



Integrated broad spectrum approach and combined strategy of world health system with public support to break pandemic Coronavirus disease (COVID-19).

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Abstract

COVID-19; Coronavirus disease 2019 was seen in December 2019 in Wuhan, China is an infectious disease caused by severe acute respiratory syndrome and has since spread across the world, progressing to a more terrifying stage as coronavirus pandemic 2019–20. Fever, throat irritation cough and shortness of breath are common symptoms. Around 80 % of the population shows mild to moderate symptoms, while others may progress to viral pneumonia and around 5 % may show multi-organ failure and finally cause death in about 2 to 5 % across the globe. Data shows that since first week of April 2020, more than 1.5 million cases of COVID-19 have been reported in 208 countries resulting in around 1 lac deaths. There should be an integrated broad-spectrum approach to break the pandemic COVID-19. This integration should include all the pathies (Allopathy, Ayurveda, Homeopathy, Siddha, Unani, Yoga, Naturopathy and Others) in collaboration with all medical specialities. Also, there should be integration between all political powers across the globe, world economies and religions, in support with public power across the world.

Keywords: coronavirus disease, severe acute respiratory syndrome, prevention

1. Introduction:

COVID-19, coronavirus disease 19 is a natural pandemic severe acute respiratory syndrome (SARS) followed by multiorgan involvement and finally cause death in about 2 to 5 % across the globe which was found at end of 2019. With identification of novel corona virus which cause SARS, so the World Health Organization(WHO) declared the pandemic disease as COVID 19 and also declared the virus with designation as SARS CoV-2 due to the second time appearance of corona virus with SARS (originally first seen in 2003 in China) with different novel strain in Wuhan, China (2019). Study revealed of 103 strains of SARS CoV -2 phylogenetic analysis and results found two type of virus, L type (70%) and S type(30%) in China [1]. After phylogenetic analysis and full-genome sequencing it was found that betacoronavirus is novel corona virus which is a cause of COVID-19. SARS CoV-2 structure is found to be very similar to the previous SARS coronavirus in respect of receptor-binding gene region and it enters the cell by binding to the angiotensin-converting enzyme 2 (ACE2) [2]. Viral transmission is directly from bats or unknown intermediate host however the closer Ribonucleic Acid (RNA) sequence is similar to bat corona virus [3]. Viral transmission perception is not complete, however main mode of transmission is person to person spread via respiratory droplets(distance about two meters) like influenza [4]. Also it can spread through infected surface, when touch our face, eyes, nose or mouth and may spread by fecal-oral route. RNA sequence of SARS-CoV-2 has also been found in blood and stool samples as per WHO- China Joint Mission report [5, 6, 7].

COVID-19 represent symptoms include fever, cough and shortness of breath, muscle ache, gastric irritation with loose stools, loss of taste or smell and slight pressure in ear. In more severe cases, SARS-CoV-2 infection can cause

pneumonia or breathing difficulties and rarely, the disease can be fatal. Upper respiratory specimens show viral RNA levels to be very soon after onset of symptoms as compare to later in the illness through a reverse transcription polymerase chain reaction (RT-PCR) [8, 9]. COVID-19 incubation period is thought to be within 14 days after exposure of SARS CoV-2, with most cases occurring approximately four to five days following exposure [10]. Enzyme-linked immunosorbent assay (ELISA) detected antibodies to the receptor-binding domain of the spike protein and the nucleocapsid protein of SARS CoV-2 in most patients by 14 days after the onset of symptoms; ELISA antibody titers were correlated with the neutralizing activity of SARS CoV-2 [11]. A test that qualitatively identifies immunoglobulin (Ig)M and IgG antibodies against SARS-CoV-2 in serum or plasma has been approved by FDA [12].

2. Management strategy :

There should be an integrated broad-spectrum approach to break the pandemic COVID-19. This integration should include all the pathies (Allopathy, Ayurveda, homeopathy, siddha, unani, yoga, naturopathy and others) in collaboration with all medical specialities. Also, there should be integration between all political powers across the globe, world economies and religions, in support with public power across the world.

