



Biostructure of Corona Virus Infection Cycle Protein & Genome Bioanalysis & Generalised Route of Bio-Vaccine & DNA Vaccine: A Review with Bioactive Compounds to Tackle Covid-19

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| <p>Abstract: Possibly Corona virus is a Space Virus. Another Possibility behind spreading of Corona virus maybe it was present in Earth Biosphere in inactive form from many years before Covid -19 pandemic. Spreading of Corona Virus was made possible by 5G & 6G Technology. Extensive Space Research by which Radio signals have to be sent to Superclusters of Stars Galaxies such as IC Galaxy & NGC Galaxy of Corona Australis & Corona Bolaris to search Alien Life & New Stars cum Galaxy Cluster is another reason for corona virus to come on/at Earth Biosphere. As such super clusters are high energy clusters. ISM related important gaseous component which are called coronal are analogy with the solar corona. Sun Planet is thought to be surrounded by a local bubble with a radius of 100 pc containing coronal Atmosphere that produces in huge amount which contains High Temperature Sensitive Microbes which are called Galactic Corona. Worldly Known that space agencies and space centres in India, worldwide & Globally are working on SETI & Planetary Science as some Scientists or group of Scientist are working on Sun Planet as All those Laboratories in India Worldwide Globally send Radio Signal to Sun Planet & others planets & of/to their galaxies as said above such as Messier Galaxy IC Galaxy NGC galaxy & targeted space microbes from those planets & galaxies from space to make Space Microbes Library by which Became Discharge cum Spout by Reasons to worldwide Globally. However, they forgot it will harm to themselves too. In the Present Review we are Providing GENERALISED BIO-NANO-ECO-BIO VACCINE ROUTE FOR COVID 19 <i>In vitro</i>. Also in this review we are Providing Generalised Chart of Corona DNA Vaccine to Develop it in Future.</p> <p>Keywords: Corona Virus, IC Galaxy & NGC Galaxy, SETI & Planetary Science, DNA.</p> | <p style="text-align: center;">Review Paper</p> |
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ADVANCED INTRODUCTION

Biological attack is the intentional release of a pathogen (disease causing agent) or biotoxin (poisonous substance produced by a living organism) against humans, plants, or animals. These biological agents can be isolated from sources in nature acquired from laboratories, and synthesized or genetically manipulated in a laboratory. The aim of a bio attack is to create suffering and disruption by introducing an epidemic of infectious disease such as Covid -19.

The thread of biological weapons at global level is not a myth but harsh reality which is called bioterrorism. Bioterrorism which is also called bio-

crime always planned and use to attack any nation, multination, small population of trees, animal and male & female population of any country. The main purpose of biocrime or bioterrorism is to achieve political and social objectives.

Recently, developed nation & some developing nations are using bioterrorism as a threat to demolish any nation in which they used pathogenic microbes altered by genetic modification to demolish any nation more threatfully. Bioterrorism is also the part of Indian defence strategy from last many decades. (Amit Rastogi, 2023). Bioterrorism exist on this planet since 600 BC to demolish population of plants, animals

and Male and Female population of other countries, sometimes same country (Amit Rastogi, 2023).

Category C Bio-Safety Agent which is/are/was/ were are genetically engineered designed and fabricated for mass dissemination in the future to cause mortality rates and major health impact and Penic Death. Such as Covid- 19 which is Biosafety agent anyhow leaked or any other circumstances to out from lab and became bioterrorism agent in India World Wide Globally. (Amit Rastogi 2023).

Such Bioterrorism agent are designed, prepared and fabricated in developed nations, developing nations laboratory for Biosafety purpose either or to attack to others nations for any purpose are threat to same nation too. Moreover, bioterrorism agents can harm small animal farm in the same nation or in the other nation (Amit Rastogi 2023).

How Corona Virus & Covid-19 Emerged & Theory Behind Corona Virus

Worldly Known that space agencies and space centres worldwide & Globally are working on SETI & Planetary Science as some Scientists or group of Scientist are working on Sun Planet as All those Laboratories in India Worldwide Globally send Radio Signal to Sun Planet & others planets & of/to their galaxies such as Messier Galaxy IC Galaxy NGC galaxy & targeted space microbes from those planets & galaxies from space to make Space Microbes Library by which corona emerged or Possibly such as space laboratory genetically engineered a virus strain & spread it to worldwide Globally. However, they forgot

it will harm to themselves too (Amit Rastogi, 2023) (Amit Rastogi, 2023) (Amit Rastogi, 2023).

