Product Data Sheet

Product Name: Cecropin B
Cat. No.: GC32991

Chemical Properties

Cas. No.	80451-05-4		
SMILES	Lys-Trp-Lys-Val-Phe-Lys-Lys-Ile-Glu-Lys-Met-Gly-Arg-Asn-Ile-Arg-Asn-Gly-Ile-Val-Lys-Ala-Gly-Pro-Ala-Ile-Ala-Val-Leu-Gly-Glu-Ala-Lys-Ala-Leu-NH2		
Formula	$C_{176}H_{302}N_{52}O_{41}S$	M.Wt	3834.67
Solubility	Water : 20 mg/mL (5.22 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	Cecropin B		

Protocol

Cell experiment [1]:

Cell lines	primary hepatocytes
Preparation Method	primary hepatocytes were seeded in 6-well plates at a density of 2×10^6 cells per well and cultured for 24 hours. The cells were then treated with varying concentrations (0, 125, 250, and 500ng/mL) of cecropin B for different durations (3, 6, 9, 12, 15, 18, 21, and 24h). Subsequently, quantitative analysis of CYP3A29 and PXR expression levels was performed using Real-Time Quantitative Polymerase Chain Reaction (qPCR) and Western Blot techniques.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Reaction Conditions	0, 125, 250 and 500ng/mL; 3, 6, 9, 12, 15, 18, 21, and 24h
Applications	Cecropin B downregulates CYP3A29 mRNA expression through a PXR-dependent mechanism and promotes nuclear export of RXR-α in primary hepatocytes.

Animal experiment [2]:

Animal models	ICR mice
Preparation Method	A mouse model of *Pseudomonas aeruginosa* infection was established by excising a 1 cm × 1 cm area of full-thickness dorsal skin. At 3 hours post-wounding, the wounds were topically treated with 1000 mg/L Cecropin B via wet compress. Body temperature and hemogram parameters were measured before injury and on day 4 post-injury. Bacterial load in muscular tissue of the wound site was quantitatively assessed, and mouse survival was recorded on day 4 after injury.
Dosage form	100mg/L/day for 4 days; Wet compresses
Applications	Cecropin B exhibits significant antibacterial efficacy against *Pseudomonas aeruginosa* infected wounds in ICR mice and reduces mortality.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

References:
[1]Zhou X, Li X, Wang X, Jin X, Shi D, Wang J, Bi D. Cecropin B Represses CYP3A29 Expression through Activation of the TLR2/4-NF-?B/PXR Signaling Pathway. Sci Rep. 2016 Jun 14;6:27876.
[2]Ren HT, Han CM, Zhang R, Xu ZJ, Meng ZQ, Weng HB, Niu BL. The antibacterial effect of cecropin B on *pseudomonas aeruginosa* infection of wounds in mice]. Zhonghua Shao Shang Za Zhi. 2006 Dec;22(6):445-7. Chinese.

Background

Cecropin B is an antimicrobial peptide that exhibits potent antibacterial activity against *Escherichia coli* and a broad spectrum of Gram-negative bacteria[1], thereby showing wide-spectrum antimicrobial properties[2]. Its primary mechanism of action involves binding to and acting upon negatively charged bacterial cell membranes, altering membrane potential, inducing membrane damage, and facilitating the permeation of macromolecules such as proteins. This process disrupts cellular morphology and membrane integrity, ultimately leading to cell death[3].

In vitro, treatment of porcine hepatocytes with Cecropin B (0-500ng/mL) for 3-24 hours significantly inhibited the expression of cytochrome P450 family 3 subfamily A polypeptide 29 (CYP3A29) and pregnane X receptor (PXR). This inhibitory effect was both

concentration- and time-dependent in the short term[4].

In vivo, topical application of Cecropin B (100mg/L/day for 4 days) significantly inhibited *Pseudomonas aeruginosa* infection in a mouse wound model and reduced mortality[5]. In a rat model of septic shock, intraperitoneal administration of Cecropin B (1mg/kg), either alone or in combination with piperacillin (120mg/kg) for 72h, demonstrated anti-endotoxin activity and markedly reduced plasma levels of endotoxin and tumor necrosis factor alpha (TNF-alpha)[6].

References:
[1]Steiner H, Hultmark D, Engström A, Bennich H, Boman HG. Sequence and specificity of two antibacterial proteins involved in insect immunity. Nature. 1981 Jul 16;292(5820):246-8.
[2]Amso Z , Hayouka Z . Antimicrobial random peptide cocktails: a new approach to fight pathogenic bacteria. Chem Commun (Camb). 2019 Feb 12;55(14):2007-2014.
[3]Lei J, Sun L, Huang S, Zhu C, Li P, He J, Mackey V, Coy DH, He Q. The antimicrobial peptides and their potential clinical applications. Am J Transl Res. 2019 Jul 15;11(7):3919-3931.
[4]Zhou X, Li X, Wang X, Jin X, Shi D, Wang J, Bi D. Cecropin B Represses CYP3A29 Expression through Activation of the TLR2/4-NF-κB/PXR Signaling Pathway. Sci Rep. 2016 Jun 14;6:27876.
[5] Ren HT, Han CM, Zhang R, Xu ZJ, Meng ZQ, Weng HB, Niu BL. The antibacterial effect of cecropin B on *pseudomonas aeruginosa* infection of wounds in mice]. Zhonghua Shao Shang Za Zhi. 2006 Dec;22(6):445-7. Chinese.
[6] Ghiselli R, Giacometti A, Cirioni O, Mocchegiani F, Orlando F, D'Amato G, Sisti V, Scalise G, Saba V. Cecropin B enhances betalactams activities in experimental rat models of gram-negative septic shock. Ann Surg. 2004 Feb;239(2):251-6.