CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

https://doi.org/10.5281/zenodo.6780084

Available online at: http://www.iajps.com *Review Article*

A REVIEW OF STUDY ON UNDERSTANDING OF COVID-19 BASED ON CURRENT EVIDENCE

Vinay[1], Ramanjeet kaur[2], R.K Patil[3], H.C Patil[4] , Avneet Garg[5]

[1](Student of Pharm.D, Adesh Institue of Pharmacy and Biomedical Sciences)

[2](Associate Professor, Adesh Institute of Pharmacy and Biomedical Sciences)

[3](Professor & HoD Department of Pharmacy Practice, Adesh institute of Pharmacy and Biomedical Sciences)

[4](Professor & Principal, Adesh Institute of Pharmacy and Biomedical Sciences)

[5](Assistant Professor, Department of Respiratory Medicine, Adesh Hospital, Bathinda)

Article Received: May 2022 **Accepted:** May2022 **Published:** June 2022

Abstract:

COVID-19, often known as the Corona virus, is a virus that infects humans. It is a phrase that is often used to refer to SARS-CoV-2, a newly found strain of coronavirus that was designated a worldwide pandemic by the World Health Organization on March 11, 2020, and is spreading rapidly (World Health Organization). It was initially discovered at the central hospital of Wuhan City, Hubei Province, China, on December 31, 2019, that the current continuing pandemic, which has the potential to spread widely and pose a danger to public health, had begun. A significant number of people all over the world experienced emotional stress as a result of this outbreak, making it essential to grasp the fundamentals of ncov-19/novel coronavirus infection. Basic information about COVID-19 will be covered in this section, including the first human coronavirus and observations of it, the design of COVID-19, the virus's life cycle and infiltration into host cells, diagnosis, the various stages of COVID-19, and risk factors and preventive measures for COVID-19.

Keywords*: COVID-19, RT-PCR, SARS, SARS-nCOV-19,SARS2.*

Corresponding author:

Ramanjeet Kaur Brar

Associate Professor, *Department of Pharmacy Practice, Adesh Institute of Pharmacy and Biomedical Sciences, Bathinda,151001, Punjab, India*

QR code

*Please cite this article in press Vinay et al,**A Review Of Study On Understanding Of Covid-19 Based On Current Evidence ,**Indo Am. J. P. Sci, 2022; 09(6).*

INTRODUCTION:

A Corona infection is a gathering of RNA infections which is a sort of regular infections that causes diseases in respiratory parcel in people and creatures **[1].**

The name "Covid" comes from the word crown which comprises of spikes that cover the surfaces of the crown same as those spikes cover infections in this family. "Coronam" is a Latin word that is additionally utilised for "crown". Most of Covid's influence creatures, like bats and pigs, Various indications of disease are pretty much like hacking, fever, and weakness **[1].**

There are complete seven kinds of Human causing Covid (HCoV) that cause mellow respiratory diseases, like the normal chilly, in people. These are as per the following:

1. HCoV-229E
2. HCoV-NL63
3. HCoV-OC43
4. HKU1
5. SARS-COV
6. MERS-COV
7. SARS-COV-2

Coronavirus is brought about by one of seven infections called extreme intense respiratory disorder Covid or SARS-COV-2, which is recently transformed and established. It's a ss RNA infection and in perceptions, by researchers it is said that it changes rate a lot higher than ssDNA and DsDNA infections. where DNA infections, by and large, depending on the recording apparatus of the host cell, RNA infections encode for their record hardware for their endurance subsequently implies that their replication and transformation rate is all the more straightforwardly identified with their genome and is dependent upon similar developmental pressing factors. Accordingly, they force a higher change Rate **[2].** It is likewise called a Novel which signifies "new" Covid, Coronavirus Disease-19 [COVID-19] [12,17].

DESIGN OF COVID-19:

The Coronavirus is a Non segmented, wrapped infections these are family Coronaviridae which is a monophyletic group in the request Nidovirales individuals from which are encompassed with a positive sense/single-abandoned (positive-sense) RNA relationship of nucleoprotein inside a capsid contained framework protein, single-abandoned RNA/ssRNA genome and measures, on normal gauging 26-30 kilobases SARS-COV and SARS-CoV-2 have a place with genera Betacoronavirus. underlying examination disclose that there is transformation in the spike (s) glycoproteins and nucleocapsid proteins from other Covids. In this way, it is adequate proof that the Novel/nCOVID-19 is particular from the SARS infection [6,7,8,9]. Which after a transformation that gave it the ability to taint people, it was in all probability sent from babat [2 ,17].