ISM related important gaseous component which are called coronal are analogy with the solar corona. Sun Planet is thought to be surrounded by a local bubble with a radius of 100 pc containing coronal Atmosphere that produces in huge amount which contains High Temperature Sensitive Microbes which are called Galactic Corona (https://archive.stsci.edu/hut/papers/afdscorev_b/node6.html). Several Models for the galactic corona in space space labs are studied as a function of mass and energy inputs. (https://ui.adsabs.harvard.edu/abs/1979ApJ...227..398C/abstract)

Therefore, that can say Corona Virus has high energy input that cannot be tolerate by Male & Female that leads to immune system of both smashed & makes both bodies to infectious and put up with Corona disease. Secondly cum Furthermore, Genetically Engineered Corona Virus must have high energy input in it & its byproducts to makes Male & Female body to provide pass on from Earth Planet. It is Universally Known that Scientists in Space Centers & Agencies and in others Research Institutions & Universities World Wide cum globally work on Genetic Engineering as it is Fabricated as Biosafety agent Discharge cum spout by reasons & became Bio-terror of Recent Century (Amit Rastogi, 2023).

STRUCTURE OF CORONA VIRUS

Structure of Corona Virus with percent identity matrix of major proteins and domains of novel coronavirus is discussed below

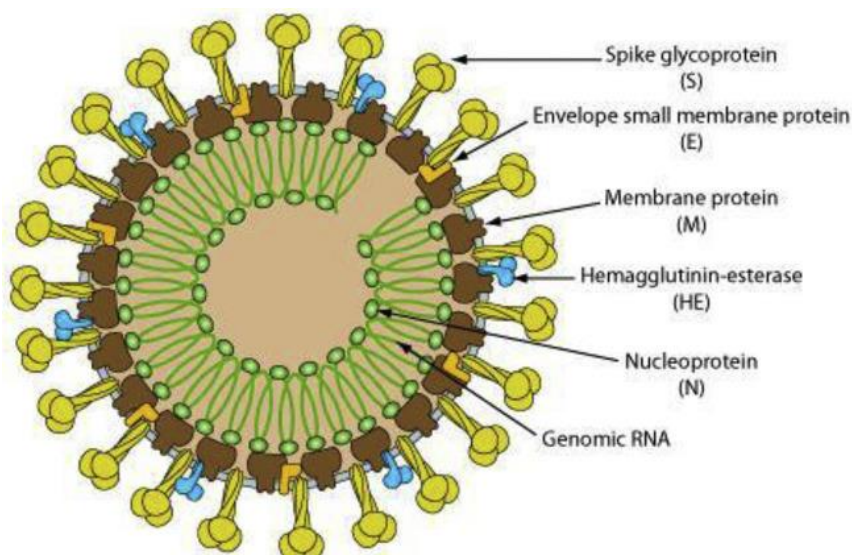


Figure 1: Schematic Representation of a Corona virus

Source: (<http://ruleofsix.fieldofscience.com/2012/09/a-new-coronavirus-should-you-care.html>)

Source: (<https://www.discovermagazine.com/health/the-strange-theory-of-coronavirus-from-space>)

Infection Cycle of SARS-CoV-2(<https://www.invivogen.com/spotlight-covid-19-infection>)

Infection Cycle of SARS-CoV-2 is given & discussed below in the figure.

