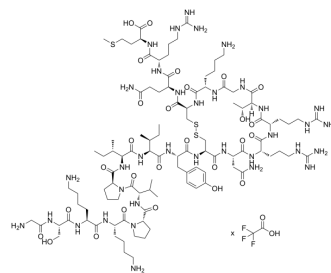


## Thanatin TFA

<b>Cat. No.:</b>	HY-P5601A
<b>Molecular Formula:</b>	$C_{103}H_{177}N_{35}O_{27}S_3 \cdot xC_2HF_3O_2$
<b>Sequence:</b>	Gly-Ser-Lys-Lys-Pro-Val-Pro-Ile-Ile-Tyr-Cys-Asn-Arg-Arg-Thr-Gly-Lys-Cys-Gln-Arg-Met ( Disulfide bridge:Cys11-Cys18)
<b>Sequence Shortening:</b>	GSKKPVIIYCNRRRTGKCQRM (Disulfide bridge:Cys11-Cys18)
<b>Target:</b>	Bacterial; Fungal
<b>Pathway:</b>	Anti-infection
<b>Storage:</b>	Sealed storage, away from moisture and light Powder    -80°C    2 years -20°C    1 year  * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	H <sub>2</sub> O : 100 mg/mL (Need ultrasonic)
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### BIOLOGICAL ACTIVITY

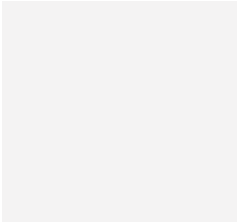
<b>Description</b>	Thanatin TFA is an inducible cationic antimicrobial peptide. Thanatin TFA is a pathogen-inducible single-disulfide-bond-containing $\beta$ -hairpin AMP. Thanatin TFA displays broad-spectrum activity against both Gram-negative and Gram-positive bacteria as well as against various species of fungi with MICs of 0.3-40 $\mu$ M, 0.6-40 $\mu$ M and 0.6-20 $\mu$ M, respectively. Thanatin TFA has the property of competitive replacement of divalent cations from bacterial outer membrane (OM), leading to OM disruption <sup>[1][2]</sup> .
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<b>In Vitro</b>	Thanatin TFA is strongly cationic (pI of 10.48) and contains a distinct short eight-residue basic loop created through a disulfide bond formation between residues Cys11 and Cys18 at the C-terminus. <sup>[1]</sup> Thanatin TFA exhibits potent inhibitory effect on the growth of all New Delhi metallo- $\beta$ -lactamase-1 (NDM-1)-producing <i>E. coli</i> and <i>K. pneumoniae</i> strains at 0.4-3.2 $\mu$ M of the minimum inhibitory concentration (MIC) values <sup>[2]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
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<b>In Vivo</b>	Thanatin (1, 3, 6 mg/kg; ip; at 1 and 6 h) TFA protects mice infected with NDM-1-producing <i>E. coli</i> <sup>[2]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
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Animal Model:	Male BALB/c mice aged 8-10 weeks and weighing 18-22 g with CFU <i>E. coli</i> XJ141026
Dosage:	1, 3, 6 mg/kg
Administration:	Intraperitoneally injected; at 1 and 6 h
Result:	1, 3, and 6 mg/kg markedly increased the survival rate from 0 to 30%, 70%, and 100%, respectively.

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Shown that the bacterial titers decreased with increasing drug dose.  
Rescued the pathological damages (large amounts of inflammatory cell infiltration, alveolar fusion, congestion in the spleen red pulp area, hepatic sinusoidal dilation and congestion) in a dose-dependent manner.

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## REFERENCES

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- [1]. Rachita Dash, et al. Thanatin: An Emerging Host Defense Antimicrobial Peptide with Multiple Modes of Action. *Int J Mol Sci.* 2021 Feb 3;22(4):1522.
- [2]. Bo Ma, et al. The antimicrobial peptide thanatin disrupts the bacterial outer membrane and inactivates the NDM-1 metallo- $\beta$ -lactamase. *Nat Commun.* 2019 Aug 6;10(1):3517.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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