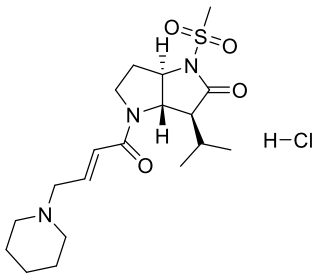
Product data sheet

MedKoo Cat#: 525250 Name: GW-311616A CAS: 197890-44-1 (HCl) Chemical Formula: $C_{19}H_{31}N_3O_4S$ Exact Mass: 433.1802 Molecular Weight: 433.9920	
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:
GW311616A is a potent, intracellular, orally bioavailable, long duration inhibitor of human neutrophil elastase(HNE).

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
DMF	30.0	69.13
DMSO	65.0	149.77
DMSO:PBS (pH 7.2) (1:4)	0.25	0.58
Ethanol	10.0	23.04
Water	100.0	230.42

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.30 mL	11.52 mL	23.04 mL
5 mM	0.46 mL	2.30 mL	4.61 mL
10 mM	0.23 mL	1.15 mL	2.30 mL
50 mM	0.05 mL	0.23 mL	0.46 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. Ushakumari CJ, Zhou QL, Wang YH, Na S, Rigor MC, Zhou CY, Kroll MK, Lin BD, Jiang ZY. Neutrophil Elastase Increases Vascular Permeability and Leukocyte Transmigration in Cultured Endothelial Cells and Obese Mice. Cells. 2022 Jul 25;11(15):2288. doi: 10.3390/cells11152288. PMID: 35892585; PMCID: PMC9332277.
2. Jiang KL, Ma PP, Yang XQ, Zhong L, Wang H, Zhu XY, Liu BZ. Neutrophil elastase and its therapeutic effect on leukemia cells. Mol Med Rep. 2015 Sep;12(3):4165-4172. doi: 10.3892/mmr.2015.3946. Epub 2015 Jun 17. PMID: 26081156; PMCID: PMC4526057.

In vivo study

1. Khomtchouk KM, Joseph LI, Khomtchouk BB, Kouhi A, Massa S, Xia A, Koliesnik I, Pletzer D, Bollyky PL, Santa Maria PL. Treatment with a neutrophil elastase inhibitor and ofloxacin reduces P. aeruginosa burden in a mouse model of chronic suppurative otitis media. NPJ Biofilms Microbiomes. 2021 Apr 6;7(1):31. doi: 10.1038/s41522-021-00200-z. PMID: 33824337; PMCID: PMC8024339.

2. Mansuy-Aubert V, Zhou QL, Xie X, Gong Z, Huang JY, Khan AR, Aubert G, Candelaria K, Thomas S, Shin DJ, Booth S, Baig SM, Bilal A, Hwang D, Zhang H, Lovell-Badge R, Smith SR, Awan FR, Jiang ZY. Imbalance between neutrophil elastase and its inhibitor α1-antitrypsin in obesity alters insulin sensitivity, inflammation, and energy expenditure. Cell Metab. 2013 Apr 2;17(4):534-48. doi: 10.1016/j.cmet.2013.03.005. PMID: 23562077; PMCID: PMC3646573.

7. Bioactivity

Biological target:

GW-311616 is a potent, orally bioavailable, long duration and selective human neutrophil elastase (HNE) inhibitor with IC_{50} value of 22 nM and K_i value of 0.31 nM.

In vitro activity

GW311616A inhibited NE (20 nM)-induced loss of VE-cadherin at 200 nM and completely reversed NE's effect at 1 μM. However, GW311616A effectively blocked NE-induced F-actin formation even at the concentration of 100 nM.

Reference: Cells. 2022 Jul 25;11(15):2288. https://pubmed.ncbi.nlm.nih.gov/35892585/

In vivo activity

GW311616A treatment inhibited serum NE activity by 60% within 1 week of treatment, and this inhibitory effect was sustained during the treatment. GW311616A inhibition of NE activity resulted in significant reductions in HFD-induced bodyweight gain (Figure 4I) and fasting blood glucose levels (Figure 4J). Moreover, both insulin sensitivity and glucose tolerance were significantly improved in the obese WT mice treated with GW311616A for 5 to 6 weeks, compared with the vehicle-treated mice (Figures 4K–4M). Interestingly, GW311616A also significantly increased the level of HMW adiponectin and the ratio of HMW adiponectin to total adiponectin in the sera of HFD-induced obese mice (Figures 4N & 4O).

Reference: Cell Metab. 2013 Apr 2;17(4):534-48. https://pubmed.ncbi.nlm.nih.gov/23562077/

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.