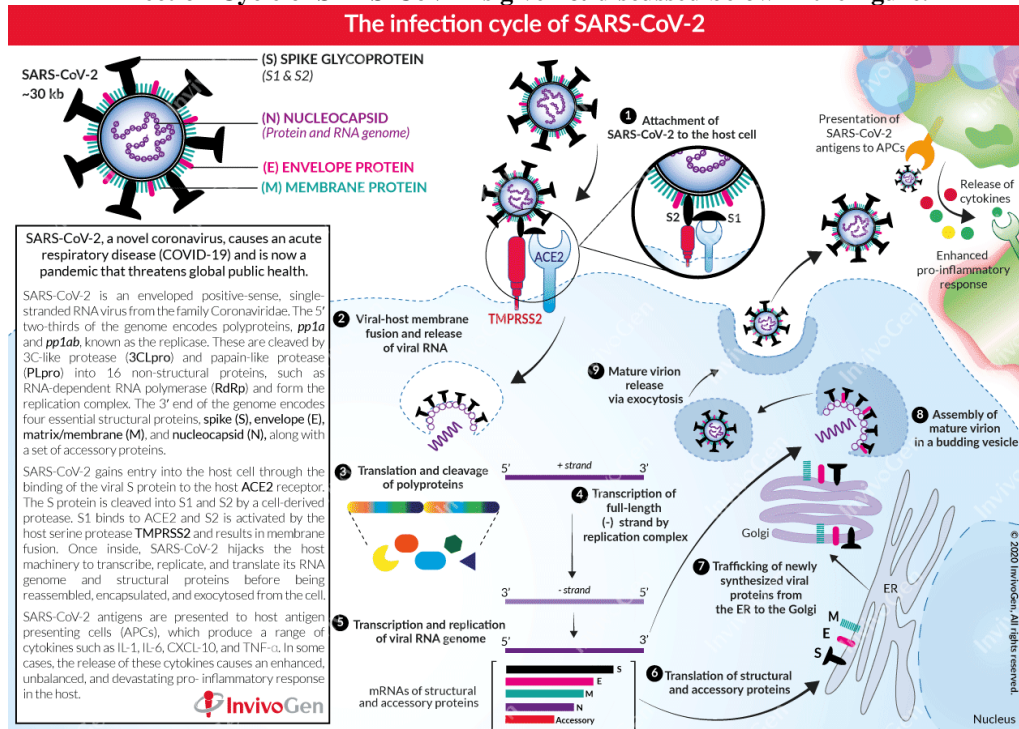


Figure 2: Infection Cycle of SARS-CoV-2

Percent identity matrix of major proteins and domains of novel coronavirus SARS-CoV2 strain with other beta-CoVs obtained using CLUSTAL O (1.2.4)

| PROTEIN | SARS-CoV | MERS-CoV | HCoV HKU1 | HCoV OC43 |
|---------------------------------|----------|----------|-----------|-----------|
| S (spike) | 97.71% | 32.79% | 30.50% | 31.26% |
| E (Envelope) | 96.00% | 36.00% | 28.00% | 20.00% |
| M (Membrane) | 89.59% | 39.27% | 35.29% | 38.74% |
| N (Nucleocapsid) | 85.41% | 48.47% | 34.28% | 35.20% |
| Receptor (ACE-2) binding domain | 74.41% | 18.75% | 24.44% | 22.83% |
| N-terminal domain | 52.55% | 21.67% | 21.49% | 20.26% |

Source: (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7395230/>)

Genome Bio-Analysis of Corona Virus

Coronaviruses possess the largest genomes (26.4–31.7 kb) among all known RNA viruses, with G + C contents varying from 32% to 43%. Variable numbers of small ORFs are present between the various conserved genes (ORF1ab, spike, envelope, membrane

and nucleocapsid) and, downstream to the nucleocapsid gene in different coronavirus lineages. The viral genome contains distinctive features, including a unique N-terminal fragment within the spike protein. Genes for the major structural proteins in all coronaviruses occur in the 5'–3' order as S, E, M, and N.

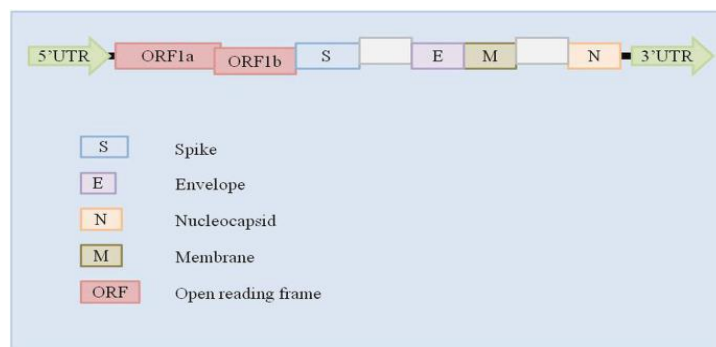


Figure 3: Genomic organization of coronavirus

Source: (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7395230/>)

The Accession Number, Genus, Abbreviation, Name, and Length (Bps) for the Seven Most Common Human Coronavirus Strains.

