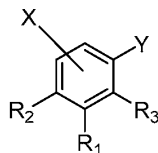


WE CLAIM:

1. A novel anticancer and antiviral activity exhibiting compound for treating subjects with chronic disorder, comprising of structure in accordance with Formula 1A



Formula 1A

or any derivative thereof, pharmaceutically acceptable salt thereof, or combination thereof

wherein:

R₁ is H, OH, or alkoxy;

R₂ is alkoxy, or OH;

R₃ is alkoxy or OH;

X is C₁-C₁₅ alkyl, C₂-C₁₅ alkenyl, or aralkyl chain, each of which is independently substituted with at least one alkoxy, OH, =NH, or oxo, group;

Y is H or alkyl; and

X is in ortho position to R₂, or para position to R₁.

2. The compound as claimed in claim 1, wherein:

R₁ is H;

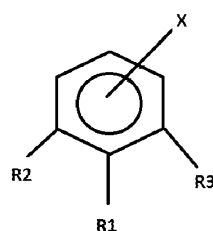
R₂ is -OH;

R₃ is C₁-C₃alkoxyl;

X is C₄-C₈ alkenyl substituted with two oxo groups; and

Y is C₁-C₃ alkyl.

3. A compound as claimed in claim 1, having a structure of Formula 1



Formula 1

or any derivative thereof, pharmaceutically acceptable salt thereof, or combination thereof

wherein:

- 5 R₁ is H, alkoxy, or OH;
 R₂ is alkoxy or OH;
 R₃ is alkoxy or OH;
 X is C₁-C₁₅ alkyl, C₂-C₁₅ alkenyl, or aralkyl, chain, each of which is independently
 substituted with at least one alkoxy, OH, =NH, or oxo group.

10

4. The compound as claimed in claim 3 wherein X is:

- (i) C₆-C₁₀ alkenyl, substituted with four substituents independently selected from the group
 consisting of oxo, -OH, and C₁-C₃ alkoxy;
 (ii) C₈-C₁₂ alkenyl substituted with oxo and C₁-C₃ alkoxy;
 15 (iii) C₄-C₈ alkenyl substituted with two oxo groups;
 (iv) C₂-C₆ alkenyl substituted with oxo and C₁-C₃ alkoxy;
 (v) C₁-C₆ alkyl substituted with =NH;
 (vi) C₂-C₃ alkenyl substituted with -OH;
 (vii) C₈-C₁₂ alkenyl substituted with oxo and 2 C₁-C₃ alkoxy groups; and
 20 (viii) aralkyl comprising a C₆-C₈ alkyl and a C₆ aryl, wherein the alkyl is substituted with
 oxo and the aryl is substituted with two alkoxy groups.

20

5. The compound as claimed in claim 3 or 4, wherein:

- R₁ is H;
 25 R₂ is C₁-C₃ alkoxy;

25

R₃ is C₁-C₃ alkoxy; and

X is C₆-C₁₀ alkenyl, substituted with oxo, -OH, and two C₁-C₃ alkoxy groups.

6. The compound as claimed in claim 3 or 4, wherein

5

R₁ is H;

R₂ is C₁-C₃ alkoxy;

R₃ is C₁-C₃ alkoxy; and

X is C₈-C₁₂ alkenyl substituted with oxo and C₁-C₃ alkoxy.

10

7. The compound as claimed in claim 3 or 4, wherein

R₁ is OH;

R₂ is C₁-C₃ alkoxy;

R₃ is C₁-C₃ alkoxy; and

X is C₄-C₈ alkenyl substituted with two oxo groups.

15

8. The compound as claimed in claim 3 or 4, wherein

R₁ is C₁-C₃ alkoxy;

R₂ is OH;

R₃ is C₁-C₃ alkoxy; and

20

X is C₄-C₈ alkenyl substituted with two oxo groups.

9. The compound as claimed in claim 3 or 4 wherein

R₁ is H;

R₂ is OH;

25

R₃ is OH; and

X is C₁-C₆ alkyl substituted with =NH.

10. The compound as claimed in claim 3 or 4, wherein

R₁ is OH;

30

R₂ is C₁-C₃ alkoxy;

R₃ is C₁-C₃ alkoxy; and

X is C₂-C₃ alkenyl substituted with OH.

