contributing to the overall structure of corona viruses are hemagglutinin esterase peplomers, the envelope (E), membrane (M), spike (S), and nucleocapsid (N) [17]. Protein hydrophilic amino terminus consist of 7–12 amino acids, and the domain of hydrophobic transmembrane comprises 25 amino acids (Fig-01) [18,19].

The genome of these virus is predicted to have 14 functional open reading frames (ORFs), [20] two large 5'-terminal ORFs, ORFs 1a and 1b, encoding 16 non-structural proteins are involved in the transcription and replication of the largest genome of all RNA viruses. [21-23] The S protein is a sequence of the N-terminal signal that gains access to the ER, and is heavily N-linked glycosylated. [24] Homotrimers of the encoded S protein virus from a spike structure on the virus surface. [25] The glycoprotein trimeric S can help in attachment to the host receptor. [26].

The M protein is the most important protein needed to make the virion structure. It is a small (average 25–30 kDa) protein with 3 transmembrane domains and has a small N-terminal glycosylated ectodomain and a much larger endodomain of C-terminal endodomain in viral particles. [27] Protein E (below 8–12 kDa) is present in small amounts in the structure of the virion, has an ion channel activity in the C-terminal endodomain, this protein is opposed to structural proteins and an ion channels is required for the Pathogenesis [28-30]. The N protein holds the viral genome together in a confirmation like a beads-on-a-string. The protein N is only present in the nucleocapsid, the domain C-terminal and N-terminal are attached to molecules of RNA with a different mechanism. [30].

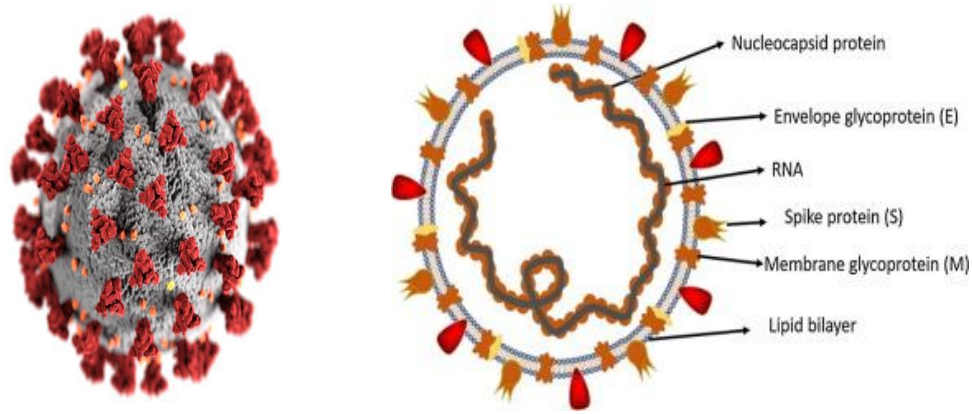


Figure-01:Structural of corona virus.

### INTRODUCTION VIRUS INTO THE CELL

The coronavirus is positioned at the foot of the host cell cytoplasm. Viruses are First bound to the receptor present on the cell surface via the spike protein (S). The protein S is receptor binding and complex was created, then virus entry into the cell and the cell start, RNA genome is released from the virus particle, the release genome is about 26-32 kb (Fig-02).

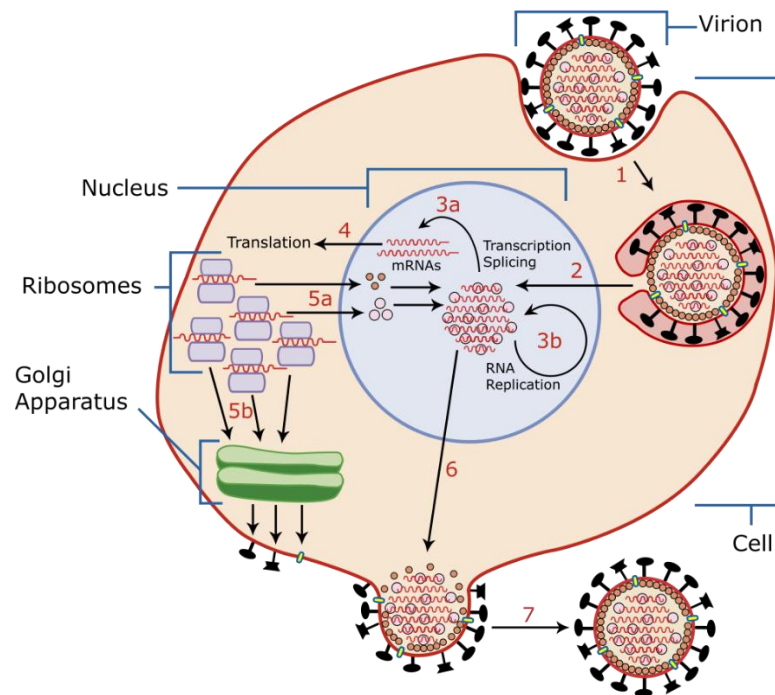


Figure-02: Diagrammatic representation of entry of viron particle into the host.