| No. | Accession | Genera | Abbreviation | Genome | Length(bp) |
|-----|-----------|----------|--------------|---|------------|
| 1 | NC_002645 | α | HCoV-229E | Human Coronavirus 229E | 27,317 |
| 2 | NC_005831 | α | HCoV-NL63 | Human Coronavirus NL63 | 27,553 |
| 3 | NC_006577 | β | HCoV-HKU1 | Human Coronavirus HKU1 | 29,926 |
| 4 | NC_006213 | β | HCoV-OC43 | Human Coronavirus OC43 | 30,741 |
| 5 | NC_019843 | β | MERS-CoV | Middle East respiratory syndrome Coronavirus | 30,119 |
| 6 | NC_004718 | β | SARS-CoV | Severe acute respiratory syndrome Coronavirus | 29,751 |
| 7 | NC_045512 | β | SARS-CoV2 | Severe acute respiratory syndrome Coronavirus-2 | 29,903 |

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7395230/>)

FASTA sequences of SARS-CoV2 for vaccine development

1. Spike protein S2 subunit

GVTQNVLYENQKLIANQFNSAIGKIQDSL
SSTASALGKLQDVVNQNAQALNTLVKQLSSNFG
AISSVLNDILSRDLKVESGGRGGPDVDLGDISGIN
ASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYG
G

2. Receptor Binding domain (RBD)

RVVPSGDVVRFPNITNLCPFGEVFNATKFPSVYA
WERKKISNCVADYSVLYNSTFFSTFKCYGVSATK
L
NDLCFSNVYADSFVVKGGDDVRQIAPGQT
GVIADYNYKLPDDFMGCVLAWNTRNIDATSTGN
YNYKYRLFRKSNLKPFERDISTEYQAGSTPCNGV
EGFNCYFPLQSYGFQPTNGVGYQPYRVVLSFEL
LNPATVCGPKLSTDLIK

3. N-Terminal Domain (NTD)

GAMGLPNNTASWFTALTQHGKEDLKFP
RGQGVPIINTSSPDDQIGYYRRATRRIRGGDGKM
KDLSRWYFYLLGTGPEAGLPYGANKDGIWVA
TEGALNTPKDHIGTRNPANNAIIVLQLPQGTTLF
KGFYAEGSRGGS

4. M protein

MADSNGTITVEELKKLLEQWNLVIGFLFL
TWICLLQFAYANRNRFLYIIKLIFLWLLWPVTLAC
FVLAAYRINWITGGIAIAMAACLVLGMWLSYFIA
SFRLFARTRSMWSFNPNILLNVPLHGTILTRPL
LESELVIGAVILRGHLRIAGHHLGRCDIKDLPKEIT
VATSRTLSTYKLGASQRVAGDSGFAAYSRYRIGN
YKLNTHSSSSDNIALLVQ

5. E protein

MYSFVSEETGTLIVNSVLLFLAFVVFLLV
TLAILTALRLCAYCCNIVNVSLVKPSFYVYSRVK
NLNSSRVPDLLV

6. N protein

MSDNGPQNQRNAPRITFGGSPDSTGSNQ
NGERSGARSKQRRPQGLPNNTASWFTALTQHGK
EDLKFPQGVPIINTSSPDDQIGYYRRATRRIRG
GDGKMKDLSRWYFYLLGTGPEAGLPYGANKD
GIWVATEGALNTPKDHIGTRNPANNAIIVLQLP

QGTTLPKGFYAEGSRGGSQASSRSSSRNRSRNS
TPGSSRGTSAPARMAGNGGDAALALLLLDRLNQL
ESKMSGKGGQQGQQTVTTKKSAEASKKPRQKRT
ATKAYNVTQAFGRRGPEQTQGNFGDQELIRQGT
DYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTW
LTYTGAIKLDDKDPNFKDQVILLNKHIDAYKTFFP
TEPKKDKKKKADETQALPQRQKKQQTVTLLPAA
DLDDFSKQLQQSMSSADSTQA

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7395230/>)

Nucleic Acid of Corona Virus

The nucleic acid of the novel coronavirus is a positive-stranded RNA8. **The 8-nucleotide-long RNA.**

(<https://www.google.com/search?client=firefox-b-d&q=VIRAL+RNA+TYPES+IN+COVID+19>)

(<https://pubmed.ncbi.nlm.nih.gov/10692458/>)

At present, there is no specific treatment for COVID-19. The high rate of transmission of this virus between humans and its pandemics, it is important to identify the basis of its pathogenicity for discovering a way to the special treatment or the prevention.

