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REVIEW

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Potential interventions for novel coronavirus in China: A systematic review

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Abstract

An outbreak of a novel coronavirus (COVID-19 or 2019-CoV) infection has posed significant threats to international health and the economy. In the absence of treatment for this virus, there is an urgent need to find alternative methods to control the spread of disease. Here, we have conducted an online search for all treatment options related to coronavirus infections as well as some RNA-virus infection and we have found that general treatments, coronavirus-specific treatments, and antiviral treatments should be useful in fighting COVID-19. We suggest that the nutritional status of each infected patient should be evaluated before the administration of general treatments and the current children's RNA-virus vaccines including influenza vaccine should be immunized for uninfected people and health care workers. In addition, convalescent plasma should be given to COVID-19 patients if it is available. In conclusion, we suggest that all the potential interventions be implemented to control the emerging COVID-19 if the infection is uncontrollable.

KEYWORDS
2019-CoV, coronavirus, COVID-19, MERS, potential interventions, SARS

1 | INTRODUCTION

Coronaviruses (CoVs) belong to the subfamily *Orthocoronavirinae* in the family of *Coronaviridae* in the order *Nidovirales*, and this subfamily including α-coronavirus, β-coronavirus, γ-coronavirus, and delta-coronavirus.[1] Coronaviruses primarily cause enzootic infections in birds and mammals and, in the last decades, have shown to be capable of infecting humans as well.[2] The outbreak of severe acute respiratory syndrome (SARS) in 2002 and Middle East respiratory syndrome (MERS) in 2012 has demonstrated the lethality of coronaviruses when they cross the species barrier and infect humans.[2] SARS-CoV and MERS-CoV all belong to the β-coronavirus family.[3] Recently, a novel flu-like coronavirus (COVID-19) related to the MERS and SARS coronaviruses was found at the end of 2019 in China[4,5] and the evidence of human-to-human transmission was confirmed among close contacts.[6] The genome of COVID-19 is a single-stranded positive-sense RNA.[7] The sequence analysis showed that the COVID-19 possessed a typical genome structure of coronavirus and belonged to the cluster of β-coronaviruses including SARS-CoV and MERS-CoV.[7] COVID-19 was more than 82% identical to those of SARS-CoV.[8,9] COVID-19 may spread worldwide with the pandemic. Currently, there is no registered treatment or vaccine for the disease. In the absence of a specific treatment for this novel virus, there is an urgent need to find an alternative solution to prevent and control the replication and spread of the virus. We have done an online search on PubMed and Web of Science with the keywords of SARS, MERS, and coronaviruses. We summarize and propose therapeutic options available for the treatment of this novel coronaviruses.

2 | GENERAL TREATMENT FOR VIRAL INFECTION

2.1 | Nutritional interventions

2.1.1 | Vitamin A

Vitamin A is the first fat-soluble vitamin to be recognized and β-carotene is its plant-derived precursor (Table 1). There are three

