PRODUCT INFORMATION

Piericidin A
Item No. 15379

CAS Registry No.: 2738-64-9
Formal Name: 2-[(2E,5E,7E,11E)-10R-hydroxy-3,7,9R,11-tetramethyl-2,5,7,11-tridecataetraen-1-yl]-5,6-dimethoxy-3-methyl-4-pyridinol
Synonyms: AR 054, Shaoguanmycin B, SN 198E
MF: C₂₅H₃₇NO₄
FW: 415.6
Purity: ≥95%
Supplied as: An oil
Storage: -20°C
Stability: ≥2 years

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Piericidin A is supplied as an oil. A stock solution may be made by dissolving the piericidin A in the solvent of choice. Piericidin A is soluble in organic solvents such as ethanol, methanol, DMSO, and dimethyl formamide, which should be purged with an inert gas.

Description

Complex I, also known as NADH:ubiquinone oxidoreductase or NADH dehydrogenase (ubiquinone), catalyzes the transfer of electrons from NADH to ubiquinone (also known as coenzyme Q₁₀) as part of the respiratory chain leading to ATP generation. Piericidin A is an irreversible inhibitor of mitochondrial complex I that strongly associates with ubiquinone binding sites in both mitochondrial and bacterial forms of the enzyme.¹,² First identified as an insecticidal metabolite produced by Streptomyces, piericidin A was soon found to bind and inhibit complex I at nanomolar concentrations.³,⁴ The inhibition of complex I by piericidin A in the presence of NADH results in the generation of reactive oxygen species.⁵ In plants, piericidin A inhibits photosystem II, a water-plastoquinone oxidoreductase involved in light-dependent electron transfer.⁶ Piericidin A also suppresses the up-regulation of the glucose-regulated protein GRP78 in glucose-deprived, etoposide-resistant HT-29 cells, resulting in cell death (IC₅₀ = 7.7 nM).⁷

References