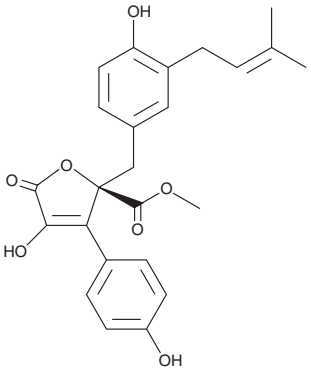
PRODUCT INFORMATION

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:	$C_{24}H_{24}O_7$
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; IC_{50} = 20 µg/ml in PC-14 cells).[1] It induces dose-dependent G_2/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 IC_{50} = 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 G_2/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).

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