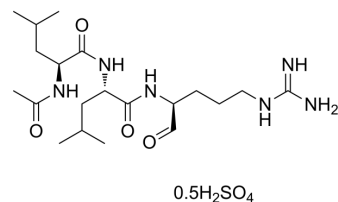


## Leupeptin hemisulfate

<b>Cat. No.:</b>	HY-18234A
<b>CAS No.:</b>	103476-89-7
<b>Molecular Formula:</b>	C <sub>20</sub> H <sub>38</sub> N <sub>6</sub> O <sub>4</sub> ·1/2H <sub>2</sub> SO <sub>4</sub>
<b>Molecular Weight:</b>	475.59
<b>Sequence Shortening:</b>	Ac-LLR-CHO
<b>Target:</b>	Cathepsin; Ser/Thr Protease; Virus Protease
<b>Pathway:</b>	Metabolic Enzyme/Protease; Anti-infection
<b>Storage:</b>	-20°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	H <sub>2</sub> O : 83.33 mg/mL (175.21 mM; ultrasonic and warming and heat to 60°C)				
	<b>Preparing Stock Solutions</b>	Solvent Concentration	Mass 1 mg	5 mg	10 mg
		1 mM	2.1027 mL	10.5133 mL	21.0265 mL
		5 mM	0.4205 mL	2.1027 mL	4.2053 mL
		10 mM	0.2103 mL	1.0513 mL	2.1027 mL
Please refer to the solubility information to select the appropriate solvent.					
<b>In Vivo</b>	1. Add each solvent one by one: PBS Solubility: 100 mg/mL (210.27 mM); Clear solution; Need ultrasonic and warming and heat to 60°C				

### BIOLOGICAL ACTIVITY

<b>Description</b>	Leupeptin hemisulfate is a broad-spectrum, membrane-permeable protease inhibitor. Leupeptin hemisulfate potently inhibits serine, cysteine and threonine proteases. Leupeptin hemisulfate inhibits M <sup>Pro</sup> (the main protease of SARS-CoV-2) and also has anti-inflammatory activity <sup>[1][2][3]</sup> .
<b>IC<sub>50</sub> &amp; Target</b>	Cathepsin B, Cathepsin H, Cathepsin L, Ser/Thr Protease, M <sup>pro</sup> <sup>[1][2][3]</sup> .
<b>In Vitro</b>	<p>Leupeptin hemisulfate (0.06-200 μM; 72 h) significantly decreases copy numbers of SARS-CoV-2 viral RNA (vRNA) in Vero cells<sup>[1]</sup></p> <p>Leupeptin hemisulfate inhibits RNA levels of SARS-CoV-2 in Vero cells, with an EC<sub>50</sub> value of 42.34 μM<sup>[1]</sup>.</p> <p>Leupeptin hemisulfate has some inhibitory activity against M<sup>Pro</sup>, with an IC<sub>50</sub> value of 127.2 μM<sup>[1]</sup>.</p> <p>Leupeptin hemisulfate againsts human coronavirus strain 229E with an IC<sub>50</sub> value of 0.4 μg/mL (about 1 μM)<sup>[1]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>RT-PCR<sup>[1]</sup></p>

Cell Line:	Vero cells
Concentration:	0.06-200 $\mu$ M
Incubation Time:	72 h
Result:	Significantly decreased copy numbers of SARS-CoV-2 viral RNA (vRNA).

#### In Vivo

Leupeptin hemisulfate (0, 9, 18, 36 mg/kg; i.p.; single) is well tolerated by the animals and produces a strong, dose-dependent increase in LC3b-II in both the total tissue extracts and the lysosome and autophagosome-enriched pellet fraction<sup>[2]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57BL/6NCrl male mice (6-8 weeks old, 20-25 g) <sup>[1]</sup>
Dosage:	0, 9, 18, 36 mg/kg
Administration:	Intraperitoneal injection; single
Result:	Promoted the accumulation of LC3b-II in mouse liver.

## CUSTOMER VALIDATION

- Nature. 2023 Jun;618(7966):799-807.
- Natl Sci Rev. 2021 Feb 10;8(7):nwab024.
- Neuro Oncol. 2022 Jun 21;noac157.
- J Clin Invest. 2022 Mar 1;132(5):e152170.
- Sci Adv. 2021 Jan 1;7(1):eabe1340.

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## REFERENCES

- [1]. Fu L, et al. Mechanism of Microbial Metabolite Leupeptin in the Treatment of COVID-19 by Traditional Chinese Medicine Herbs. mBio. 2021 Oct 26;12(5):e0222021.
- [2]. Haspel J, et al. Characterization of macroautophagic flux in vivo using a leupeptin-based assay. Autophagy. 2011 Jun;7(6):629-42.
- [3]. Aoyagi T, et al. Biological activities of leupeptins. J Antibiot (Tokyo). 1969 Nov;22(11):558-68.
- [4]. Aoyagi T, et al. Biological activities of leupeptins. J Antibiot (Tokyo). 1969 Nov;22(11):558-68.

**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA