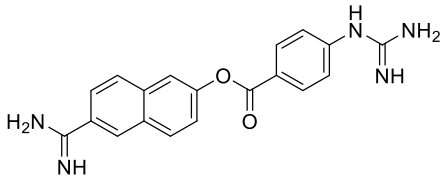
Product data sheet

MedKoo Cat#: 330245 Name: Nafamostat free base CAS: 81525-10-2 (free base) Chemical Formula: $C_{19}H_{17}N_5O_2$ Exact Mass: 347.1382 Molecular Weight: 347.378	
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:

Nafamostat, also known as FUT-175, is a serine protease inhibitor and an anticoagulant. Nafamostat promotes endothelium-dependent vasorelaxation via the Akt-eNOS dependent pathway. Nafamostat Attenuates Ischemia-Reperfusion-Induced Renal Injury. Nafamostat Attenuates Ischemia-Reperfusion-Induced Renal Injury. Nafamostat protects against acute cerebral ischemia via blood-brain barrier protection. Nafamostat Inhibits TNF-α-Induced Vascular Endothelial Cell Dysfunction by Inhibiting Reactive Oxygen Species Production. Researchers have identified the drug as a potential therapy for COVID-19,[with clinical trials in Japan possibly set to begin in March 2020.

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
TBD	TBD	TBD

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.88 mL	14.39 mL	28.79 mL
5 mM	0.58 mL	2.88 mL	5.76 mL
10 mM	0.29 mL	1.44 mL	2.88 mL
50 mM	0.06 mL	0.29 mL	0.58 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. Morimoto M, Toyoda H, Niwa K, Hanaki R, Okuda T, Nakato D, Amano K, Iwamoto S, Hirayama M. Nafamostat mesylate prevents metastasis and dissemination of neuroblastoma through vascular endothelial growth factor inhibition. Mol Clin Oncol. 2022 Jul 21;17(3):138. doi: 10.3892/mco.2022.2571. PMID: 35949892; PMCID: PMC9353881.
2. Homma S, Hayashi K, Yoshida K, Sagawa Y, Kamata Y, Ito M. Nafamostat mesilate, a serine protease inhibitor, suppresses interferon-gamma-induced up-regulation of programmed cell death ligand 1 in human cancer cells. Int Immunopharmacol. 2018 Jan;54:39-45. doi: 10.1016/j.intimp.2017.10.016. Epub 2017 Oct 28. PMID: 29100036.

In vivo study

1. Matsubara H, Imai T, Tsuji S, Oka N, Egashira Y, Enomoto Y, Nakayama N, Nakamura S, Shimazawa M, Iwama T, Hara H. Nafamostat protects against early brain injury after subarachnoid hemorrhage in mice. J Pharmacol Sci. 2022 Jan;148(1):65-72. doi: 10.1016/j.jphs.2021.10.007. Epub 2021 Oct 23. Erratum in: J Pharmacol Sci. 2022 Feb;148(2):279. PMID: 34924132.

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2. Ikehara S, Shimamura K, Aoyama T, Fujii S, Hamashima Y. Effect of FUT-175, a new synthetic protease inhibitor, on the development of lupus nephritis in (NZB x NZW) F1 mice. Immunology. 1985 Aug;55(4):595-600. PMID: 4018844; PMCID: PMC1453784.

7. Bioactivity

Biological target:

Nafamostat, a synthetic serine protease inhibitor, is an anticoagulant.

In vitro activity

Nafamostat mesilate (NM), a serine protease inhibitor that is frequently used in the clinic, potently suppressed interferon-gamma (IFN-gamma)-induced up-regulation of PD-L1 in cultured human lung cancer cells (HLC-1) at both the messenger RNA (mRNA) and protein levels.

Reference: Int Immunopharmacol. 2018 Jan;54:39-45. https://pubmed.ncbi.nlm.nih.gov/29100036/

In vivo activity

FUT-175 (6-amidino-2-naphthyl p-guanidinobenzoate dimethanesulphonate), a new synthetic protease inhibitor, was administrated to (NZB x NZB) F1 mice in order to examine its influence on the development of autoimmune diseases. A dose (400 mg/kg of body weight) of FUT-175 has both prophylactic and curative effects on the development of lupus nephritis: mice showed a significantly low percentage of proteinuria, a marked decrease in BUN levels, and the lowest degree of glomerular damages.

Reference: Immunology. 1985 Aug;55(4):595-600. https://pubmed.ncbi.nlm.nih.gov/4018844/