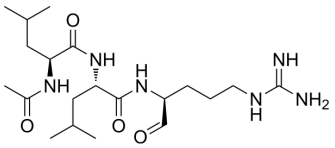
Leupeptin

Cat. No.:	HY-18234
CAS No.:	55123-66-5
Molecular Formula:	$C_{20}H_{38}N_6O_4$
Molecular Weight:	426.55
Target:	Ser/Thr Protease; Virus Protease; Cathepsin
Pathway:	Metabolic Enzyme/Protease; Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Leupeptin is a broad-spectrum, membrane-permeable protease inhibitor. Leupeptin potently inhibits serine, cysteine and threonine proteases. Leupeptin inhibits M^{pro} (the main protease of SARS-CoV-2) and also has anti-inflammatory activity[1][2][3].

IC_{50} & Target

Cathepsin B, Cathepsin H, Cathepsin L, Ser/Thr Protease, Mpro[1][2][3].

In Vitro

Leupeptin (0.06-200 μM; 72 h) significantly decreases copy numbers of SARS-CoV-2 viral RNA (vRNA) in Vero cells[1]
Leupeptin inhibits RNA levels of SARS-CoV-2 in Vero cells, with an EC_{50} value of 42.34 μM[1].
Leupeptin has some inhibitory activity against M^{pro}, with an IC_{50} value of 127.2 μM[1].
Leupeptin againsts human coronavirus strain 229E with an IC_{50} value of 0.4 μg/mL (about 1 μM)[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

RT-PCR[1]

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

In Vivo

Leupeptin (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[2].
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)[1].
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.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

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