

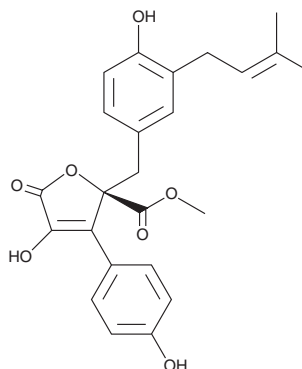
PRODUCT INFORMATION



Butyrolactone I

Item No. 21765

CAS Registry No.: 87414-49-1
Formal Name: (2R)-2,5-dihydro-4-hydroxy-2-[[4-hydroxy-3-(3-methyl-2-buten-1-yl)phenyl]methyl]-3-(4-hydroxyphenyl)-5-oxo-2-furancarboxylic acid, methyl ester
MF: C₂₄H₂₄O₇
FW: 424.5
Purity: ≥90%
Supplied as: A solid
Storage: -20°C
Stability: ≥4 years
Item Origin: Fungus/*Aspergillus* sp.



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

Laboratory Procedures

Butyrolactone I is supplied as a solid. A stock solution may be made by dissolving the butyrolactone I in the solvent of choice, which should be purged with an inert gas. Butyrolactone I is soluble in organic solvents such as ethanol, methanol, DMSO, and dimethyl formamide.

Description

Butyrolactone I is a secondary metabolite from *A. terreus* that acts as an ATP-competitive inhibitor of cyclin-dependent kinase 1 (Cdk1; IC₅₀ = 20 µg/ml in PC-14 cells).¹ It induces dose-dependent G₂/M arrest, inhibits DNA synthesis, and decreases Cdk1 protein expression *in vitro*.¹ Butyrolactone I has antitumor effects in non-small cell lung, small cell lung, and prostate cancer cell lines (mean IC₅₀ = 50 µg/ml).^{1,2} It inhibits *in vitro* Cdk1 phosphorylation of tau and *in vivo* phosphorylation of transcription factor E2F-1.^{3,4} Additionally, exogenous application of butyrolactone I to *A. terreus* cultures increases biogenesis of the secondary metabolites lovastatin (Item No. 10010338) and conidiation in a quorum-sensing manner.⁵

References

1. Nishio, K., Arioka, H., Kurokawa, H., *et al.* Antitumor effects of butyrolactone I, a selective cdc2 kinase inhibitor, on human lung cancer cell lines. *Anticancer Res.* **16(6B)**, 3387-3395 (1996).
2. Suzuki, M., Hosaka, Y., Matsushima, H., *et al.* Butyrolactone I induces cyclin B1 and causes G₂/M arrest and skipping of mitosis in human prostate cell lines. *Cancer Lett.* **138(1-2)**, 121-130 (1999).
3. Hosoi, T., Uchiyama, M., Okumura, E., *et al.* Evidence for cdk5 as a major activity phosphorylating tau protein in porcine brain extract. *J. Biochem.* **117(4)**, 741-749 (1995).
4. Kitagawa, M., Higashi, H., Suzuki-Takahashi, I., *et al.* Phosphorylation of E2F-1 by cyclin A-cdk2. *Oncogene* **10(2)**, 229-236 (1995).
5. Palonen, E.K., Raina, S., Brandt, A., *et al.* Transcriptomic complexity of *Aspergillus terreus* velvet gene family under the influence of butyrolactone I. *Microorganisms* **5(1)**, (2017).

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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