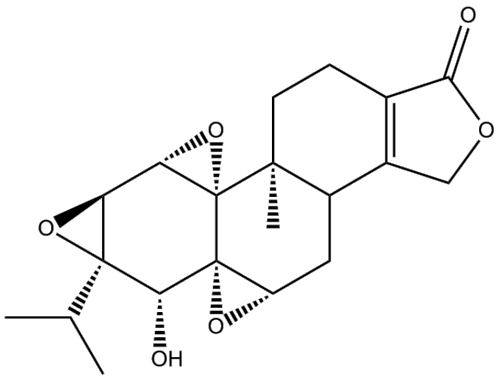
Product Data Sheet

Product Name: Triptolide
Cat. No.: GC14402

Chemical Properties

Cas. No.	38748-32-2		
Chemical Name	(6aS,7aS,8R,8aR,9aS,9bS,10aS,10bS)-8-hydroxy-8a-isopropyl-10b-methyl-1,5,5b,6,6a,8,8a,9a,9b,10b-decahydrotris(oxireno)[2',3':4b,5;2'',3'':6,7;2''',3''':8a,9]phenanthro[1,2-c]furan-3(2H)-one		
SMILES	CC(C)C12C(O1)C3C4(O3)C5(CCC6=C(C5CC7C4(C2O)O7)COC6=O)C		
Formula	$C_{20}H_{24}O_6$	M.Wt	360.41
Solubility	≥ 36 mg/mL in DMSO	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Cell experiment [1]:

Cell lines SKOV3 and A2780 cells

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Preparation Method	SKOV3 and A2780 cells were plated in 96-well plates (5 × 103/well). 24h later, triptolide was added to a final concentration of 0, 1.5, 5, 15, 50, or 150 nM for 72 h.
Reaction Conditions	0, 1.5, 5, 15, 50, or 150 nM; 72 h
Applications	Triptolide (50nM, 72 h) noticeably inhibited ovarian cancer cell proliferation. Triptolide (15nM) significantly inhibited cell migration 48h after wounding. Triptolide (15nM) markedly blocked the invasive capacity of SKOV3 and A2780 cells.

Animal experiment [2]:

Animal models	orthotopic mouse model
Preparation Method	Mice were then randomized into two treatment groups: (a) control and (b) triptolide-treated mice. Mice were given daily i.p. injections of triptolide (0.2 mg/kg) or vehicle (DMSO) for 60 days.
Dosage form	0.2 mg/kg/d; 60 days; i.p.
Applications	After a daily injection of triptolide (0.2 mg/kg) for 60 days, the tumor volume was significantly reduced. triptolide also significantly reduced the incidence of local-regional tumor spread.

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References:

[1] Zhao H, Yang Z, Wang X, et al. Triptolide inhibits ovarian cancer cell invasion by repression of matrix metalloproteinase 7 and 19 and upregulation of E-cadherin[J]. Experimental & molecular medicine, 2012, 44(11): 633-641.
[2] Phillips P A , Dudeja V , Mccarroll J A ,et al. Triptolide Induces Pancreatic Cancer Cell Death via Inhibition of Heat Shock Protein 70[J].Cancer Research, 2007, 67(19):9407.

Background

Triptolide is a diterpene triepoxide isolated for the first time from the medicinal plant Tripterygium wilfordii, exhibiting immunosuppressive, anti-inflammatory, anti-proliferative, and antitumor effects. It acts as an inhibitor of NF-κB activation, where NF-κB is a family of transcription factor protein complexes[1]. Triptolide possesses broad-spectrum anticancer activity, inhibiting the development of colon cancer, breast cancer, renal cell carcinoma, and cervical cancer[2].

In vitro, triptolide (50 nM, 72 h) significantly inhibits the proliferation of ovarian cancer cells SKOV3 and A2780. Triptolide (15 nM, 48h) significantly inhibits cell migration and blocks the invasive capability of cells[2]. Triptolide (50-200 nmol/L) incubated with PANC-1 and MiaPaCa-2 cells significantly reduces cell viability without affecting the viability of normal pancreatic ductal cells[3]. The IC50 value of triptolide on RSF cell viability is 74.3 nM, and its IC50 value on RSF cell proliferation is 20.4 nM[4]. Triptolide (0-150 nM) significantly inhibits the viability of HK1, FaDu, and C666-1 cells in a dose- and time-dependent manner[5].

In vivo, treatment with triptolide (1 mg/kg/d, p.o.) for three weeks in nude mice reduced the number of metastatic nodules by approximately 80%[2]. Triptolide (0.2 mg/kg/d) administered to mice with transplanted pancreatic tumors for 60 days reduced pancreatic cancer growth and significantly decreased local tumor spread[3].

References:
[1] Zhang W, et al. Triptolide Combined with Radiotherapy for the Treatment of Nasopharyngeal Carcinoma via NF-κB-Related Mechanism. Int J Mol Sci. 2016 Dec 19;17(12).
[2] Zhao H, Yang Z, Wang X, et al. Triptolide inhibits ovarian cancer cell invasion by repression of matrix metalloproteinase 7 and 19 and upregulation of E-cadherin[J]. Experimental & molecular medicine, 2012, 44(11): 633-641.

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[3] Phillips P A , Dudeja V , Mccarroll J A ,et al.Triptolide Induces Pancreatic Cancer Cell Death via Inhibition of Heat Shock Protein 70[J].Cancer Research, 2007, 67(19):9407.
[4] Kusunoki N, Yamazaki R, Kitasato H, Beppu M, Aoki H, Kawai S: Triptolide, an active compound identified in a traditional Chinese herb, induces apoptosis of rheumatoid synovial fibroblasts. BMC Pharmacol 2004, 4:2.
[5] Cai J, et al. Natural product triptolide induces GSDME-mediated pyroptosis in head and neck cancer through suppressing mitochondrial hexokinase-II. J Exp Clin Cancer Res. 2021;40(1):190. Published 2021 Jun 9.

Caution: Product has not been fully validated for medical applications. For research use only.
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