11. The compound as claimed in claim 3 or 4, wherein

R₁ is H;

5 R₂ is C₁-C₃ alkoxy;

R₃ is C₁-C₃ alkoxy; and

X is C₈-C₁₂ alkenyl substituted with oxo and 2 C₁-C₃ alkoxy groups.

12. The compound as claimed in claim 3 or 4, wherein

10 R₁ is OH;

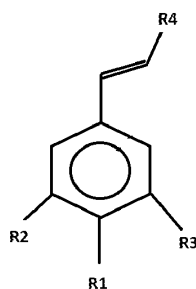
R₂ is C₁-C₃ alkoxy;

R₃ is C₁-C₃ alkoxy; and

X is aralkyl comprising a C₆-C₈ alkyl and a C₆ aryl, wherein the alkyl is substituted with oxo and the aryl is substituted with two C₁-C₃ alkoxy groups.

15

13. The compound as claimed in claim 1, having a structure of Formula 2



Formula 2

20 or any derivative thereof, pharmaceutically acceptable salt thereof, or combination thereof

wherein:

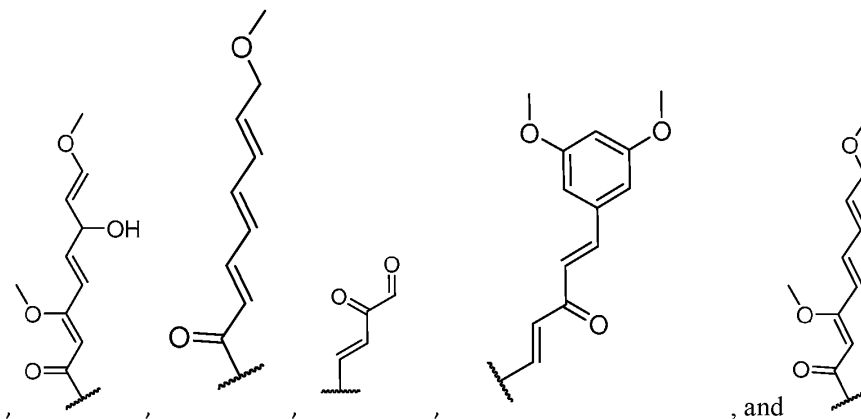
R₁ is H or OH;

R₂ is alkoxy or OH;

R₃ is alkoxy or OH; and

R₄ is an C₁-C₁₅ alkyl, C₂-C₁₅ alkenyl, or aralkyl, each of which is substituted with at least one alkoxy, -OH, or oxo.

14. The compound as claimed in claims 13, wherein R₄ is selected from the group consisting of:

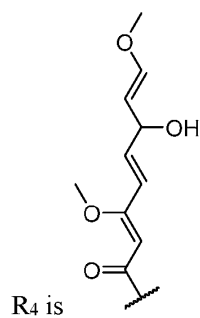


15. The compound as claimed in claim 13 or 14, wherein

R₁ is H;

R₂ is OCH₃;

R₃ is OCH₃; and

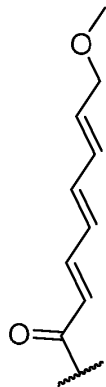


16. The compound as claimed in claim 13 or 14, wherein

R₁ is H;

R₂ is OCH₃;

R₃ is OCH₃; and



R₄ is.

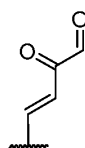
17. The compound as claimed in claim 13 or 14, wherein

5

R₁ is OH;

R₂ is OCH₃;

R₃ is OCH₃; and



R₄ is .

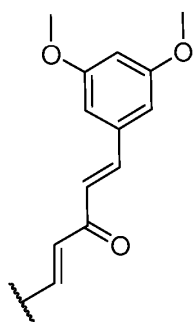
10

18. The compound as claimed in claim 13 or 14, wherein

R₁ is OH;

R₂ is OCH₃;

R₃ is OCH₃; and



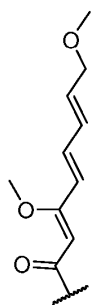
R₄ is

19. The compound as claimed in claim 13 or 14, wherein

R₁ is H;

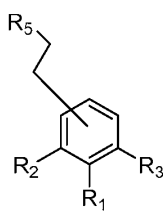
5 R₂ is OCH₃;

R₃ is OCH₃; and



R₄ is

20. The compound of claim 1 having a structure of Formula 3



Formula 3

or any derivative thereof, pharmaceutically acceptable salt thereof, or combination thereof

wherein:

R₁ is H, alkoxy, or OH;

R₂ is alkoxy or OH;

R₃ is alkoxy or OH; and

R₅ is C₁-C₁₂alkyl or C₂-C₁₂ alkenyl, which is independently substituted with 1, or 2, substituents selected from the group consisting of =NH and oxo.

