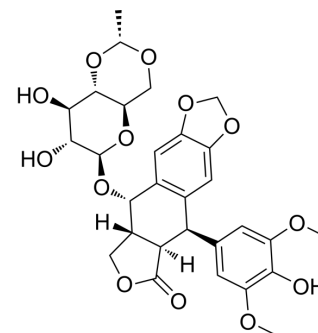


## Etoposide

Cat. No.:	HY-13629
CAS No.:	33419-42-0
Molecular Formula:	C <sub>29</sub> H <sub>32</sub> O <sub>13</sub>
Molecular Weight:	588.56
Target:	Topoisomerase; Autophagy; Mitophagy; Apoptosis; Bacterial; Antibiotic
Pathway:	Cell Cycle/DNA Damage; Autophagy; Apoptosis; Anti-infection
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 39 mg/mL (66.26 mM)  
\* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	1.6991 mL	8.4953 mL	16.9906 mL
	5 mM	0.3398 mL	1.6991 mL	3.3981 mL
	10 mM	0.1699 mL	0.8495 mL	1.6991 mL

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (4.25 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (4.25 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline  
Solubility: ≥ 2.5 mg/mL (4.25 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (4.25 mM); Clear solution
- Add each solvent one by one: 1% DMSO >> 99% saline  
Solubility: ≥ 0.5 mg/mL (0.85 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Etoposide (VP-16; VP-16-213) is an anti-cancer chemotherapy agent. Etoposide inhibits topoisomerase II, thus stopping DNA replication. Etoposide induces cell cycle arrest, apoptosis and autophagy<sup>[1]</sup>.

<b>IC<sub>50</sub> &amp; Target</b>	Topoisomerase II																
<b>In Vitro</b>	<p>Etoposide is capable of causing cytotoxicity on pancreatic <math>\beta</math>-cells by inducing apoptosis through the JNK/ERK-mediated GSK-3 downstream-triggered mitochondria-dependent signaling pathway in RIN-m5F cells<sup>[1]</sup>.</p> <p>Etoposide and Anti-Human VEGF significantly abolish P1 sphere-forming ability, an effect associated with apoptosis of this subset of cells<sup>[2]</sup>.</p> <p>Etoposide phosphate (0-1<math>\mu</math>M; 72 hours) inhibits HCT116 FBXW<sup>+/+</sup>, FBXW<sup>-/-</sup> and p53<sup>-/-</sup> as a dose-dependent manner, exhibits IC<sub>50</sub>s of 0.945 <math>\mu</math>M; 0.375 <math>\mu</math>M; and 1.437 <math>\mu</math>M, respectively<sup>[5]</sup>.</p> <p>Etoposide (25 <math>\mu</math>M; 6 hours) delays p53 recover in FBXW7-deficient cells. In addition, FBXW7 expression is disappeared in FBXW7<sup>-/-</sup> cells<sup>[5]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay<sup>[5]</sup></p> <table border="1"> <tr> <td>Cell Line:</td> <td>HCT116 FBXW<sup>+/+</sup>, FBXW<sup>-/-</sup> and p53<sup>-/-</sup> cells</td> </tr> <tr> <td>Concentration:</td> <td>0.025 <math>\mu</math>M, 0.05 <math>\mu</math>M, 0.075 <math>\mu</math>M, 0.1 <math>\mu</math>M, 0.2 <math>\mu</math>M, 0.4 <math>\mu</math>M, 0.6 <math>\mu</math>M, 0.8 <math>\mu</math>M, 1 <math>\mu</math>M</td> </tr> <tr> <td>Incubation Time:</td> <td>72 hours</td> </tr> <tr> <td>Result:</td> <td>Inhibits HCT116 FBXW<sup>+/+</sup>p&gt;, FBXW<sup>-/-</sup> and p53<sup>-/-</sup> cell growth as a concentration manner.</td> </tr> </table> <p>Western Blot Analysis<sup>[5]</sup></p> <table border="1"> <tr> <td>Cell Line:</td> <td>HCT116 FBXW7<sup>+/+</sup> or FBXW7<sup>-/-</sup> cells</td> </tr> <tr> <td>Concentration:</td> <td>25 <math>\mu</math>M</td> </tr> <tr> <td>Incubation Time:</td> <td>6 hours</td> </tr> <tr> <td>Result:</td> <td>Exhibited that the recovery of p53 levels after DNA damage is mediated by FBXW7.</td> </tr> </table>	Cell Line:	HCT116 FBXW <sup>+/+</sup> , FBXW <sup>-/-</sup> and p53 <sup>-/-</sup> cells	Concentration:	0.025 $\mu$ M, 0.05 $\mu$ M, 0.075 $\mu$ M, 0.1 $\mu$ M, 0.2 $\mu$ M, 0.4 $\mu$ M, 0.6 $\mu$ M, 0.8 $\mu$ M, 1 $\mu$ M	Incubation Time:	72 hours	Result:	Inhibits HCT116 FBXW <sup>+/+</sup> p>, FBXW <sup>-/-</sup> and p53 <sup>-/-</sup> cell growth as a concentration manner.	Cell Line:	HCT116 FBXW7 <sup>+/+</sup> or FBXW7 <sup>-/-</sup> cells	Concentration:	25 $\mu$ M	Incubation Time:	6 hours	Result:	Exhibited that the recovery of p53 levels after DNA damage is mediated by FBXW7.
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<b>In Vivo</b>	<p>Etoposide (50 <math>\mu</math>M) and Anti-Human VEGF-treated hypoxic cells injected intravenously into immunodeficient mice reveals a reduced capacity to induce lung colonies, which also appear with a longer latency period<sup>[2]</sup>. Etoposide (10 mg/kg/day, i.v.) with NSC 109724 and NSC 241240, reduces the tumor volume in the hepatoblastoma cell injected NMRI nude mice<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>																

## CUSTOMER VALIDATION

- Immunity. 2022 Aug 9;55(8):1370-1385.e8.
- Cell Host Microbe. 2023 Nov 8;31(11):1820-1836.e10.
- Protein Cell. 2022 Jan;13(1):47-64.
- Nat Commun. 2023 Sep 19;14(1):5709.
- J Extracell Vesicles. 2022 Apr;11(4):e12206.

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## REFERENCES

[1]. Lee KI, et al. Etoposide induces pancreatic  $\beta$ -cells cytotoxicity via the JNK/ERK/GSK-3 signaling-mediated mitochondria-dependent apoptosis pathway. Toxicol In Vitro. 2016 Jul 26. pii: S0887-2333(16)30147-3.

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[2]. Calvani M, et al. Etoposide-Anti-Human VEGF a new strategy against human melanoma cells expressing stem-like traits. Oncotarget. 2016 Jun 9. doi: 10.18632/oncotarget.9939.

[3]. Fuchs, J., et al. Comparative activity of NSC 119875, NSC 109724, NSC 123127, NSC 241240, and etoposide in heterotransplanted hepatoblastoma. Cancer, 1998. 83(11): p. 2400-7.

[4]. Hande KR, et al. The Importance of Drug Scheduling in Cancer Chemotherapy: Etoposide as an Example. Oncologist. 1996;1(4):234-239.

[5]. Cui D, et al. FBXW7 Confers Radiation Survival by Targeting p53 for Degradation. Cell Rep. 2020 Jan 14;30(2):497-509.e4.

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

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