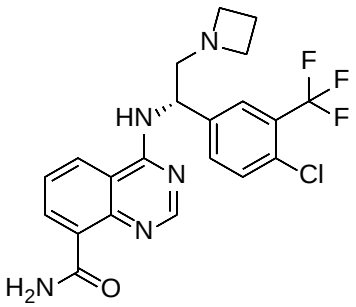
Product data sheet

MedKoo Cat#: 407496 Name: M2698 free base CAS: 1379545-95-5 (free base) Chemical Formula: $C_{21}H_{19}ClF_3N_5O$ Exact Mass: 449.123 Molecular Weight: 449.8622	
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:
M2698, also known as MSC-2363318A, is a potent dual-inhibitor of p70S6K and Akt that affects tumor growth in mouse models of cancer and crosses the blood-brain barrier. M2698 was highly potent in vitro (IC50 1 nM for p70S6K, Akt1 and Akt3 inhibition; IC50 17 nM for pGSK3β indirect inhibition) and in vivo (IC50 15 nM for pS6 indirect inhibition), and relatively selective (only 6/264 kinases had an IC50 within 10-fold of p70S6K).

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	125.0	277.86

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.22 mL	11.11 mL	22.23 mL
5 mM	0.44 mL	2.22 mL	4.45 mL
10 mM	0.22 mL	1.11 mL	2.22 mL
50 mM	0.04 mL	0.22 mL	0.44 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. Previs RA, Armaiz-Pena GN, Ivan C, Dalton HJ, Rupaimoole R, Hansen JM, Lyons Y, Huang J, Haemmerle M, Wagner MJ, Gharpure KM, Nagaraja AS, Filant J, McGuire MH, Noh K, Dorniak PL, Linesch SL, Mangala LS, Pradeep S, Wu SY, Sood AK. Role of YAP1 as a Marker of Sensitivity to Dual AKT and P70S6K Inhibition in Ovarian and Uterine Malignancies. J Natl Cancer Inst. 2017 Jul 1;109(7):djw296. doi: 10.1093/jnci/djw296. PMID: 28376174; PMCID: PMC6059189.
2. Machl A, Wilker EW, Tian H, Liu X, Schroeder P, Clark A, Huck BR. M2698 is a potent dual-inhibitor of p70S6K and Akt that affects tumor growth in mouse models of cancer and crosses the blood-brain barrier. Am J Cancer Res. 2016 Mar 15;6(4):806-18. PMID: 27186432; PMCID: PMC4859885.

In vivo study

1. DeSelm L, Huck B, Lan R, Neagu C, Potnick J, Xiao Y, Chen X, Jones R, Richardson TE, Heasley BH, Haxell T, Moore J, Tian H, Georgi K, Rohdich F, Sutton A, Johnson T, Mochalkin I, Jackson J, Lin J, Crowley L, Machl A, Clark A, Wilker E, Sherer B, Goutopoulos A. Identification of Clinical Candidate M2698, a Dual p70S6K and Akt Inhibitor, for Treatment of PAM Pathway-Altered Cancers. J Med Chem. 2021 Oct 14;64(19):14603-14619. doi: 10.1021/acs.jmedchem.1c01087. Epub 2021 Oct 1. PMID: 34596404.

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2. Machl A, Wilker EW, Tian H, Liu X, Schroeder P, Clark A, Huck BR. M2698 is a potent dual-inhibitor of p70S6K and Akt that affects tumor growth in mouse models of cancer and crosses the blood-brain barrier. Am J Cancer Res. 2016 Mar 15;6(4):806-18. PMID: 27186432; PMCID: PMC4859885.

7. Bioactivity

Biological target:

M2698 (MSC2363318A) is an orally active, ATP competitive, selective p70S6K and Akt dual-inhibitor with IC_{50}s of 1 nM for p70S6K, Akt1 and Akt3.

In vitro activity

In this study, the p70S6K/Akt dual inhibitor, M2698 (previously MSC2363318A), was characterized as a potential anti-cancer agent through examination of its pharmacokinetic, pharmacodynamic and metabolic properties, and anti-tumor activity. M2698 was highly potent in vitro (IC50 1 nM for p70S6K, Akt1 and Akt3 inhibition; IC50 17 nM for pGSK3β indirect inhibition) and in vivo (IC50 15 nM for pS6 indirect inhibition), and relatively selective (only 6/264 kinases had an IC50 within 10-fold of p70S6K).

Reference: Am J Cancer Res. 2016 Mar 15;6(4):806-18. https://pubmed.ncbi.nlm.nih.gov/27186432/

In vivo activity

Through the screening of in-house proprietary kinase library, 4-benzylamino-quinazoline-8-carboxylic acid amide 1 stood out, with sub-micromolar p70S6k biochemical activity, as the starting point for a structurally enabled p70S6K/Akt dual inhibitor program that led to the discovery of M2698, a dual p70S6k/Akt inhibitor. M2698 is kinase selective, possesses favorable physical, chemical, and DMPK profiles, is orally available and well tolerated, and displayed tumor control in multiple in vivo studies of PAM pathway-driven tumors.

Reference: J Med Chem. 2021 Oct 14;64(19):14603-14619. https://pubmed.ncbi.nlm.nih.gov/34596404/

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.