

## Product Data Sheet

Product Name: Penicillic Acid

Cat. No.: GC15880

### Chemical Properties

Cas. No. 90-65-3

Chemical Name 3-methoxy-5-methyl-4-oxo-2,5-hexadienoic acid

SMILES C=C(C)C(/C(OC)=C\C(O)=O)=O

Formula  $C_8H_{10}O_4$

M.Wt 170.2

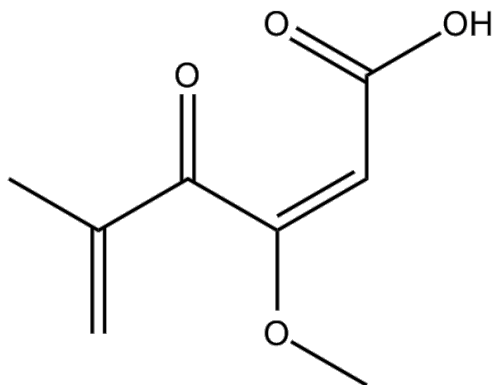
Solubility  $\leq 30\text{mg/ml}$  in ethanol;  $30\text{mg/ml}$  in DMSO;  $30\text{mg/ml}$  in dimethyl formamide

Storage Store at  $-20^\circ\text{C}$

General tips For obtaining a higher solubility, please warm the tube at  $37^\circ\text{C}$  and shake it in the ultrasonic bath for a while. Stock solution can be stored below  $-20^\circ\text{C}$  for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



### Background

Penicillic acid is synthesized by a large number of fungi, such as *P. puberulum*, *Penicillium stoloniferum*, *P. eye/opium*, *Penicillium martensii*, *Penicillium thomii*. The synthesis of this secondary metabolite has little or no taxonomic significance [1].

In vitro: The compound was active primarily against gram-negative bacteria, and it was also active

**Caution: Product has not been fully validated for medical applications. For research use only.**

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against some gram-positive species. It showed limited antihelminthic properties but did affect the growth of oat seed coleoptiles by interference with the respiratory process. Penicillic acid has proven to be too toxic for use in therapy [1]. Penicillic acid (80  $\mu$ M) inhibited bacterial quorum sensing communication in *P. aeruginosa* by selectively repressing various virulence factor and other quorum sensing-regulated genes [2]. In Burkitt's lymphoma Raji cells, penicillic acid exhibited an inhibitory effect on Fas-mediated apoptosis at 100-200  $\mu$ M by targeting caspase-8 activity [3].

In vivo: The LD<sub>50</sub> (subcutaneous injection) for mice is 100 mg/kg. Subcutaneous injection of 1.0 mg/dose twice weekly produced transplantable tumors after 64 weeks in all rats surviving treatment. In addition, a dose at 0.1 mg initiated tumor development [1].

### References:

- [1] Ciegler A, Detroy R W, Lillehoj E B. Patulin, penicillic acid, and other carcinogenic lactones[J]. Microbial toxins, 1971, 6: 409-434.
- [2] Rasmussen T B, Skindersoe M E, Bjarnsholt T, et al. Identity and effects of quorum-sensing inhibitors produced by *Penicillium* species[J]. Microbiology, 2005, 151(5): 1325-1340.
- [3] Bando M, Hasegawa M, Tsuboi Y, et al. The mycotoxin penicillic acid inhibits Fas ligand-induced apoptosis by blocking self-processing of caspase-8 in death-inducing signaling complex[J]. Journal of Biological Chemistry, 2003, 278(8): 5786-5793.

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