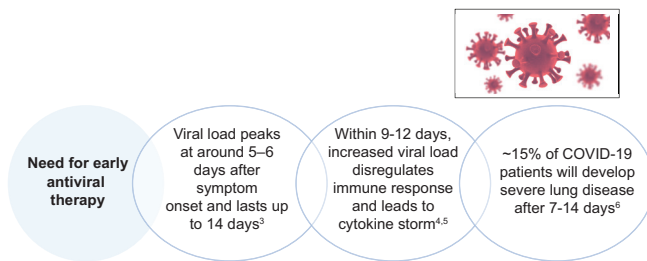


Clinical Efficacy of Favipiravir Therapy against Coronavirus Disease 2019

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Antiviral therapy shortly after symptom onset reduces viral load, limits disease progression, shortens the course of clinical illness and prevents subsequent consequences.^[1,2]



Continuation of 14-day antiviral therapy seems important despite negative RT-PCR test.^[3-8]

Negative test does not mean recovery from COVID-19^[7]

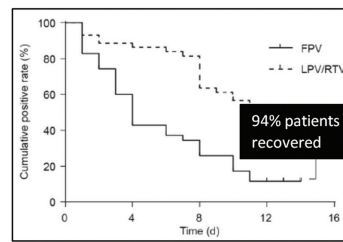
- Test results are influenced by stage of infection, quality of specimen, presence of virus in other organs, and variable sensitivity and specificity of the employed test^[8]
- Recovery assessment should include duration, severity fluctuating symptoms, and functionality and quality of life^[7]

14-day favipiravir therapy demonstrated 94% response rate and better recovery^[9]

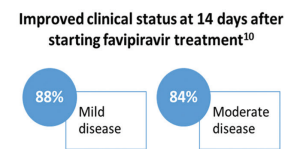
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The median time of viral clearance for the patients treated with favipiravir was estimated to be 4 days (IQR: 2.5-9)



Dr. Akash Juneja
M.B.B.S., M.S. - ENT
ENT/Otorhinolaryngologist
Pediatric Otorhinolaryngologist
Otologist/Neurotologist

I have treated many coronavirus disease (COVID) patients with oral antiviral therapy, especially with favipiravir along with other supportive medicine, and I am satisfied with the response of COVID patients to favipiravir therapy. I strongly recommend initiation of oral antiviral therapy as soon as reverse transcription polymerase chain reaction test comes positive to patients having mild symptoms such as fever, dry cough, headache, or diarrhea. The 14-day favipiravir therapy should be given as early phase therapy, because it helps in rapid reduction in the viral load, faster clinical recovery, prevents progression to severe and critical stage, and prevents development of cytokine storm. I have seen many patients recover in 7-10 days after initiation of therapy. Most of the symptoms were absent after 10 days, and very rare side effects were reported with oral antiviral favipiravir therapy. It prevents progression of disease to severe cases and averts the need for hospitalization, thus reducing the overall cost of treatment. I strongly recommend favipiravir therapy in mild-to-moderate COVID patients, as it helps in early recovery and better patient prognosis with least side effects.

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Dr. Anil Vardani
M.B.B.S., M.D. (Medicine)
Director in Internal Medicine Department at BLK Super Speciality Hospital, New Delhi

I frequently prescribe favipiravir in COVID-19 pandemic, especially in patients with early disease stages. It is highly effective as an early antiviral therapy in patients with mild-to-moderate disease. People who have received favipiravir did not have any serious complications, and did not show disease progression. Only one or two cases may need further management with other injectable antiviral drug. In my opinion, around 70–80% of patients show immediate clinical response within 1–2 days with early favipiravir therapy.

