Research Article

A brief Introduction to Remdesivir

C.Reshma*, S. Aravindh*, M.S. Simran Kousar[1]

1. Department of pharmacy practice, Santhiram college of pharmacy, Nandyal, Andhra Pradesh, India

***Corresponding Author: C. Reshama S Aravindh,** Department of pharmacy practice, Santhiram college of pharmacy, Nandyal, Andhra Pradesh, India.

Received Date: June 20, 2020

Publication Date: July 07, 2020

Abstract:

Remdesivir is a broad spectrum anti-viral medication that was developed by a US biopharmaceutical company named Gilead sciences. As per 2020, the route of administration for Remdesivir is intravenous, and it was formulated as a powder for injection. This drug is being tested for the treatment for COVID-19 and has been authorized as emergency use in the US, India, Singapore, and it was approved for use in Japan for the people with severe symptoms of COVID. This drug was approved In India from DCGB, some generic licensing companies from India had agreement with Gilead sciences for production of Remdesivir.

Keywords: COVID -19, Approvals, clinical trials, effectiveness.

Introduction:

Remdesivri comes under the category of broad-spectrum anti-viral, it was developed by US biopharmaceutical company called Gilead Sciences.

Clinical data of Remdisivir

Formula: C27H35N6O8P

Route of administration: Intravenous

Formulation: Powder for injection

Molecular mass: 602.585g.mol-1

Legal status: Investigational

Pharmacology

Redemsivir is a prodrug of nucleotide

Mechanism of Action: The active metabolite of Remdisivir an adenosine nucleoside triphosphate analog, that interferes with the action of viral RNA-dependent RNA polymerase and evades proofreading by viral exoribonuclease (ExoN) causing a decrease in viral RNA production.

Research

Remdesivir is developed in 2009 by Gilead sciences as part of the company research and development program for hepatitis C, it does not work on hepatitis, but it was again repurposed the study for the treatment of Ebola virus and Marburg viral diseases, but it proves ineffective in all these viral infections.

According to the Czech News Agency, this new line of research was carried out by the scientist Tomus Cilhlar of Gilead sciences. He discovered the Remdisivir has the antiviral capacity against multiple filoviruses, paramyxoviruses, pnemoviruses, and coronavirus.

These preclinical and clinical studies were done by Gilead sciences in collaboration with US government agencies and academic institutions.

Ebola

In October 2015 the united states army medical research institute of infectious diseases announced pre-clinical results that Remdesivir blocked the Ebola virus in rhesus monkey. Redemsivir was rapidly pushed through clinical trials due to the West African Ebola epidemic in 2013-2016, eventually using in diseased people. preliminary results were promising that it was used in the emergency setting during the Ebola epidemic, along with further clinical trials until august 2019, when Congolese health officials announced that Remdesivir was significantly less effective than monoclonal antibody treatments.

COVID-19

As of 2020 April, Remdesivir was shown as a most promising treatment for COVID-19 and was included among four treatments under evaluation in the international solidarity trail and European discovery trails.

In January 2020 Gilead company started laboratory testing of Remdisivir against SARS-CoV-2, stating that Remdesivir is active against SARS and MERS in preclinical trails.

On 2020 January 21 the Wuhan institute of virology applied for the Chinese “use patent” for treating COVID-19, but in china over February-march 2020 Remdesivir was showing ineffective against COVID -19 and deaths and caused various adverse effects requiring the investigators to terminate the trails.

On 18 March 2020 WHO announced to launch the trails that include one group treated with Remdesivir.

Preliminary data from international multi-center, placebo-controlled double-blind randomized control trials carried out by the US national institute of health, suggests that Remdesivir is effective in reducing the recovery time from 15 days to 11 days in hospitalized people with COVID-19.

On 29 April 2020 the ACTT trails, NIAID announced the results that Remdesivir is better than the placebo in reducing the time of recovery, but it is clear that the treatment with antiviral alone is not likely to be sufficient, the Chinese studies concluded that further researches required to understand the effectiveness of Remdesivir against COVID-19.

In 2020 April the European medicines agency started a "rolling review" of data on Remdesivir and completed the review in May 2020.

In June 2020 number of companies in India like Cipla, jubilant life sciences, hetero labs had an agreement with Gilead Sciences for the production of drugs in India, recently some other companies like Dr. Reddy's and Jairus cuedila also get collaborated with Gilead for the production of Remdesivir.

In June 2020 the committee of medical products for human use (CHMP) OF EMA started evaluating Remdesivir for marketing authorization after receiving an application from Gilead.

On June 21, 2020 Remdesivir got approved by DCGI in India.

Dosage form: Powder for injection.

Dosage

Remdesivir is given as 100mg infusion powder with IV fluids

It was given as two loading doses on the first day and a single maintenance dose for the next four days.

If the symptoms of COVID are seen higher this maintenance dose should be given for 9 to 10 days.

Side effects

- Respiratory failure
- Organ impairment
- Low albumin, low potassium, low RBC,
- Gastrointestinal distress
- Elevated transaminase levels in blood
- Infusion site reactions

Conclusion:

Remdesivir is an antiviral drug which is used to decrease the recovery time of patient with hospitalized COVID-19. As it is an EUA drug furthermore studies required to understand the effectiveness of Remdesivir against COVID-19.

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Volume 1 Issue 1 July 2020