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ANTIVIRAL DRUGS USED IN TREATMENT OF NOVEL CORONAVIRUS (COVID-19)

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ABSTRACT

Novel corona virus has emerged in 31 December 2019 namely as nCOV19. Currently, no promising drug is available to treat against SARS-CoV infection. In the present studies to understand the exhibited antiviral drugs used to treat COVID19. The study was investigated the antiviral drugs shown effective dose in the treatment of SAR-CoV-2 symptoms. Aim of study was to know available antiviral drug exhibit the efficacy and positive result against COVID-19 by in vivo, in vitro and virtual screening.

Keywords - Antiviral drugs, In vivo, In vitro, Clinical study

1. INTRODUCTION

The novel SARS-CoV-2 exhibited in December 2019 and then spread uncontrolled and rapidly. The novel coronavirus infection is a zoonotic origin has been first identified in China, spread around the globe so called as pandemic¹. The virus made up of RNA nucleic acid component, generally have four structural proteins: Spike (S), envelope (E), membrane (M), and nucleocapsid (N)² which belongs to the Coronaviridae family³.

The endemic coronavirus infection was first identified around 1960, while till date various seven coronavirus infections are identified⁴.the four types of coronavirus infections (HCoV-229E, HCoV-OC43, HCoV-NL63 and HCoV-HKU1) which causes mild illness involving immune-compromised systems, common colds and flu like symptoms. Two coronaviruses infection namely SARS-CoV and MERS-CoV originated in 2002-03 and 2012-13 respectively those which cause the acute respiratory infections in humans and flue like illness that is causes epidemic⁵.

The current coronavirus infections (COVID19) which pandemic caused by SAR-CoV-2 virus shown symptoms like flu, fever, migraine, headache, dry cough, fatigue, breathing problems like pneumonia and dyspnea⁶.

The scientists are finding the drugs to treat disease. The research was going on natural products, allopathic, Ayurveda, traditional medicine systems which shown a potency efficacy against covid19. In medical field innovating new medical device and medicines gives a quick results and efficacy to treat COVID-19. Objective of study was the already available antiviral drugs including lopinavir/ritonavir, chloroquine phosphate, ribavirin, Umifenovir, favipiravir and arbidol have shown potency of efficacy against COVID-19. The guidelines of the national health commission and people republic of China for tentative treatment of COVID-19 issued against pneumonia that prevention, treatment and diagnosis of coronavirus⁷.

2. ANTIVIRAL DRUGS USED IN TREATMENT OF COVID-19

2.1 Darunavir's

The administration of darunavirs with other antiviral drugs gives a promising and shown positive result against COVID-19 patient. The patient was received a 200mg darunavir and Hydroxychloroquine for 5days antiviral therapy twice in a day ^{8,9}.

2.2 Oseltamivir

Rajavithi Hospital in Bangkok reported the Osteltamivir combination with lopinavir/ritonavir antiviral drugs of 75mg twice a day prescribed. oseltamivir shown an ineffective against COVID19 but it shown a synergic effect with combination of other antiviral drugs ^{10,11}.

2.3 Umifenovir

The Umifenovir has shown potential treatment for COVID-19. Done a clinical study on Umifenovir at ELACOI hospital by giving a single dose of 100mg but not seen significant improvement at patient as compare to control group ¹².

2.4 Lopinavir/Ritonavir

The in vitro studies and clinical trial reported already against SARS and MARS. The Lopinavir combined with the ribavirin and corticosteroids etc., has shown the clinical benefits ¹².

2.5 Favipiravir

It has a broad range of antiviral activity against the RNA virus i.e., Bunyavirus, Arenavirus, Flavivirus, filoviruses and also effect against ebola virus. The SAR-CoV-2 virus is RNA based makes a potential drug against COVID-19 treatment ¹³.

2.6 Remdesivir

Currently the most demand emerging drug against COVID-19 patients having a promising recovery. The experiment was done on SARS and MARS as in vivo and in vitro respectively could help to inhibits the viral replication and reduces viral loading at lungs and SARS-CoV-2 induced pathogen at bronchi ¹⁴.

2.7 Ribavirin

The ribavirin has a shown potential activity against virus like SARS-CoV, RSV and MARS-CoV. Now in the pandemic, the ribavirin used in virtual analysis has shown potential treatment against COVID-19. It has been confirmed that antiviral property ¹⁵.

2.8 Nelfinavir

It has a significantly inhibitory property in replication and lowering of viral pathogen of SARS-COV-2. The drug has an effective against inhibit the replication SARS-COV-2 RNA by in vitro method. Drug has very safe, with little side effect like diarrhea ¹⁶.

2.9 Nafamostat

Nafamostat was coined by German group as an inhibitor for virus replication. The mechanism involved in drug by preventing member fusion and stops the entry of host inside cell. It was competitive study against COVID-19 treatment has determined inside lung cells which shown potent action of blocking virus entry in host ¹⁷.

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