

## COVID 19 “A Global Curse”: An Urgent Need to Craft a Shield

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**Received:** June 16, 2020; **Published:** July 07, 2020

Currently entire world grapple with the infiltration of killer strain recognized as SARS COV 2 causing COVID 19; which breakout from Wuhan province of china; later to the entire world in less than three months except Antarctica region. On 12<sup>th</sup> March 2020, Covid-19 was declared a pandemic by the World Health Organization. Forthwith there have been more than 7 million confirmed cases and 428 K deaths reported worldwide due to Covid-19 as reported by the WHO Which is exponentially increasing day by day [1].

SARS-CoV-2 is composed of positive-sense single-stranded RNA virus, enable to encodes four major proteins: spike, membrane, nucleocapsid and envelope, where Spike protein facilitate viral entry into target cell, through human angiotensin-converting enzyme 2 (ACE2), which promotes membrane fusion as well as internalization of the virus into human cells to generate viral proteins for viral replication. Moreover, RNA dependent RNA polymerase (RdRp) is a key enzyme in the life cycle of RNA viruses, as active site of RdRp representing two successive aspartate residues extended from a beta turn structure making them accessible through the nucleotide channel [2].

Currently, there is no approved vaccine or specific drug against the SARS-CoV-2 pose a great challenge for the medical fraternity to treat the severely ill COVID-19 patients. In fact creation of effective vaccines is extremely essential to protect humanity against contagious SARS-CoV-2. However, in mean time drugs that have been approved by the FDA in the USA for other indications have been under trial to treat COVID-19 patients [3,4]. Besides this few conventional drugs like Hydroxychloroquine, Ivermectin and Azithromycin have been highlighted as potential weapon against SARS COV2 by the researchers with skeptical views. Hydroxychloroquine as well as Ivermectin were recognized to act by creating the acidic environment and inhibiting the importin (IMP $\alpha$ / $\beta$ 1) mediated viral import. Besides this, Ivermectin has recently been claimed, to produce approximately 5000-fold reduction in the RNA of (SARS CoV-2) at 48h of its single addition [5]. In addition to this molecular docking was also tried to test some direct-acting antiviral drugs against COVID-19 RdRp (Sofosbuvir; Ribavirin, Remdisvir, IDX-184, initially used against Hepatitis C Virus [2]. Remdesivir (GS-5734) was developed by the U.S. Centers for Disease Control and Prevention (CDC) in collaboration with the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), consider as potent drug to reduce mortality in severe cases of COVID 19. In an interim analysis of the Adaptive COVID-19 Treatment Trial (NCT04280705), in between the patients receiving remdesivir, compared to control, with a 31% faster time to recovery, therefore US FDA has issued authorization for the use of remdesivir in hospitalized COVID-19 patients [6,7].

In addition to this there is evidence of an inflammatory excess in patients with COVID-19. Lung pathology in COVID-19 is characterized by capillary leakage of fluid and recruitment of immune-inflammatory lymphocytes, neutrophils, and macrophages, implying a role for adhesion molecules, chemokines, and cytokines targeting vascular endothelium [8]. Tocilizumab (TCZ), a monoclonal antibody against interleukin-6 (IL-6), emerged recently as an alternative treatment in COVID-19-induced cytokine storms and recommended in seriously ill patients with elevated IL-6 [9]. Additionally there are few other potent drug highlighted for reducing inflammation in COVID-19, such as the anti-TNF antibodies infliximab or adalimumab besides this, Usage of Etanercept, Interferon  $\beta$  1b is also under trial by the researcher in COVID 19 patients [10-12].

It is proclaimed that convalescent plasma, which is collected from an infected individual, is then transfused into infected patients as a post exposure prophylaxis considered as a new treatment modality in terminal patients infected with COVID 19 [13]. Unlike immunoglobulin (Ig G)-derived antibodies such as plasma-derived monoclonal antibodies, convalescent plasma is a passive antibody therapy that showed some success as a neutralizing antibody against other corona virus epidemics, SARS-1 and Middle East respiratory syndrome (MERS), though IV Ig and convalescent serum therapy is costly and may not be available frequently to poorer patients. Research in plasma therapy as well as subcutaneous immunoglobulin is still underway with various other modalities of treatment available against corona virus [14].

It has also been cited that BCG vaccination provides protection against Covid-19 disease; considered as an interesting fact by the worldwide research fraternity and three new clinical trials have commenced in; Australia (BRAVE) USA (BADAS) and the Netherlands by including 6000 health care workers versus placebo to test the hypothesis. Perhaps immune effects of BCG provide a significant way for investigation in relation to the COVID-19 pandemic though warned by the WHO, to gather appropriate evidence prior to widespread use for BCG for this purpose [15].

Recently the potential use of low dose radiation therapy (LDRT) for COVID-19 pneumonia treatment by the induction of anti-inflammatory effects has been hypothesized [16]. However anti-inflammatory effects of low dose radiation therapy may disrupt immune system fighting against COVID-19 virus and delay virus elimination. Moreover some studies have reported the significant increase of uptake, activation, transcription and spread of some viruses after radiation therapy, hence caution must be taken to use the lungs as the target organ for radiation therapy due to high virus concentration [17].

Global research fraternity working perpetually in search of cost effective treatment against COVID 19 to save humanity, though collective efforts by conducting more comprehensive multicenter randomized drug trial to explore more effective weapons which fill the gap of knowledge to control this menace in an effective way by reducing mortality and improving recovery rate worldwide in all strata.

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**Volume 9 Issue 8 August 2020**

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