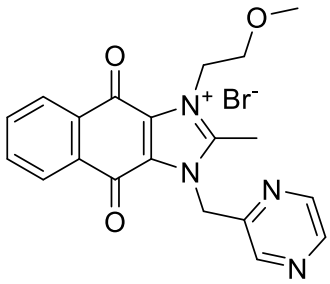
Product data sheet

MedKoo Cat#: 203190 Name: Sepantronium bromide CAS#: 781661-94-7 Chemical Formula: $C_{20}H_{19}BrN_4O_3$ Molecular Weight: 443.29	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.



1. Product description:
Sepantronium bromide, also known as YM-155, is a small-molecule proapoptotic agent with potential antineoplastic activity. Survivin inhibitor YM155 selectively inhibits survivin expression in tumor cells, resulting in inhibition of survivin antiapoptotic activity (via the extrinsic or intrinsic apoptotic pathways) and tumor cell apoptosis. Survivin, a member of the inhibitor of apoptosis (IAP) gene family, is expressed during embryonal development and is absent in most normal, terminally differentiated tissues; upregulated in a variety of human cancers, its expression in tumors is associated with a more aggressive phenotype, shorter survival times, and a decreased response to chemotherapy.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	55	124.07
Water	89	200.77

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.26 mL	11.28 mL	22.56 mL
5 mM	0.45 mL	2.26 mL	4.51 mL
10 mM	0.23 mL	1.13 mL	2.26 mL
50 mM	0.05 mL	0.23 mL	0.45 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Nakahara T, Kita A, Yamanaka K, Mori M, Amino N, Takeuchi M, Tominaga F, Hatakeyama S, Kinoyama I, Matsuhisa A, Kudoh M, Sasamata M. 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. doi: 10.1158/0008-5472.CAN-07-1343. Erratum in: Cancer Res. 2012 Aug 1;72(15):3886. Mori, Masamichi [added]; Amino, Nobuaki [added]; Hatakeyama, Shinji [added];Minematsu, Tsuyoshi [removed]; Shirasuna, Kenna[removed]. PMID: 17804712.

2. Iwasa T, Okamoto I, Suzuki M, Nakahara T, Yamanaka K, Hatashita E, Yamada Y, Fukuoka M, Ono K, Nakagawa K. 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. doi: 10.1158/1078-0432.CCR-08-0468. PMID: 18927289.

In vivo study

1. Nakahara T, Kita A, Yamanaka K, Mori M, Amino N, Takeuchi M, Tominaga F, Hatakeyama S, Kinoyama I, Matsuhisa A, Kudoh M, Sasamata M. 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. doi: 10.1158/0008-5472.CAN-07-1343. Erratum in: Cancer Res. 2012 Aug 1;72(15):3886. Mori, Masamichi [added]; Amino, Nobuaki [added]; Hatakeyama, Shinji [added];Minematsu, Tsuyoshi [removed]; Shirasuna, Kenna[removed]. PMID: 17804712.

7. Bioactivity

Biological target:

Sepantronium bromide (YM-155) is a survivin inhibitor with an IC50 of 0.54 nM.

In vitro activity

To identify a novel small molecule that specifically inhibits survivin expression in human cancer cells, a high-throughput screening of in-house chemical compound libraries using the transformants stably expressing survivin gene promoter–driven luciferase reporter or SV40 enhancer/promoter–driven luciferase reporter was conducted. YM155 was identified as a novel small-molecule survivin gene suppressant (Table 1). YM155 potently inhibited survivin promoter activity with an IC50 value of 0.54 nmol/L but did not significantly inhibit SV40 promoter activity at concentrations up to 30 μmol/L. The in vitro effect of YM155 was further confirmed on endogenous survivin expression in PC-3 and PPC-1 human HRPC cells with deficient p53 (Fig. 1A–C). YM155 administered from 10 to 1,000 nmol/L significantly suppressed survivin expression in a dose-dependent manner (Fig. 1A), as observed at 6 h after the drug addition (Fig. 1B). These results clearly show that at similar time points, YM155 suppresses survivin at the mRNA and protein levels, which suggests that the suppression of survivin by YM155 is through transcriptional inhibition of the survivin gene promoter.

Reference: Cancer Res. 2012 Aug 1;72(15):3886. http://cancerres.aacrjournals.org/cgi/pmidlookup?view=long&pmid=17804712

In vivo activity

The in vivo antitumor activity of YM155 was evaluated in PC-3 orthotopic xenografts, a more clinically relevant model of HRPC (Fig. 5). YM155 administered at 1 and 5 mg/kg showed 47% and 80% inhibition of tumor growth, respectively, compared with controls (Fig. 5A). For this evaluation, because the excised prostate and seminal vesicles were both included in the tumor weight, YM155 treatment almost completely inhibited tumor growth (Fig. 5C). After orthotopic implantation of PC-3, control mice showed a marked decrease in body weight and a deterioration of general health as the tumors progressed (Fig. 5B). Mice treated with YM155, however, showed improved general health and body weight gain. These results strongly suggest that YM155 may potentially show clinical benefits in patients with HRPC.

Reference: Cancer Res. 2012 Aug 1;72(15):3886. http://cancerres.aacrjournals.org/cgi/pmidlookup?view=long&pmid=17804712