2.1 Primary prevention-

The main focus of primary prevention should be- 1) a strict mandatory lockdown of 35-40 days with self-isolation of every individual and safe social distancing should be maintained. 2) Quarantine centres should be developed for suspected cases and others in periphery of every city of every state.3) Regular strict environmental air and water

sanitization procedures should be done in the cities/colonies, parks, malls, offices, schools, travel/transport modes etc. 4) Periodic door to door supply of basic necessities like medicines, food/groceries, vegetables, fruits, dairy products etc. 5) Facilities of colony clinics with qualified medical graduate should be arranged for routine checkup. Also, there should be facilities provided to them for door to door screening of SARS Cov-2 and divide the population into three zones; green zone (safe), yellow zone (suspected) and red zone (cases).

Public care: To prevent infection and break the chain of viral transmission (Strict lockdown, self-isolation, social distancing, use of face cover/homemade mask ^[13] and hand sanitization, education and awareness).

Home care: To inactivate the virus practicing self-isolation, social distancing and frequent hand/face washing. For better immunity, muscle strength, to relieve stress and depression and for relaxation practicing; healthy diet (proteins, vegetables/fruits /rich vitamin C/ zinc/ herbs/hot herbal tea/soups), healthy life style (pranayam /yoga/aerobics/music/meditation/spiritual connection/prayer and sound sleep).

Hospital care: Periodic rotating duty schedule for staffs and doctors for relaxation, personal protection equipments (mask, gown, goggles, gloves, shoe covers etc.), clean wards Ultraviolet light ^[33], Hydrogen peroxide vapor ^[34] Moist heat ^[35, 36] with proper ventilation, intensive care unit equipments (non-invasive ventilators via the continuous positive airway pressure (CPAP), ventilators, bronchoscope, endoscope, Extracorporeal membrane oxygenation) and prophylactical medicines for working staffs and doctors.

2.2 Secondary prevention-

As we all know that the whole world is facing the pandemic COVID-19 and day by day people are dieing with severe level of SARS CoV-2 infection. Unfortunatelty, no specific medicines/vaccine is being prepared for this deadly infection till now however we can manage to fight against this infection by early expansion isolation /quarantine/diagnostic kit followed by integrated broad spectrum approach of modern medicine with ayurveda, homeopathy, naturopathy/yoga etc. Apart from hydroxy chloroquine, ritonavir, azithromycin no other allopathy medicine is found to be effective against COVID-19 till now however in India we are recommending people to use herbal hot liquids like herbal tea/soups, luke water and inhalation of herbal steam based on researches done prior on SARS infection and evidence based medicines long years ago with the solid believe on ayurveda.

2.21 Modern medicines are being used for Covid-19:

- Paracetamol, Aspirin, Antihistamines, Bronchodilators, Mucolytics, Hydroxyl-chloroquine, Azithromycin, Ritonavir/Lopinavir, remdesivir, Alpha-interferon, Meropenum/Feropenum, High flow oxygen, Zinc/ zinc oxide, Vitamin C, E and D, Co enzymes, Anti oxidents, Omega 3 fatty acid, Polyethyleneglycol, Calcium, Potassium and Magnesium supplements, Vasopressures and Supportive co morbid treatment for heart disease, hypertension, diabetes, kidney disease and gastro-hepato-entral disease.
- Lopinavir – Protease inhibitor ^[14], Remdesivir an inhibitor of RNA polymerase ^[15]. lopinavir/ritonavir

combined with interferon beta ^[16, 17], Tolicizumab. It is a humanized IgG1 monoclonal antibody, directed against the IL-6 receptor ^[18], Convalescent plasma therapy ^[19, 20]. Virus inactivation by CO2 bubbles ^[21]. Hydroxy chloroquine act as anti-inflammatory reducing cytokine production, increase lysosome pH, anti-proliferative, immunomodulatory, decrease protease activity ^[22]. Vaccine is in waiting.

2.22 Herbal/Ayurveda medicines are being used for Covid-19:

Ayurveda / herbal medicine are natural products have been used to evaluate valuable compounds have the biological effects *in vitro* and *in vivo*, such as essential oils, flavonoids, alkaloids, and terpenoids. These products play role as anti-inflammatory, antiviral, antiplatelet, antioxidant, anti-allergic activities and anti proliferatives ^[23]. The eugenol is a substance present in essential oils of various herbal plants, and it is part of a phenolic group with a recognized antioxidant capacity. Also, it can prevent lipid peroxidation and generate hydroxyl radical followed by inhibition of superoxide radical's formation from xanthine oxidase system ^[24, 27].