Structure of SARS-COV-2

SARS-CoV-2's four structural proteins are mentioned in

Figure 1/Diagram: SARS-CoV-2's

Structural proteins.

. Spike protein (S)
. Envelop protein (E)
. Nucleocapsid protein (N)
. Membrane protein (M)

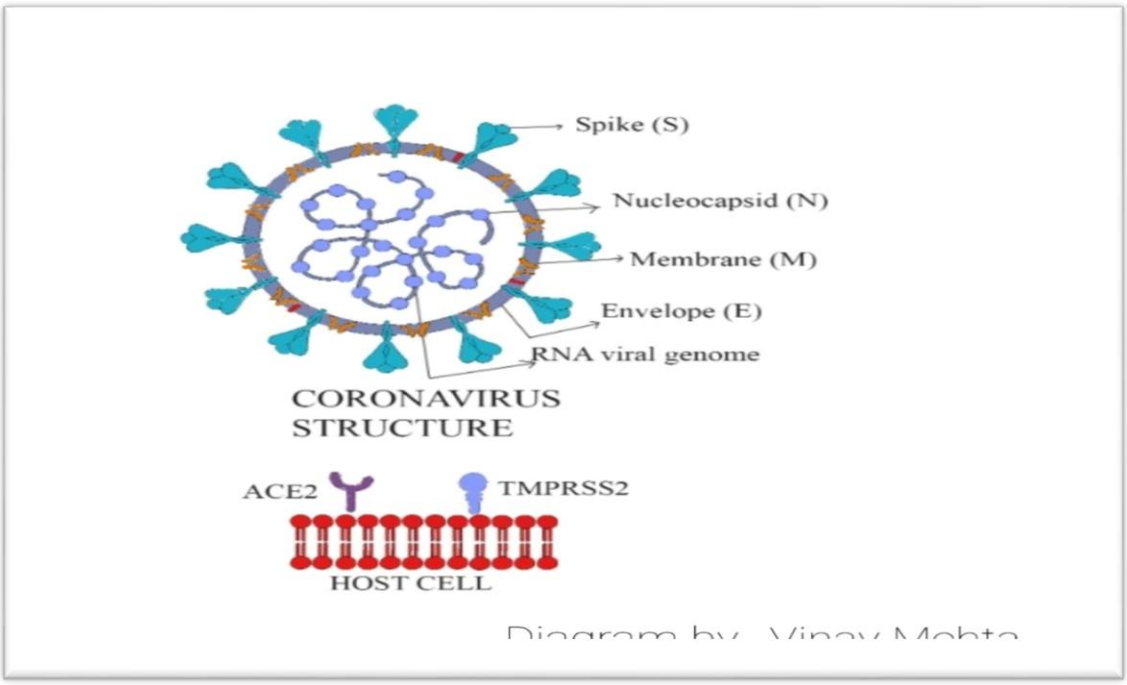
Out of which:

. S protein has two S1 and S2 subunits, S1 is responsible for binding, and S2
encourages infiltrate the host cell.

