

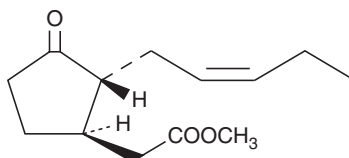
Product Information



(±)-Jasmonic Acid methyl ester

Catalog No. 9000059

CAS Registry No.: 39924-52-2
Synonym: (±)-Methyl Jasmonate
Formal Name: 3-oxo-2-(2-penten-1-yl)-cyclopentaneacetic acid, methyl ester
MF: C₁₃H₂₀O₃
FW: 224.3
Purity: ≥95% (mixture of isomers)
Stability: ≥1 year at -20°C
Supplied as: A neat oil



Laboratory Procedures

For long term storage, we suggest that (±)-jasmonic acid methyl ester be stored as supplied at -20°C. It should be stable for at least one year.

(±)-Jasmonic acid methyl ester is supplied as a neat oil. A stock solution may be made by dissolving the neat oil in an organic solvent 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.

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 is a mixture of *trans* (3R/7R and 3S/7S) isomers. (±)-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 ester derivatives 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**, 7713-7716 (1990).
2. Fingrut, O. and Flescher, E. Plant stress hormones suppress the proliferation and induce apoptosis in human cancer cells. *Leukemia* **16**, 608-616 (2002).
3. Goldin, N., Arzoin, L., Heyfets, A., *et al.* Methyl jasmonate binds to and detaches mitochondria-bound hexokinase. *Oncogene* **27**, 4636-4643 (2008).
4. Dang, H.T., Lee, H.J., Yoo, E.S., *et al.* New jasmonate analogues as potential anti-inflammatory agents. *Bioorganic & Medicinal Chemistry* **16**, 10228-10235 (2008).

Related Product

(±)-Jasmonic Acid - Cat. No. 88300

WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent via email to your institution.

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