Product Information

Phalloidin from *Amanita phalloides*

≥ 90%

P2141

Product Description

CAS Number: 17466-45-4

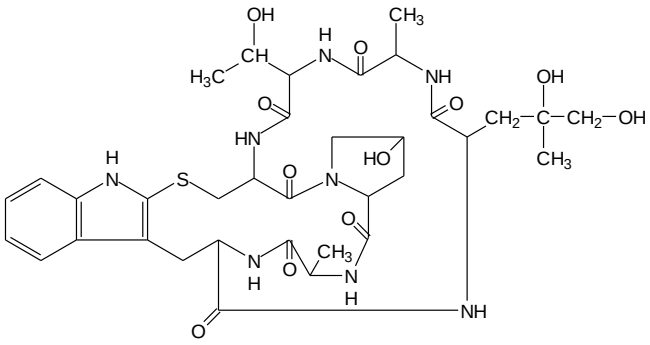
Molecular Formula: $C_{35}H_{48}N_8O_{11}S$

Molecular Weight: 788.9 (anhydrous)

Synonym: 28-(2,3-dihydroxy-2-methylpropyl)-18-hydroxy-34-(1-hydroxyethyl)-23,31-dimethyl-12-thia-10,16,22,25,27,30,33,36-octazapentacyclo[12.11.11.03,11.04,9.016,20] hexatriaconta-3(11),4,6,8-tetraene-15,21,24,26,29,32,35-heptone

Extinction Coefficient:[1] $E^{1\%}$ = 0.597 (295 nm in water)

Structure:



Phalloidin is a fungal toxin that occurs naturally in the poisonous mushroom *Amanita phalloides*.[2] Phalloidin toxicity is attributed to the ability to bind F actin in liver and muscle cells. As a result of binding phalloidin, actin filaments become strongly stabilized. Phalloidin has been found to bind only to polymeric and oligomeric forms of actin, and not to monomeric actin.[3] The dissociation constant of the actin-phalloidin complex has been determined to be on the order of 3×10^{-8} M.[4]

Phalloidin differs from amanitin in rapidity of action, where at high dose levels, death of mice or rats occurs within 1 or 2 hours.[1]

Fluorescent conjugates of phalloidin are used to label actin filaments for histological applications.[3-8] Some structural features of phalloidin are required for the binding to actin.[3] However, the side chain of amino acid 7 (γ-δ-dihydroxyleucine) is accessible for chemical modifications without appreciable loss of affinity for actin. FITC[4,6] and TRITC[6,7] phalloidin conjugates are useful for these applications. The TRITC conjugate is considered less susceptible to photobleaching than the FITC conjugate.[7]

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

This product is tested for solubility in methanol at 10 mg/mL.

Solubility in water:[1]

- 0 °C: 0.5%
- Hot water: much more soluble

Solubility in methanol, ethanol, butanol, or pyridine:[1] freely soluble

In general, solutions of phalloidin should be prepared fresh and protected from light when ever possible.

One publication has reported preparation of a stock solution of phalloidin in distilled water at 2.53 mM, although we have not tested this ourselves.[9]

Stock solutions of phalloidin conjugates have been made in methanol or DMSO at 0.1-5 mg/mL.[10,11]

Procedure

The following procedure may serve as a general guideline for staining cells.[12] Final staining solutions in aqueous physiological buffers have a phalloidin concentration range of 0.1-100 µM, with corresponding incubation times of 15 minutes to 72 hours.

1. Cells are washed with phosphate buffered saline (PBS).
2. Cells are fixed for 5 minutes in 3.7% formaldehyde solution in PBS, then washed extensively in PBS.
3. Cells may be dehydrated with acetone, permeabilized with 0.1% TRITON™ X-100 in PBS and washed again in PBS.
4. Cells are stained with a 50 µg/mL fluorescent phalloidin conjugate solution in PBS (containing 1% DMSO from the original stock solution) for 40 minutes at room temperature.
5. Wash several times with PBS to remove unbound phalloidin conjugate.

References

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