NEW ANTIVIRAL COMPOUNDS ACTIVE AGAINST HUMAN SARS-COV-2

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HIGHLIGHTS

- New chemical scaffold is easily functionalized.
- Active against human coronaviruses and HCMV

OPPORTUNITY

Drug repurposing has been proposed as a shortcut towards antivirals. However, the many unsuccessful attempts to repurpose drugs against SARS-CoV-2 highlight the limitations of the concept, including PK/PD, the low probability of drugs highly optimized against one target having pharmacologically relevant activities against others, and their pharmacological effects precluding safe use in other diseases.

Chemists at the University of Alberta have re-engineered existing drugs based on smaller, simpler scaffolds. The resulting compounds were then tested at Cornell University for anti-viral activity. Two were selected for their activity against HCoV-OC43 and SARS-CoV-2 in viral replication assays; these showed low potency and low selectivity. An initial exploration of the chemical space identified a lead scaffold that produced compounds preserving the potency while decreasing toxicity. Second generation compounds have shown single digit micromolar potency and selectivity indexes larger than 10 to 20 (the highest concentration tested, 100 µM, did not result in 50% cytotoxicity). These compounds are active against two distantly-related coronaviruses and provide a scaffold for development based on a clinical drug. We are testing their activities against other viruses and studying mode of action.

COMPETITIVE ADVANTAGE

- Active against three viruses - two coronaviruses and HCMV
- Compounds show good therapeutic index
- Scaffold can be used to generate additional derivatives

STATUS

- Patent pending

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MORE INFORMATION

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