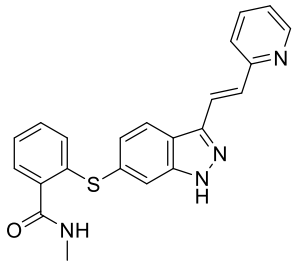
Product data sheet

MedKoo Cat#: 200400 Name: Axitinib CAS#: 319460-85-0 Chemical Formula: $C_{22}H_{18}N_4OS$ Exact Mass: 386.12013 Molecular Weight: 386.47	
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:

Axitinib, also known as AG013736, is an orally bioavailable tyrosine kinase inhibitor. Axitinib inhibits the proangiogenic cytokines vascular endothelial growth factor (VEGF) and platelet-derived growth factor receptor (PDGF), thereby exerting an anti-angiogenic effect. A xitinib has received FDA (27 January 2012), EMA (13 September 2012), MHRA (3 September 2012) and TGA (26 July 2012) approval for use as a treatment for renal cell carcinoma.

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	14.75	38.17
DMF	0.25	0.65

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.59 mL	12.94 mL	25.88 mL
5 mM	0.52 mL	2.59 mL	5.18 mL
10 mM	0.26 mL	1.29 mL	2.59 mL
50 mM	0.05 mL	0.26 mL	0.52 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. Paik ES, Kim TH, Cho YJ, Ryu J, Choi JJ, Lee YY, Kim TJ, Choi CH, Kim WY, Sa JK, Lee JK, Kim BG, Bae DS, Han HD, Ahn HJ, Lee JW. Preclinical assessment of the VEGFR inhibitor axitinib as a therapeutic agent for epithelial ovarian cancer. Sci Rep. 2020 Mar 17;10(1):4904. doi: 10.1038/s41598-020-61871-w. PMID: 32184452; PMCID: PMC7078214.
2. Kerr LT, Donoghue JF, Wilding AL, Johns TG. Axitinib Has Antiangiogenic and Antitumorigenic Activity in Myxoid Liposarcoma. Sarcoma. 2016;2016:3484673. doi: 10.1155/2016/3484673. Epub 2016 Oct 16. PMID: 27822137; PMCID: PMC5086398.

In vivo study

1. Liu F, Zou F, Chen C, Yu K, Liu X, Qi S, Wu J, Hu C, Hu Z, Liu J, Liu X, Wang L, Ge J, Wang W, Ren T, Bai M, Cai Y, Xiao X, Qian F, Tang J, Liu Q, Liu J. Axitinib overcomes multiple imatinib resistant cKIT mutations including the gatekeeper mutation T670I in gastrointestinal stromal tumors. Ther Adv Med Oncol. 2019 May 17;11:1758835919849757. doi: 10.1177/1758835919849757. PMID: 31205508; PMCID: PMC6535728.

2. Van der Veken B, De Meyer GRY, Martinet W. Axitinib attenuates intraplaque angiogenesis, haemorrhages and plaque destabilization in mice. Vascul Pharmacol. 2018 Jan;100:34-40. doi: 10.1016/j.vph.2017.10.004. Epub 2017 Oct 31. PMID: 29079346.

7. Bioactivity

Biological target:

Axitinib is a multi-targeted tyrosine kinase inhibitor with IC50s of 0.1, 0.2, 0.1-0.3, 1.6 nM for VEGFR1, VEGFR2, VEGFR3 and PDGFRβ, respectively.

In vitro activity

In an in vitro study, axitinib significantly inhibited proliferation and migration, and increased apoptosis, of EOC cells in a dose-dependent manner. Initially, cell viability experiments presented that axitinib showed cytotoxic activity in all EOC cells. In addition, axitinib-induced apoptosis was confirmed in EOC cell lines. However, in Western blot confirming expression of VEGFR and its downstream signaling in EOC cell lines, axitinib-induced inhibitory effects in VEGFR2, phosphorylation of AKT, and ERK were not observed in HeyA8-MDR. Unlike A2780 and HeyA8, the migration assay showed no effect of axitinib on HeyA8-MDR. Based on these results, it is hypothesized that axitinib inhibits EOC cells by targeting multiple pathways including angiogenesis, AKT, and ERK signaling pathways.

Reference: Sci Rep. 2020; 10: 4904. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7078214/

In vivo activity

In the GIST-T1 xenograft mouse model, axitinib exhibited dose-dependent tumor growth suppression and the TGI (tumor inhibition rate) was 53% at 100 mg/kg/day dosage [Figure 5(a)]. In the GIST-5R xenograft mouse model, 100 mg/kg/day dosage of axitinib could almost completely block the tumor progression and showed a TGI of 88%, whereas the same dosage of imatinib showed limited effect on tumor growth [Figure 5(b)]. As expected, reduced phosphorylation of cKIT and related downstream mediators such as STAT3, AKT, and ERK in tumors were observed compared with the vehicle-treated controls (Supplemental Figure 4). Furthermore, this study found that at 100 mg/kg dosage, aurora kinase started to be inhibited, which might help to enhance the antitumor efficacy of axitinib in vivo (Supplemental Figure 4). These data were also consistent with the results observed in the cell cycle arrest assays and centrosome separation experiments [Figure 4(b) and Supplemental Figure 2].

Reference: Ther Adv Med Oncol. 2019; 11: 1758835919849757. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6535728/

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.