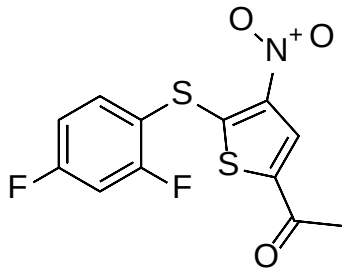
Product data sheet

MedKoo Cat#: 406569 Name: P22077 CAS: 1247819-59-5 Chemical Formula: $C_{12}H_7F_2NO_3S_2$ Exact Mass: 314.9835 Molecular Weight: 315.3088	
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:

P22077 is a potent and selective ubiquitin-specific protease 7 (USP7) inhibitor. P22077 potently induces apoptosis in NB cells with an intact USP7-HDM2-p53 axis but not in NB cells with mutant p53 or without human homolog of MDM2 (HDM2) expression. P22077 also significantly augmented the cytotoxic effects of doxorubicin (Dox) and etoposide (VP-16) in NB cells with an intact USP7-HDM2-p53 axis. Moreover, P22077 was found to be able to sensitize chemoresistant LA-N-6 NB cells to chemotherapy. In an in vivo orthotopic NB mouse model, P22077 significantly inhibited the xenograft growth of three NB cell lines. USP7-specific inhibitors like P22077 may serve not only as a stand-alone therapy but also as an effective adjunct to current chemotherapeutic regimens for treating NB with an intact USP7-HDM2-p53 axis.

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
DMF	30.0	95.14
DMSO	43.63	138.38
DMSO:PBS (pH 7.2) (1:2)	0.33	1.05
Ethanol	0.55	1.74

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	3.17 mL	15.86 mL	31.71 mL
5 mM	0.63 mL	3.17 mL	6.34 mL
10 mM	0.32 mL	1.59 mL	3.17 mL
50 mM	0.06 mL	0.32 mL	0.63 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. Xiang M, Liang L, Kuang X, Xie Z, Liu J, Zhao S, Su J, Chen X, Liu H. Pharmacological inhibition of USP7 suppresses growth and metastasis of melanoma cells in vitro and in vivo. J Cell Mol Med. 2021 Oct;25(19):9228-9240. doi: 10.1111/jcmm.16834. Epub 2021 Sep 1. PMID: 34469054; PMCID: PMC8500953.

2. Fan YH, Cheng J, Vasudevan SA, Dou J, Zhang H, Patel RH, Ma IT, Rojas Y, Zhao Y, Yu Y, Zhang H, Shohet JM, Nuchtern JG, Kim ES, Yang J. USP7 inhibitor P22077 inhibits neuroblastoma growth via inducing p53-mediated apoptosis. Cell Death Dis. 2013 Oct 17;4(10):e867. doi: 10.1038/cddis.2013.400. PMID: 24136231; PMCID: PMC3920959.

Product data sheet

In vivo study

1. Gu YH, Ren KW, Wang Y, Wang SH, Yu XH, Xu LW, Li HH, Bi HL. Administration of USP7 inhibitor P22077 inhibited cardiac hypertrophy and remodeling in Ang II-induced hypertensive mice. Front Pharmacol. 2022 Oct 25;13:1021361. doi: 10.3389/fphar.2022.1021361. PMID: 36386139; PMCID: PMC9640964.

2. Zhao XB, Ji FY, Li HR, Zhu HH, Zhao ZZ, Ling J, Di QQ, Ma XY, Chen WL. P22077 inhibits LPS-induced inflammatory response by promoting K48-linked ubiquitination and degradation of TRAF6. Aging (Albany NY). 2020 Jun 9;12(11):10969-10982. doi: 10.18632/aging.103309. Epub 2020 Jun 9. PMID: 32516131; PMCID: PMC7346011.

7. Bioactivity

Biological target:

P 22077 is a cell-permeable ubiquitin-specific protease 7 (USP7) inhibitor.

In vitro activity

This study found that P22077 stabilized p53 by inducing HDM2 protein degradation in NB cells. P22077 also significantly augmented the cytotoxic effects of doxorubicin (Dox) and etoposide (VP-16) in NB cells with an intact USP7-HDM2-p53 axis. Moreover, P22077 was found to be able to sensitize chemoresistant LA-N-6 NB cells to chemotherapy.

Reference: Cell Death Dis. 2013 Oct 17;4(10):e867. https://pubmed.ncbi.nlm.nih.gov/24136231/

In vivo activity

These data indicated that USP7 expression was increased during Ang II-induced cardiac hypertrophy and remodeling in mice and humans with heart failure, while the administration of its inhibitor p22077 attenuated cardiac hypertrophy, cardiac fibrosis, inflammation, and oxidase stress. Mechanistically, the administration of p22077 inhibited the multiple signaling pathways, including AKT/ERK, TGF-β/SMAD2/Collagen I/Collagen III, NF-κB/NLRP3, and NAPDH oxidases (NOX2 and NOX4).

Reference: Front Pharmacol. 2022 Oct 25;13:1021361. https://pubmed.ncbi.nlm.nih.gov/36386139/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.