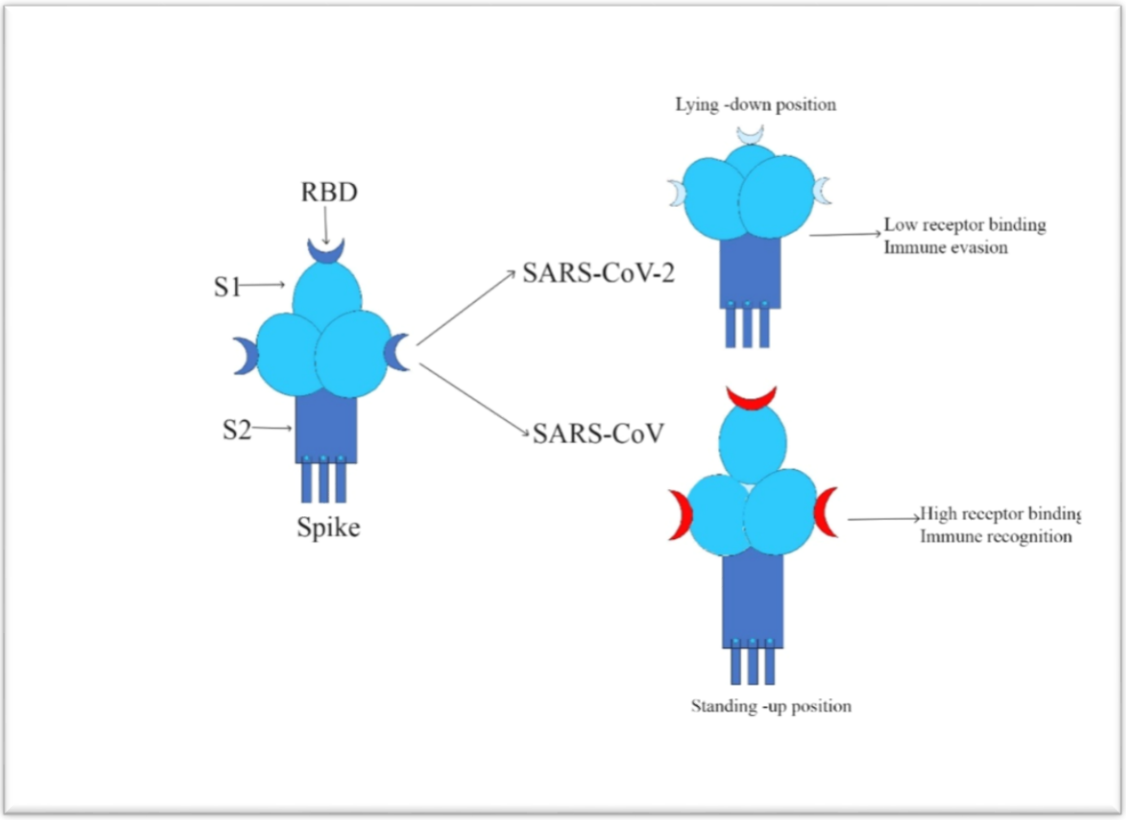
. N protein contributes in the binding with new genomic RNA.

. M protein provides integration to the cellular endoplasmic reticulum (ESR) [**3]**

Fig/Diagram 2:



Spikes Protein:



Life Cycle and Infiltration into Host Cells:

SARS-CoV-2 is disseminated by physical engagement with person to person, person to surface, and surface to person through infected respiratory droplets by cough and sneeze. After getting access to the host's body, the virus gets attach to the ACE-2 receptor and enters the cell by process of endocytosis or membrane fusion, Many researchers claim that ACE-2 has been identified as a functional receptor for SARS- CoV-2 and is strongly expressed on the pulmonary epithelial cells. First, the S protein binds to the host receptor, and then the virus invades the start cells being presented to the start of the lymphocyte cells. Following the binding of SARS-CoV-2 to the ACE-2, the S protease undergoes proteolysis by two steps: the first begins at the S1 cleavage site and terminates at the ACE2-FUS site, and the second expands from an adjacent pept of the S2 protein at the S2FUS. These researchers propose that the initial bond forming of the S2 subunit at the attachment site of the virus to the host cell is essential for virus particle stabilization, but that the virus uses altered conformation to cause cell-linked fusion, thereby rendering the rest ineffective.

As the post-membrane phase of viral infection occurs, the virus enters the pulmonary alveolar cells and is released into the airways. Thus, the synthesis of the negative strand of pre-separated RNA by RNA polymerase action (transcription) takes place in the host cell prior to replication and synthesis of the positive strand of RNA follows afterwards.

