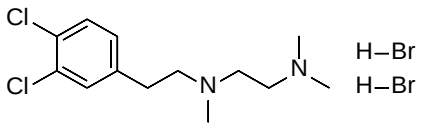
Product data sheet

MedKoo Cat#: 522998 Name: BD1047 HBr CAS#: 138356-21-5 (HBr) Chemical Formula: $C_{13}H_{22}Br_2Cl_2N_2$ Molecular Weight: 437.04	
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:
BD1047 is a potent and selective Sigma-1 Receptor Antagonist. It has effects in animal studies suggestive of antipsychotic activity and may also be useful in the treatment of neuropathic pain. BD-1047 has >50-fold selectivity at σ1 over σ2 and also >100-fold selectivity over opiate, phencyclidine, muscarinic, dopamine, α1- & α2-adrenoceptor, 5-HT1, and 5-HT2.

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
Water	87.0	199.06
DMSO	50.0	114.41

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.29 mL	11.44 mL	22.88 mL
5 mM	0.46 mL	2.29 mL	4.58 mL
10 mM	0.23 mL	1.14 mL	2.29 mL
50 mM	0.05 mL	0.23 mL	0.46 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. Su DA, Jiang RY, Liu N, Ding LC, Wang DM, Yu HY, Yan ES, Zhu MH, Zhu B. Effects of BD1047, a σ1 receptor antagonist, on the expression of mTOR, Camk2γ and GSK-3β in fluvoxamine-treated N2a cells. Exp Ther Med. 2014 Feb;7(2):435-438. doi: 10.3892/etm.2013.1438. Epub 2013 Dec 5. PMID: 24396420; PMCID: PMC3881039.

In vivo study

1. Zhu S, Wang C, Han Y, Song C, Hu X, Liu Y. Sigma-1 Receptor Antagonist BD1047 Reduces Mechanical Allodynia in a Rat Model of Bone Cancer Pain through the Inhibition of Spinal NR1 Phosphorylation and Microglia Activation. Mediators Inflamm. 2015;2015:265056. doi: 10.1155/2015/265056. Epub 2015 Nov 30. PMID: 26696751; PMCID: PMC4677253.
2. Kwon YB, Jeong YC, Kwon JK, Son JS, Kim KW. The Antinociceptive Effect of Sigma-1 Receptor Antagonist, BD1047, in a Capsaicin Induced Headache Model in Rats. Korean J Physiol Pharmacol. 2009 Dec;13(6):425-9. doi: 10.4196/kjpp.2009.13.6.425. Epub 2009 Dec 31. PubMed PMID: 20054487; PubMed Central PMCID: PMC2802301.

7. Bioactivity
Biological target: BD1047 is a Sigma-1 Receptor Antagonist.

Product data sheet

In vitro activity

The administration of BD1047 significantly decreased the levels of mTOR and Camk2γ expression compared with those of the F group in the cultured N2a cells (P<0.01; Figs. 1 and 2). Moreover, BD1047 significantly increased the levels of GSK-3β expression compared with those of the F group in the cultured N2a cells (P<0.01; Fig. 3).

Reference: Exp Ther Med. 2014 Feb;7(2):435-438. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3881039/

In vivo activity

To investigate the role of sigma-1 receptor in initiation of BCP (bone cancer pain), mechanical allodynia was measured in BCP rats after a continuous administration of the selective sigma-1 receptor antagonist BD1047 injection. A continuous drug administration of BD1047 (120 nmol/20 μL, once a day for 3 consecutive days) from day 5 to day 7 was used after inoculation with Walker 256 cells. There were no significant differences in baseline PWT (paw withdrawal threshold) among all groups (n = 10, P > 0.05). Compared with normal saline-treated (NS-treated) sham group, there were no remarkable changes of PWT in BD1047-treated sham group (P > 0.05; Figure 3). BCP group exhibited a decrease of PWT compared with sham group on day 5. Intrathecal administration of BD1047 significantly alleviated bone cancer induced mechanical allodynia compared with NS-treated BCP group (P < 0.01; Figure 3).

Reference: Mediators Inflamm. 2015;2015:265056. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4677253/