International Journal of Advance Innovations, Thoughts & Ideas

Letter to Editor Open Access

Trends in Development of Remdesivir Based Inventions Against COVID

Ahmed Subeh Alshrari*

Department of Biological Sciences, Faculty of Science, Northern Border University, Saudi Arabia

Letter to Editor

The development of remdesivir has been a breakthrough for COVID-19 treatment. It has been approved in about 50 countries, including Saudi Arabia, since 2020. The generic structure of remdesivir was first disclosed in 2009. This patent review summarizes the remdesivir based inventions to treat/prevent COVID-19 and other disorders from 2009 to May 16, 2021, emphasizing the patents related to medical and pharmaceutical sciences. The primary patents/patent applications of remdesivir are related to its compositions, new combinations with other therapeutic agents, delivery systems, and new indications [1]. The inventive combinations have displayed synergistic effects against COVID-19, whereas the delivery systems/compositions have improved patient compliance. The inventions related to new indications of remdesivir to treat Ebola, hepatitis, idiopathic pulmonary fibrosis, diabetic nephropathy, and cardiovascular complications enhance its therapeutic area. Many new innovative combinations and delivery systems of remdesivir are anticipated to provide better treatment for COVID-19.

COVID-19 a communicable pandemic infection was first noticed in Wuhan, China, in December 2019. It is triggered by a new single-stranded virus. The general signs of COVID-19 comprise fatigue, fever, cough, loss of smell/taste, and shortness of breath. Some people may develop ARDS due to cytokine release, septic shock, and blood clots [2]. Accordingly, it may be fatal in some patients By May 16, 2021, about 162,177,376 confirmed cases of COVID-19 had been reported globally, approximately 3,364,178 people have died of COVID-19, and 1,264,164,553 people have been vaccinated [3]. The World Health Organization has issued guidelines, advice, and situation reports regularly to the general public and health workers about COVID-19. Many reviews have discussed the epidemiology, diagnosis, treatment, vaccines, and challenges of dealing with COVID-19.

Remdesivir is a tetrahydrofuran based pyrrolo-triazine derivative which has been developed by Gilead Sciences In May 2020, the United States Food and Drug Administration approved an Emergency Use Authorization to remdesivir , wherein the USFDA fully approved it on October 22, 2020. Remdesivir is indicated to treat COVID-19, which is subjected to certain conditions [4]. First, it must be administered in a healthcare center or hospital, providing acute care similar to inpatient hospital care because remdesivir intravenous infusion must be administered by a trained professional. Second, remdesivir is approved for COVID-19 patients >12 years of age and weighing >40 kg because of the established safety and efficacy clinical studied. The recommended dosage of remdesivir in COVID-19 patients comprises a single loading IV infusion of remdesivir on day 1 followed by a maintenance dose from day 2 via IV infusion. The recommended treatment duration is not less than 5 days and not more than 10 days.

Nausea is the most common side effect of remdesivir. Remdesivir can cause allergic reactions during its infusion or after the infusion. Consequently, the remdesivir treatment must be discontinued in patients showing clinically significant hypersensitivity to remdesivir or any component of its product [5]. The remdesivir dose (150 mg) for 7-14 days revealed a reversible increase in the liver enzymes, for example, alanine aminotransferase and aspartate transaminase Besides, remdesivir can also lead to an increase in the prothrombin time. Therefore, liver function tests and determination of the prothrombin time are recommended before and during the remdesivir therapy. The injection of remdesivir is prepared in sulfobutylether-β-cyclodextrin, which can cause renal dysfunction due to its accumulation in the kidney.

Acknowledgement

I would like to thank my Professor for his support and encouragement.

Conflict of Interest

The authors declare that they are no conflict of interest.

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***Corresponding author:** Ahmed Subeh Alshrari, Department of Biological Sciences, Faculty of Science, Northern Border University, Saudi Arabia, Email.id: alshrari@live.com

Received: 04-Apr-2022, Manuscript No: ijaiti-22-61535, **Editor assigned:** 06-Apr-2022, PreQC No: ijaiti-22-61535(PQ), **Reviewed:** 20-Apr-2022, QC No: ijaiti-22-61535, **Revised:** 22-Apr-2022, Manuscript No: ijaiti-22-61535 (R), **Published:** 28-Apr-2022: DOI: 10.4172/2277-1891.1000171

Citation: Alshrari AS (2022) Trends in Development of Remdesivir Based Inventions Against COVID. Int J Adv Innovat Thoughts Ideas, 11: 171.