Potential COVID-19 drug is successful in lab study

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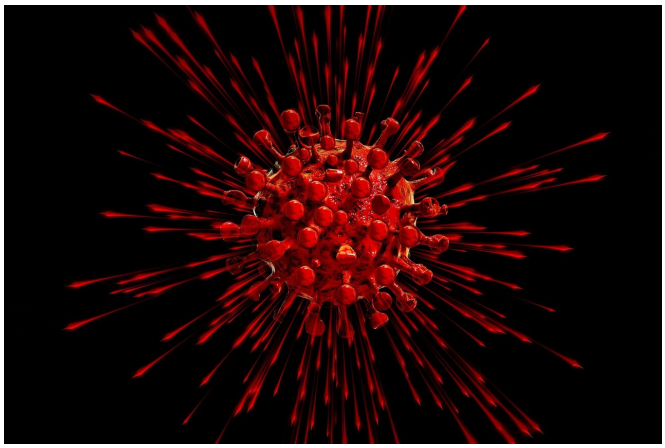

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A new potential therapy for COVID-19 developed by researchers at Rush University Medical Center has shown success in preventing the disease's symptoms in mice.

In a study, mouse models with COVID-19 showed positive results when a peptide (chain of amino acids) was introduced nasally. The peptide proved effective in reducing fever, protecting the lungs, improving heart function and reversing cytokine storm—the immune system overreacting to an infection and flooding the bloodstream with inflammatory proteins. The researchers also report success in preventing the disease from progression in the report of their results published Jan. 11 in the *Journal of Neuroimmune Pharmacology*.

SARS-CoV-2, the virus that causes COVID-19, binds to an enzyme called ACE2 to enter and infect human cells. In response, the research team designed a hexapeptide (a peptide with six amino acids) that inhibits the virus from binding with ACE2.

"This could be a new approach to prevent SARS-CoV-2 infection and protect COVID-19 patients from breathing problems and cardiac issues," said Kalipada Pahan, Ph.D., the Floyd A. Davis Professor of Neurology at the Rush University Medical Center and a research career scientist at the Jesse Brown VA Medical Center, who led the study.

Many patients with COVID-19 in intensive care units suffer from cytokine storm, which affects lungs, heart and other organs. Although anti-inflammatory therapies such as steroids are available to treat the problem, very often these treatments cause suppression of the immune system.

"The peptide inhibits cytokines that only are produced by the SARS-CoV-2 spike protein, not other inflammatory stimuli, indicating that this peptide would not cause immunosuppression," Pahan said.

Although vaccines for COVID-19 are becoming available, their distribution nationally and globally will take months and possibly years in some part of the world. In addition, vaccines may not entirely prevent the spread of COVID-19. For example, despite flu vaccination, about 40,000 to 50,000 people die each year in United States from the flu. Therefore, a specific medicine for reducing inflammatory events and treating respiratory and cardiac problems caused by COVID-19 will be necessary for better management of the disease even in the post-vaccine era.

"If our peptide results can be replicated in COVID-19 patients, it would be a remarkable advance in controlling this devastating pandemic," Pahan said.

More information: Ramesh K. Paidi et al. ACE-2-interacting Domain of SARS-CoV-2 (AIDS) Peptide Suppresses Inflammation to Reduce Fever

and Protect Lungs and Heart in Mice: Implications for COVID-19 Therapy, *Journal of Neuroimmune Pharmacology* (2021). DOI: 10.1007/s11481-020-09979-8

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