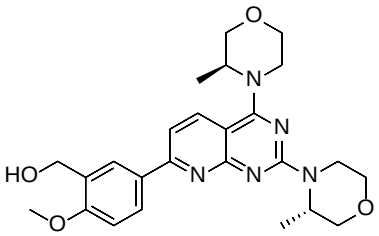
Product data sheet

MedKoo Cat#: 200312 Name: AZD-8055 CAS#: 1009298-09-2 Chemical Formula: $C_{25}H_{31}N_5O_4$ Exact Mass: 465.2376 Molecular Weight: 465.54	
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:
AZD-8055 is an inhibitor of the mammalian target of rapamycin (mTOR) with potential antineoplastic activity. mTOR kinase inhibitor AZD8055 inhibits the serine/threonine kinase activity of mTOR, resulting in decreased expression of mRNAs necessary for cell cycle progression, which may induce cell cycle arrest and tumor cell apoptosis. mTOR phosphorylates transcription factors, such as S6K1 and 4E-BP1, which stimulate protein synthesis and regulate cell growth, proliferation, motility, and survival.

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	45.44	97.61
Ethanol	10.25	22.02
DMF	10.0	21.48

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.15 mL	10.74 mL	21.48 mL
5 mM	0.43 mL	2.15 mL	4.30 mL
10 mM	0.21 mL	1.07 mL	2.15 mL
50 mM	0.04 mL	0.21 mL	0.43 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. Chen Y, Lee CH, Tseng BY, Tsai YH, Tsai HW, Yao CL, Tseng SH. AZD8055 Exerts Antitumor Effects on Colon Cancer Cells by Inhibiting mTOR and Cell-cycle Progression. Anticancer Res. 2018 Mar;38(3):1445-1454. doi: 10.21873/anticanres.12369. PMID: 29491070.
2. Chresta CM, Davies BR, Hickson I, Harding T, Cosulich S, Critchlow SE, Vincent JP, Ellston R, Jones D, Sini P, James D, Howard Z, Dudley P, Hughes G, Smith L, Maguire S, Hummersone M, Malagu K, Menear K, Jenkins R, Jacobsen M, Smith GC, Guichard S, Pass M. AZD8055 is a potent, selective, and orally bioavailable ATP-competitive mammalian target of rapamycin kinase inhibitor with in vitro and in vivo antitumor activity. Cancer Res. 2010 Jan 1;70(1):288-98. doi: 10.1158/0008-5472.CAN-09-1751. Epub 2009 Dec 22. PMID: 20028854.

In vivo study

1. Chen Y, Lee CH, Tseng BY, Tsai YH, Tsai HW, Yao CL, Tseng SH. AZD8055 Exerts Antitumor Effects on Colon Cancer Cells by Inhibiting mTOR and Cell-cycle Progression. Anticancer Res. 2018 Mar;38(3):1445-1454. doi: 10.21873/anticanres.12369. PMID: 29491070.

2. Chresta CM, Davies BR, Hickson I, Harding T, Cosulich S, Critchlow SE, Vincent JP, Ellston R, Jones D, Sini P, James D, Howard Z, Dudley P, Hughes G, Smith L, Maguire S, Hummersone M, Malagu K, Menear K, Jenkins R, Jacobsen M, Smith GC, Guichard S, Pass M. AZD8055 is a potent, selective, and orally bioavailable ATP-competitive mammalian target of rapamycin kinase inhibitor with in vitro and in vivo antitumor activity. Cancer Res. 2010 Jan 1;70(1):288-98. doi: 10.1158/0008-5472.CAN-09-1751. Epub 2009 Dec 22. PMID: 20028854.

7. Bioactivity

Biological target: AZD-8055 is a mTOR kinase inhibitor with an IC50 of 0.8 nM.

In vitro activity

The antitumor effect of AZD8055 on colon cancer cells was studied. The human HT-15 and HCT-116 colon cancer cell lines, and the mouse CT-26 colon cancer cell line, were treated with different concentrations of AZD8055 for 24 h or 48 h. Following this, cell viability was measured using an MTT assay (Figure 1a). AZD8055 was found to inhibit the proliferation of these three colon cancer cell lines in a time- and concentration-dependent manner ($p<0.05$). The LC50s for AZD8055 at 24 h and 48 h of treatment were 107.8 μM and 9.8 μM for HCT-15 cells, 124.6 μM and 21.5 μM for HCT-116 cells, and 3.0 μM and 0.43 μM for CT-26 cells, respectively. To further investigate the effect on cell viability, apoptosis induction was examined in these colon cancer cells treated with different concentrations of AZD8055 for 48 h. As shown in Figure 1b, AZD8055 treatment caused a significant, concentration-dependent increase in apoptosis of these colon cancer cells ($p<0.05$).

Reference: Anticancer Res. 2018 Mar;38(3):1445-1454. https://ar.iiarjournals.org/content/38/3/1445.long

In vivo activity

The in vivo effect of AZD8055 on tumor growth was investigated in a CT-26 syngeneic tumor model (Figure 5). The AZD8055 treatment was given from day 1 to 28 in the early treatment group, and from day 11 to 28 in the delayed treatment group. The administration of AZD8055 did not induce a significant change in the activity or body weight of mice throughout the treatment course, and all animals survived after completion of the treatment. The early-treatment group showed a significantly slower tumor growth rate than the delayed-treatment group (tumor size on day 28: 198.3±343.8 mm3 vs. 479.6±380.9 mm3; $p=0.0067$) or the control group (tumor size on Day 28, 198.3±343.8 mm3 vs. 1156.8±579.1 mm3; $p=0.003$). In addition, the tumor growth rate also significantly differed between the delayed-treatment group and the control group was (tumor size on day 28: 479.6±380.9 mm3 vs. 1156.8±579.1 mm3; $p=0.017$). These data suggest that AZD8055 treatment exerts an antitumor effect on the subcutaneous CT-26 tumor in vivo, and early treatment has a better effect than delayed treatment.

Reference: Anticancer Res. 2018 Mar;38(3):1445-1454. https://ar.iiarjournals.org/content/38/3/1445.long