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Broad-Spectrum Non-Covalent Anti-Coronavirus Therapeutics for Implementation in Zoonotic Outbreaks

A series of peptidomimetic compounds has been developed as broad-spectrum inhibitors targeting the coronavirus 3C-like protease, holding promise for therapeutic treatment against multiple respiratory diseases caused by Coronaviruses.

Coronaviruses (CoVs) are viruses that infect humans and a wide variety of animals. The more virulent strains include those resulting in widespread human infection and diseases such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). Human CoVs originate from a jump between species known as zoonotic shifts. As zoonotic shifts occur, the medical field does their best to create vaccines and therapeutics to combat these diseases. Vaccines exist for canine CoV, avian infectious bronchitis virus, and porcine transmissible gastroenteritis CoV; however, there is currently no treatment for human CoV infections.

Researchers from Purdue University have developed a series of 48 peptidomimetic compounds as broad-spectrum inhibitors of the CoV 3C-like protease (3CLpro). Five compounds present themselves as successful inhibitors of all alpha- and beta-CoV CL3pro's tested, and 28 compounds inhibit at least one 3CLpro. In the past, the focus has been on developing vaccines that are specialized to one strand or class of virus. With the current developments, multiple strands of CoVs can be treated by administering the anti-CoV drug. These 3CLpro inhibitors hold promise as a much needed treatment for a number respiratory diseases cause by CoV that infect humans as a result of zoonotic shifts.

Advantages:

-Wider spectrum of use

-Therapeutic treatment

Potential Applications:

Technology ID

2016-STJO-67409

Category

Pharmaceuticals/Small Molecule Therapeutics

Pharmaceuticals/Research Tools & Assays

Authors

Andrew D Mesecar

Sarah Emma St John

Further information

Joe Kasper

JRKasper@prf.org

Nathan Smith

nesmith@prf.org

View online

-Drug development

-Viral disease research

-Coronaviruses

-Zoonotic diseases

TRL: 3

Intellectual Property:

Provisional-Patent, 2016-04-28, United States | Utility Patent, 2017-04-28, United States

Keywords: Coronaviruses, broad-spectrum inhibitors, 3C-like protease, 3CLpro, peptidomimetic compounds, anti-CoV drug, therapeutic treatment, zoonotic shifts, viral disease research, drug development