(SD2008-188) Anticancer Agents - Novel Spirohexenolides

Tech ID: 19781 / UC Case 2008-188-0

TECHNOLOGY DESCRIPTION

UC San Diego inventors have received a patent on a new chemical compound, isolated from a natural product that can inhibit progression through the cell cycle. The new structure's use as an anti-cancer agent is in the early stage of preclinical studies. This technology relates to novel spirohexenolides, biosynthetic methods for producing these spirohexenolides. and methods of treating cancer using the novel spirohexenolides.

This patented technology is available for commercial development within the United States (USA). Detailed description is available in the hyperlinked US Patent 8,653,283.

RELATED MATERIALS

- Yu WL, Jones BD, Kang M, Hammons JC, La Clair JJ, Burkart MD. Spirohexenolide A targets human macrophage migration inhibitory factor (hMIF). J Nat Prod. 2013 May 24;76(5):817-23. - 05/24/2013
- Kang MinJin , Brian D. Jones, Alexander L. Mandel, Justin C. Hammons, Antonio G. DiPasquale, Arnold L. Rheingold, James J. La Clair and Michael D. Burkart (2009) Isolation, Structure Elucidation, and Antitumor Activity of Spirohexenolides A and B J. Org. Chem, 2009, 74, 9054-9062.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,653,283	02/18/2014	2008-188

OTHER INFORMATION

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OTHER INFORMATION

KEYWORDS

anti-mitotic, anti-fungal, anti-microbial, anti-cancer, tetrocarcins, kijanimicins, quartromicins, chlorothricins

CATEGORIZED AS

- **Medical**
  - Disease: Cancer
  - New Chemical Entities, Drug Leads

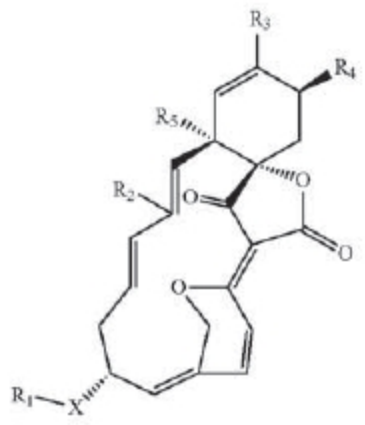
RELATED CASES

2008-188-0

What is claimed:

1. A compound of formula (III) or a pharmaceutically acceptable salt thereof:

(III)



wherein X is a —O—C(=O)—;

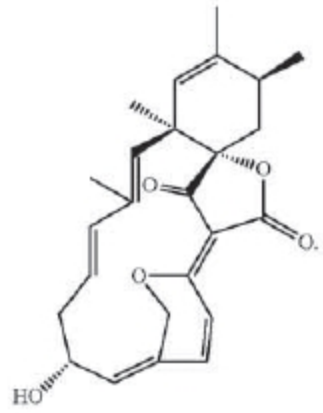
R_1 is H, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_1-C_6 alkoxy, $—CF_3$, aryl, heteroaryl, or a label;

or X—R_1 is —H or —OH; and

R_2, R_3, R_4, and R_5 are $—CH_3$.

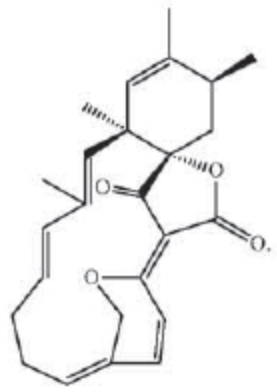
2. The compound of claim 1, wherein the compound has the structure and stereochemical configuration of formula (VII):

(VII)



3. The compound of claim 1, wherein the compound has the structure and stereochemical configuration of formula (VIII):

(VIII)



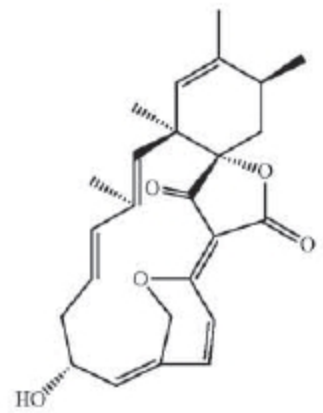
4. The compound of claim 1, wherein R_1 is a label.

5. The compound of claim 4, wherein the label is an immunological label, fluorescent label, a chemiluminescent label, a radioisotope label, an enzyme label, a particulate label, a colorimetric label, or an energy transfer agent.

6. The compound of claim 4, wherein the label is α-methoxy-α-trifluoromethylphenylacetic acid (MTPA), fluorescent dye, affinity tag, soublizing group, or an immunoaffinity fluorescent (IAF) label.

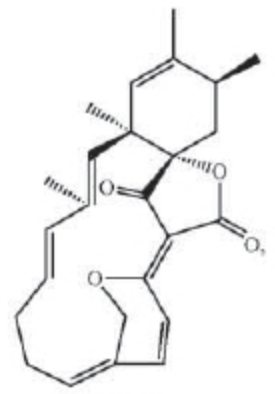
7. A method of screening for proteins that bind to the compound of claim 1, comprising exposing a cancerous tissue to a compound comprising a label and detecting the presence of the labeled compound.

8. A process for preparing a compound having a formula of:



-continued

or



the method comprising culturing a microorganism having the identifying characteristics of *Streptomyces platensis* under suitable conditions, allowing the compound to accumulate in the culture medium, and isolating the compound from the culture medium.

9. The process of claim 8, further comprising the steps of:

inducing mutations in *Streptomyces platensis* microorganisms by exposing the microorganisms to a mutagen;

selecting the resulting microorganisms having a desired trait; and

culturing the selected organisms.

10. The process of claim 9, wherein the mutagen is ultraviolet irradiation, ionizing radiation, or a chemical mutagen.

11. The process of claim 9, wherein the desired characteristic is decreased contact inhibition.

12. The process of claim 8, wherein the microorganism is strain MJ1A1 or MJ1A2 of *Streptomyces platensis*.

13. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable excipient.

14. The pharmaceutical composition of claim 13, wherein the compound of claim 1 is the compound of claim 2.

15. The pharmaceutical composition of claim 13, wherein the compound of claim 1 is the compound of claim 3.

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Synthetic Anticancer Polyketide Compounds
- Reversible Chemoenzymatic Protein Labeling

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