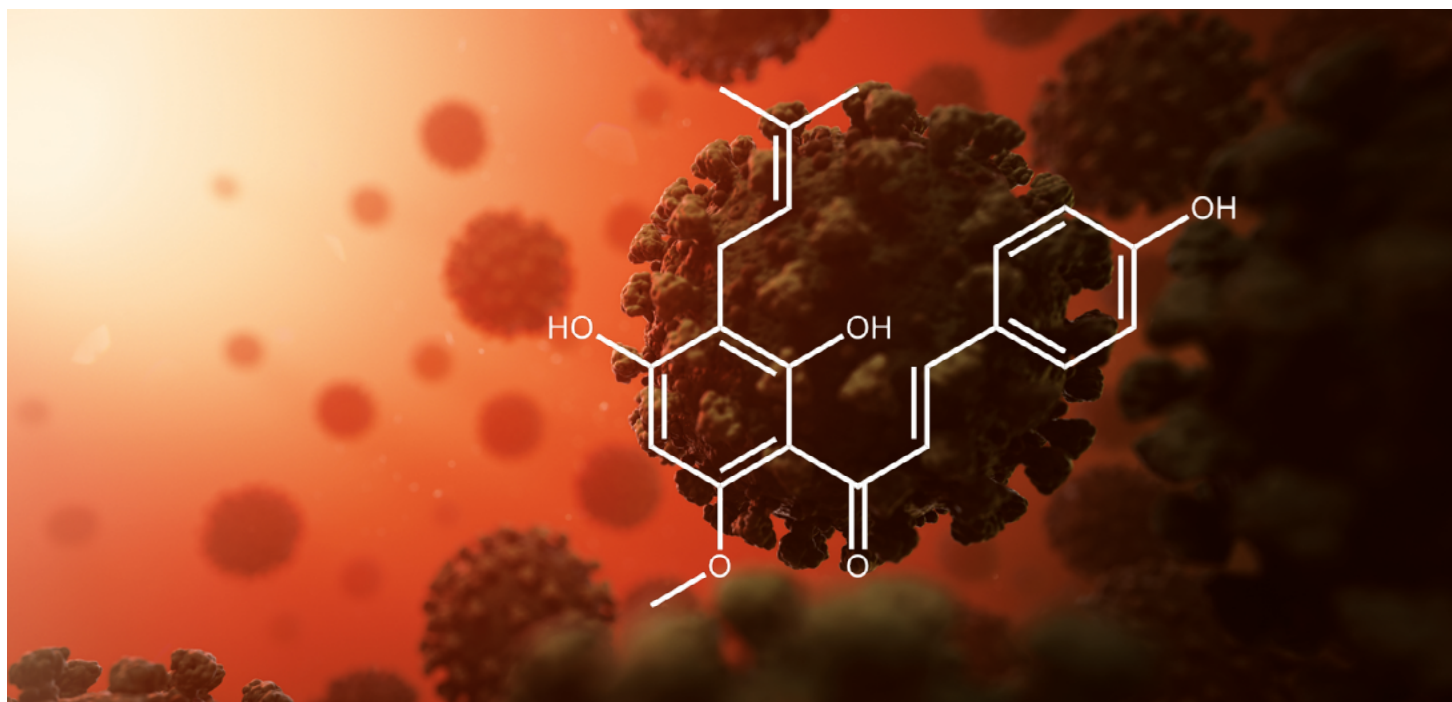


# XANTHOHUMOL AS A POTENT INHIBITOR FOR SARS-COV-2 AND OTHER CORONAVIRUSES

| COMPANY UPDATE |



After the outbreak of Covid-19 (coronavirus disease 2019), intensive research on potential inhibitors of the viral pathogen SARS-CoV-2 (severe acute respiratory syndrome coronavirus type 2) started worldwide. Since the beginning of last year, hundreds of scientific papers have been published on this topic. Thousands of compounds were screened for their inhibitory effects against coronaviruses.

Amongst them were not only candidates coming from research within the pharmaceutical industry but also a wide range of substances occurring in nature.

For the past year, Hopsteiner has supported such a study comparing the antiviral activity of xanthohumol with other hop prenylflavonoids (1). In the meantime, the final tests in a high security laboratory at Tuebingen University have been completed and accordingly the results will be presented soon.

Now, within the first two weeks in November, three papers have appeared in renowned scientific journals reporting on inhibitory effects of xanthohumol against SARS-CoV-2

detected at extremely low concentrations in various “in vitro” tests. Moreover, such an activity could also be confirmed in a first animal model. These results were published by independent research groups, and they are based on broad international cooperation. The corresponding authors are coming from prestigious US and Chinese medical research institutes in New York, Hong Kong, and Lanzhou.

The main conclusions presented in the papers are:

“As shown in our study, Xanthohumol inhibited alpha- and beta-coronaviruses, which contain all fatal pathogenic coronaviruses: PEDV, SARS-CoV, MERS-CoV, and the recent SARS-CoV-2.” (2).

“Finally, xanthohumol, 5-(tetradecyloxy)-2-furoic acid, and ND-646, three compounds that suppress fatty acid biosynthesis, also block SARS-CoV-2 infection.” (3).

“Xanthohumol was found to suppress SARS-CoV-2 replication and the associated pulmonary inflammation in a hamster model. ...Taken together, our study identified an affordable treatment option for COVID-19.” (4).

**In summary, the potential of Xanthohumol against SARS-CoV-2 and other coronaviruses seems to be very promising and further research in this field towards human studies can be expected.**

*Simon H. Steiner, Hopfen, GmbH*

*S.S. Steiner, Inc.*

Newsletter, November 2021

## References

(1) Hopsteiner Newsletter 10/2020: Hopsteiner supports the fight against SARS-CoV-2. *Brauwelt International* 5/2020.

(2) Lin et al.: Xanthohumol is a potent pan-inhibitor of coronaviruses targeting main protease. *International Journal of Molecular Sciences* 22, 2021, 2134. doi:10.3390/ijms222212134

(3) Duan et al.: An airway organoid-based screen identifies a role for the HIF1 $\alpha$ -glycolysis axis in SARS-CoV-2 infection. *Cell Reports* 37, 109920 November 9, 2021. doi:10.1016/j.celrep.2021.109920

(4) Yuan et al.: SARS-CoV-2 exploits host DGAT and ADRP for efficient replication. *Cell Discovery* 7, 2021, 100. doi:10.1038/s41421-021-00338-2



Hopsteiner®

COMMITTED TO THE BREWER