### Symptoms

Corona virus infected person are shown the symptoms like as "pneumonia" (Fig.-03) [31].

- ❖ Cough
- ❖ Fever
- ❖ Difficulty in breathing.
- ❖ Sore throat
- ❖ Diarrhoea
- ❖ Tiredness
- ❖ Headache
- ❖ Loss of smell or taste
- ❖ A rash on skin, or discolouration of fingers or toes
- ❖ Loss of speech or movement
- ❖ Chest pain or pressure



**Figure-03:Major Symptoms of corona virus disease.**

### TREATMENT OF CORONAVIRUS

Currently no effective medication for the treatment of CoV infections, and no any effective vaccines against the MERS-CoV infection, there are few ancient drugs are that are effective in the prevention of these infection. [32].

A novel epidemic of coronavirus has triggered pandemic which has triggered tens of thousands of infections and thousands of deaths worldwide. Favipirvir is an antiviral drug that was first used by China to treat corona [33]. favipiravir is a modified analogpyrazine, which has originally approved for medicinal use in influenza-resistant case. Enabled fevipirvir-RTP (fevipirvirribofuranosyl-5'-triphosphate) inhibits RNA polymerase selectively, and inhibits viral genome replication [34,35]. The RNA-dependent RNA polymerase that catalyzes the synthesis of viral RNA, is a key component of coronaviral replication/transcription machinery and appears to be a primary target for the antiviral medication, some studies have shown that when favipiravir-RTP is incorporated into the nascent RNA strand, it inhibits RNA strand elongation and viral proliferation [36]. Studies have also shown that the existence of purine analogs can lower favipiravir antiviral activity, indicating competition between favipiravir-RTP. Purine nucleosides to be bound to RdRp. fevipirvir-RTP available in both intravenous and oral formulations.

Chloroquine and hydroxychloroquine are anti-malarial pharmaceutical products used to treat many types of malaria. Chloroquine and hydroxychloroquine are being tested in the treatment of coronavirus COVID-19. Study results were mixed on their effectiveness efficacy. Chloroquine and hydroxychloroquine within the intracellular vacuole increase pH and alter the degradation of protein by acidic hydrolysis in lysosomes, assembly of macromolecules in endosomes and modification of proteins in the Golgi apparatus after translation [37].Digesting antigen protein includes acidic cytoplasmic compartments, and assembly of peptides along alpha and beta chain of MHC class II proteins. As a result, antimalariums minimize the formation of peptide-MHC protein complexes to stimulate CD4 + T cells and control the immune response to autogenic peptides. [37].

Viral diseases can alter human cytokinin activity, an effect linked to morphological and physiological changes. Experimental evidence suggests that cytokinins levels can be either lowered or increased depending on various viral diseases. China approved Roche's use of Actemra to treat serious coronavirus complication. [38]. Drugs such as Actemra have the potential to avoid cytokine storms or immune system overreaction, which is known as the key cause behind to death in certain patients with coronavirus.

Galidesivir (BCX4430) antiviral drug has demonstrated broad-spectrum activity against a wide variety of pathogens including coronavirus. It is a nucleoside RNA polymerase inhibitor which interfares with the viral replication process. [39].

The University of Southampton plans to study SNG001, an inhaled drug, to treat asthma, chronic obstructive pulmonary disease and lower respiratory tract diseases caused by coronavirus. SNG001 is a naturally occurring formulation of Interferon- $\beta$ , which is administered by a nebuliser through a nebuliser and distributed directly to the lungs to minimize the frequency of coronavirus infection. [40].

The combination is classified as essential medicines in the WHO list. Lopinavir is thought to work on the intracellular coronavirus replication processes and demonstrated reduced mortality in the MERS non-human primates (NHP) model. During an open clinical trial in patient during the 2003 SARS outbreak, Lopinavir/ritonavir in combination with ribavirin demonstrated decreased fatality risk and milder course of diseases. Cipla is also reportedly plans to repurpose its HIV drug LOPIMUNE, a combination of protease inhibitors Lopinavir and Ritonavir, for coronaviral therapy.



