

Antibacterial agent 271

Chemical Properties

CAS No. :

Formula:

Molecular Weight:

Storage: 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	Antibacterial agent 271 is an antimicrobial compound that significantly inhibits Escherichia coli, with a minimum inhibitory concentration (MIC) of 2.2 μ M. It disrupts bacterial membrane integrity, reducing metabolic activity. By binding to DNA grooves, it inhibits replication and induces reactive oxygen species (ROS) accumulation, leading to bacterial death. Antibacterial agent 271 shows considerable potential in combating bacterial infections.
Targets(IC50)	Reactive Oxygen Species, Antibacterial, DNA/RNA Synthesis, ROS
In vitro	Antibacterial agent 271 (Compound 11c) exhibits notable inhibitory effects against Escherichia coli with a MIC of 2.2 μ M, and demonstrates considerable inhibition against other Gram-negative bacteria, such as Pseudomonas aeruginosa (MIC: 17.6 μ M), as well as certain Gram-positive bacteria, including Staphylococcus aureus (MIC: 8.8 μ M) and Enterococcus faecalis (MIC: 4.4 μ M). At a concentration of 2.2 μ M, Antibacterial agent 271 (2.2 μ M-8.8 μ M, 4 h) can fully suppress the growth of E. coli, indicating a strong capability for rapid inhibition. The MIC value remains stable over 16 generations in serial passaging experiments with E. coli, highlighting low resistance risk. Additionally, Antibacterial agent 271 (0.5632 mM, 24 h) shows low hemolytic activity in human red blood cells (RBC). It has minimal cytotoxicity against human liver (LO2) and breast cancer cells (MCF-7) at 40 μ M, with cell viability exceeding 85%. At concentrations of 2.2 μ M to 35.2 μ M, the compound disrupts E. coli membrane potential, causing damage to the outer and inner membranes, and protein leakage. It inhibits metabolic activity, leading to loss of cell viability and induces reactive oxygen species (ROS) production in E. coli, thereby suppressing bacterial growth. Antibacterial agent 271 interacts with DNA via groove binding, inhibiting replication without cutting DNA, ultimately disrupting bacterial biological functions.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

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