This newly-formed RNA complexes, containing the old chain of positive RNAs, then initiates positive RNAs, proceed to synthesize new proteins in the cytoplasm (translation). New genes, which may have been inherited from a different mother, bind to the endoplasmic reticulum on the viral N protein and activate cellular DNA-sequence-specific replication to complete the retro transposition. These freshly produced Nucleic acids are delivered to the cell through the Golgi apparatus and exocytosis. Epithelial cells will now have a chance to become infected, and have ready particles to present on respiratory tract mucus, with the new virus having completed the preparation phase. An overview of the viral cycle is given, especially in regards to the topics of infection, infection transmission, incubation, replication, and how the virus interacts with its host are included in Figure 2: Flowchart of

SARS-CoV-2's life cycle and infiltration into host's cells.[4]

HISTORY OF HCoV:

Human Covid was found in the 1960s in an organ culture of human undeveloped windpipe taken from a kid which was depicted by onlookers as the main human Covid (B814) in 1965 Using the organ culture technique, 6 other strains were recently recovered including the paradigm strains HCoV OC43 just as 3 strains researched anti-geniallyassociated to either OC43 or 229E [11,14].

HISTORY OF COVID-19

A Young matured man was admitted to the Central Hospital of Wuhan on 26 December 2019, a week after the beginning of the sickness[16]. He had no set of experiences of HIV, hepatitis, tuberculosis, or diabetes and revealed chills, fever, chest snugness, a useless hack, torment, and soft spot for seven days on the introduction [16,17,19]. The china CDCP (Center for Disease Control and Prevention) directed an epidemiological examination and saw that the patients who worked at a nearby indoor fish market in Wuhan [17]. where, notwithstanding chicken, fish and shellfish, an assortment of live wild creatures (counting hedgehogs, hares, lions, panthers, snakes, and fowls) was accessible record-breaking available to be purchased. In any case, there were no bats ready to move, and the patient recalls no openness to live poultry even though he may have come into contact with wild creatures [17].

Different Phases of Covid-19 (7)

There are complete three particular periods of COVID-19 contamination, with variable levels of manifestations have been seen in the populace who tried positive for the Coronavirus [13,16].

1.Stage I: The underlying contamination or viral reaction stage in which manifestations of upper respiratory lot disease are predominantly noticed.

2.Stage II: The aspiratory stage additionally called a pneumonic period of Covid-19 when the patients grow out and out pneumonia alongside the entirety of its signs and side effects.

3.Stage III: It is likewise called the hyper inflammation stage in which patients create intense respiratory misery condition making trouble in relaxing for patients, prompting multi-organ disappointments.

Stage I: Initial Stage

On the off chance that a patient remaining part asymptomatic fourteen days after openness, persistent is probably not going to create indications for Coronavirus. This is the reason the Indian government have given rules for the public to self-

seclude or isolate for about fourteen days [12].

Indicative In many patients, the sickness starts as a mellow disease with upper respiratory parcel indications. In certain patients, the contamination declined and entered the lungs and caused pneumonia before the finish of the principal week or by the start of the second seven day stretch of Covid. The terminal alveoli in the lungs bear cells wealthy in the ACE2 receptors. As the infection enters these alveolar cells in the lungs, pneumonia creates [5,10,12]. White platelets discharge chemokines as self-started insusceptibility for the security of the body from infections making contamination all together execute infection tainted cells. Discharge, which is a group of liquid and dead cells called discharge is given up and meddles with the lungs and diminishes the ability to move oxygen to the blood and CO2 out of it [10]. At this point, the patient will probably have a deteriorating hack, disquiet in breathing, fever, and quick, shallow breath. It is at this stage where most patients with Covid would be hospitalized concerning ventilation (fake oxygen siphoning) for close perception, the board of patients [16,19]

Stage II: Pulmonary stage

This pneumonic stage is partitioned has two parts. Stage IIA and stage IIB where Stage IIA is the pneumonic stage wherein persistent without hypoxia and Stage IIB is the pneumonic stage were quiet with hypoxia who will probably require hospitalization and Ventilators (fake oxygen siphoning) [5,13]. Patients in the aspiratory period of the sickness have higher opportunities to prompts the hyperinflammatory stage where the disease gets deteriorated and could be lethal [16].

Stage III: Hyperinflammation stage

The third and last basic stage where patients regularly fall apart unexpectedly and creating ARDS. Intense respiratory pain disorder prompts unease in breathing and it includes inflammation of lungs and liquid development pressure in the lungs, which meddles in oxygen move from the air to the blood [16,19]. Blood oxygen levels diminish quickly and making it hard for patients to breath subsequently persistent battles harder to take in this stage. Patients with ARDS generally require mechanical ventilation (counterfeit oxygen siphoning) through Ventilators in the Intensive consideration unit called ICU [16,18]. By and large, patients are intubated between about fourteen days after the beginning of signs and manifestations. Further Depending on the accessibility of legitimate hospitalisation with Ventilators and appropriate ICU setting accessible for patients [19].

