Inhibition of virus entry. SARS-CoV-2 uses ACE2 as the

receptor and human proteases as entry activators; sub-

sequently it fuses the viral membrane with the cell mem-

brane and achieves invasion. Thus, drugs that interfere

with entry may be a potential treatment for COVID-19.

Umifenovir (Arbidol) is a drug approved in Russia and

China for the treatment of influenza and other respira-

tory viral infections. It can target the interaction between

the S protein and ACE2 and inhibit membrane fusion

(FIG. 5). In vitro experiments showed that it has activity

against SARS-CoV-2, and current clinical data revealed

it may be more effective than lopinavir and ritonavir in

treating COVID-19 (REFS'\*'\*’). However, other clinical

studies showed umifenovir might not improve the prog-

nosis of or accelerate SARS-CoV-2 clearance in patients

with mild to moderate COVID-19 (REFS!”\*!”°). Yet some

ongoing clinical trials are evaluating its efficacy for

COVID-19 treatment. Camostat mesylate is approved

in Japan for the treatment of pancreatitis and postoper-

ative reflux oesophagitis. Previous studies showed that it

can prevent SARS-CoV from entering cells by blocking

TMPRSS2 activity and protect mice from lethal infection

with SARS-CoV in a pathogenic mouse model (wild-

type mice infected with a mouse-adapted SARS-CoV

strain)'°'’, Recently, a study revealed that camostat

mesylate blocks the entry of SARS-CoV-2 into human

lung cells”. Thus, it can be a potential antiviral drug

against SARS-CoV-2 infection, although so far there are

not sufficient clinical data to support its efficacy.