Sepantronium bromide

Cat. No.: HY-10194

CAS No.: 781661-94-7

Molecular Formula: $C_{20}H_{19}BrN_4O_3$

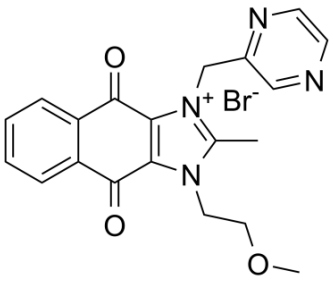
Molecular Weight: 443.29

Target: Survivin; Autophagy

Pathway: Apoptosis; Autophagy

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (225.59 mM; Need ultrasonic)
DMSO : 50 mg/mL (112.79 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.2559 mL	11.2793 mL	22.5586 mL
5 mM	0.4512 mL	2.2559 mL	4.5117 mL
10 mM	0.2256 mL	1.1279 mL	2.2559 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2 mg/mL (4.51 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 2 mg/mL (4.51 mM); Clear solution; Need ultrasonic
3. Add each solvent one by one: PBS
   Solubility: 50 mg/mL (112.79 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Sepantronium bromide (YM-155) is a survivin inhibitor with an IC_{50} of 0.54 nM[1].

IC_{50} & Target

IC50: 0.54 nM (Survivin)[1]

In Vitro

Sepantronium bromide (YM155; 30 μM) is not sensitive to survivn gene promoter-driven luciferase reporter activity.
Sepantronium bromide shows significant supression on endogenous survivin expression in PC-3 and PPC-1 human HRPC

	cells with deficient p53 via transcriptional inhibition of the survivin gene promoter. Sepantronium bromide (100 nM) does not affect protein expression of c-IAP2, XIAP, Bcl-2, Bcl-xL, Bad, α-actin, and β-tubulin. Sepantronium bromide potently inhibits human cancer cell lines (mutated or truncated p53) such as PC-3, PPC-1, DU145, TSU-Pr1, 22Rv1, SK-MEL-5 and A375 with IC_{50}s ranging from 2.3 to 11 nM, respectively[1]. Sepantronium bromide (YM155) resultin in an increase in sensitivity of NSCLC cells to γ-radiation. Sepantronium bromide combined with γ-radiation increases both the number of apoptotic cells and the activity of caspase-3. In addition, Sepantronium bromide delays the repair of radiation-induced double-strand breaks in nuclear DNA[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Sepantronium bromide (YM155; 3 and 10 mg/kg) inhibits the tumor growth in PC-3 xenografts, without obvious body weight loss and blood cell count decrease. Sepantronium bromide is highly distributed to tumor tissue in vivo. Sepantronium bromide shows 80% TGI at a dose of 5 mg/kg in PC-3 orthotopic xenografts[1]. Sepantronium bromide (YM155) in combination with γ-radiation shows potent antitumor activity against H460 or Calu6 xenografts in nude mice[2]. In this orthotopic renal and metastatic lung tumors models, Sepantronium bromide (YM-155) and IL-2 additively decreases tumor weight, lung metastasis, and luciferin-stained tumor images[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	The antiproliferative activity of Sepantronium bromide is measured. After treatment with Sepantronium bromide for 48 h, the cell count is determined by sulforhodamine B assay. The GI_{50} value is calculated by logistic analysis, which is the drug concentration resulting in a 50% reduction in the net protein increase (as measured by sulforhodamine B staining) in control cells during the drug incubation. The assay is done in triplicate, and the mean GI_{50} value is obtained from the results of four independent assays. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Five-week-old male nude mice (BALB/c nu/nu) are used for the assay. PC-3 cells (2×10^6-3×10^6) are injected into the flanks of the mice and allowed to reach a tumor volume of > 100 mm^3 in tumor volume (length×$width^2$×0.5). Sepantronium bromide is s.c. administered as a 3-day continuous infusion per week for 2 weeks using an implanted micro-osmotic pump or i.v. administered five times a week for 2 weeks. The percentage of tumor growth inhibition 14 days after initial Sepantronium bromide administration is calculated for each group using the following formula: MTV=100×{1-[(MTV of the treated group on day 14)-(MTV of the treated group on day 0)]/[(MTV of the control group on day 14)-(MTV of the control group on day 0)]}, where MTV is mean tumor volume. For both the frozen tumors and plasma samples, survivin expression levels are analyzed by Western blotting and Sepantronium bromide concentration by high-performance liquid chromatography/triple quadrupole mass spectrometry (LC/MS/MS) using validated methods. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cancer Lett. 2018 Jul 1;425:54-64.
- Cell Death Dis. 2020 Nov 15;11(11):982.
- Cancers. 2019 Oct 14;11(10):1550.
- Cancers. 2019 Jul 5;11(7):947.
- Stem Cell Res Ther. 2020 Jun 10;11(1):229.

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REFERENCES

[1]. Nakahara T, et al. YM155, a novel small-molecule survivin suppressant, induces regression of established human hormone-refractory prostate tumor xenografts. Cancer Res. 2007 Sep 1;67(17):8014-21.

[2]. Iisa T, et al. Radiosensitizing effect of YM155, a novel small-molecule survivin suppressant, in non-small cell lung cancer cell lines. Clin Cancer Res. 2008 Oct 15;14(20):6496-504.

[3]. Guo K, et al. A combination of YM-155, a small molecule survivin inhibitor, and IL-2 potently suppresses renal cell carcinoma in murine model. Oncotarget. 2015 Aug 28;6(25):21137-47.

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