- *Osimum tenuiflorum*(Tulsi), *osmium viridae*, *cordiflora tinospora*(Giloy), *cinnamomum camphora*, *curcuma longa*, *withania somnifera*, *cinnamomum tamala*, *ficus religiosa*, *officinale zingiber*, *piper longum*, *piper nigrum*, *cinnamon* etc have extraxt compounds of eugenol, caryophylline, withanolides, eucalyptol, curcumin, linalool, turpentine, alkaloid, ether may destroy the lipd layer, membrane, envelop protein of corona virus and inactivate SARS Cov-2 with anti-inflammatory and immunomodulatory effects ^[24, 28] Wikipedia).
- *Artemisia annua* is a alternative of hydroxychloroquine having artemisin, terpenoid, flavonol and free radical like epoxide as providing anti-inflammatory, reducing cytokines, increase lysosomal pH and decrease protease activity ^[28].
- *Azadirachta indica*(Neem), *spondias mombin*, *carica papaya*, *Persea americana*, *Spondias mombin*, *Ocimum viride* having compounds of Methanolic, Crude oil, hexane, Dichloromethane, ethylacetate, ethanol, caryophylline act as protease inhibitors ^[29].
- *Magnolia officinalis*, *Andrographolide* inhibit interleukin -6 expression ^[30, 31].
- *Nigella sativa* seeds contain thymoquinone which act as anti inflamtory and antioxidants ^[32].
- Himalayan region were Leguminosae (six plants) and Lamiaceae (basil, mentha, rosemary) Different compounds like monoterpenoids, flavonoids, triterpenoids, iridoid glycosides, sesquiterpenes, benzoic and phenolic compounds were reportedly isolated from extracts having strong antiviral potential ^[37].
- Purine and zinc-based herbs/ diet- pea mushroom, spinach, white bran, pumpkin seeds, etc may help to reduce viral replication and phyllanthum emblica, citrus lemon – Vitamin C providers

3. Tertiary prevention:

- To treat, educate and rehabilitate those with the clinical disease, toward reducing complications.

- To improve quality of life within a integrative framework.
- Give confidence for strict home quarantine /solation, homemade mask and sanitization.
- To provide health insurance

4. Message to all mankind:

For the mass prevention of SARS CoV-2 and break the chain of infection all have to start practicing self-isolation, hand/face sanitization. Do keep your body warm internally with the help of herbal teas/soups, herbal steam inhalation as mentioned above. Do keep your body hydrated, slightly alkaline and oxygenated. Use vitamins/fruits/vegetables that boost up your immunity. Start practicing meditation, yoga and exercise. Add music in your life style, make yourself spiritual and happy. Take rest and recharge yourself and maintain social distancing. Do cooperate with each other and help others where possible. Take sound sleep. Avoid unprotected contact with farm or wild animals. Contribute yourself to make successful lockdown by helping the poor and animals. Take care especially elderly people and individuals that are immunocompromised should avoid public gatherings. Finally do appreciate all who are supporting in lockdown.

5. Future aspect:

Our appeal to the whole world is to give their contribution in research on herbal products, silver nano particles and better vaccines for COVID-19. All the Scientists and engineers across the globe give their contribution in maintaining the optimal water contents, soil index/pH, air quality index, balanced healthy atmospheric gases, ultra-violet strength, balanced electro-magnetic field and protective measures for ozone layer protection. Also give their valuable support in uplifting and protecting the economy across the globe by all uniting together as one.

6. Conclusion:

The whole earth is vibrating from this pandemic COVID-19 and facing this rising mortality rate by SARS CoV-2 severity. Integration of the whole world from all directions may prevent pandemic Covid-19 and may help to reduce the mortality due to SARS CoV-2 followed by future mass prevention. Also, we can recover from our economical, mental and social loss from this unity and integrated broad spectrum approach.

