

Product Information

Penicillic Acid

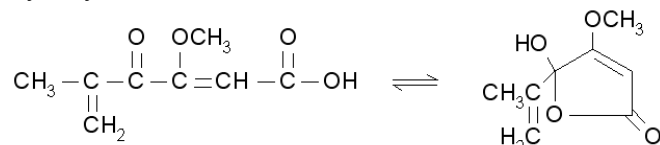
from *Penicillium cyclopium*

Catalog Number **P0063**

Storage Temperature 2–8 °C

CAS RN 90-65-3

Synonym: PA



Product Description

Molecular formula: C₈H₁₀O₄

Molecular weight: 170.16

Appearance: light yellow powder

Purity: ≥98% (HPLC)

Penicillic acid (PA) is a polyketide mycotoxin produced by several *Aspergillus* and *Penicillium* species. PA induces single and double strand DNA breaks. It shares similar cytotoxic properties with patulin.¹

Penicillic acid irreversibly inhibits GDP-mannose dehydrogenase (GMD), which catalyzes alginate biosynthesis and has no analogous human enzyme. Alginate is a copolymer of β(1→4) D-mannuronic acid and α(1→4) L-guluronic acid and is the main component of the mature biofilm of *Pseudomonas aeruginosa*. PA inhibition of GMD is due to a covalent interaction between PA and a cysteine or lysine residue in the active site of the enzyme.² PA also inhibits muscle aldose dehydrogenase, alcohol dehydrogenase, and lactate dehydrogenase.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Penicillic acid is soluble in water or chloroform up to 10 mg/mL, and in DMSO, ethyl acetate, or acetonitrile above 10 mg/mL.

Storage/Stability

The product is stable at least 2 years at 2–8 °C.

A DMSO solution is stable for 2 years at –20 °C. Aqueous solutions are unstable.

References

1. Sorenson, W.G., and Simpson, J., Toxicity of penicillic acid for rat alveolar macrophages *in vitro*. *Environ. Res.*, **41**, 505-513 (1986).
2. Kimmel, J.L., and Tipton, P.A., Inactivation of GDP-mannose dehydrogenase from *Pseudomonas aeruginosa* by penicillic acid identifies a critical active site loop. *Arch. Biochem. Biophys.*, **441**, 132-140 (2005).
3. Lindenfelser, L.A., et al., Penicillic acid production in submerged culture. *Appl. Environ. Microbiol.*, **34**, 553-556 (1977).
4. Grabsch, C., et al., Cytotoxicity assessment of gliotoxin and penicillic acid in *Tetrahymena pyriformis*. *Environ. Toxicol.*, **21**, 111-117 (2006).

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