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bioRxiv is receiving many new papers on coronavirus SARS-CoV-2. A reminder: these are preliminary reports that have not been peer-reviewed. They should not be regarded as conclusive, guide clinical practice/health-related behavior, or be reported in news media as established information.

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## An artificial intelligence system reveals liquiritin inhibits SARS-CoV-2 by mimicking type I interferon

Jie Zhu, Yong-Qiang Deng, Xin Wang, Xiao-Feng Li, Na-Na Zhang, Zhen Liu, Bowen Zhang, Chengfeng Qin, Zhengwei Xie

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This article is a preprint and has not been certified by peer review (what does this mean?).

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### Abstract

The pandemic COVID-19 has spread to all over the world and greatly threatens safety and health of people. COVID-19 is highly infectious and with high mortality rate. As no effective antiviral treatment is currently available, new drugs are urgently needed. We employed transcriptional analysis to uncover potential antiviral drugs from natural products or FDA approved drugs. We found liquiritin significantly inhibit replication of SARS-CoV-2 in Vero E6 cells with EC50 = 2.39  $\mu$ M. Mechanistically, we found liquiritin exerts anti-viral function by mimicking type I interferon. Upregulated genes induced by liquiritin are enriched in GO categories including type I interferon signaling pathway, negative regulation of viral genome replication and etc. In toxicity experiment, no death was observed when treated at dose of 300 mg/kg for a week in ICR mice. All the organ indexes but liver and serum biochemical indexes were normal after treatment. Liquiritin is abundant in licorice tablet (~0.2% by mass), a traditional Chinese medicine. Together, we recommend liquiritin as a competitive candidate for treating COVID-19. We also expect liquiritin to have a broad and potent antiviral function to other viral pathogens, like HBV, HIV and etc.

### Competing Interest Statement

Pingwest May 4, according to Beijing Daily, on May 3, Xie Zhengwei's team from Peking University and Qin Zhengfeng's team from the Academy of Military Medical Sciences published on the website of biorxiv the title of "an artistic intelligence system requires infection SARS cov-2 by mixing type I" An artificial intelligence system showed that glycyrrhizin inhibited SARS cov-2 by imitating type I interferon. In this study, it was found that glycyrrhizin, one of the main components of Glycyrrhiza uralensis, can inhibit the replication of sars-cov-2 in Vero cells, with EC50 of 2.39  $\mu$  m. The study analyzed the changes of cell transcriptome after the action of glycyrrhizin, revealed the potential antiviral mechanism of glycyrrhizin, and evaluated the safety of glycyrrhizin at the level of mice, laying a foundation for its drug resistance The foundation.