Malabaricone C as a novel SARS-CoV-2 inhibitor from spices

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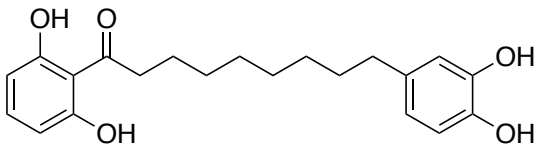
Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2) is an enveloped virus that recently urges global health emergency. The coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2 shows respiratory disturbance symptoms such as a cough, fever, and in case of severe, difficulty breathing and death. Similar to its predecessor, SARS-CoV-1 that hit two decades before, this novel coronavirus hijacks human cells by attaching its spike protein to the Angiotensin-Converting Enzyme-2 (ACE2) receptors. However, while SARS-CoV-1 enters the host cell via the endocytosis pathway, this SARS-CoV-2 penetrates the host cell favorably via transmembrane serine protease 2 (TMPRSS2) mediated membrane fusion pathway.[1] Even though new vaccines and antiviral drugs against the SARS-CoV-2 are developed, a discovery for new COVID-19 treatment is required following limited treatment of choices.

From a safety point of view, bioactive compounds found in foods and edible plants are attractive yet challenging to be discovered as new potential drugs against SARS-CoV-2. The present study demonstrates the ability of a naturally occurred compound malabaricone C and its synthetic derivatives to inhibit SARS-CoV-2 infection. Our recent findings indicated the potential inhibitory activity of malabaricone C toward SARS-CoV-2 infection in Vero E6/TMPRSS2 cell with EC_{50} = 1.5 μM determined by MTT assay. To evaluate the ability of malabaricone C in inhibiting cell-cell fusion, a cell-cell fusion assay using GFP and mCherry expressed HEK293TA modified cells has also been conducted. The results showed that malabarione C and some derivatives gave excellent inhibition. The putative mechanism of how malabaricone C inhibits SARS-CoV-2 is still being studied. However, these new findings could attract much interest in developing prospective drugs against SARS-CoV-2.



Malabaricone C

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