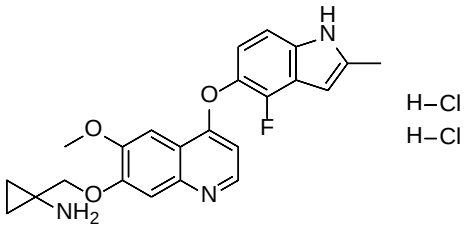
Product data sheet

MedKoo Cat#: 206058 Name: Anlotinib HCl CAS#: 1360460-82-7 (HCl) Chemical Formula: $C_{23}H_{24}Cl_2FN_3O_3$ Molecular Weight: 480.36	
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:
Anlotinib, also known as AL3818, is a receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic and anti-angiogenic activities. Upon administration, anlotininib targets multiple RTKs, including vascular endothelial growth factor receptor type 2 (VEGFR2) and type 3 (VEGFR3). This agent may both inhibit angiogenesis and halt tumor cell growth.

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	54.0	112.42
Water	96.0	199.85

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.08 mL	10.41 mL	20.82 mL
5 mM	0.42 mL	2.08 mL	4.16 mL
10 mM	0.21 mL	1.04 mL	2.08 mL
50 mM	0.04 mL	0.21 mL	0.42 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. Ruan H, Lv Z, Liu S, Zhang L, Huang K, Gao S, Gan W, Liu X, Zhang S, Helian K, Li X, Zhou H, Yang C. Anlotinib attenuated bleomycin-induced pulmonary fibrosis via the TGF-β1 signalling pathway. J Pharm Pharmacol. 2020 Jan;72(1):44-55. doi: 10.1111/jphp.13183. Epub 2019 Oct 28. PMID: 31659758.

In vivo study

1. Ruan H, Lv Z, Liu S, Zhang L, Huang K, Gao S, Gan W, Liu X, Zhang S, Helian K, Li X, Zhou H, Yang C. Anlotinib attenuated bleomycin-induced pulmonary fibrosis via the TGF-β1 signalling pathway. J Pharm Pharmacol. 2020 Jan;72(1):44-55. doi: 10.1111/jphp.13183. Epub 2019 Oct 28. PMID: 31659758.

7. Bioactivity
Biological target: Anlotinib HCl is a receptor tyrosine kinase (RTK) inhibitor that primarily inhibits VEGFR2/3, FGFR1-4, PDGFRα/β, c-Kit, and Ret.

In vitro activity

Transforming growth factor-β1 (TGF-β1) is considered to be the most critical fibrogenic factor involved in the development of IPF (idiopathic pulmonary fibrosis) and its function depends on the signal transduction and regulation of Smad and non-Smad. Smad3 is

the main activation protein of TGF-β/Smad signalling pathway, regulating a series of gene expression, and promotes fibroblast differentiation and proliferation. The constructed CAGA-NIH3T3 cell line stably transfected with the TGF-β1/Smad3 signalling pathway reporter plasmid was used to detect the effect of anlotinib hydrochloride on TGF-β1/Smad3 signalling pathway. As shown in Figure 5a, luciferases assay showed that anlotinib inhibited the TGFβ1/Smad3 signalling pathway in a dose-dependent manner. According to the results of Luciferases assay, 1 μM was selected as the best effective concentration for subsequent experiments. Further, it was observed that anlotinib hydrochloride significantly inhibited TGF-β1-induced phosphorylation of Smad3 protein, as shown in Figure 5b.

Reference: J Pharm Pharmacol. 2020 Jan;72(1):44-55. https://academic.oup.com/jpp/article/72/1/44/6122084

In vivo activity

The effect of anlotinib on bleomycin-induced pulmonary fibrosis in mice was evaluated. The histological changes at 14 days are shown in Figure 2a. In the saline group, there was no obvious inflammatory reaction and fibrosis in the lung tissue of mice, and the lung tissue structure was normal. After bleomycin was injected, not only the airway wall was significantly thickened, but also the alveolar structure was disordered. Meanwhile, the lung tissue of mice showed obvious alveolar inflammation, and some alveoli appeared realistic changes and fibrosis. In addition, the mice with bleomycin injection showed higher Ashcroft score than in control group. After anlotinib intervention, the above lesions were alleviated, and the Ashcroft score was significantly reduced (Figure 2b). It was also observed that the content of hydroxyproline in the left lung of mice in bleomycin group was significantly higher than that in saline group, as shown in Figure 2c. In anlotinib-treated group, the hydroxyproline content decreased, indicating that anlotinib inhibited ECM (extracellular matrix) deposition. The effect of anlotinib on the forced vital capacity in bleomycin-induced pulmonary fibrosis mice was also evaluated. The results showed that anlotinib increased the lung capacity of mice (Figure 2d).

Reference: J Pharm Pharmacol. 2020 Jan;72(1):44-55. https://academic.oup.com/jpp/article/72/1/44/6122084