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ASIA EDITION

Singapore discovers small molecule inhibitors for COVID-19

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These compounds target the SARS-CoV-2 main protease and are active against other coronaviruses

Currently, the only treatment for COVID-19 approved by the US FDA is Remdesivir, but it has to be administered via intravenous infusion, and can therefore only be used in a hospital setting.

A much more ideal drug for COVID-19 and other pandemics should be in the form of a widely available pill, which a doctor can prescribe for patients to take orally at home.

The Experimental Drug Development Centre (EDDC), a national platform in Singapore hosted by the Agency for Science, Technology and Research (A*STAR), is making headway in the endeavour to develop such a drug. It has recently discovered several small molecules that have shown to be effective against SARS-CoV-2 and other coronavirus strains.

Known as protease inhibitors, EDDC's novel small molecule drug candidates target SARS-CoV-2 directly. Specifically, the compounds target the virus's main protease (also known as 3CL protease or 3CLpro for short).

EDDC is collaborating with Singapore's DSO National Laboratories to validate these 3CLpro inhibitors with live virus experiments in DSO's BioSafety Level 3 facility. Results have shown that the compounds are highly potent and selective. They are also active against a panel of other coronaviruses. In these studies, EDDC's 3CLpro inhibitors also compared favourably against other competing drug candidates under development for the same target.

EDDC's compounds are currently in the preclinical phase and clinical studies in humans have not yet started. The Centre hopes to out-license or co-develop its lead series of proprietary 3CLpro inhibitors with a partner that can expedite development of these compounds and bring them to patients. By doing so, it hopes to make effective, orally available COVID-19 treatments a reality as soon as possible.