7. References:

1. Tang X, Wu C, Li X, *et al.* On the origin and continuing evolution of SARS-CoV-2. *National Science Review*, 2020.
2. Zhou P, Yang XL, Wang XG, *et al.* A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*, 2020; 579:270.
3. Perlman S. Another Decade, Another Coronavirus. *N Engl J Med*, 2020; 382:760.
4. World Health Organization. Novel coronavirus situation reports -2. January 22, 2020. <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200122-sitrep-2-2019-ncov.pdf> (Accessed on January 23, 2020).
5. Chen W, Lan Y, Yuan X, *et al.* Detectable 2019-nCoV viral RNA in blood is a strong indicator for the further clinical severity. *Emerg Microbes Infect*, 2020; 9:469.
6. Wang W, Xu Y, Gao R, *et al.* Detection of SARS-CoV-2 in Different Types of Clinical Specimens. *JAMA*, 2020.
7. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-2019). February 16-24, 2020. <http://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf> (Accessed on March 04, 2020).
8. Zou L, Ruan F, Huang M, *et al.* SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. *N Engl J Med*, 2020; 382:1177.
9. To KK, Tsang OT, Leung WS, *et al.* Temporal profiles of viral load in posterior oropharyngeal saliva samples and serum antibody responses during infection by SARS-CoV-2: an observational cohort study. *Lancet Infect Dis*, 2020.
10. Li Q, Guan X, Wu P, *et al.* Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med*, 2020; 382:1199.
11. To KK, Tsang OT, Leung WS, *et al.* Temporal profiles of viral load in posterior oropharyngeal saliva samples and serum antibody responses during infection by SARS-CoV-2: an observational cohort study. *Lancet Infect Dis*, 2020.
12. US Food and Drug Administration. <https://www.fda.gov/media/136622/download> (Accessed on April 03, 2020).
13. Strategies for Optimizing the Supply of Facemasks". CDC. 11 February 2020. Archived from the original on 23 March 2020. Retrieved 23 March, 2020.
14. Dayer M R, Taleb-Gassabi S, Dayer M S. Lopinavir; A Potent Drug against Coronavirus Infection: Insight from Molecular Docking Study, *Arch Clin Infect Dis*. 2017; 12(4):e13823. doi: 10.5812/archcid.13823.
15. Gordon CJ, Tchesnokov EP, Feng JY, Porter DP, Gotte M. The antiviral compound remdesivir potently inhibits RNA-dependent RNA polymerase from Middle East respiratory syndrome coronavirus. *J Biol. Chem*, 2020.
16. "UN health chief announces global 'solidarity trial' to jumpstart search for COVID-19 treatment". *UN News*. 18 March 2020. Archived from the original on 23 March, 2020. Retrieved 23 March 2020.
17. Kupferschmidt Kai, Cohen Jon. WHO launches global megatrial of the four most promising coronavirus treatments". *Science Magazine*. doi:10.1126/science.abb8497, 2020. Retrieved 27 March 2020.
18. "Effective Treatment of Severe COVID-19 Patients with Tocilizumab". *ChinaXiv.org*. 5 March 2020. doi:10.12074/202003.00026 (inactive 16 March 2020). Archived from the original on 19 March 2020. Retrieved 14 March, 2020.
19. Chen L, Xiong J. Convalescent plasma as a potential therapy for COVID-19. *Lancet Infect. Dis*, 2020; 20:398-400.
20. Kai Duan, Bende Liu. Effectiveness of convalescent plasma therapy in severe COVID-19 patients Proceedings of the National Academy of Sciences Apr, 2020. 202004168; DOI: 10.1073/pnas.2004168117
21. Garrido Sanchis A, Pashley R, Ninham B. Virus and bacteria inactivation by CO₂ bubbles in solution. *npj Clean Water* 2, 2019, 5. <https://doi.org/10.1038/s41545-018-0027-5>
22. Philippe Gautret, Jean-Christophe Lagier, Philippe Parola, Van Thuan Hoang, Line Meddeb, Morgane Mailhe, Barbara Doudier, Johan Courjon, Valérie Giordanengo, Vera Esteves Vieira, Hervé Tissot Dupont, Stéphane Honoré, Philippe Colson, Eric Chabrière, Bernard La Scola, Jean-Marc Rolain, Philippe Brouqui, Didier Raoult *Int J Antimicrob Agents*, 2020. 105949. doi: 10.1016/j.ijantimicag.2020.105949
23. Fernanda Paula, Santana R, Nathalia M, Pinheiro Márcia, Isabel B, Mernak Renato, *et al.* Prado Evidences of Herbal Medicine-Derived Natural Products Effects in Inflammatory Lung Diseases, mediator of inflammation, 2016. |Article ID 2348968 | 14 pages | <https://doi.org/10.1155/2016/2348968>
24. d'Avila M, Farias PS, Oliveira FSP Dutra, *et al.*, "Eugenol derivatives as potential anti-oxidants: is phenolic hydroxyl necessary to obtain an effect?" *Journal of Pharmacy and Pharmacology*. 2014; 66(5):733-746.