8 DIAGNOSES of Covid-19

 Molecular test (RT-PCR): Real time-polymerase chain reaction

It is highly accurate to find out viral genetic material from the patient's body to confirm the diagnosis. The samples are obtained through naso-oropharyngeal swabs from the upper respiratory tract and preserved at 4 o Celsius before being sent to the laboratories.
This test becomes positive after 2-7 days of getting the infection. It gives a result within 1-2 days.

 Antibody Detection test:

This test is having a rapid result. This test was developed for rapid diagnosis, it requires a very low quantity of blood as a sample. It gives the result within 15-30 minutes.

 Chest x-ray/CT Imaging HRCT:

This test is showing significant results, it is helpful when the classifiing stages of infection is in covid patients Using computed tomography (CT) scan pictures, it is feasible to do a quick and accurate COVID-19 screening.

PREVENTIVE MEASURES FROM COVID TRANSMISSION: -

Various steps to prevent ourself

1) Whenever going outside use hand sanitizer for keeping hands germ free.
2) Wash your hands thoroughly with soup/dettol for atleast 30 seconds or with hand sanitiser (hand sanitiser consisting 60% concentration of alcohol) until hands get dried properly.
3) Always cover ur face specially mouth and nose area with clothes/surgrical mask.
4) Avoid touching your face, eyes nose & ears when hands are not washed.
5) Maintain social distancing of at least 6 feet from another person (between yourself and anyother person).
6) Avoid Mass gathering like parties, occasions, festival because there are higher chances to get infected from a sick person in large crowd.

Various steps to prevent others

1). Stay at home if health doesn't feel well, unless you feel fit and fine.
2) If after some time still health doesn't feel well then seek for medical attention from any of your concerned doctor.
3) If still feel uncomfortable then visit doctor for better treatment and care in such situation.

4) If sick then avoid un-necessary traveling.
5) Always cover face with mask while travelling outside in any necessary situation.
6) Always cover face while sneezing or coughing.
7) It would be better if you use any tissue paper or napkin while covering mouth and nose during sneezing like condition. Which can be thrown in dustbin after use.
8) If possible, stay isolated in separated room for at least quarantine period if at home after being tested cover-19 positive or even if negative for preventive measure one should maintain gap.
9) Stay home and stay in contact with your doctor. And follow all instructions as given by doctor.
10) If sick or cover positive stay in isolation for at-least 14 days or as per.
11) If sick or covid positive then stay in separate isolated room.
12) If sick or covid positive then avoid sharing cloths, bedsheets, bathroom, utensils, dishes, glasses and any other household items.
13) If [possible stay completed isolated from family buy using separate room, washroom, toilet and kitchen.
14) If any surface or utensil is dirty or unwashed, then clean them using detergent or any cleaning soap or wash them thoroughly using disinfectant at last.
15) Use disinfectant daily on regular. Basis after touching any surface which are frequently touched.
16) Identify and ask suspected cases to isolate themselves in a separate room for betterment of other people in surrounding.

Summary
The COVID-19 virus, often known as the Corona virus, is a virus that infects humans and other animals. It is a term that is often used to allude to SARS-CoV-2, a newly discovered strain of coronavirus that was declared a global pandemic by the Globe Health Organization (WHO) on March 11, 2020, and has since spread across the world. According to the authors, although it is clear that some therapies do not offer therapeutic benefits in patients admitted to the hospital, there is enough uncertainty, and thus clinical equipoise, to justify continuing clinical research in other COVID-19 disease states. Current research are mostly focused on patients who have been admitted to a hospital, and extending their findings to ambulatory patients may jeopardise attempts to identify effective outpatient treatments in the near future.

