

## Nosiheptide

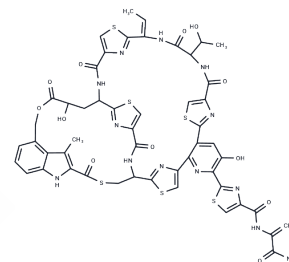
## Chemical Properties

CAS No. : 56377-79-8

Formula: C51H43N13O12S6

Molecular Weight: 1222.36

Storage: Keep away from moisture, Store at low temperature,  
Store under nitrogen  
Powder: -20°C for 3 years | In solvent: -80°C for 1 year  
Actual storage temperature shall be subject to the COA.



## Biological Description

Description	Nosiheptide (Multhiomycin), a thiopeptide antibiotic produced by <i>Streptomyces actuosus</i> , is a potent feed additive that promotes animal growth by inhibiting bacterial protein synthesis. It is characterized by an indole side ring system and regiospecific hydroxyl groups on its macrocyclic core.
Targets(IC50)	Antibacterial, Antibiotic
In vitro	Nosiheptide demonstrates non-toxic behavior towards mammalian cells at concentrations greater than 100 times the minimum inhibitory concentration (MIC) and retains its effectiveness against <i>Staphylococcus aureus</i> in the presence of 20% human serum. It is particularly potent against <i>Enterococcus</i> spp., the hypervirulent BI strain of <i>Clostridium difficile</i> , and displays remarkable activity against all tested strains of <i>Staphylococcus aureus</i> , including those resistant to multiple drugs (MIC values $\leq$ 0.25 mg/L). Additionally, Nosiheptide exhibits a significantly extended post-antibiotic effect against both healthcare- and community-associated <i>Staphylococcus aureus</i> when compared to vancomycin. Through time-kill studies, Nosiheptide has been found to quickly eliminate <i>Staphylococcus aureus</i> in a concentration- and time-dependent manner, achieving a near 2-log reduction at 6 hours with a concentration 10 times the MIC [1].
In vivo	Nosiheptide (20 mg/kg; intraperitoneal injection; administered at 1 and 8 hours post-infection; female CD1 mice) significantly protects against mortality, with all 10 treated mice surviving by day 3, compared to 6 out of 10 control mice dying on day 1[1].

## Solubility Information

Solubility	DMSO: 125 mg/mL (102.26 mM), Sonication is recommended. ( $<$ 1 mg/ml refers to the product slightly soluble or insoluble)
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### Preparing Stock Solutions

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	1mg	5mg	10mg
1 mM	0.8181 mL	4.0904 mL	8.1809 mL
5 mM	0.1636 mL	0.8181 mL	1.6362 mL
10 mM	0.0818 mL	0.409 mL	0.8181 mL
50 mM	0.0164 mL	0.0818 mL	0.1636 mL

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Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

### Reference

Haste NM, et al. Activity of the thiopeptide antibiotic nosiheptide against contemporary strains of methicillin-resistant *Staphylococcus aureus*. *J Antibiot (Tokyo)*. 2012 Dec;65(12):593-8.

Yu X, Zhu R, Geng Z, et al. Nosiheptide Harbors Potent In Vitro and Intracellular Inhibitory Activities against *Mycobacterium tuberculosis*. *Microbiology Spectrum*. 2022: e01444-22.

Yu Y, et al. Nosiheptide biosynthesis featuring a unique indole side ring formation on the characteristic thiopeptide framework. *ACS Chem Biol*. 2009 Oct 16;4(10):855-64.

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