

Researchers investigate potential treatments for COVID-19

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The number of potential therapeutic options for treatment of COVID-19 is growing. Approaches include blocking SARS-CoV-2 from entering cells, disrupting the virus' replication, antivirals, vaccines, and

suppressing overactive immune response.

The research was published in a minireview, and in a short article in *Antimicrobial Agents and Chemotherapy*, a journal of the American Society for Microbiology. The authors of the former suggest that therapeutic drugs directly targeting SARS-CoV-2 will be most effective.

SARS-CoV-2 is easily transmissible because spike proteins on the virus' surface bind exceptionally efficiently to "angiotensin-converting enzyme 2" (ACE2) on the surfaces of human cells. A pilot clinical trial is underway in patients with severe COVID-19, investigating use of recombinant human ACE2 to act as "decoys" that would attach to spike proteins, disabling SARS-CoV-2's mechanism for entry into human cells.

The most promising antiviral for fighting SARS-CoV-2 is remdesivir. It gets incorporated into nascent viral RNA, where it prevents RNA synthesis, and in turn, further [viral replication](#). Remdesivir inhibited SARS-CoV-2 replication in [laboratory studies](#), and the clinical condition of the first confirmed case of COVID-19 in the U.S. improved following intravenous remdesivir administration. But more data is needed.

Tilarone, a [broad spectrum](#) antiviral, may also be active against SARS-CoV-2. This 50-year-old synthetic small molecule is used in some Russian Federation countries and neighboring countries against multiple viruses, including acute respiratory viral infection, influenza and hepatitis. Recent observations suggest tilarone is active against chikungunya virus and MERS-CoV.

While tilarone is approved in Russian Federation countries, it has not been tested for safety and efficacy in studies that meet U.S. Food and Drug Administration standards.

Another approach being researched is the transfusion of blood from recovered patients—which contain antibodies against the virus—into current patients. Due to lack of high quality randomized [clinical trials](#) and knowledge of the precise mechanism of action, it is not clear how effective this therapy is. It is used mainly in patients in critical condition. Several clinical trials investigating its effectiveness and safety against COVID-19 are now in progress.

More than fifteen [vaccine candidates](#) are being developed around the world, which take different approaches to [vaccine](#) design. Experts say vaccine development will take approximately 12-18 months.

More information: Haiou Li et al, Updated approaches against SARS-CoV-2, *Antimicrobial Agents and Chemotherapy* (2020). [DOI: 10.1128/AAC.00483-20](#)

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