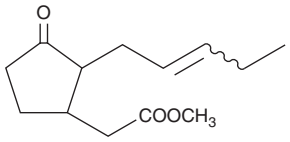
PRODUCT INFORMATION

Jasmonic Acid methyl ester

Item No. 9000059

CAS Registry No.: 39924-52-2
Formal Name: 3-oxo-2-(2-penten-1-yl)-cyclopentaneacetic acid, methyl ester
Synonym: Methyl Jasmonate
MF: $C_{13}H_{20}O_3$
FW: 224.3
Purity: ≥95% (mixture of isomers)
Supplied as: A neat oil (stabilized with synthetic α-tocopherol, ≤0.5% w/w)
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Jasmonic acid methyl ester is supplied as a neat oil. A stock solution may be made by dissolving the jasmonic acid methyl ester in the solvent of choice, which should be purged with an inert gas. Jasmonic acid methyl ester is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of jasmonic acid methyl ester in these solvents is approximately 30, 15, and 25 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of jasmonic acid methyl ester can be prepared by directly dissolving the neat oil in aqueous buffers. The solubility of jasmonic acid methyl ester in PBS (pH 7.2) is approximately 3 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

The jasmonates are a group of plant stress hormones that naturally occur in plants following exposure to certain types of stresses, including pathogen and herbivore attacks. Jasmonic acid methyl ester induces the synthesis of proteinase inhibitors in plant leaves.[1] In cancer cells, it suppresses proliferation and induces apoptosis.[2] More specifically, methyl jasmonate inhibits hexokinase that is bound to mitochondria.[3] As hexokinase is overexpressed in cancer cells and contributes to cancer cell growth and survival, methyl jasmonate's disruption of mitochondrial hexokinase activity selectively targets and kills cancer cells. Jasmonic acid methyl esterderivatives also have potential as anti-inflammatory agents.[4]

References

1. Farmer, E.E. and Ryan, C.A. Interplant communication: Airborne methyl jasmonate induces synthesis of proteinase inhibitors in plant leaves. *Proc. Natl. Acad. Sci. USA* **87(19)**, 7713-7716 (1990).
2. Fingrut, O. and Flescher, E. Plant stress hormones suppress the proliferation and induce apoptosis in human cancer cells. *Leukemia* **16(4)**, 608-616 (2002).
3. Goldin, N., Arzoine, L., Heyfets, A., *et al*. Methyl jasmonate binds to and detaches mitochondria-bound hexokinase. *Oncogene* **27(34)**, 4636-4643 (2008).
4. Dang, H.T., Lee, H.J., Yoo, E.S., *et al*. New jasmonate analogues as potential anti-inflammatory agents. *Bioorg. Med. Chem.* **16(24)**, 10228-10235 (2008).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

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CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM