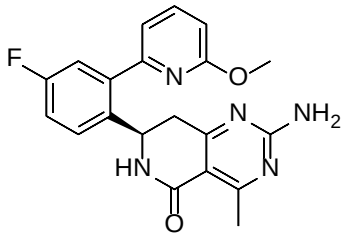
Product data sheet

MedKoo Cat#: 205487 Name: HSP-990 CAS#: 934343-74-5 Chemical Formula: $C_{20}H_{18}FN_5O_2$ Exact Mass: 379.1445 Molecular Weight: 379.39	
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:
HSP990 is an orally bioavailable inhibitor of human heat-shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp990 binds to and inhibits the activity of Hsp90, which may result in the proteasomal degradation of oncogenic client proteins, including HER2/ERBB2, and the inhibition of tumor cell proliferation.

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	44.33	116.85
DMF	25.0	65.90
DMF:PBS (pH 7.2) (1:1)	0.50	1.32

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.64 mL	13.18 mL	26.36 mL
5 mM	0.53 mL	2.64 mL	5.27 mL
10 mM	0.26 mL	1.32 mL	2.64 mL
50 mM	0.05 mL	0.26 mL	0.53 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. Menezes DL, Taverna P, Jensen MR, Abrams T, Stuart D, Yu GK, Duhl D, Machajewski T, Sellers WR, Pryer NK, Gao Z. The novel oral Hsp90 inhibitor NVP-HSP990 exhibits potent and broad-spectrum antitumor activities in vitro and in vivo. Mol Cancer Ther. 2012 Mar;11(3):730-9. doi: 10.1158/1535-7163.MCT-11-0667. Epub 2012 Jan 12. PMID: 22246440.
2. Lamottke B, Kaiser M, Mieth M, Heider U, Gao Z, Nikolova Z, Jensen MR, Sterz J, von Metzler I, Sezer O. The novel, orally bioavailable HSP90 inhibitor NVP-HSP990 induces cell cycle arrest and apoptosis in multiple myeloma cells and acts synergistically with melphalan by increased cleavage of caspases. Eur J Haematol. 2012 May;88(5):406-15. doi: 10.1111/j.1600-0609.2012.01764.x. Epub 2012 Mar 21. PMID: 22309072.

In vivo study

1. Sha L, Chen T, Deng Y, Du T, Ma K, Zhu W, Shen Y, Xu Q. Hsp90 inhibitor HSP990 in very low dose upregulates EAAT2 and exerts potent antiepileptic activity. Theranostics. 2020 Jul 9;10(18):8415-8429. doi: 10.7150/thno.44721. PMID: 32724478; PMCID: PMC7381737.

2. Menezes DL, Taverna P, Jensen MR, Abrams T, Stuart D, Yu GK, Duhl D, Machajewski T, Sellers WR, Pryer NK, Gao Z. The novel oral Hsp90 inhibitor NVP-HSP990 exhibits potent and broad-spectrum antitumor activities in vitro and in vivo. Mol Cancer Ther. 2012 Mar;11(3):730-9. doi: 10.1158/1535-7163.MCT-11-0667. Epub 2012 Jan 12. PMID: 22246440.

7. Bioactivity

Biological target: NVP-HSP990 is a Hsp90 inhibitor, with IC50 values of 0.6, 0.8, and 8.5 nM for Hsp90α, Hsp90β, and Grp94, respectively.

In vitro activity

In GTL-16 cells, NVP-HSP990 rapidly destabilized the Hsp90-p23 complex in a time- and concentration- dependent manner (Fig. 1B, Supplementary Fig. S1). NVP-HSP990 treatment also resulted in a dose proportional decrease in c-Met (EC50 value = 37 nmol/L) and induction of Hsp70 (EC50 value = 20 nmol/L) in GTL-16 cells (Table 1). Furthermore, Hsp90 inhibition by NVP-HSP990 in GTL-16 cells inhibited ERK and AKT activation, as showed by the decreased level of phosphorylated AKT and ERK using in-cell Western blot analysis.

Reference: Mol Cancer Ther. 2012 Mar;11(3):730-9. https://mct.aacrjournals.org/content/11/3/730.long

In vivo activity

Epilepsy is a common disease phenotype observed in the APPswe/PS1dE9 transgenic model of Alzheimer's disease (AD). Loss of EAAT2 (excitatory amino acid transporter 2) may be responsible for the aberrant neuronal discharge. It was investigated whether HSP990 could restore EAAT2 levels in AD mice. The EAAT2 levels were reduced in the AD mice aged 7 months compared with normal mice, and administration of HSP990 restored EAAT2 levels (Figure 6A). To determine whether HSP990-induced EAAT2 has antiepileptic effects, 7-month old AD mice were treated with HSP990 or vehicle for 4 weeks (Figure 6B-C); their EEG was analyzed from the second week to the fourth week. In the vehicle group, 62% of the mice exhibited at least one seizure during the 3-week EEG recording, compared with 20% in the HSP990 group (Figure 6D). The overall frequencies of seizures and spikes were significantly decreased in the HSP990 group compared with the vehicle group (Figure 6E-F). No difference was observed in the time of each ictal episode (seizure duration) between the HSP990 group and the vehicle group (Figure 6J).

Reference: Theranostics. 2020 Jul 9;10(18):8415-8429. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7381737/

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.