REFERENCES:

1). Acter, T., Uddin, N., Das, J., Akhter, A., Choudhury, T. R., & Kim, S. (2020). Evolution of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as coronavirus disease 2019 (COVID-19) pandemic: A global health emergency. *Science of the Total Environment*, *730*, 138996.
2). Verma, S., Abbas, M., Verma, S., Raza, S. T., & Mahdi, F. THE 2019 NOVEL PANDEMIC OF CORONAVIRUS DISEASE (COVID-19): A STUDY OF EXISTING EVIDENCE IN THE INDIAN POPULATION
3). Gao, Y., Yan, L., Huang, Y., Liu, F., Zhao, Y., Cao, L., ... & Rao, Z. (2020). Structure of the RNA-dependent RNA polymerase from COVID-19 virus. *Science*, *368*(6492), 779-782.
4). Mitra, P. (2020). Virus-Host Cell Interactions and the Viral Life Cycle: Basic Science to Therapeutics: Inhibiting fusion with cellular membrane system: therapeutic options to prevent severe acute respiratory syndrome coronavirus-2 infection. *American Journal of Physiology-Cell Physiology*, *319*(3), C500.
5). Mahase, E. (2020). Covid-19: First coronavirus was described in The BMJ in 1965
6). Wu, F., Zhao, S., Yu, B., Chen, Y. M., Wang, W., Song, Z. G., ... & Zhang, Y. Z. (2020). A new coronavirus associated with human respiratory disease in China. *Nature*, *579*(7798), 265-269
7). Song, F., Zhang, X., Zha, Y., & Liu, W. (2020). COVID-19: Recommended sampling sites at different stage of the disease. *Journal of medical virology*.
8). Tang, Y. W., Schmitz, J. E., Persing, D. H., & Stratton, C. W. (2020). Laboratory diagnosis of COVID-19: current issues and challenges. *Journal of clinical microbiology*, *58*(6), e00512-20.
9). Dai, W. C., Zhang, H. W., Yu, J., Xu, H. J., Chen, H., Luo, S. P., ... & Lin, F. (2020). CT imaging and differential diagnosis of COVID-19. *Canadian Association of Radiologists Journal*, *71*(2), 195-200.
10). Kopel, J., Goyal, H., &Perisetti, A. (2021, January). Antibody tests for COVID-19. In *Baylor University Medical Center Proceedings* (Vol. 34, No. 1, pp. 63-72). Taylor & Francis.
11). Rashedi, J., Mahdavi Poor, B., Asgharzadeh, V., Pourostadi, M., SamadiKafil, H., Vegari, A., ... &Asgharzadeh, M. (2020). Risk factors for COVID-19. *Infez Med*, *28*(4), 469-474.
12)Jahangir, M. A., Muheem, A., & Rizvi, M. F. (2020). Coronavirus (COVID-19): history, current knowledge and pipeline medications. *International Journal of Pharmaceutics & Pharmacology*, *4*(1). 13). Song, F., Zhang, X., Zha, Y., & Liu, W.

(2020). COVID-19: Recommended sampling sites at different stages of the disease. *Journal of medical virology*, *92*(9), 1383-1385.
14). Perlman, S. (2020). Another decade, another coronavirus.
15). Singhal, T. (2020). A review of coronavirus disease-2019 (COVID-19). *The indian journal of pediatrics*, *87*(4), 281-286.
16). World Health Organisation (WHO). Clinical management of COVID-19. Interimguidance.:WHO2020.Availablefrom:https://www.who.int/publications/i/item/clinical-management-ofcovid19.Health Information and Quality Authority (HIQA). Evidence summary for asymptomatic transmission of COVID-19. 21 April 2020. Dublin: HIQA; 2020.Available from: https://www.hiqa.ie/sites/default/files/2020-04/Evidence-summary-for-asymptomatictransmissionof-COVID-19.pdf.
17). World Health Organization (WHO). Novel Coronavirus – China 2020 [14 January 2020].Available from: https://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/
18). Zimmermann P, Curtis N. Coronavirus Infections in Children Including COVID-19: AnOverview of the Epidemiology, Clinical Features, Diagnosis, Treatment and Prevention Options in Children. The Pediatric Infectious Disease Journal. 2020;39(5):355-68.
19). World Health Organisation (WHO). Clinical management of COVID-19. Interimguidance.:WHO;2020.Availablefrom:https://www.who.int/publications/i/item/clinical-management-ofcovid19.