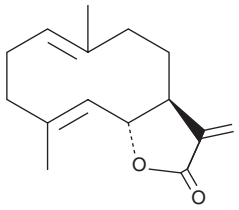
PRODUCT INFORMATION

Costunolide

Item No. 14743

CAS Registry No.:	553-21-9
Formal Name:	3aS,4,5,8,9,11aR-hexahydro-6E,10E-dimethyl-3-methylene-cyclodeca[b]furan-2(3H)-one
Synonyms:	Costus lactone, Melampolide, NSC 106404
MF:	$C_{15}H_{20}O_2$
FW:	232.3
Purity:	≥98%
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



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

Laboratory Procedures

Costunolide is supplied as a crystalline solid. A stock solution may be made by dissolving the costunolide in the solvent of choice. Costunolide is soluble in organic solvents such as DMSO and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of costunolide in these solvents is approximately 0.1 and 1.6 mg/ml, respectively.

Costunolide is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, costunolide should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Costunolide has a solubility of approximately 0.3 mg/ml in a 1:2 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Costunolide is a sesquiterpene lactone that is found naturally in certain plant extracts and in alternative medicine oils. It reduces growth (EC_{50} = 3-35 µM) and induces apoptosis in assorted cancer cell lines.[1-3] Costunolide inhibits the activation of Akt (15 µM) in endometriotic epithelial cells and STAT3 activation in THP-1 cells (EC_{50} = 10 µM).[4-5] It also inhibits telomerase activity in NALM-6 cells.[1]

References

1. Kanno, S.-I., Kitajima, Y., Kakuta, M., *et al.* Costunolide-induced apoptosis is caused by receptor-mediated pathway and inhibition of telomerase activity in NALM-6 cells. *Biol. Pharm. Bull.* **31(5)**, 1024-1028 (2008).
2. Liu, C.-Y., Chang, H.-S., Chen, I.-S., *et al.* Costunolide causes mitotic arrest and enhances radiosensitivity in human hepatocellular carcinoma cells. *Radiat. Oncol.* **6**, 56 (2011).
3. Lohberger, B., Rinner, B., Stuendl, N., *et al.* Sesquiterpene lactones downregulate G_2/M cell cycle regulator proteins and affect the invasive potential of human soft tissue sarcoma cells. *PLoS One* **8(6)**, e66300 (2013).
4. Kim, J.-H., Yang, Y.-I., Lee, K.-T., *et al.* Costunolide induces apoptosis in human endometriotic cells through inhibition of the prosurvival Akt and nuclear factor kappa B signaling pathway. *Biol. Pharm. Bull.* **34(4)**, 580-585 (2011).
5. Butturini, E., Cavalieri, E., Carcereri de Prati, A., *et al.* Two naturally occurring terpenes, dehydrocostuslactone and costunolide, decrease intracellular GSH content and inhibit STAT3 activation. *PLoS One* **6(5)**, e20174 (2011).

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