

VIROLOGY, INFECTIOUS DISEASES AND COVID-19

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A molecular network based approach to fight viral infections: Focus on phytocomplexes, isolated compounds and SARS-COV-2

The novel coronavirus disease 2019 (COVID-19) caused by SARS-COV-2 is producing a deep impact towards human health and economy. As this pandemic is still ongoing, in addition to the actual preventive and therapeutical strategies, further tools to limit viral infection spread and impact on organism are required.

The development of new treatments may take many months or years, so the investigation of chemically characterized phytocomplexes and isolated compounds effects towards SARS-COV-2 and human organism may accelerate the discovery process.

Some phytocomplexes obtained by different plants such as Echinacea,

1. Were shown to inhibit several coronaviruses strains. In addition, some isolated compounds including isoliquiritigenin, kaempferol, broussonchalcone inhibit MERS CoV proteases (3CLpro and PLpro)
2. Furthermore, in silico studies showed the potential inhibitory effects of some terpenoids and alkaloids against SARS-COV-2-3-chymotrypsin-like protease (3CLpro)
3. Similar results were observed with flavonoids
4. Propolis was shown to contain some compounds, such as caffeic acid phenethyl ester (CAPE), galangin, chrysin and caffeic acid, potentially able to SARS-CoV-2 MPRO. Propolis extract and its phytochemicals were shown to affect several host targets such as ACE2, TMPRSS2, PAK-1.
5. In this presentation data about the molecular mechanisms underlying potential application of phytocomplexes and isolated compounds in COVID-19 will be discussed.

References

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Biography:

Dr. Matteo Micucci graduated in Pharmacy at Bologna University, with Honors. In 2010 he worked in the laboratory of Dr. R.R.J. ARROO, Leicester School of Pharmacy, De Montfort University, Leicester, UK. He was Guest Scientist at the Department of Chemistry of Natural Substances, University of Naples "Federico II", Napoli, Italy. He awarded European PhD in Pharmaceutical Sciences at Bologna University in 2012. He is co-author of several publications in the field of food and medicinal chemistry. He is Adjunct Professor in Food Chemistry, Research Fellow Scientist at Department of Pharmacy and Biotechnology, University of Bologna.