Salinosporamide A: A Superior Proteasome Inhibitor

Tech ID: 21336 / UC Case 2001-208-0

BACKGROUND

As a means of controlling levels of cellular proteins, eukaryotic organisms have evolved the ubiquitin-proteasome pathway, which selectively and rapidly degrades and eliminates undesired proteins. The availability of selective proteasome inhibitors has made it possible to understand the importance of this pathway and the critical role it plays in such cellular processes as cell-cycle regulation, antigen presentation, and the degradation of abnormally conformed, or regulatory, or membrane proteins. The ability to selectively inhibit proteasome function provides a mechanism to study basic cell biology, as well explore the applications of proteasome inhibition as a target for drug discovery.

TECHNOLOGY DESCRIPTION

Marine organisms are a rich source of natural products with unique structures and potent biological activities. UC researchers have isolated and characterized one such product, Salinosporamide A (Sal A), which was discovered as a fermentation product from the marine actinomycete *Salinispora tropica*. By forming an irreversible, covalent adduct with the active site threonine of the 20S subunit of the proteasome, Sal A is able to potently and selectively inhibit all catalytic functions of the proteasome and thus represents a new biochemical tool that can be used to study basic cell biology or can be used as a standard for drug discovery programs targeting proteasome inhibition.

ADVANTAGES

- Significantly more potent than other commercially available proteasome inhibitors; IC50 values in the low to mid nM range.
- 3-log specificity for the inhibition of proteasome proteolytic activities as compared to other proteases such as chymotrypsin, trypsin, catharsis A, and catharsis B.
- Well-characterized mechanism of binding and action.
- Easily configured for sale as an individual reagent or within a kit.

INTELLECTUAL PROPERTY INFO

U.S. issued patents include 7,179,834 and 7,176,232. Foreign rights also available. The field of use of “drug discovery and therapeutics” is not available for licensing.

RELATED MATERIALS

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RELATED CASES

SD2006-203 and SD2001-022

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,314,818	06/11/2019	2001-208
United States Of America	Issued Patent	9,713,607	07/25/2017	2001-208

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OTHER INFORMATION

KEYWORDS

Sal A, ubiquitin-proteosome, degradation, chymotrypsin, trypsin, cathepsin A, cathepsin B, lactacystin, actinomycete, Salinispora tropica

CATEGORIZED AS

- **Research Tools**
  - Other

RELATED CASES

2001-208-0, 2006-203-1, 2006-203-2, 2001-022-1, 2001-022-2, 2001-022-3, 2001-022-4, 2001-022-5, 2001-022-6

United States Of America	Issued Patent	9,078,881	07/14/2015	2001-208
United States Of America	Issued Patent	8,637,565	01/28/2014	2001-208
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United States Of America	Issued Patent	8,217,072	07/10/2012	2001-208
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United States Of America	Issued Patent	7,179,834	02/20/2007	2001-208
United States Of America	Issued Patent	7,176,232	02/13/2007	2001-208
United States Of America	Issued Patent	7,176,233	02/13/2007	2001-208
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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Natural Products for Cancer Therapeutics

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