INTRODUCTION
The Coronavirus Disease 2019 (COVID-19) outbreak occurred in the world in December 2019. It has become an internationally important public health emergency with an average mortality rate of about 4%. As of November 29th, 2020, a total of more than 60 million confirmed cases of COVID-19 had been reported worldwide and the number of cases continues to increase day by day (1). The epidemic not only affects the standard life of people, but also causes global economic problems. The development of drugs for the treatment of COVID-19 plays an important role for people all over the world. This article summarizes the research in the field of COVID-19 treatment.

Antiviral drugs inhibit all stages of virus replication (2). Antiviral drugs in clinical applications in the treatment of COVID-19: protease inhibitors, nucleic acid synthesis inhibitors, influenza virus drugs, and antimalarial drugs with antiviral activity. Favipiravir is a guanine analog that selectively inhibits RdRP of RNA viruses. Wang et al. reported inhibition of SARS-CoV-2 by favipiravir (3). Lopinavir/ritonavir is a specific drug for AIDS (HIV). Ritonavir inhibits CYP3A activity and may have a synergistic effect with lopinavir by increasing the concentration of Lopinavir (4). The impact of Lopinavir/ritonavir against COVID-19 remains to be verified in clinical trials. Darunavir/cobicistat is a protease inhibitor. It prevents virus replication by inhibiting the division of polyproteins in virus-infected cells (5). Ribavirin is a nucleoside 1 analog and acts as an antiviral role by inhibiting inosine-5-phosphate dehydrogenase and blocking the synthesis of viral RNA and DNA (6). Remdesivir was reported that it has activity against SARS-CoV-2 in cell test and animal model test. It may play a role in prevention when it is used before infection. Additionally, it can obviously relieve clinical symptoms taking it before the high incidence period of virus replication (7). Deng et al. reported that the combination of arbidol and lopinavir/ ritonavir may be useful to delay the progression of lung disease and reduce the probability of respiratory and gastrointestinal transmission (8). Hydroxychloroquine and chloroquine are considered to be immunomodulators. Chloroquine has a role in both the entry stage and post-stage of the SARS-CoV-2 virus in Vero E6 cells (9). Hydroxychloroquine is thought to have the ability to inhibit the cytokine release syndrome caused by the overactivation of the immune system caused by SARS-CoV-2 infection.

The clinical usage of glucocorticoid in the treatment of COVID-19 is mainly due to its anti-inflammatory effect. However high dose glucocorticoids can cause immunosuppression, therefore it is suggested to usage low-dosage glucocorticoids.

Immunopotentiators increase the immunity of the body by activating human immune cells, especially including transfer factors, interferon, and interleukin-2. When the virus infection has occurred, cells produce interferon. Thus, a large number of interferon-derived proteins prevent virus replication and create an antiviral effect (10). Convalescence plasma provides passive immunity. The use of convalescence plasma in COVID-19 treatment is also an alternative option (11). In patients with severe adult COVID-19, in addition to antiviral drugs, convalescent plasma was observed to be well tolerated with a 200 mL dose, which can significantly raise or maintain a high level of neutralizing antibody, improving viremia and other clinical indices (11). The management of the cytokine storm is a significant part of treating critically COVID 19 patients. Interleukin-6 (IL-6) plays a major role in cytokine release syndrome. Tocilizumab has been observed to be an effective drug for severe COVID-19 patients by effectively blocking the IL-6 signal transduction pathway (12). Current studies do not support the use of prophylactic antibiotics in COVID-19 patients in the absence of bacterial infection (13). However, it has been reported that when azithromycin is combined with hydroxychloroquine, the viral load is significantly reduced in COVID-19 patients and as a result, azithromycin increases the activity of hydroxychloroquine (14). The COVID-19 vaccine may prevent recurrent and sustained epidemics of COVID-19, which would lead to greater benefits for all people. Since the full genome sequence of SARS-CoV-2 was discovered, there has been a global increase in vaccine development efforts against COVID-19 (15). In a previous publication, we reported that the hematopoietic effects of COVID-19/ SARS viral infections, including lymphopenia, leukoerythroblastosis, and macrophage activation syndrome, may be linked to the viral effect on the local renin angiotensin system in the bone marrow microenvironment (16). The development of effective treatment options for CO- VID-19 requires the joint efforts of researchers from various countries and important recommendations from the World Health Organization.

Keywords: COVID19, SARS-CoV-2, Hydroxychloroquine, Tocilizumab, Favipiravir

CONFLICT of INTERESTS
The authors of this paper have no conflict of interests, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

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ABSTRACT
The new SARS-CoV-2 virus continues to spread rapidly around the world. As the world struggles to minimize the transmission of this devastating disease, various strategies and interventions are actively being implemented to improve treatment. Pharmaceutical companies and academic researchers are working relentlessly to search for experimental, fit-for-purpose, or FDA-approved drugs for SARS-CoV-2 prophylaxis and treatment. This review provides an overview of the current therapeutic modalities being evaluated against the SARS-CoV-2 virus.