Dr. Balbir Singh Gandhi
M.B.B.S., M.D.
ENT Specialist

Severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) is a positive sense single-stranded RNA virus and has incubation period of 2 weeks. Viral shredding is seen 1–2 days before symptoms and may continue for 1–2 weeks in mild-moderate cases, and in severe cases may go beyond 2 weeks. About 80% of patients have no symptoms. However, in elderly population and patients with comorbid conditions, risks of infection, and severity of symptoms are very high. Symptoms usually appear between 2 and 14 days after exposure. Shortness of breath can occur, which leads to progressive illness (severe in 14% and critical in 5%) including the hyperinflammatory response causing multiorgan failure. Not only in patients with mild-to-moderate symptoms managed at home, this drug has also been useful in COVID-19 patients with moderate symptoms who were discharged earlier from hospital. Also provision of multiple treatment benefits include faster time to clinical cure and delay in the need for supportive oxygen therapy.

It has been observed that antiviral drugs interfere with the viral cycle inside the host cell, hence reducing the viral load and viral shredding. Thus, the antiviral drugs administered shortly after the onset of symptoms can shorten the course of disease and also reduce the spread of infection by reducing viral shredding. It has been reported that if a patient receives antiviral therapy in the early phase of infection, there is a high chance of decreased viral shredding and also the intensity of symptoms as well.

Favipiravir, an oral, broad-spectrum RdRp inhibitor, has an established safety profile and also has effective concentration against the SARS-COV-2 infection. Being

an oral formulation and 80% of patients having mild-to-moderate COVID-19 infection, it is effective and useful in a sizeable majority of population of COVID-19 on outpatient basis.

Most frequent side effects observed were mild-to-moderate diarrhea and decreased neutrophil counts in some patients.

Dr. B.K. Agarwal
M.B.B.S., M.D. (Medicine)
HOD (Head of Department) Medicine, Sant Parmanand Hospital, Delhi

Early initiation of antiviral therapy is an appropriate way to manage COVID-19 and has better prognosis. If a patient has tested positive for COVID and is observed to be in the early phase of viral infection suffering from mild or moderate symptoms, it is better to initiate antiviral therapy as soon as possible.

Antiviral drug favipiravir has been a good choice of drug for rapid reduction of viral load and faster clinical recovery. It is crucial to consider the duration of therapy to achieve expected results. Favipiravir 14-day therapy after positive COVID test has shown better clinical improvement and overall recovery.

I have used this in large number of patients and found excellent results, with very good recovery rate. None of my patients suffered from any complications or side effects caused by this drug.

Dr. DK Chauhan
Consultant Physician and Child Specialist (M.B.B.S., M.C.A.I., M.N.C.P., M.A.C.C.P., D.D.M.).
Dr. Surya Dev Chauhan
M.B.B.S.
Telemedicine, Private Practice

The novel coronavirus, after getting attached to the cell surface, gets internalized, and begins to express and rapidly replicate its genomic RNA to produce full-length copies, that are then incorporated into newly produced viral particles. After certain such cycles of viral replication inside the cell, the cell is lysed and virions are secreted from the infected cell by exocytosis. These virions breakthrough and infect other cells. Viral genomic replication is initiated by the synthesis of full-length negative-sense genomic copies; the latter function as templates for the generation of new positive-sense genomic RNA. These newly synthesized genomes are used for translation to generate more nsps and replication-transcription complexes or are packaged into new virions.

Now, this cellular debris and viruses are highly immunogenic and thrombogenic material. The more the number of viruses and dead cells, the worst the outcome may become. The increasing viral load in the host warrants an effective and safe antiviral drug that will reduce the complications. This is where favipiravir has its role.

The key to success lies in identifying the disease early, and treating it with effective antiviral drugs at its early stage wherein the viral replication has not yet been boosted many fold.

If the medicine is initiated late; say on the 10th day; the antiviral will not have much role to play at this juncture. Probably, this is the time when we are required to modify the immune system to mitigate the viruses' ill effects.

I have used favipiravir in hundreds of patients with excellent results. It leads to faster resolution of fever and speedy recovery. Of course, most of the patients exhibited mild-to-moderate symptoms, and did not require hospitalization. Furthermore, there were no significant adverse events requiring discontinuation of the drug. All the patients could complete the entire course of the medication.

