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CHEM VS. COVID TIMELINE

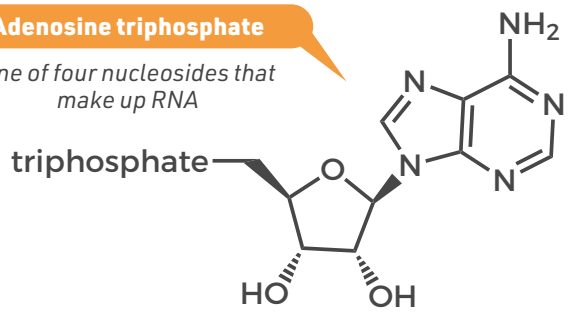
FDA approves first COVID-19 antiviral

Nucleoside analogues

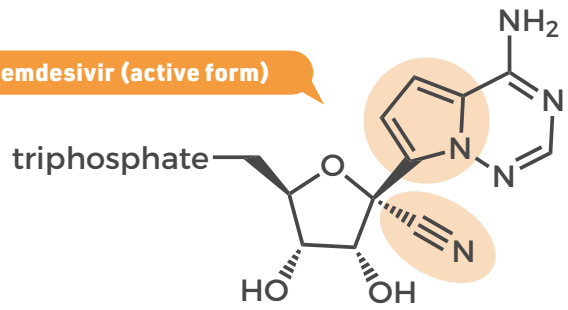
Nucleoside analogues, molecules which resemble naturally-occuring building blocks that make up virus RNA, have been developed for COVID-19. They're picked up by the virus enzyme which copies RNA, RNA polymerase, but stop it from functioning, stopping the virus copying itself.

Adenosine triphosphate

One of four nucleosides that make up RNA

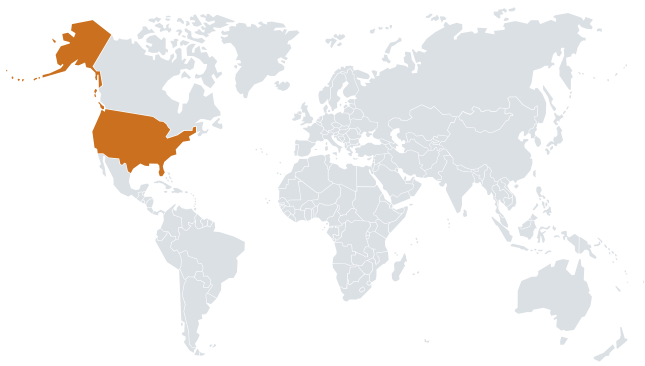


Remdesivir (active form)



The structural changes in nucleoside analogues are responsible for sabotaging the virus's RNA replication process.

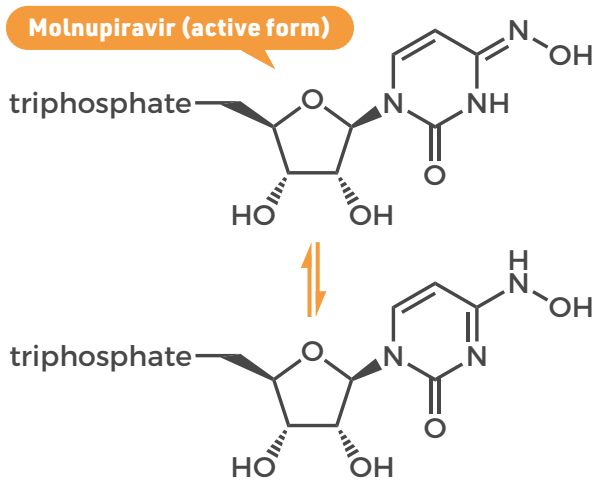
Remdesivir became the first antiviral drug to be approved in the USA for the treatment of COVID-19. It is not as effective as first thought but similar drugs are in development.



Other treatment candidates

The WHO have said there is insufficient evidence that remdesivir is effective against SARS-CoV-2, and cautioned against its use. But another nucleoside analogue, molnupiravir, does reduce the risk of hospitalisation and death from COVID-19.

Molnupiravir (active form)



Molnupiravir exists as two interchangeable structures. One form mimics the uridine (U) nucleoside, the other form mimics the cytidine (C) nucleoside.

Protease inhibitor drugs have also shown promise. These drugs bind to the viral protease enzyme and stop the virus from copying itself. Pfizer's PF-07321332 is an example which is currently in clinical trials.

How did it help?

More effective medicines
Understanding how antivirals against SARS-CoV-2 work, even if they are not particularly effective, helps scientists work out how to make more effective drugs.

Combination therapy
Giving antiviral drugs in combination rather than individually is more effective at blocking virus replication, so the more options we have the better.

Future viruses
Some of the drugs being developed against SARS-CoV-2 may also be efffective against other viruses, making them potentially useful during future pandemics.

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