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Novel Anticancer Compounds

An efficient and cost-effective synthesis method has been developed for pure, bioactive natural product antitumor compounds and structural variants for pharmaceutical and cancer treatment applications.

Natural product antitumor compounds, such as FR901464 and spliceostatin A, have particular interest in clinical applications due to their remarkable antitumor activity and effectiveness against human solid tumors. More significantly, both FR901464 and spliceostatin A potently inhibit in vitro splicing and promote pre-mRNA accumulation. The first total synthesis of FR901464 was accomplished in 29-41, which made the original methods time consuming and costly. In addition, it was difficult to produce a pure form of the compound.

Researchers at Purdue University have developed concise, enantioselective syntheses of pure FR901464 and spliceostatin A, which can be accomplished in only 10 and 9 linear steps, respectively. By drastically decreasing the number of steps, this method is cost efficient, convergent, and amenable to the synthesis of structural variants. The researchers have already developed nine synthetic analogues, which are potentially more potent and bioactive, as well as synthesized several other high-quality, natural products such as jasplakinolide and lasonolide A.

Advantages:

-Efficient and cost effective

-Amenable to the synthesis of structural variants

Potential Applications:

-Pharmaceuticals

-Drug development

-Cancer treatment

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Pharmaceuticals/Pharmaceutical Manufacturing & Methods

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Intellectual Property:

Provisional-Patent, 2013-11-19, United States | EP-Patent, 2014-11-19, United Kingdom | DIV-Patent, 2014-11-19, Israel | DIV-Patent, 2014-11-19, China | NATL-Patent, 2014-11-19, Brazil | NATL-Patent, 2014-11-19, Japan | NATL-Patent, 2014-11-19, Israel | PCT-Patent, 2014-11-19, WO | NATL-Patent, 2014-11-19, Canada | NATL-Patent, 2014-11-19, Peru | NATL-Patent, 2014-11-19, Malaysia | NATL-Patent, 2014-11-19, Mexico | NATL-Patent, 2014-11-19, European Patent | NATL-Patent, 2014-11-19, South Africa | NATL-Patent, 2014-11-19, Republic of Korea | NATL-Patent, 2014-11-19, Eurasian Patent Organization | DIV-Patent, 2014-11-19, Japan | NATL-Patent, 2014-11-19, Colombia | NATL-Patent, 2016-01-15, India | NATL-Patent, 2016-05-19, United States | NATL-Patent, 2016-05-19, Singapore | NATL-Patent, 2016-05-19, Philippines | NATL-Patent, 2016-0

Keywords: Natural product antitumor compounds, FR901464, spliceostatin A, enantioselective syntheses, cost efficient synthesis, structural variants, synthetic analogues, jasplakinolide, lasonolide A, cancer treatment