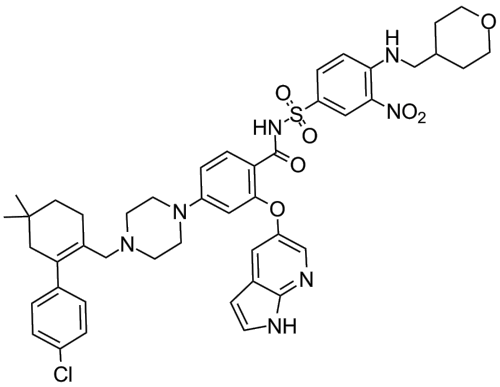
Product Data Sheet

Product Name: ABT-199
Cat. No.: GC14069

Chemical Properties

Cas. No.	1257044-40-8		
Chemical Name	4-[4-[[2-(4-chlorophenyl)-4,4-dimethylcyclohexen-1-yl]methyl]piperazin-1-yl]-N-[3-nitro-4-(oxan-4-ylmethylamino)phenyl]sulfonyl-2-(1H-pyrrolo[2,3-b]pyridin-5-yloxy)benzamide		
SMILES	CC1(CCC(=C(C1)C2=CC=C(C=C2)Cl)CN3CCN(CC3)C4=CC(=C(C=C4)C(=O)NS(=O)(=O)C5=CC(=C(C=C5)NCC6CCOCC6)[N+](=O)[O-])OC7=CN=C8C(=C7)C=CN8)C		
Formula	$C_{45}H_{50}ClN_7O_7S$	M.Wt	868.44
Solubility	≥ 43.422mg/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

Kinase experiment [1]:

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Preparation Method	The affinity of ABT-199 for different subtypes of the Bcl-2 family (Ki or IC50) was determined by competitive fluorescence polarization assays using the following peptide probe/protein pairs: F-BAD (1 nM) and Bcl-XL (6 nM),F-bax (1 nM) and Bcl-2 (10 nM), F-Bax (1 nM) and Bcl-W (40 nM), F-NOxa (2 nM) and McL-1 (40 nM),And the affinity of F-Bax (1 nM) and Bcl-2-A1(15 nM) for Bcl-XL was determined by time-resolved fluorescence resonance energy transfer assays.1 nM Tb labeled anti-His antibody,And ABT-199 were mixed for 30 min at room temperature on Envision microplate reader. Fluorescence values were measured using excitation filters at 340/35 nm and emission filters at 520/525 (F-BAK) and 495/510 nm (anti-His antibody labeled with Tb).
Reaction Conditions	ABT-199 with Bcl-2 for 30 min at RT
Applications	ABT-199 has a subnanomolar affinity for BCL-2 (Ki < 0.010 nM) and bound over three orders of magnitude less avidly to BCL-XL (Ki = 48 nM) and BCL-W (Ki = 245 nM) than to BCL-2.

Cell experiment [2]:

Cell lines	NHL cell lines
Preparation Method	The viability of NHL cell lines was examined after 48 h incubation with increasing concentrations of Navitoclax or ABT-199.
Reaction Conditions	0.01 μM -3.0 μM ABT-199 for 48h

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Applications	ABT-199 cell killing was selective and mechanism dependent, BCL2high status is thus a potential predictive marker for sensitivity to ABT-199.

Animal experiment [3]:

Animal models	Female C.B-17 SCID-beige mice
Preparation Method	All xenograft trials were conducted using ten mice per group, and all mice were ear tagged and monitored individually throughout the studies. ABT-199 was formulated for oral dosing in 60% phosal 50 propylene glycol (PG), 30% polyethylene glycol (PEG) 400 and 10% ethanol. ABT-199 was delivered approximately 2 h before bendamustine or bendamustine plus rituximab.
Dosage form	12.5 mg/kg ABT-199 for 60 days
Applications	After a single oral dose of 12.5 mg per kg body weight in xenografts derived from RS4;11 cells (ALL), ABT-199 caused a maximal tumor growth inhibition (TGImax) of 47% and tumor growth delay (TGD) of 26%.

References:

[1].Souers AJ, Leverson JD,et,al. ABT-199, a potent and selective BCL-2 inhibitor, achieves antitumor activity while sparing platelets. Nat Med. 2013 Feb;19(2):202-8. doi: 10.1038/nm.3048. Epub 2013 Jan 6. PMID: 23291630.