Dr. Ram Niwas Patel
M.D. Medicine
Senior Consultant Physician, Baba Ramdev Hospital, Jodhpur

Initial viral replication phase is the most important segment of the disease progression. Appropriate treatment intervention at this stage helps in preventing severe and critical disease state which is characterized by cytokine storm.

Antiviral therapy for initial 14 days after symptom onset and positive test result is advised. The duration is important from the point of view of long-term improvement and prevention of severe disease. It is advisable to continue 14-day antiviral therapy even if the test results are negative.

Dr. Sanjay Jain
M.B.B.S., M.S. Otorhinolaryngology
Practicing ENT/Otorhinolaryngologist with an experience of 27 years in New Delhi

Favipiravir has demonstrated promising results in the treatment of mild-to-moderate COVID-19. Fourteen-day antiviral therapy with favipiravir, if started in early phase of the illness, provides faster clinical recovery and prevents cytokine storm and progression to severe/critical stage.

Dr. Sanjay Raina
M.B.B.S., M.D. (Medicine)
Senior Consultant – Bhagwan Mahavir Hospital and Heart Institute, Delhi
Consultant – Saroj Hospital and Heart Institute, Delhi

I have personally used favipiravir in more than 300 COVID-19 patients and found wonderful results.

I observed faster clinical recovery and rapid reduction in viral load.

It prevented most of my patients from progressing to severe and critical stage, and also prevented cytokine storm. In fact, very less number of my patients required admission and could be managed with home quarantine with 14 days therapy.

Favipiravir should be started at the earliest stage in mild-to-moderate cases to get very good results.

Dr. Sudhir Oswal
M.B.B.S., M.D.
Cardiologist

Increased viral load is associated with worse disease severity, lower lymphocyte counts, and increased systemic inflammation, which further increase the risk of complications and mortality. Thus, it is necessary to prevent progression of the disease in the initial phase itself.

Antiviral drugs are effective in declining viral load by reducing viral replication and associated cascade events leading to irreversible severe state of the disease.

Symptom onset and positive COVID-19 test should prompt initiation of antiviral drug at the earliest post-detection.

REFERENCES

1. Vora A, Tiwaskar M. Favipiravir. *J Assoc Physicians India* 2020;68:91-2.
2. Joshi S, Parkar J, Ansari A, Vora A, Talwar D, Tiwaskar M, *et al.* Role of favipiravir in the treatment of COVID-19. *Int J Infect Dis* 2020;102:501-8.
3. Mitjà O, Clotet B. Use of antiviral drugs to reduce COVID-19 transmission. *Lancet Glob Health* 2020;8:e639-40.
4. Khadke S, Ahmed N, Ahmed N, Ratts R, Raju S, Gallogly M, *et al.* Harnessing the immune system to overcome cytokine storm and reduce viral load in COVID-19: A review of the phases of illness and therapeutic agents. *Virology* 2020;17:154.
5. Tang Y, Liu J, Zhang D, Xu Z, Ji J, Wen C. Cytokine storm in COVID-19: The current evidence and treatment strategies. *Front Immunol* 2020;11:1708.
6. Hossen MS, Barek M, Nusrat J, Mohammad I. A review on current repurposing drugs for the treatment of COVID-19: Reality and challenges. *SN Compr Clin Med* 2020;2020:1-13.
7. Alwan N. A Negative COVID-19 Test does not Mean Recovery. Available from: <https://www.media.nature.com/original/magazine-assets/d41586-020-02335-z/d41586-020-02335-z.pdf>. [Last accessed on 2020 Dec 23].

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8. Adapted from SRL Diagnostics Report of SARS-CoV-2, Real time RT-PCR Test. (Beijing) 2020;6:1192-8.
9. Cai Q, Yang M, Liu D, Chen J, Shu D, Xia J, *et al.* Experimental treatment with favipiravir for COVID-19: An open-label control study. Engineering 10. Interim Report of the Favipiravir (Avigan) Observational Study. Available from: <https://www.fujita-hu.ac.jp/en/news/kka9ar0000000ep3.html>. [Last accessed on 2020 Dec 23].

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