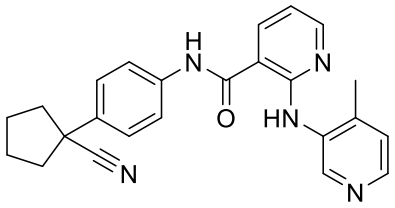
Product data sheet

MedKoo Cat#: 123316 Name: Apatinib free base CAS#: 811803-05-1 (free base) Chemical Formula: $C_{24}H_{23}N_5O$ Exact Mass: 397.1903 Molecular Weight: 397.482	
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:

Apatinib, also known as Rivoceranib, is an orally bioavailable, small-molecule receptor tyrosine kinase inhibitor with potential antiangiogenic and antineoplastic activities. The free-base form is also known as Rivoceranib. Apatinib selectively binds to and inhibits vascular endothelial growth factor receptor 2, which may inhibit VEGF-stimulated endothelial cell migration and proliferation and decrease tumor microvessel density. In addition, this agent mildly inhibits c-Kit and c-SRC tyrosine kinases.

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	54.5	137.11
DMSO:PBS (pH 7.2) (1:3)	0.25	0.63
DMF	30.0	75.48
Ethanol	1.0	2.52

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.52 mL	12.58 mL	25.16 mL
5 mM	0.50 mL	2.52 mL	5.03 mL
10 mM	0.25 mL	1.26 mL	2.52 mL
50 mM	0.05 mL	0.25 mL	0.50 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. Liu K, Ren T, Huang Y, Sun K, Bao X, Wang S, Zheng B, Guo W. Apatinib promotes autophagy and apoptosis through VEGFR2/STAT3/BCL-2 signaling in osteosarcoma. Cell Death Dis. 2017 Aug 24;8(8):e3015. doi: 10.1038/cddis.2017.422. PMID: 28837148; PMCID: PMC5596600.
2. Yang C, Qin S. Apatinib targets both tumor and endothelial cells in hepatocellular carcinoma. Cancer Med. 2018 Sep;7(9):4570-4583. doi: 10.1002/cam4.1664. Epub 2018 Aug 14. PMID: 30109780; PMCID: PMC6144148.

In vivo study

1. Liu K, Ren T, Huang Y, Sun K, Bao X, Wang S, Zheng B, Guo W. Apatinib promotes autophagy and apoptosis through VEGFR2/STAT3/BCL-2 signaling in osteosarcoma. Cell Death Dis. 2017 Aug 24;8(8):e3015. doi: 10.1038/cddis.2017.422. PMID: 28837148; PMCID: PMC5596600.

2. Yang C, Qin S. Apatinib targets both tumor and endothelial cells in hepatocellular carcinoma. Cancer Med. 2018 Sep;7(9):4570-4583. doi: 10.1002/cam4.1664. Epub 2018 Aug 14. PMID: 30109780; PMCID: PMC6144148.

7. Bioactivity

Biological target:

Apatinib (Rivoceranib, YN968D1) is a potent inhibitor of the VEGF signaling pathway with IC50 values of 1 nM, 13 nM, 429 nM and 530 nM for VEGFR-2, Ret (c-Ret), c-Kit and c-Src, respectively.

In vitro activity

To evaluate the role of Apatinib in osteosarcoma cells, flow cytometry was used to analyze the cells after Annexin V-FITC and propidium iodide (PI) staining. Apatinib-induced apoptosis significantly when compared with the control group (Figure 3a). As a key indicator of apoptosis, the level of cleaved-PARP increased after treatment with Apatinib for 48 h, or with 10 μM Apatinib for different time points (Figure 3d). To determine whether Apatinib inhibited cell proliferation by inducing cell-cycle arrest, the distribution of cell cycle in osteosarcoma cells treated with Apatinib was evaluated. As shown in Figure 3b, accumulation of cells by Apatinib resulted in the G0/G1 phase, whereas a corresponding reduction in both KHOS and MG63 cells in the G2/M and S phases. The expression of cyclin D1 decreased after treatment with Apatinib, as analyzed by western blot (Figure 3d). Terminal deoxynucleotidyl transferase-mediated nick-end labeling staining (TUNEL staining) were used to confirm apoptosis. Treatment with Apatinib increased TUNEL-positive cells when compared with the control (Figure 3c). All the data suggest that Apatinib induces apoptosis and G0/G1-phase arrest.

Reference: Cell Death Dis. 2017 Aug 24;8(8):e3015. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5596600/

In vivo activity

Apatinib was valid in tumor growth inhibition in vivo. The tumor volume decreased when compared with the control group (Figures 7a and b). In accordance with the in vitro experiment, Figure 7c shows that Apatinib treatment increased the level of LC3-II and Bax, whereas the level of BCL-2 and VEGFR2 decreased in vivo. Immunohistochemistry showed that Apatinib decreased the expression of VEGFR2, p-STAT3 and BCL-2 in tumors formed by KHOS cells (Figure 7d). All the results revealed that Apatinib inhibited the growth of osteosarcoma in vivo.

Reference: Cell Death Dis. 2017 Aug 24;8(8):e3015. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5596600/

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.