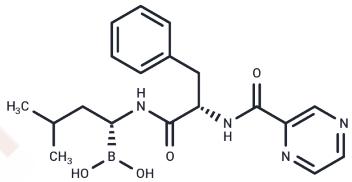
Data Sheet (Cat.No.T2399)

TargetMol

Bortezomib

Chemical Properties



CAS No. :	179324-69-7
Formula:	C19H25BN4O4
Molecular Weight:	384.24
Storage:	Keep away from direct sunlight Powder: -20°C for 3 years | In solvent: -80°C for 1 year Actual storage temperature shall be subject to the COA.

Biological Description

Description	Bortezomib (LDP 341) is a 20S proteasome inhibitor (Ki=0.6 nM) that is reversible and selective. Bortezomib has antitumor activity and inhibits NF-κB, which can disrupt the cell cycle and induce apoptosis.
Targets(IC50)	Apoptosis,NF-κB,Proteasome,Autophagy
In vitro	**METHODS**: Human tongue squamous carcinoma cells SCC-15 and CAL-27, human pharyngeal squamous carcinoma cells FaDu, and human salivary gland carcinoma cells A-253 and SALTO-5 were treated with Bortezomib (6.25-100 nM) for 24-72 h. The growth inhibition of these cells was detected by SRB. **RESULTS**: The effects of Bortezomib on the proliferation of the five tumor cells were dose- and time-dependent, and SCC-15 was the most sensitive cell to the effects of Bortezomib. SCC-15 was the most sensitive cell to the effect of Bortezomib.[1] **METHODS**: Human small cell lung cancer cells NCI-H69 and NCI-H2171 were treated with Bortezomib (0.05 μM; 0.5 μM) for 48 h. Cell cycle and apoptosis were detected by Flow Cytometry. **RESULTS**: Bortezomib induced cell cycle arrest in the G2-M transition state, increased the number of G2-phase cells and decreased the number of S-phase cells, and induced apoptosis in tumor cells. [2] **METHODS**: H460, a large cell lung cancer cell, was incubated with Bortezomib (0.01-10 μM) for 3-48 h, and the expression levels of target proteins were detected by Western Blot. **RESULTS**: Bortezomib treatment resulted in concentration-dependent phosphorylation of Bcl-2 protein. Starting at 12 h, a recognizable Bcl-2 cleavage product was observed, and Bcl-2 phosphorylation preceded Bcl-2 cleavage for at least 9 h.[3]
In vivo	**METHODS**: To detect anti-tumor activity in vivo, Bortezomib (0.3 mg/kg) was administered intraperitoneally to NOD/SCID mice bearing primary exudative lymphoma (PEL) UM-PEL-1 once daily for three weeks. **RESULTS**: Bortezomib induced remission of PEL and prolonged overall survival of mice with lymphoma exudates. bortezomib downregulated cell cycle progression, DNA replication, and Myc target genes. [4] **METHODS**: To investigate the effect of Bortezomib on renal fibrosis, Bortezomib (0.5 mg/kg) was intraperitoneally injected into an aristolochic acid I (AA)-induced fibrotic C57BL/6J mouse model twice a week for ten weeks.

In vivo	**RESULTS**: Bortezomib treatment significantly attenuated AA-induced renal dysfunction and proteinuria, reduced the expression of renal fibrosis-associated proteins and markers of renal injury, such as αSMA, Kim1, and Ngal, and prevented renal fibrosis at histopathologic level. [5]
Kinase Assay	Inhibitors were synthesized and purified according to the procedures described in Adams et al.The inhibition constant (Ki) for each inhibitor was measured according to the method of Stein et al.using a fluorometric assay,monitoring peptide substrate cleavage of Z-Leu-Leu-Val-Tyr-amino methyl coumarin (Z = carbobenzyloxy) by the 20S proteasome [1].
Cell Research	PC-3 cells were treated with different doses of PS-341 for different periods of time. The cells were washed with PBS, harvested, and fixed in suspension with 3.7% formaldehyde in the neutral buffer for 10 min at room temperature. The cells were centrifuged, and the cell pellet was resuspended in 0.5 ml of 80% ethanol. The cell suspension (25–50 μl) was then placed onto a microscope slide precoated with poly-l-lysine and air-dried. The slides were washed four times with 0.1% Triton X-100 in PBS. The slide was incubated with the DNA stain Hoechst 33342 (Molecular Probes; 1.0 μg/ml in PBS with 0.1% Triton-X-100) for 1.0 min. The slides were rinsed in PBS and mounted with 70% glycerol containing 25 mg/ml 1,4-diazabicyclo[2.2.2]octane. Nuclear staining was visualized using a fluorescent microscope [1].
Animal Research	Mice were inoculated s.c. into the right flank with 3 × 10^7 MM cells in 100 μl of RPMI 1640, together with 100 μl of Matrigel basement membrane matrix. When tumor was measurable, mice were assigned into four treatment groups receiving PS-341 or into a control group. Treatment with PS-341 was given i.v. twice weekly via tail vein at 0.05, 0.1, 0.5, and 1.0 mg/kg for 4 weeks. Subsequently, it was administered once weekly. The control group received the vehicle alone (0.9% sodium chloride) at the same schedule. Caliper measurements of the longest perpendicular tumor diameters were performed every alternate day to estimate the tumor volume, using the following formula: 4π/3 × (width/2)^2 × (length/2), representing the three-dimensional volume of an ellipse. Animals were sacrificed when their tumors reached 2 cm or when the mice became moribund. Survival was evaluated from the first day of treatment until death [4].

Solubility Information

Solubility	H2O: Insoluble, Ethanol: 20.83 mg/mL (54.21 mM),Sonication is recommended. DMSO: 255 mg/mL (663.65 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 7.1 mg/mL (18.48 mM),Solution. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.6025 mL	13.0127 mL	26.0254 mL
5 mM	0.5205 mL	2.6025 mL	5.2051 mL
10 mM	0.2603 mL	1.3013 mL	2.6025 mL
50 mM	0.0521 mL	0.2603 mL	0.5205 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

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