Calyculin A

**Description:** Calyculin A is a more potent phosphatase inhibitor than Okadaic acid (2). As shown by Western blot, treatment of cells with 100 nM Calyculin A for 30 minutes induces threonine phosphorylation, detected by Phospho-Threonine-Polyclonal Antibody #9381. IC₅₀ values for inhibitory activity against PP1 are approximately 2 nM. IC₅₀ values for inhibitory activity against PP2A are approximately 0.5 - 1.0 nM.

**Background:** Calyculin A inhibits the activity of protein phosphatases PP1 and PP2A (1, 2). Unlike Okadaic acid, which reduces PP2A activity but has little effect on PP1 activity, Calyculin A inhibits both phosphatases (1). Neither Calyculin A nor Okadaic acid inhibit acid or alkaline phosphatases or phosphotyrosine protein phosphatases (2).

**Molecular Formula:** C₅₀H₈₁N₄O₁₅P

**Directions for Use:** Calyculin A is supplied as a lyophilized film. For 10 µM stock, reconstitute in 1 ml DMSO. Store in aliquots at -20°C in the dark. Treat cells with 50-100 nM calyculin A for 5-30 minutes. Store in aliquots tightly sealed (unopened) at -20°C in the dark. See MSDS.

**Background References:**

**Storage:** Store lyophilized or in solution at -20°C, desiccated. Protect from light. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

**Precautions:** This compound is sold only for use in extremely dilute solutions for biological research. No other use is intended and any other use involves substantial hazards. This compound should never be handled in powder or aerosol form or in any other form susceptible to uncontrolled release in the laboratory, even in very small quantities.

See enclosed Material Safety Data Sheet (MSDS) or refer to our website for further information.

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Western blot analysis of extracts from A431 cells treated with varied concentrations of Okadaic Acid or calyculin A (30 minutes) using P-Thr-Polyclonal #9381.

Western blot analysis of extracts from Jurkat cells, untreated or treated with Calyculin A-treated (0.1 µM for 45 minutes prior to lysis), using P-Thr-Polyclonal #9381. Proteins were separated by 2D electrophoresis prior to blotting.
SECTION 1. Identification

Product identifier:

Product number: 9902

GHS symbol(s):

Hazard statement(s):

DANGEROUS

Precautionary Statement(s):

Risk phrase(s):

Harm phrase(s):

Additional precautionary information:

SECTION 2. Hazard(s) Identification

Classification:

Hazard class:

Acute oral toxicity:

Category 3

Acute dermal toxicity:

Category 2

Acute inhalation toxicity:

Category 3

Skin corrosion/irritation:

Category 2

GHS Label elements, including precautionary statements:

Signal Word:

Danger

Hazard statement(s):

SECTION 3. Composition/information on ingredients

Formula:

C(1-14Z)-14-cyano-3,5-dihydroxy-1-methoxy-4,6,8,9,10-dioxaspiro[4.5]decan-3-yl dihydrogen phosphate

Molecular Weight:

218.18

Synonym:

Calyculin A from Discodermia calyx; Hemicalyculin A

Chemical Name:

Calyculin A

CAS no:

9902-17-9

Section:

4-

SECTION 4. First-aid measures

Eye contact:

Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing.

Skin contact:

Immediate medical attention is required. Wash off immediately with soap and plenty of water, remove contaminated clothing and shoes. Remove and wash contaminated clothing before reuse. Wash off immediately with plenty of water. Immediate medical attention is not required.

Inhalation:

If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Immediate medical attention is not required. If INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

Ingestion:

Do NOT induce vomiting. Immediate medical attention is required. Never give anything by mouth to an unconscious person. Drink plenty of water. Do NOT induce vomiting without medical advice. Consult a physician.

Most important symptoms and effects, both acute and delayed:

SECTION 6. Accidental release measures

For non-emergency personnel:

Use personal protective equipment: Avoid contact with skin, eyes and clothing. Wash hands before breaks and after handling the product. Keep away from food, drink and animal feeding stuffs.

