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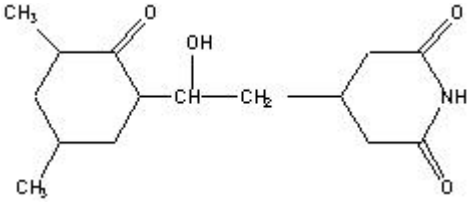
TECHNICAL INFORMATION

Catalog Number: 100183, 194527, 199520
Cycloheximide

Structure:



Molecular Formula: $C_{15}H_{23}NO_4$
Formula Weight: 281.36
CAS #: 66-81-9
Synonyms: Acti-Dione; 3-[2-(3,5-Dimethyl-2-oxocyclohexyl)-2-hydroxyethyl] glutarimide; Naramycin A
Physical Description: Grayish to yellowish gray crystalline powder or solution
Recommended Storage: +4°C
Solubility: It is very soluble in chloroform, methanol, and acetone; moderately soluble in isopropanol, n-butanol and amyl acetate; very slightly soluble in carbon tetrachloride and the saturated hydrocarbons. Cycloheximide solubility in water is about 2% and the solutions are stable for several weeks at pH 3-5 which is the optimum range for stability. Activity is rapidly destroyed by alkaline solutions.
Activity: Approximately 800 ug/mg
Description: Cycloheximide is an antibiotic which is very active against many molds, yeasts, and phytopathogenic fungi. It exhibits somewhat lower activity against bacteria and certain fungi. Control of various molds and fungi in gelatin-based photographic emulsions, photoengraving glues, and other light-sensitive products is suggested. The activity of cycloheximide against various organisms is given below.[1,2] Inhibits peptide synthesis in eukaryotic organisms but not in prokaryotes. Protein synthesis is blocked by the interaction of cycloheximide with the translocase enzyme. This interaction prohibits the translocation of messenger RNA on the cytosolic, 80S ribosomes without inhibiting organelle protein synthesis.[3,9,10]
The antibiotic activity is described below as micrograms per milliliter completely inhibiting growth for 72 hours.

Phytopathogenic Fungi	
Pythium debaryanum	20.0
Sclerotinia fructicola	20.0
Diplocarpon rosae	10.0
Elsinoe veneta	40.0
Gibberella saubinetii	20.0
Physalopora tucumanensis	10.0
Diaporthe citri	2.5
Endothia parasitica	20.0
Gnomonia leptostyla	20.0
Gnomonia veneta	20.0
Guignardia aesculi	10.0
Venturia inaequalis	10.0
Ustilago tritici	0.125
Ustilago zeae	10.0
Cercospora apii	20.0
Heterosporium iridis	5.0
Cladosporium fluvum	0.25
Cladosporium paeoniae	10.0
Macrosporium sarcinaeforme	20.0
Alternaria solani	40.0
Alternaria solani BTI	10.0
Alternaria oleracea BTI	20.0
Ramularia pastinaceae	100.0
Diplodia zeae	1.25

Bacteria	
Aerobacter aerogenes	> 1000.0
Bacillus mycoides	> 1000.0
Bacillus subtilis	> 1000.0
Escherichia coli	> 1000.0
Phytomonas campestris	> 1000.0
Proteus vulgaris	> 1000.0
Pseudomonas aeruginosa	> 1000.0
Salmonella schottmuelleri	> 1000.0
Staphylococcus aureus	> 1000.0
Streptococcus faecalis	> 1000.0
Streptococcus pyogenes	> 1000.0
Yeasts	
Nematospora phaseoli	0.17
Pichia membranaefaciens	0.17
Saccharomyces carlsbergensis	0.17
Saccharomyces ellipsoideus var. burgundy	0.17
Saccharomyces fragilis	0.17
Saccharomyces pastorianus	0.17
Schwanniomyces occidentalis	0.17
Sporobolomyces salmonicolor	0.17
Torulaspora fermentati	0.17
Rhodotorula glutinis	0.31
Hansenia apiculata	0.62

Colletotrichum lagenarium	10.0	*Hensenula anomala*	2.5
Colletotrichum phomoides	10.0	*Saccharomyces cerevisiae*	10.0
Fusarium lycopersci	100.0	*Torula utilis*	10.0
Sphaeropsis elysii	0.125	*Asporomyces urae*	25.0
Sclerotium rolfsii	2.5	*Debaryomyces globosum*	25.0
Rhizoctonia sp.	1.25	*Schizosaccharomyces pombe*	25.0
		Endomyces magnusii	> 1000.0
Pathogenic Fungi		*Kloeckera apiculata*	> 1000.0
Cryptococcus neoformans	0.24	*Mycotorula roseo-corrallina*	> 1000.0
Phialophora verrucosa	12.5	*Pityrosporum ovale*	> 1000.0
Monosporium apiospermum	25.0	*Saccharomyces lactis*	> 1000.0
Blastomyces dermatitidis	1000.0		
Candida albicans	> 1000.0		
Coccidioides immitis	> 1000.0		
Geotrichum sp.	> 1000.0		
Hormodendrum compactum	> 1000.0		
Nocardia asteroides	> 1000.0		
Sporotrichum schenkii	> 1000.0		
Trichophyton rubrum	> 1000.0		
Trichophyton mentagrophytes	> 1000.0		

Cycloheximide is also known to induce FAS/FAS Ligand apoptosis, and triggers apoptosis in HL-60 cells, T-cell hybridomas, Burkitt's lymphoma cells[11] in addition to a variety of other cell types. Cycloheximide will also delay or inhibit apoptosis induced by other agents. Cycloheximide is used in plant research to study disease resistance and as an ethylene stimulant, useful in studies involving fruit and leaf production.
Typical uses involve:

– Used in bacteriological media to isolate or count bacteria in the presence of yeast and molds;
– Used in protein synthesis in apoptosis[4];
– Gene expression[5,6];
– Glycogenolysis, gluconeogenesis and ureogenesis in isolated rat hepatocytes[7];
– Studies involving steroidogenesis[8];
– Used in plant regulation and as a quality control measure by the food and beverage industry.

Availability:

Catalog Number	Description	Size
100183	Cycloheximide	1 g 5 g 25 g
194527	Cycloheximide, cell culture reagent	1 g 5 g 25 g
199520	Cycloheximide solution - 100 mg/ml of DMSO, 0.2um filtered.	1 ml

References:

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