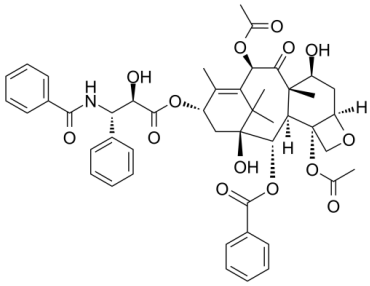
Data Sheet

Product Name:	Paclitaxel
Cat. No.:	CS-1145
CAS No.:	33069-62-4
Molecular Formula:	C47H51NO14
Molecular Weight:	853.91
Target:	ADC Cytotoxin; Autophagy; Microtubule/Tubulin
Pathway:	Antibody-drug Conjugate/ADC Related; Autophagy; Cell Cycle/DNA Damage; Cytoskeleton
Solubility:	H2O : < 0.1 mg/mL (insoluble); DMSO : ≥ 50 mg/mL (58.55 mM)



BIOLOGICAL ACTIVITY:

Paclitaxel (Taxol), a naturally occurring antineoplastic agent, stabilizes **tubulin polymerization**, resulting in arrest at the G2/M phase of the cell cycle and apoptotic cell death[1][2]. IC50 & Target: IC50: 4 nM (Microtubule) **In Vitro:** Paclitaxel (20 nM; 48 hours) induces programmed cell death and exists a block at the G2/M phase of the cell cycle[1].
Paclitaxel (20 nM; 48 hours) induces a consistent increase in the level of p53[1]. **In Vivo:** Paclitaxel (1-20 mg/kg; i.p.; 1 time/2 days for five cycles) obviously induces liver metastases at the low-Paclitaxel group with little influence on primary tumor growth[3].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [1]1×10^4 cells are plated in 100 μL of the growth medium in the presence or absence of increasing concentrations (0.1-1 μM) of taxol in 96-well plates and cultured at 37°C in 5% CO_2 for 12-48 h. The cells are then incubated with 25 μL of MTT (5 mg/mL) at 37°C for 4 h. After dissolving the crystals with 0.04 N HCl in isopropanol, the plates are read in a microplate reader at 570 nm. The concentration of drug that inhibits cell survival by 50% (IC_{50}) is determined from cell survival plots. **Animal Administration:** Paclitaxel is dissolved at 25 mg/mL in 1:1 Cremophor EL: ethanol and freshly diluted 1:12.5 in 0.9% sterile saline prior to injections.[5]Adult (250-320 g) male Sprague-Dawley rats are used for all experiments. Rats are housed two per cage in a temperature and humidity controlled, on a 12 h:12 h light:dark schedule with food and water available ad libitum. One week following the DiI injection, rats are anesthetized with isofluorane and injected into the tail vein with 2 mg/kg Paclitaxel (Taxol) or its vehicle (1:1:23, cremophor EL:ethanol:0.9% saline). The tail vein injection is repeated three more times every other day for a total of four injections.

References:

[1]. Choi YH, et al. Taxol-induced growth arrest and apoptosis is associated with the upregulation of the Cdk inhibitor, p21WAF1/CIP1, in human breast cancer cells. Oncol Rep. 2012 Dec;28(6):2163-9.

[2]. Dziadyk JM, et al. Paclitaxel-induced apoptosis may occur without a prior G2/M-phase arrest. Anticancer Res. 2004 Jan-Feb;24(1):27-36.

[3]. Li Q, et al. Low doses of paclitaxel enhance liver metastasis of breast cancer cells in the mouse model. FEBS J. 2016 Aug;283(15):2836-52.

[4]. Pan Z, et al. Paclitaxel attenuates Bcl-2 resistance to apoptosis in breast cancer cells through an endoplasmic reticulum-mediated calciumrelease in a dosage dependent manner. Biochem Biophys Res Commun. 2013 Feb 13. pii: S0006-291X(13)00259-3.

[5]. Cadamuro M, et al. Low dose paclitaxel reduces S100A4 nuclear import to inhibit invasion and hematogenous metastasis of cholangiocarcinoma. Cancer Res. 2016 Jun 21.

[6]. Li Q, et al. Low doses of paclitaxel enhance liver metastasis of breast cancer cells in the mouse model. FEBS J. 2016 Jun 16.

[7]. Yilmaz E, et al. Sensory neuron subpopulation-specific dysregulation of intracellular calcium in a rat model of chemotherapy-induced peripheral neuropathy. Neuroscience. 2015 Aug 6;300:210-8.

[8]. Jing C, et al. Lenvatinib enhances the antitumor effects of paclitaxel in anaplastic thyroid cancer. Am J Cancer Res. 2017 Apr 1;7(4):903-912.

CAIndexNames:

Benzenepropanoic acid, β-(benzoylamino)-α-hydroxy-, (2aR,4S,4aS,6R,9S,11S,12S,12aR,12bS)-6,12b-bis(acetyloxy)-12-(benzoyloxy)-2a,3,4,4a,5,6,9,10,11,12,12a,12b-dodecahydro-4,11-dihydroxy-4a,8,13,13-tetramethyl-5-oxo-7,11-methano-1H-cyclodeca[3,4]benz[1,2-b]oxet-9-yl ester, (αR,βS)-

SMILES:

O=C(C1=CC=CC=C1)N[C@@H](C2=CC=CC=C2)[C@H](C(O[C@@H]3C(C)=C([C@@H](OC(C)=O)C([C@@]4(C)[C@]([C@@](CO5)(OC(C)=O)[C@@]5([H])C[C@@H]4O)([H])[C@@H]6OC(C7=CC=CC=C7)=O)=O)C(C)(C)[C@@]6(O)C3)=O)O

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