

sigma-aldrich.com

 3050 Spruce Street, St. Louis, MO 63103 USA

 Tel: (800) 521-8956
 (314) 771-5755

 Fax: (800) 325-5052
 (314) 771-5757

 email: techservice@sial.com sigma-aldrich.com

Product Information

Enniatin B from Gnomonia errabuda

Catalog Number **E5411** Storage Temperature –20 °C

CAS RN 917-13-5

Product Description

Molecular formula: C₃₃H₅₇N₃O₉ Molecular weight: 639.82



Enniatins are a group of cyclohexadepsipeptide mycotoxins produced by *Gnomonia errabuda* and several *Fusaria* species, with phytotoxic, antibiotic, and insecticidal activities.^{1.4} Enniatins function as ionophores by their incorporation into the cellular membrane to form dimeric structures. They transport monovalent ions across the membrane, especially the mitochondrial membranes, affecting oxidative phosphorylation uncoupling.⁵⁻⁸ It has been demonstrated enniatins have a cytotoxic effect on human cancer cells.⁹ Furthermore, incubation of H4IIE hepatoma cells with enniatins strongly diminished phosphorylation of ERK (p44/p42).¹⁰ Enniatins B and B1 were found to inhibit the multi-drug resistance transporter Pdr5p from *Saccharomyces cerevisiae*,¹¹ indicating their beneficial potential in cases of drug resistant patients.

Purity: ≥95% (HPLC)

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

Soluble at 10 mg/mL in DMSO, methanol, and ethanol.

Storage/Stability

Store the product sealed at -20 °C. Under these conditions the product is stable for at least 2 years.

References

- 1. Gäumann, E. et al., lonophore antibiotics produced by the fungus *Fusarium orthoceras var.* enniatum and other *Fusaria*. Experientia, **3**, 202 (1947).
- Grove, J.F., and Pople, M., The insecticidal activity of beauvericin and the enniatin complex. Mycopathologia, **70**, 103-105 (1980).
- Gupta, S. et al., Isolation of beauvericin as an insect toxin from *Fusarium semitectum* and *Fusarium moniliforme var*. subglutinans. Mycopathologia, **115**, 185-189(1991).
- Ganassi, S. et al., Effects of beauvericin on Schizaphis graminum (Aphididae). J. Invertebr. Pathol., 80, 90-96 (2002).
- Ovchinnikov, Y.A. et al., The enniatin ionophores. Conformation and ion binding properties. Int. J. Pept. Protein Res., 6, 465-498 (1974).
- Lifson, S. et al., Enniatin B and valinomycin as ion carriers: An empirical force field analysis. J.Biomol. Struct. Dyn., 2, 641-661 (1984).
- Doebler, J.A., Effects of neutral ionophores on membrane electrical characteristics of NG108-15 cells. Toxicol. Lett., **114**, 27-38 (2000).
- Ivanov V.T. et al., The far-infrared spectra of alkali metal ion complexes with valinomycin, beauvericin, nonactin and perhydroantamanide in solution. FEBS Lett., **30**, 199-204 (1973).
- Dornetshuber, R. et al., Enniatin exerts p53dependent cytostatic and p53-independent cytotoxic activities against human cancer cells. Chem. Res. Toxicol., 20, 465-473 (2007).
- Wätjen, W. et al., Enniatins A1, B and B1 from an endophytic strain of *Fusarium tricinctum* induce apoptotic cell death in H4IIE hepatoma cells accompanied by inhibition of ERK phosphorylation. Mol. Nutr. Food Res., **53**, 431-440 (2009).
- Hiraga, K. et al., Enniatin has a new function as an inhibitor of Pdr5p, one of the ABC transporters in *Saccharomyces cerevisiae*. Biochem. Biophys. Res. Commun., **328**, 1119-1404 (2005).

DWF,MAM 06/11-1

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.