25. Okada N, Satoh K, Atsumi T, *et al.*, "Radical. modulating activity and cytotoxic activity of synthesized eugenol-related compounds," *Anticancer Research*. 2000; 20(5):2955–2960.
26. Hidalgo ME, De La Rosa C, Carrasco H, Cardona W, Gallardo C, Espinoza L. "Antioxidant capacity of eugenol derivatives," *Quimica Nova*. 2009; 32(6):1467-1470.
27. Khan A, Ahmad A, Akhtar F, *et al.*, "Induction of oxidative stress as a possible mechanism of the antifungal action of three phenylpropanoids," *FEMS Yeast Research*. 2011; 11(1):114-122.
28. Cumming JN, Ploypradith P, Posner GH. Antimalarial activity of artemisinin (qinghaosu) and related trioxanes: mechanism(s) of action. *Adv. Pharmacol. Advances in Pharmacology*, 1997; 37:253-97. doi:10.1016/S1054-3589(08)60952-7
29. Idowu Kehinde, Pritika Ramharack, Manimbulu Nlooto, MichelleGordon. The pharmacokinetic properties of HIV-1 protease inhibitors: A computational perspective on herbal phytochemicals. 2019; 5(10):e02565
30. Jae Yeon Chun, Ramakumar Tummala, Nagalakshmi Nadiminty, Wei Lou, Chengfei Liu, Joy Yang, *et al.* Gao Andrographolide, an Herbal Medicine, Inhibits Interleukin-6 Expression and Suppresses Prostate Cancer Cell Growth Genes *Cancer*. 2010; 1(8):868-876. doi: 10.1177/1947601910383416
31. Chen SC, Chang YL, Wang DL, Cheng JJ. Herbal remedy magnolol suppresses IL-6-induced STAT3 activation and gene expression in endothelial cells. *Br J Pharmacol*. 2006; 148(2):226-32.
32. Gharby S, Harhar H, Guillaume D, Roudani A, Boulbaroud S, Ibrahim M, *et al.* "Chemical investigation of *Nigella sativa* L. seed oil". *Journal of the Saudi Society of Agricultural Sciences*. 2015; 14(2):172-177. doi: 10.1016/j.jssas.2013.12.001
33. Lindsley WG, Martin SB Jr, Thewlis RE, *et al.* Effects of Ultraviolet Germicidal Irradiation (UVGI) on N95 Respirator Filtration Performance and Structural Integrity. *J Occup Environ Hyg*, 2015; 12:509.
34. Holmdahl T, Walder M, Uzcátegui N, *et al.* Hydrogen Peroxide Vapor Decontamination in a Patient Room Using Feline Calicivirus and Murine Norovirus as Surrogate Markers for Human Norovirus. *Infect Control Hosp Epidemiol*, 2016; 37:561.
35. Yunoki M, Urayama T, Yamamoto I, *et al.* Heat sensitivity of a SARS-associated coronavirus introduced into plasma products. *Vox Sang*, 2004; 87:302.
36. Duan SM, Zhao XS, Wen RF, *et al.* Stability of SARS coronavirus in human specimens and environment and its sensitivity to heating and UV irradiation. *Biomed Environ Sci*, 2003; 16:246.
37. Amber Rahila, Adnan Muhammad, Tariq Akash, Mussarat Sakina. A review on antiviral activity of the Himalayan medicinal plants traditionally used to treat bronchitis and related symptoms. *Journal of Pharmacy and Pharmacology*, 2016, 69. 10.1111/jphp.12669.