Product data sheet



N II O

MedKoo Cat#: 408099			
Name: RA-9			
CAS: 919091-63-7			
Chemical Formula: C ₁₉ H ₁₅ N ₃ O ₅			
Exact Mass: 365.1012			
Molecular Weight: 365.35			
Product supplied as:	Powder] ⁻O _{`N+} ≁∕≪	
Purity (by HPLC):	$\geq 98\%$		
Shipping conditions	Ambient temperature		
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.	7	
_	In solvent: -80°C 3 months; -20°C 2 weeks.		

Product description:

RA-9 is a potent and selective proteasome-associated deubiquitinating enzymes (DUBs) inhibitor with favorable toxicity profile and anticancer activity.

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	4.17	11.41

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.74 mL	13.69 mL	27.37 mL
5 mM	0.55 mL	2.74 mL	5.47 mL
10 mM	0.27 mL	1.37 mL	2.74 mL
1 mM	2.74 mL	13.69 mL	27.37 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

- Mirzapoiazova T, Pozhitkov A, Nam A, Mambetsariev I, Nelson MS, Tan YC, Zhang K, Raz D, Singhal S, Nasser MW, Kulkarni P, Batra SK, Sattler M, Salgia R. Effects of selected deubiquitinating enzyme inhibitors on the proliferation and motility of lung cancer and mesothelioma cell lines. Int J Oncol. 2020 Jul;57(1):80-86. doi: 10.3892/ijo.2020.5034. Epub 2020 Apr 1. PMID: 32236606; PMCID: PMC7252467.
- Vogel RI, Coughlin K, Scotti A, Iizuka Y, Anchoori R, Roden RB, Marastoni M, Bazzaro M. Simultaneous inhibition of deubiquitinating enzymes (DUBs) and autophagy synergistically kills breast cancer cells. Oncotarget. 2015 Feb 28;6(6):4159-70. doi: 10.18632/oncotarget.2904. PMID: 25784654; PMCID: PMC4414179.

In vivo study

- Winkel AF, Engel CK, Margerie D, Kannt A, Szillat H, Glombik H, Kallus C, Ruf S, Güssregen S, Riedel J, Herling AW, von Knethen A, Weigert A, Brüne B, Schmoll D. Characterization of RA839, a Noncovalent Small Molecule Binder to Keap1 and Selective Activator of Nrf2 Signaling. J Biol Chem. 2015 Nov 20;290(47):28446-28455. doi: 10.1074/jbc.M115.678136. Epub 2015 Oct 12. PMID: 26459563; PMCID: PMC4653701.
- Coughlin K, Anchoori R, Iizuka Y, Meints J, MacNeill L, Vogel RI, Orlowski RZ, Lee MK, Roden RB, Bazzaro M. Smallmolecule RA-9 inhibits proteasome-associated DUBs and ovarian cancer in vitro and in vivo via exacerbating unfolded protein responses. Clin Cancer Res. 2014 Jun 15;20(12):3174-86. doi: 10.1158/1078-0432.CCR-13-2658. Epub 2014 Apr 11. PMID: 24727327; PMCID: PMC4269153.

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7. Bioactivity

Biological target:

RA-9 blocks ubiquitin-dependent protein degradation without impacting 20S proteasome proteolytic activity. RA-9 selectively induces onset of apoptosis in ovarian cancer cell lines and primary cultures derived from donors. RA-9 induces endoplasmic reticulum (ER)-stress responses in ovarian cancer cells.

In vitro activity

RA-9 exerted an inhibitory effect on the adhesion and proliferation of H2373 cells, whereas it had no effect on A549 cells. In H2373 cells, treatment with RA-9 decreased its phosphorylation compared to the DMSO control.

Reference: Int J Oncol. 2020 Jul;57(1):80-86. https://pubmed.ncbi.nlm.nih.gov/32236606/

In vivo activity

This study demonstrated that RA-9 is efficient in exerting cytotoxic effects and inhibitory actions on cell proliferation and hormone secretion by modulating the expression of pERK1/2, pCREB and p27. Inhibition of USP8 might be a strategy to target both USP8-WT and USP8-mutated tumors in CD patients.

Reference: Endocr Relat Cancer. 2021 Jun 28;28(8):573-582. https://pubmed.ncbi.nlm.nih.gov/34086599/

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.