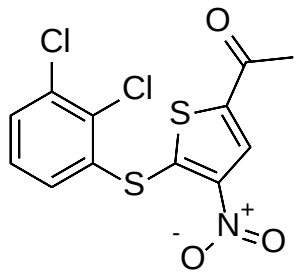
Product data sheet

MedKoo Cat#: 406577 Name: P005091 CAS: 882257-11-6 Chemical Formula: $C_{12}H_7Cl_2NO_3S$ Exact Mass: 346.9244 Molecular Weight: 348.212	
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:

P005091 is a potent and selective inhibitor of ubiquitin-specific protease (USP) 7 (IC50 = 4.2 μ M). P005091 induces elevated p53 and apoptosis in cancer cell lines and displays antiangiogenic activity in vivo . The deubiquitylating enzyme USP7 (HAUSP) sits at a critical node regulating the activities of numerous proteins broadly characterized as tumor suppressors, DNA repair proteins, immune responders, viral proteins, and epigenetic modulators. Aberrant USP7 activity may promote oncogenesis and viral disease making it a compelling target for therapeutic intervention.

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	3.0	8.62
DMF:PBS (pH 7.2) (1:2)	0.3	0.86
DMSO	17.07	49.01

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.87 mL	14.36 mL	28.72 mL
5 mM	0.57 mL	2.87 mL	5.74 mL
10 mM	0.29 mL	1.44 mL	2.87 mL
50 mM	0.06 mL	0.29 mL	0.57 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. Granieri L, Marocchi F, Melixetian M, Mohammadi N, Nicoli P, Cuomo A, Bonaldi T, Confalonieri S, Pisati F, Giardina G, Bertalot G, Bossi D, Lanfrancone L. Targeting the USP7/RRM2 axis drives senescence and sensitizes melanoma cells to HDAC/LSD1 inhibitors. Cell Rep. 2022 Sep 20;40(12):111396. doi: 10.1016/j.celrep.2022.111396. PMID: 36130505.
2. Pan T, Li X, Li Y, Tao Z, Yao H, Wu Y, Chen G, Zhang K, Zhou Y, Huang Y. USP7 inhibition induces apoptosis in glioblastoma by enhancing ubiquitination of ARF4. Cancer Cell Int. 2021 Sep 23;21(1):508. doi: 10.1186/s12935-021-02208-z. PMID: 34556124; PMCID: PMC8461901.

In vivo study

1. Ye M, He J, Zhang J, Liu B, Liu X, Xie L, Wei M, Dong R, Li K, Ma D, Dong K. USP7 promotes hepatoblastoma progression through activation of PI3K/AKT signaling pathway. Cancer Biomark. 2021;31(2):107-117. doi: 10.3233/CBM-200052. PMID: 33780361.

2. Chauhan D, Tian Z, Nicholson B, Kumar KG, Zhou B, Carrasco R, McDermott JL, Leach CA, Fulcinniti M, Kodrasov MP, Weinstock J, Kingsbury WD, Hideshima T, Shah PK, Minvielle S, Altun M, Kessler BM, Orlowski R, Richardson P, Munshi N, Anderson KC. A small molecule inhibitor of ubiquitin-specific protease-7 induces apoptosis in multiple myeloma cells and overcomes bortezomib resistance. Cancer Cell. 2012 Sep 11;22(3):345-58. doi: 10.1016/j.ccr.2012.08.007. PMID: 22975377; PMCID: PMC3478134.

7. Bioactivity

Biological target:

P005091 is a selective and potent inhibitor of ubiquitin-specific protease 7 (USP7) with an EC50 of 4.2 μM.

In vitro activity

As shown in the results of Fig. 2A, treatment with different concentrations of P5091 for different times resulted in a significant decrease in the viability of both cell lines. The IC50 of SHG-140 and T98G cells were 1.2 μM and 1.59 μM, respectively, when treated with P5091 for 48 h. Application of P5091 caused a concentration-dependent increase in early-, late-stage apoptosis and total apoptosis in GBM cells.

Reference: Cancer Cell Int. 2021 Sep 23;21(1):508. https://pubmed.ncbi.nlm.nih.gov/34556124/

In vivo activity

Treatment of MM.1S tumor-bearing mice with intravenous (IV) injection of P5091 inhibits MM tumor growth and prolongs survival of these mice (Fig 6A and 6B). Examination of harvested tumors showed that P5091 inhibited USP7 activity, decreased HDM2, and increased p21 levels relative to tumors from control mice (Fig 6C). P5091 decreases proliferation in harvested tumors, as assessed by BrdU and Ki67 staining (Fig 6D, and Fig S5A). P5091 increases the number of cleaved-caspase-3-, and TUNEL-positive apoptotic tumor cells versus vehicle treatment (Fig 6E, and Fig S5B).

Reference: Cancer Cell. 2012 Sep 11;22(3):345-58. https://pubmed.ncbi.nlm.nih.gov/22975377/

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.