Personal precautions, protective equipment and emergency equipment:

For emergency responders:

Immediate medical attention is required. Show this safety data sheet to the doctor in attendance. If symptoms persist, call a physician.

Protection of first-aiders:

General advice:

Sensitivity to Mechanical Impact: None.

Sensitivity to Static Discharge: None.

Protective Equipment and Precautions for Firefighters:

CAUTION: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Suitable Extinguishing Media:

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media:

CAUTION: Use of water spray when fighting fire may be inefficient.

Extinguishing media:

Suitable Extinguishing Media:

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media:

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical:

No information available.

Evaporation Data:

Sensitivity to Mechanical Impact: None.

Sensitivity to Static Discharge: None.

Precautions:

No information available.

Information on basic physical and chemical properties:

Appearance:

Crystalline powder

Odor:

White

Color:

White

pH:

No information available

pH:

No information available

Flash point:

No information available

Evaporation rate:

No information available

Flammability (solid, gas):

No information available

Upper flammability limit:

No information available

Lower flammability limit:

No information available

Vapor pressure:

No information available

Vapor density:

No information available

Relative density:

No information available

Solubility:

Partially miscible

Solvency in other solvents:

No information available

Partition coefficient: n-octanol/water:

No information available

Autoignition temperature:

No information available
Decomposition temperature: No information available.
Explosive properties: No information available.
Oxidizing properties: No information available.
Molecular Weight: 1068.17 g/mol
VOC content: No information available.
Density: No information available.

SECTION 10. Stability and reactivity

Stability.
No information available.

Chemical stability.
Stable under recommended storage conditions.

Incompatibility with strong acids and bases.
No information available.

Hazardous Decomposition Products.
None under normal processing. Thermal decomposition can lead to release of irritating gases and vapors. Carbon dioxide (CO₂).

SECTION 11. Toxicological information

Information on likely routes of exposure.
Inhalation: Toxic by inhalation. There is no data available for this product.
Eye contact: Toxic in contact with skin. Contact with skin may cause irritation.
Ingestion: Toxic if swallowed.

Information on toxicological effects.
This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Delayed and immediate effects as well as chronic effects from short and long-term exposure.

Symptoms: No information available.
Sensitization: No information available.
Genotoxicity: No information available.
Carcinogenicity: No information available.
Reproductive toxicity: No information available.

SECTION 12. Ecological information

Ecotoxicity.
Product does not present an aquatic toxicity hazard based on known or supplied information.

SECTION 13. Disposal considerations

Disposal considerations.
Do not empty into drains; dispose of this material and its container in a safe way.

SECTION 14. Transport information

DOT.
UN number: UN3462
Transport hazard class(es): 6.1
Packing group: II
Special provisions: IIA, IIB, IIC, T1, T1P33
Emergency response guide number: 153

IATA.
UN number: UN3462
UN proper shipping name: Toxins, extracted from living sources, solid, n.o.s. (Calyculin A)
Transport hazard class(es): 6.1
Packing group: II
ERG code: IIL

SECTION 15. Regulatory information

With American Inventory Listing.

Calyculin A Revision Date: 2015-01-02

IATA
UN number: UN3462
UN proper shipping name: Toxins, extracted from living sources, solid, n.o.s. (Calyculin A)
Transport hazard class(es): 6.1
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ERG code: IIL

Calyculin A Revision Date: 2015-01-02

DOT
UN number: UN3462
Transport hazard class(es): 6.1
Packing group: II

Acute Health Hazard
Yes
Chronic Health Hazard
No
Fire Hazard
No
Sudden Release of Pressure Hazard
No
Reactive Hazard
No

Clean Water Act.
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.43).

CERCLA.
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65.
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations.
This product does not contain any substances regulated under applicable state right-to-know regulations.

U.S. FIFRA Label Information.