Background

ABT-199 (Venetoclax) is a highly selective oral Bcl-2 inhibitor (K¡<0.01nM) belonging to the BH3 mimetics class. ABT-199 competitively binds to the BH3 hydrophobic groove of Bcl-2 protein, displaces BH3-only pro-apoptotic proteins such as BIM and PUMA, thereby activates BAX/BAK,

triggers mitochondrial outer membrane permeabilization (MOMP), and initiates the caspase cascade to promote tumor cell apoptosis. ABT-199 can be used in research related to chronic lymphocytic leukemia (including 17p deletion), acute myeloid leukemia, mantle cell lymphoma, diffuse large B-cell lymphoma, and follicular lymphoma[1-4].

In vitro, ABT-199 (0.12–0.18μM) treated human acute myeloid leukemia U937 and KG-1 cells for 1–5 days. ABT-199 dose-dependently reduced AML cell viability and proliferation, downregulated Bcl-2 and Mcl-1 mRNA expression, and upregulated Bax mRNA expression. ABT-199 induced apoptotic morphological changes such as nuclear pyknosis and fragmentation, and increased caspase-3 activity[5]. ABT-199 (5μM) treated human colorectal cancer cells (HT-29, SW480, SW620, SW48, RKO) and mouse colorectal cancer cells (CT26, MC38) for 24–72h. ABT-199 significantly upregulated STING, TBK1, IRF3 phosphorylation levels and CCL5, CXCL10, IFNB mRNA expression in a dose- and time-dependent manner. ABT-199 induced mtDNA accumulation in the cytoplasm and activated the canonical cGAS-STING pathway[6].

In vivo, ABT-199 (50mg/kg; oral every other day; from day 9 to day 21 after inoculation; 6 doses total) was orally administered to CNE-2 subcutaneous xenograft-bearing Balb/c nude mice. ABT-199 significantly inhibited nasopharyngeal carcinoma xenograft growth, downregulated Ki67 expression and upregulated cleaved caspase-3 expression in tumors[7]. ABT-199 (100mg/kg; once daily; oral gavage; for 2 weeks) was administered to NOD SCID gamma (NSG) mice bearing MOLM-13 cells via tail vein injection (starting from day 4 after inoculation until day 15), and ABT-199 (100mg/kg; once daily; oral gavage; for 2 weeks) was given to NSG mice bearing primary AML cells via tail vein injection (treatment started 3 weeks after inoculation when engraftment was confirmed). In the MOLM-13 cell line xenograft model, ABT-199 significantly inhibited leukemia progression, prolonged overall survival, reduced leukemia burden in bone marrow, spleen, and liver, and downregulated human CD45 expression in tumors. In the primary AML PDX model, ABT-199 significantly reduced the proportion of human CD45+ cells in bone marrow[8].

References:
[1] Cang S, Iragavarapu C, Savooji J, et al. ABT-199 (venetoclax) and BCL-2 inhibitors in clinical development. J Hematol Oncol. 2015 Nov 20;8:129.
[2] Bisaillon R, Moison C, Thiollier C, et al. Genetic characterization of ABT-199 sensitivity in human AML. Leukemia. 2020 Jan;34(1):63-74.
[3] Itchaki G, Brown JR. The potential of venetoclax (ABT-199) in chronic lymphocytic leukemia. Ther

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Adv Hematol. 2016 Oct;7(5):270-287.
[4] Chiou JT, Lee YC, Wang LJ, et al. BCL2 inhibitor ABT-199 and BCL2L1 inhibitor WEHI-539 coordinately promote NOXA-mediated degradation of MCL1 in human leukemia cells. Chem Biol Interact. 2022 Jul 1;361:109978.
[5] Nazmabadi R, Pooladi M, Amri J, et al. The Effects of ABT-199 and Dihydroartemisinin Combination on Cell Growth and Apoptosis in Human U937 and KG-1 Cancer Cells. Asian Pac J Cancer Prev. 2024 Jan 1;25(1):343-350.
[6] Zhang W, Pan X, Wang L, et al. Selective BCL-2 inhibitor triggers STING-dependent antitumor immunity via inducing mtDNA release. J Immunother Cancer. 2025 Apr 29;13(4):e010889.
[7] Wang Y, Wang Y, Fan X, et al. ABT-199-mediated inhibition of Bcl-2 as a potential therapeutic strategy for nasopharyngeal carcinoma. Biochem Biophys Res Commun. 2018 Sep 10;503(3):1214-1220.
[8] Pan R, Hogdal LJ, Benito JM, et al. Selective BCL-2 inhibition by ABT-199 causes on-target cell death in acute myeloid leukemia. Cancer Discov. 2014 Mar;4(3):362-75.

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