5 21. The compound as claimed in claim 20, wherein

R₁ is H;

R₂ is OH;

R₃ is OH; and

R₅ is =NH, wherein

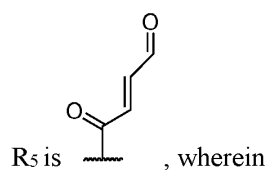
10 R₅ is in the ortho position to R₂.

22. The compound as claimed in claim 20, wherein

R₁ is -OC₂H₅;

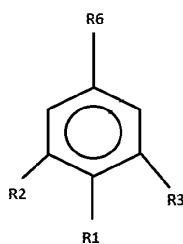
R₂ is OH;

15 R₃ is -OCH₃;



R₅ is in the para position to R₁.

23. The compound as claimed in claim 1 having a structure of Formula 4;



20

Formula 4

or any derivative thereof, pharmaceutically acceptable salt thereof, or combination thereof

wherein:

R₁ is OH;
R₂ is C₁-C₃ alkoxy;
R₃ is C₁-C₃ alkoxy; and
R₆ is C(CH₂)OH.

5

24. The compound as claimed in claim 23, wherein

R₁ is OH;
R₂ is OCH₃;
R₃ is OCH₃; and
R₆ is C(CH₂)OH.

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25. A pharmaceutical composition, comprising a compound of one of claims 1-24 and a pharmaceutically acceptable carrier.

15

26. A method of treating a chronic disorder in a patient in need thereof, comprising administering the compound of claims 1-24 or the pharmaceutical composition of claim 25.

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27. The method as claimed in claim 26, wherein the chronic disorder is acute lymphoblastic, acute lymphoblastic leukemia, acute lymphocytic leukemia, acute myelogenous leukemia, acute myeloid leukemia, adrenocortical carcinoma, AIDS -related lymphoma, anal cancer, appendix cancer, basal-cell carcinoma, bladder cancer, brain cancer, brainstem glioma, breast cancer, bronchial adenomas/carcinoids, Burkitt's lymphoma, carcinoid tumor, cerebellar or cerebral astrocytoma, cervical cancer, cholangiocarcinoma, chondrosarcoma, chronic lymphocytic or chronic lymphocytic leukemia, chronic myelogenous or chronic myeloid leukemia, chronic myeloproliferative disorders, colon cancer, cutaneous T-cell lymphoma, desmoplastic small round cell tumor, endometrial uterine cancer, ependymoma, esophageal cancer, Ewing's sarcoma, extracranial germ cell tumor, extragonadal germ cell tumor, extrahepatic bile duct cancer, gallbladder cancer, gastric (stomach) cancer, gastrointestinal carcinoid tumor, gastrointestinal stromal tumor (GIST), gestational trophoblastic tumor, glioma of the brain stem, hairy cell leukemia, head and