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138183/>)

BIOSECURITY DIRECTIONS

As we fight against bioterrorism, there is great need of to do excess research to overcome bioterrorism & bioterrorism agents. As bioterrorism is a great threat to same nation and to the global boundary may sometime be overcome by excessing the temperature of environment of the same country or at global level to inhibit the growth of same bioterrorism agent or may be spreading of bio-nanoparticles in the environment of silver, gold and platinum origin either to wear mask with same nanoparticles layer 1-2 mm near at nasal area on the mask to be biosecuritise to inhibit and not to enter the same bioterrorism agent via nasal chamber. Therapeutic treatment is also necessary for infectious disease management such as Covid – 19 which is actually a Biosafety or bio defence agent and becoming bioterror agent of the twenty century (Amit Rastogi 2023).

Principle Bio-Compounds of the Medicinal Plants as Antiviral Agents

Biocompounds of medicinal plants as antiviral agents are discussed in the table below.

| Name of plant | Major compound |
|-----------------------|---|
| Cinnamomum zeylanicum | Cinnamaldehyde, Pro anthocyanidins, Eugenol |
| Piper chaba | Piperonal, Methyl piperate, Piperchabamide A, Piperchabamide A, Piperanine, Piperine, Piperoleine B, Piperocaine, Piperchabamide B, PiperundecalidinePiperchabamide C, Dihydropiperlonguminine, Piperlonguminine, Piperchabamide E, Retrofractamide C, Retrofractamide A, Piperchabamide D, Retrofractamide B, Guineensine, Brachystamide B, <i>N</i> -Isobutyl-(2E,4E)-decadienamamide, <i>N</i> -Isobutyl-(2E,4E)-dodecadienamamide, <i>N</i> -Isobutyl-(2E,4E)-octadecadienamamide, <i>N</i> -Isobutyl-(2E,4E,14Z)-eicosatrienamamide |
| Zingiber officinale | 6-Shogaol, 6-Gingerol,8-Gingerol,10-Gingerol, Curcumin, Citric acid, Malic acid, Oxalic acid, Succinic acid, Tartaric acid |
| Piper nigrum | Pinosresinol, guineesine, Chavicine, 1- [(2E, 4Z,8E)-9-(3,4-mehtylenedioxyphenyl)-2,4,8-nonatrienoyl] pyrrolidine, Pipericide, Sesamin, Piperarborenine E, Piperarborenine D, Piperarborenine C, Dehydropiperonaline and piperrolein B, |
| Piper longum | Longumosides A (1) and B (2), erythro-1- [1-oxo-9(3,4-methylenedioxyphenyl)-8,9-dihydroxy-2E-nonenyl]- piperidine (3), and threo-1-[1-oxo-9(3,4-methylenedioxyphenyl)- 8,9-dihydroxy-2E-nonenyl]-piperidine (4) were isolated, besides two new natural products 3b,4a-dihydroxy-2-piperidinone (5), 5,6- dihydro-2(1H)-pyridinone (6) Compounds 2–6, together with the isolates previously obtained with a large amount from <i>P. longum</i> involving piperine (7),3,7 1-[1-oxo-5(3-methoxyl-4-hydroxyphenyl)-2E-pentenyl]-piperidine (8),6,10 guineesine (9),3,5 (2E,4E)- <i>N</i> -isobutyleicosa-2,4-dienamide (10),3 piperlonguminine |
| Cinnamomum tamala | Monoterpenes (65.6%). The predominant monoterpenes were <i>trans</i> -sabinene hydrate (29.8%), (<i>Z</i>)- β -ocimene (17.9%), myrcene (4.6%), α -pinene (3.1%) and β -sabinene (2.3%). Among 21 sesquiterpenes (32.9%). |
| Camellia sinensis | Polyphenols epicatechin (EC), epigallocatechin (EGC), epicatechin gallate (ECG), and epigallocatechin gallate (EGCG), caffeine, theanine, myricetin, quercetin, and kaempferol, which are examples of alkaloids, amino acids, and flavonols, |
| Allium cepa | Quercetin, fructose, quercetin-3-glucoside, isorhamnetin-4-glucoside, xylose, galactose, glucose, mannose, organosulfur compounds, allylsulfides, flavonoids, flavenols, <i>S</i> -alk(en)yl cysteine sulfoxides, cycloalliin, selenium, thiosulfinates, and sulfur and seleno compounds |

(<https://www.sciencedirect.com/science/article/pii/S0019452221002442>)

GENEREALISED BIO-NANO-ECO-BIO VACCINE ROUTE FOR COVID 19 *In vitro*

First Generalised route for Covid- 19 Vaccine is described below:

Metal Solution such as Silver Gold Platinum 1mM solution 1 ml per all three metal in different three test tube in distilled water 9 ml in sterile lab condition

