



Product Information

Calyculin A from *Discodermia calyx*

Product Number **C 5552**
Storage Temperature -20 °C

Product Description

Molecular Formula: C₅₀H₈₁N₄O₁₅P
Molecular Weight: 1,009
CAS Number: 101932-71-2
Synonym: CalA

Calyculin A is a spiro ketal compound that contains phosphate, oxazole, nitrile, and amide functionalities. It occurs naturally in the marine sponge *Discodermia calyx* as a lipophilic metabolite.¹ CalA has been found to be a very potent inhibitor of various phosphatases, including type 1 and type 2A protein phosphatase, the endogenous phosphatase of smooth muscle myosin B, and the partially purified catalytic subunit from myosin B.² It has also been shown to induce tumors in CD-1 mouse skin.³

The inhibition of K⁺ - Cl⁻ cotransport activity in cultured human erythrocytes by calyculin A has been demonstrated.⁴ In cultured CHO cells, CalA has been shown to inhibit the Ca²⁺ influx (reverse) mode of Na⁺/Ca²⁺ exchange.⁵ CalA has been used to probe the role of Rho-associated coiled coil forming protein kinase in airway smooth muscle contraction.⁶ CalA has been utilized in a proteomics study of HeLa and 293T cells for the isolation and identification of serine/threonine-phosphorylated proteins using immunoprecipitation and mass spectrometry.⁷

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

The product is soluble in ethanol (1 mg/ml), yielding a clear colorless solution. It is also soluble in organic solvents such as DMSO, methanol, acetone, and ether.

Storage/Stability

Stock solutions of this product should be prepared at a minimum of 1 mg/ml. The stock solution should be divided into aliquots with as high a concentration as possible and with a volume larger than 10 µl to minimize exposure to oxygen. In addition, argon or nitrogen should be layered over the stock solution if possible. Aliquots can be stored at -20 °C for a few months.

References

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3. Suganuma, M., et al., Calyculin A, an inhibitor of protein phosphatases, a potent tumor promoter on CD-1 mouse skin. *Cancer Res.*, **50(12)**, 3521-3525 (1990).
4. Bize, I., et al., Serine/threonine protein phosphatases and regulation of K-Cl cotransport in human erythrocytes. *Am. J. Physiol.*, **277(5 Pt 1)**, C926-C936 (1999).
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6. Iizuka, T., et al., A major role for the Rho-associated coiled coil forming protein kinase in G-protein-mediated Ca^{2+} sensitization through inhibition of myosin phosphatase in rabbit trachea. *Br. J. Pharmacol.*, **128(4)**, 925-933 (1999).
7. Gronborg, M., et al., A mass spectrometry-based proteomic approach for identification of serine/threonine-phosphorylated proteins by enrichment with phospho-specific antibodies: identification of a novel protein, Frigg, as a protein kinase A substrate. *Mol. Cell. Proteomics*, **1(7)**, 517-527 (2002).

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