

Technology Offer

CSIC/AH/039

A new antiviral family of compounds with selective activity against coronaviruses



New family of molecules with potent and selective antiviral activity in cellular models of infection by various coronaviruses such as SARS-CoV-2, MERS-CoV, hCoV-229E. They do not show cytotoxicity or activity against other viruses with RNA genome such as West Nile fever virus, dengue virus and vesicular stomatitis virus at relevant doses.

Intellectual Property

PCT application filed. Second priority patent filed

Stage of development

In vivo proof of concept under development

Intended Collaboration

Licensing and/or co-development

Contact

Ana Sanz
Vice-presidency for Innovation and Transfer
ana.sanz@csic.es
comercializacion@csic.es



Market need

So far, few antivirals have been approved against SARS-CoV-2 (and other coronaviruses) infection.

Remdesivir is nonspecific, injectable and has limited antiviral effect against COVID-19. The combination of nirmatrelvir and ritonavir (marketed under the name paxlovid) prevents the virus replication. Other small molecules with anti-infective properties against coronavirus infection include ivermectin, molnupiravir and nitazoxadine. Therefore, there is still an urgent need to identify new antivirals effective against SARS-CoV-2 and other coronaviruses.



CSIC solution

A new family of antiviral compounds has been developed with powerful selective activity against several coronaviruses. Furthermore, they have a novel mode of action, which is strongly associated with the genetics of the virus. In directed evolution and reverse genetics experiments, the resistance genetic profile has been shown to consist of 3 mutations in two different proteins to confer full resistance to the compounds, while individual mutations confer partial resistance. The genetic profile of resistance suggests alternative molecular targets to those previously known, which supports the idea of a novel mode of action that is complementary to available therapies.

Competitive advantages

- The compounds are selective against various viruses of the coronavirus family.
- The mechanism of action is novel and different from other drugs approved on the market such as paxlovid or remdesivir, which makes them particularly interesting for application in combination therapies with other direct-acting drugs.
- Optimization of the molecules to the selection of leading compounds with optimal potency and therapeutic window.