

Product Information

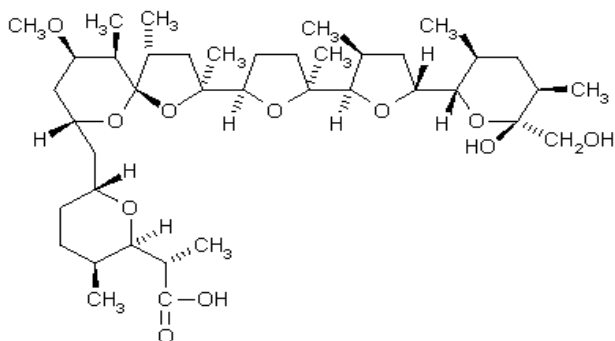
Nigericin sodium salt from *Streptomyces hygroscopicus*

Product Number **N 7143**
Storage Temperature 2-8 °C

CAS RN: 28643-80-3

Synonyms: Helexin C; Polyetherin A; Azalomycin M;
Antibiotic X464; Antibiotic K178

Product Description



Molecular formula: C₄₀H₆₇NaO₁₁
Molecular weight: 746.94

Nigericin is a polyether ionophore which catalyzes the electroneutral exchange of alkali metal (K⁺) for H⁺ (antiport).¹ It disrupts membrane potential and stimulates ATPase activity in mitochondria.^{2,3} Nigericin transports monovalent cations across membranes with the following specificity: K⁺>Rb⁺>Cs⁺>>Na⁺. Nigericin kills bacteria by facilitating the diffusion of ions across membranes.^{1,4}

Low concentration (0.5 μM) of nigericin rapidly decreases pHi, causing stimulation of PG production 1.5- to 2-fold in cerebral microvascular endothelial cells⁵ and arresting of DNA synthesis in Erlich acites carcinoma cells.⁶ Treatment of Hela cells, after entry of poliovirus, with nigericin, prevents the inhibition of host protein synthesis by poliovirus.⁷ It is widely used in studies of the consequences of changes in membrane potential in variable systems.^{8,9}

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

The product is soluble in chloroform (10 mg/ml), in methanol (10 mg/ml), in ethanol (5 mg/ml), practically insoluble in water.

Storage/Stability

Store the product desiccated and protected from light at 2-8 °C. Under these conditions the product is stable for 3 years.

References

1. Guffanti A.A., et al., Nigericin-induced death of an acidophilic bacterium., *J Gen Microbiol.*, **114**, 201-6 (1979).
2. Rottenberg, H., and Scarpa, A., Calcium uptake and membrane potential in mitochondria., *Biochemistry.*, **13**, 4811-17 (1974).
3. Eytan G.D., et al., Energy-linked transhydrogenase. Effects of valinomycin and nigericin on the ATP-driven transhydrogenase reaction catalyzed by reconstituted transhydrogenase-ATPase vesicles., *J. Biol. Chem.*, **265**, 12949-54 (1990).
4. Ahmed S. and Booth I.R., The use of valinomycin, nigericin and trichlorocarbanilide in control of the protonmotive force in *Escherichia coli* cells., *Biochem. J.* **212**, 105-12 (1983).
5. Parfenova, H., et al., Phosphorylation-dependent stimulation of prostanoic acid synthesis by nigericin in cerebral endothelial cells., *Am. J. Physiol.*, **277**, C728-C738 (1999).
6. Margolis, L.B., et al., K⁺/H⁺-antiporter nigericin arrests DNA synthesis in Ehrlich ascites carcinoma cells., *Proc. Natl. Acad. Sci. USA*, **86**, 6626-29 (1989).

7. Irurzun, A., et al., Monensin and nigericin prevent the inhibition of host translation by poliovirus, without affecting p220 cleavage., *J. Virol.*, **69**, 7453-60 (1995).
8. Sugiyama, M., et al., Possible mechanism of polycation liposome (PCL)-mediated gene transfer., *Biochim. Biophys. Acta*, **1660**, 24-30 (2004).
9. Ganzle, M.G., and Vogel, R.F., Studies on the mode of action of reutericyclin., *Appl. Environ. Microbiol.*, **69**, 1305-7 (2003).

NDH,PHC 01/05-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.