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neck cancer, heart cancer, hepatocellular (liver) cancer, Hodgkin lymphoma, hypopharyngeal cancer, hypothalamic and visual pathway glioma, intraocular melanoma, Islet cell carcinoma, Kaposi sarcoma, laryngeal cancer, leukaemia, lip and oral cavity cancer, liposarcoma, lymphoma, male breast cancer, malignant mesothelioma, medulloblastoma, melanoma, Merkel cell skin carcinoma, mesothelioma, metastatic squamous neck cancer, mouth cancer, multiple endocrine neoplasia syndrome, multiple myeloma, multiple myeloma/plasma cell neoplasm, mycosis fungoides, myelodysplastic/myeloproliferative diseases, nasal cavity and paranasal sinus cancer, nasopharyngeal carcinoma, neuroblastoma, non-Hodgkin lymphoma, non-melanoma skin cancer, non- small cell lung cancer, oligodendroglioma, oral cancer, oropharyngeal cancer, osteosarcoma and malignant fibrous histiocytoma, ovarian cancer, ovarian germ cell tumor, ovarian epithelial cancer (surface epithelial- stromal tumor), ovarian low malignant potential tumor, pancreatic cancer, paranasal sinus and nasal cavity cancer, parathyroid cancer, penile cancer, pharyngeal cancer, pheochromocytoma, pineal astrocytoma, pineal germinoma, pineoblastoma and supratentorial primitive neuroectodermal tumors, pituitary adenoma, plasma cell neoplasia, pleuropulmonaryblastoma, primary carcinoma, primary central nervous system lymphoma, primary liver cancer, prostate cancer, rectal cancer, renal cell carcinoma, renal pelvis and ureter carcinoma, retinoblastoma, rhabdomyosarcoma, salivary gland cancer, Sezary syndrome, small cell lung cancer, small intestine cancer, soft tissue sarcoma, squamous cell carcinoma, stomach cancer, supratentorial primitive neuroectodermal tumor, testicular cancer, throat cancer, thymoma and thymic carcinoma, thyroid cancer, transitional cell cancer of the renal pelvis and ureter, urethral cancer, uterine sarcoma, vaginal cancer, visual pathway and hypothalamic glioma, vulvar cancer, Waldenstrom macroglobulinemia, Wilms tumor, Parkinson's disease and Parkinsonian disorders, Huntington's disease, Alzheimer's disease, multiple sclerosis, amyotrophic lateral sclerosis, Shy-Drager syndrome, progressive supranuclear palsy, Lewy body disease, spinal ischemia, spinal cord injuries, ischemic stroke, cerebral infarction, spinal cord injury, and cancer-related brain and spinal cord injury, multi-infarct dementia, geriatric dementia, other cognitive impairments, depression, Onychomycosis (fungal infection of the nail, Gingivitis and Periodontal Disease (Gum Disease) obesity, diabetes, a viral infection, or KRAS oncogene mutated cancer.

28. The method as claimed in claim 26 or 27, in which the chronic disorder is cancer.
29. The method as claimed in claim 28, in which the cancer is colon cancer, prostate cancer,
5 breast cancer, or leukemia.
30. The method as claimed in claim 28 or 29, in which the cancer has a KRAS oncogene mutation.
- 10 31. The method as claimed in claim 26 or 27, in which chronic disorder is a viral infection.
32. The method as claimed in claim 31, in which the viral infection is SARS or COVID-19.
33. The method as claimed in any one of claims 28-30, further comprising administering an
15 effective amount of a chemotherapeutic agent to the patient in need thereof after administering the compound of claims 1-24 or the pharmaceutical composition of claim 25.
34. The method as claimed in claim 33, in which the chemotherapeutic agent is selected from
20 the group consisting of docetaxel, paclitaxel, pazobanib, endoxon, etoposide, adriamycin, dacromycin, avastin, gemcitabine, cisplatin and oxaliplatin.
35. The method as claimed in claim 33 or 34, in which administering the compound of claims
25 1-24 or the pharmaceutical composition of claim 25 to a patient in need thereof reduces and/or reverses the toxic side effects associated with administering the chemotherapeutic agent to patient in need thereof.
36. The method of claim 35, in which the toxic side effects associated with administering the
30 chemotherapeutic agent to patient in need thereof include one or more of gastritis, hair loss, bone marrow suppression, and cardiac toxicity.

37. The method as claimed in claim 31 or 32, further comprising administering an effective amount of an additional antiviral agent to a patient in need thereof.

5 38. The method as claimed in claim 36, in which the additional antiviral agent is chloroquine or hydroxychloroquine.

39. The method as claimed in claim 37, in which administering the compound of claims 1-24 or the pharmaceutical composition of claim 25 to a patient in need thereof reduces and/or reverses the toxic side effects associated with administering the chloroquine or hydroxychloroquine to patient in need thereof.

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40. The method of claim 38, in which the toxic side effects associated with administering the chloroquine or hydroxychloroquine to patient in need thereof include one or more of cardiovascular diseases, eye damage, mild or severe bronchospasm, and mental health conditions.

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