**Table-01: Some more drugs from different countries have recently been under trials.**

S.No.	Vaccine	Company Produce	Country	MOA
1.	Fusogenix DNA vaccine	Entos Pharmaceuticals	Canada	proteo-lipid vehicle which directly genetic payload into the cells
2.	ChAdOx1 nCoV-19	Roivant Sciences	Basel, Switzerland	Targets the stimulating factors of the granulocyte-macrophage colony stimulating factor (GM-CSF), which is a pro-inflammatory cytokine found in high levels in the COVID-19 serum.
3.	AdCOVID	Altimmune& University of Alabama at Birmingham	Birmingham	
4.	TJM2	I-Mab Biopharma	China	The drug targets the colony stimulating human granulocyte-macrophage factor (GM-CSF), which is responsible for both chronic and acute inflammation.
5.	AT-100	Airway Therapeutics		exploring AT-100 the novel human recombinant protein
6.	TZLS-501	Tiziana Life Sciences	Ohio United State	Developing the moAb named TZLS-501, TZLS-501 is a human anti-interleukin-6 receptor (IL-6R) that helps prevent damage to the lungs and elevated levels of IL-6.
7.	OYA1	OyaGen	New York	Inhibiting replication of SARS-CoV-2 in cell culture.
8.	BPI-002	BeyondSpring		It has the ability to activate T cell and cytotoxic T cell from a CD4+ and induce an immune response of the body
9.	INO-4800	Inovio Pharmaceuticals and Beijing Advaccine Biotechnology	Beijing, China	
10.	Ifenprodil(NP-120)	Algeron Pharmaceuticals	Canada	Ifenprodil is a glutamate receptor antagonist N-methyl-d-aspartate (NDMA), sold under the brand name Cerocal. It has shown effectiveness in improving survival of H5N1-infected mice
11.	APN01	University of British Columbia and APEIRON Biologics	China	The works showed that the key receptor for the SARS virus was the ACE2 protein.
12.	mRNA-1273	Moderna (Biotech company)	United states of America	The vaccine targets coronavirus spike (S) protein. Successfully clinical trials in humans, no side effects.
13.	Avian	MIGAL Research Institute	Israel	
14.	TNX-1800	Tonix Pharmaceuticals	United State	The vaccine is a modified horsepox virus which is developed using the proprietary Tonix's horsepox vaccine platform
15.	Brilacidin	Innovation Pharmaceuticals	United states of America	In multiple clinical trials, Brilacidin demonstrated antibacterial, anti-inflammatory and immunomodulatory properties.

Novel corona virus vaccines those under Preclinical Study [42].

## TRADITIONAL TREATMENT METHODS

Ayurveda has enough potential and possibilities to be employed both for prevention and treatment of COVID-19. This will provide an important opportunity for learning and generating credible evidence [43]. It is pertinent to reiterate that participation of Ayurveda in addressing the COVID-19 challenge in India should not remain limited and seen as the extension of healthcare services and support to bio-medical system. During this Coronavirus disease and global search for successful preventive and treatment action, the prophylactic and therapeutic ability of traditional medicine system such as Ayurveda and Yoga is also considered. Ayurveda which could be used very effectively for Covid-19 prophylaxis and adjuvant therapy. Ayurveda's holistic approach to health promotion includes personalized, host and environmental factor-based interventions. The interventions include procedures for therapy cleaning (called Panchkarma) [44] and certain immunomodulators (called Rasayana) [45]. Many Local and Systemic [46] interventions to stimulate respiratory diseases in the immune systems. In clinical practice, some of the Rasayana botanicals mentioned in Ayurveda are used to improve the immunity. The potential immunomodulators are several Rasayana botanicals such as *Withania somnifera* (Ashwagandha), *Tinosporacordofolia* (Guduchi), *Phyllanthusembelica* (Amalaki) and *Asparagus race-mosus* (Shatavari) [44]. These botanicals of Rasayana can be considered for prophylaxis COVID-19 and as an add-on to care. Ashwagandha may be safer and more effective alternative disease-modifying drugs such as HCQ. In our opinion, several general measures such as hot water consumption, hot food, medicated gargling water, steam inhalation, nasal oil application may be helpful in mild cases for symptomatic relief. Yoga including guided meditation could be a simple and useful home-based practice for Covid-19 prevention and post-recovery management. In this context, the AYUSH ministry, the Indian government, has already issued a very useful advisory [47].

## CONCLUSION

The COVID-19 pandemic is spreading very quickly every day, and the number of people putting on lockdown is increasing day by day across the globe and there is a direct loss to the world health and economy. Currently all human being is theoretically at risk of transmitting and developing infectious disease to other patients with covid-19. Precautions are for everyone's safety only. Work will continue to explore other aspects of pathogenesis and viral replication, and will find appropriate therapy to cure these infections. Ayurveda, Yoga and meditation have a potential role in building a more positive health environment for the community and improvement of immunity. Another timely initiative to launch of the traditional, integrative and Complementary health and medicine registry COVID-19 to document practices and products.

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