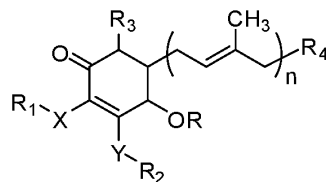


CLAIMS

WHAT IS CLAIMED IS:

1. A method for treating or reducing symptoms of or preventing an RNA virus induced disease in a subject comprising administering to said subject a therapeutically effective amount of a cyclohexenone compound having the



structure:

wherein each of X and Y independently is oxygen, NR₅ or sulfur;

R is a hydrogen or C(=O)C₁-C₈alkyl;

each of R₁, R₂ and R₃ independently is a hydrogen, optionally substituted methyl or (CH₂)_m-CH₃;

R₄ is NR₅R₆, OR₅, OC(=O)R₇, C(=O)OR₅, C(=O)R₅, C(=O)NR₅R₆, halogen, 5 or 6-membered lactone, C₁-C₈alkyl, C₂-C₈alkenyl, C₂-C₈alkynyl, aryl, glucosyl,

wherein the 5 or 6-membered lactone, C₁-C₈alkyl, C₂-C₈alkenyl, C₂-C₈alkynyl, aryl,

and glucosyl are optionally substituted with one or more substituents selected from NR₅R₆, OR₅, OC(=O)R₇, C(=O)OR₅, C(=O)R₅, C(=O)NR₅R₆, C₁-C₈alkyl, C₂-C₈

alkenyl, C₂-C₈alkynyl, C₃-C₈cycloalkyl, and C₁-C₈haloalkyl;

each of R₅ and R₆ is independently a hydrogen or C₁-C₈alkyl;

R₇ is a C₁-C₈alkyl, OR₅ or NR₅R₆;

m = 1-12; and

n=1-12; or a pharmaceutically acceptable salt, metabolite, solvate or prodrug thereof.

2. The method of claim 1, wherein the RNA virus is a coronavirus.
3. The method of claim 1, wherein the RNA virus induced disease is caused or induced by a coronaviridae infection.
4. The method of claim 1, wherein the cyclohexenone compound reduces RNA virus concentration or prevents RNA virus infection.
5. The method of claim 1, wherein said RNA virus induced disease is a coronavirus induced pneumonia, or a SARS-CoV-2 induced pneumonia.
6. The method of claim 5, wherein said RNA virus induced disease is an RNA virus induced pneumonia.

7. The method of claim 3, where said coronaviridae infection is caused by or associated with alpha coronaviruses 229E (HCoV-229E), NL63 (HCoV-NL63, New Haven coronavirus), beta coronaviruses OC43 (HCoV-OC43), HKU1, MERS-CoV (the coronavirus responsible for Middle East Respiratory Syndrome), SARS-CoV, or SARS-CoV-2 (2019-nCoV).
8. The method of claim 7, wherein said coronaviridae infection is caused by or associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
9. The method as claimed in claim 1-8, wherein said cyclohexenone compound, or a pharmaceutically acceptable salt, metabolite, solvate or prodrug thereof, is administered orally, parenterally or intravenously.
10. The method as claimed in claim 1-8, wherein said cyclohexenone compound, or a pharmaceutically acceptable salt, metabolite, solvate or prodrug thereof, is administered by injection.
11. The method as claimed in claim 1-10, wherein said subject is human.
12. The method as claimed in claim 1-11, wherein R is a hydrogen, C(=O)C₃H₈, C(=O)C₂H₅, or C(=O)CH₃.
13. The method as claimed in claim 1-11, wherein each of R₁, R₂ and R₃ independently is a hydrogen, methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl, or octyl.
14. The method of any one of claims 13, wherein R₁ is a hydrogen or methyl.
15. The method of any one of claims 13, wherein R₂ is a hydrogen or methyl.
16. The method as claimed in claim 1-15, wherein R₄ is halogen, NH₂, NHCH₃, N(CH₃)₂, OCH₃, OC₂H₅, C(=O)CH₃, C(=O)C₂H₅, C(=O)OCH₃, C(=O)OC₂H₅, C(=O)NHCH₃, C(=O)NHC₂H₅, C(=O)NH₂, OC(=O)CH₃, OC(=O)C₂H₅, OC(=O)OCH₃, OC(=O)OC₂H₅, OC(=O)NHCH₃, OC(=O)NHC₂H₅, or OC(=O)NH₂.
17. The method as claimed in claim 1-15, wherein R₄ is C₂H₅C(CH₃)₂OH, C₂H₅C(CH₃)₂OCH₃, CH₂COOH, C₂H₅COOH, CH₂OH, C₂H₅OH, CH₂Ph, C₂H₅Ph, CH₂CH=C(CH₃)(CHO), CH₂CH=C(CH₃)(C(=O)CH₃), 5 or 6-membered lactone, aryl, or glucosyl, wherein the 5 or 6-membered lactone, aryl, and glucosyl are optionally substituted with one or more substituents selected from NR₅R₆, OR₅, OC(=O)R₇, C(=O)OR₅, C(=O)R₅, C(=O)NR₅R₆, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₂-C₈ alkynyl, C₃-C₈ cycloalkyl, and C₁-C₈ haloalkyl.

18. The method as claimed in claim 1-15, wherein R_4 is C_1 - C_8 alkyl optionally substituted with one or more substituents selected from NR_5R_6 , OR_5 , $OC(=O)R_7$, $C(=O)OR_5$, $C(=O)R_5$, $C(=O)NR_5R_6$, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, C_2 - C_8 alkynyl, C_3 - C_8 cycloalkyl, and C_1 - C_8 haloalkyl.
19. The method of claim 18, wherein R_4 is $CH_2CH=C(CH_3)_2$.
20. The method as claimed in claim 1-19, wherein said compound is