- Mix all three solutions in conical flask 100 ml
- 100 gm Red Rose petal (Desi Rose) peeled in sterile mortar pistal in sterile lab condition
- Mix Rose petal paste in conical flask with Trimetal solution & took it at Room Temperature for 24 hours & Preserved it at 4 degree centigrate in Fridger for further use

Covid-19 Solution formation described below

Add 10 gm of 80 to 90 percent heat dried Covid-19 Virus Powder which will be heated at 40-50 degree centigrate for 10-20 minutes which must be added in 100 distilled water with Chlorine salt Ammonium chloride 10mg 500 mg Barium Chloride Flerovium Pure salt 99.99% 10 mg in sterile lab

conditions to which transfer in Orbital shaker at 27 degree centigrate with rpm 50-60 for 24 hours

- After 24 hours add 100 ml trimetal solution in 100 ml Covid – 19 Solution
- Add tablet Remdesivir 2 mg in the above solution with & Mix it in orbital shaker at 27 degree centigrate with 20 rpm for 30 minutes.
- Transfer this solution to Biopharmaceuticals for Vaccine formulation
Vaccine Formulation will be Clinical trial on Animal Models Such as Mice, Hamsters and Macaques (Phase 1 Phase 2Phase 3 Phase 4 Phase 5) in World class Biopharmaceuticals Laboratory first before to launch in market National International & Global

Generalised Chart of Corona DNA Vaccine Development
(<https://www.sciencedirect.com/topics/medicine-and-dentistry/dna-vaccine>)

Generalised Route of Corona DNA Vaccine is given below.

- Extraction of Genomic RNA of Corona Virus

- Such RNA must be Converted to DNA representing Viral Genome
- Genes of Antigenic Proteins are Amplified
- Amplified Fragment of Target Gene is Cloned in Mammalian Expression Vector
- Plasmid Carrying Target Gene is Grown in Large Quantities in Bacteria
- Transgenic Plasmid is Purified & Injected into the host as Vaccine

- Expression of Antigen & Induction of Immune Response

Sars-CoV-2 Enzyme for Drug Discovery

Recently Group of scientists have a detailed structure of an important Sars-CoV-2 enzyme which should help drug discovery researchers to design new molecules that can target it.

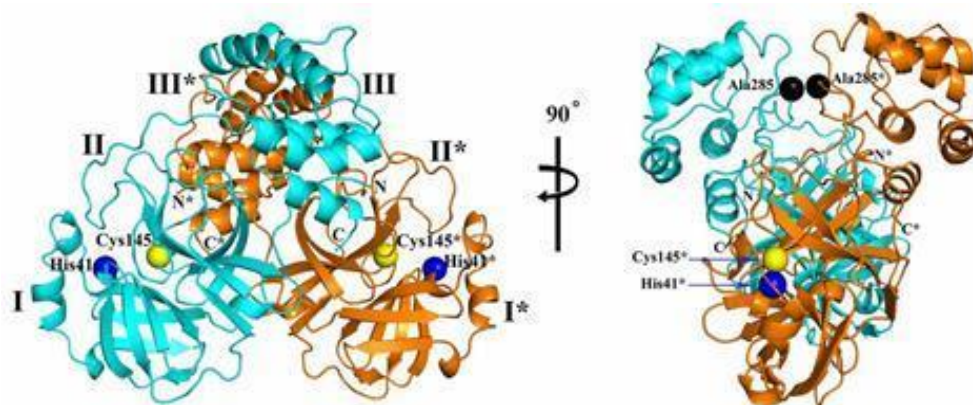


Figure 5: Structure of an important Sars-CoV-2 enzyme

ADVANCED CONCLUSION

All Scientist in Space Laboratory & in other laboratories where space microbes works occurs are Advised to not to send Radio Signal to M Galaxies IC Galaxies & NGC Galaxies & to Sun Planets. Also they are advised not to make genetically engineered Space Microbes. Along with FASTA Sequence & Spike Protein Structure Determination will help to Design Highly Potential Vaccine for Corona Virus. Furthermore, about vaccine Amit Rastogi Provides Generalised Scheme of Corona Virus Vaccine *in vitro* to which have to transfer to Biopharmaceuticals of the same country or to another country for Vaccine development cum Clinical trials to be comes to Market National International & Multinational. Also Spike & Nucleocapsid Proteins can also be Furthers can be used for as for Vaccine Development candidate. In this Review we also discussed Potential Phytochemical of Medicinal Plant to inhibit SARC-CoV-2 Activity.

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