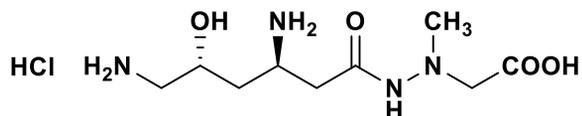


PRODUCT DATA SHEET

Date: Aug. 16, 2022

Negamycin (hydrochloride)

(Antibacterial, Gram-Positive & Negative, Bacterial Protein Synthesis Inhibitor)



Synonyms: [2-((3*R*,5*R*)-3,6-diamino-5-hydroxyhexanoyl)-1-methylhydrazino] acetic acid

Specifications

Code No.	: 14662
CAS#	: Not applicable *
Parent CAS#	: 33404-78-3 (salt free form)
Molecular Formula	: C ₉ H ₂₀ N ₄ O ₄ HCl
Molecular Weight	: 284.741
Source	: <i>Streptomyces</i> sp. M890-C2
Supplied as	: Powder, hydrochloride salt
Purity	: >80 % (qNMR)
Long Term Storage	: at -20 °C under Argon atmosphere
Solubility	: Soluble in DMSO, H ₂ O Insoluble in Hexane

* CAS number 33404-78-3 is the salt free form of negamycin. The negamycin we supply is the more stable hydrochloride salt form of which a CAS number has not been given yet.

Application Notes

Negamycin is obtained from culture filtrate of *Streptomyces* sp. M890-C2. ¹⁾ It inhibits the growth of Gram-positive and Gram-negative bacteria including drug-resistant *Pseudomonas* and causes inhibition of protein synthesis by interacting with the h34 element of 16S rRNA within the head domain of small ribosomal subunit. ¹⁻⁴⁾ Negamycin shows excellent therapeutic efficacy against *in vivo* mouse models of bacterial infection: *Pseudomonas aeruginosa* (ED₅₀: 4.4 mg/kg/sc), *Klebsiella pneumoniae* (ED₅₀: 5.0 mg/kg/sc) and *Salmonella* Typhi (ED₅₀: 2.5 mg/kg/sc). ¹⁾ The LD₅₀ value of negamycin to mice by intravenous injection is 400-500 mg/kg. ¹⁾ Negamycin restores dystrophin expression in skeletal and cardiac muscles of the *mdx* mouse, an animal model of Duchenne muscular dystrophy (DMD). ⁵⁾ Negamycin crosses the bacterial cytoplasmic membrane by multiple routes. ⁶⁾ The structure-activity relationships of negamycin analogs have been studied. ⁷⁻⁹⁾

References

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- 2) Mechanism of action of negamycin in *Escherichia coli* K12. I. Inhibition of initiation of protein synthesis. Mizuno S, *et al. J Antibiot.* 1970 **23**(12) 581-588.
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- 4) Negamycin induces translational stalling and miscoding by binding to the small subunit head domain of the *Escherichia coli* ribosome. Olivier NB, *et al. Proc Natl Acad Sci USA.* 2014 **111**(46) 16274-16279.
- 5) Negamycin restores dystrophin expression in skeletal and cardiac muscles of *mdx* mice. Arakawa M, *et al. J Biochem.* 2003 **134**(5) 751-758.
- 6) The antibiotic negamycin crosses the bacterial cytoplasmic membrane by multiple routes. Hörömpöli D, *et al. Antimicrob Agents Chemother.* 2021 **65**(4) e00986.
- 7) Syntheses and properties of negamycin analogs modified the δ -hydroxy- β -lysine moiety. Kondo S, *et al. J Antibiot.* 1976 **29**(2) 208-211.
- 8) Structure-activity relationships among negamycin analogs. Uehara Y, *et al. J Antibiot.* 1976 **29**(9) 937-943.
- 9) Structural insights lead to a negamycin analogue with improved antimicrobial activity against Gram-negative pathogens. McKinney DC, *et al. ACS Med Chem Lett.* 2015 **6**(8) 930-935.