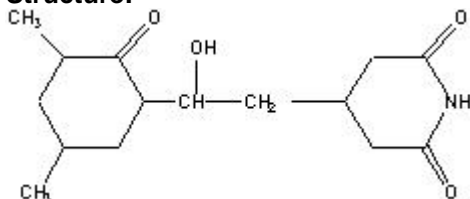


TECHNICAL INFORMATION

Catalog Number: 100183, 194527, 199520

Cycloheximide

Structure:



Molecular Formula: C₁₅H₂₃NO₄

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

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

Bacteria

<i>Aerobacter aerogenes</i>	> 1000.0
<i>Bacillus mycoides</i>	> 1000.0
<i>Bacillus subtilis</i>	> 1000.0
<i>Escherichia coli</i>	> 1000.0
<i>Phytomonas campestris</i>	> 1000.0
<i>Proteus vulgaris</i>	> 1000.0
<i>Pseudomonas aeruginosa</i>	> 1000.0
<i>Salmonella schottmuelleri</i>	> 1000.0
<i>Staphylococcus aureus</i>	> 1000.0
<i>Streptococcus faecalis</i>	> 1000.0
<i>Streptococcus pyogenes</i>	> 1000.0

Yeasts

<i>Nematospora phaseoli</i>	0.17
<i>Pichia membranaefaciens</i>	0.17
<i>Saccharomyces carlsbergensis</i>	0.17
<i>Saccharomyces ellipsoideus var. burgundy</i>	0.17
<i>Saccharomyces fragilis</i>	0.17
<i>Saccharomyces pastorianus</i>	0.17
<i>Schwanniomyces occidentalis</i>	0.17
<i>Sporobolomyces salmonicolor</i>	0.17
<i>Torulasporea fermentati</i>	0.17
<i>Rhodotorula glutinis</i>	0.31
<i>Hansenia apiculata</i>	0.62

<i>Colletotrichum lagenarium</i>	10.0	<i>Hansenula anomala</i>	2.5
<i>Colletotrichum phomoides</i>	10.0	<i>Saccharomyces cerevisiae</i>	10.0
<i>Fusarium lycopersici</i>	100.0	<i>Torula utilis</i>	10.0
<i>Sphaeropsis elysii</i>	0.125	<i>Asporomyces urae</i>	25.0
<i>Sclerotium rolfsii</i>	2.5	<i>Debaryomyces globosum</i>	25.0
<i>Rhizoctonia sp.</i>	1.25	<i>Schizosaccharomyces pombe</i>	25.0
Pathogenic Fungi		<i>Endomyces magnusii</i>	> 1000.0
<i>Cryptococcus neoformans</i>	0.24	<i>Kloeckera apiculata</i>	> 1000.0
<i>Phialophora verrucosa</i>	12.5	<i>Mycotorula roseo-corrallina</i>	> 1000.0
<i>Monosporium apiospermum</i>	25.0	<i>Pityrosporium ovale</i>	> 1000.0
<i>Blastomyces dermatitidis</i>	1000.0	<i>Saccharomyces lactis</i>	> 1000.0
<i>Candida albicans</i>	> 1000.0		
<i>Coccidioides immitis</i>	> 1000.0		
<i>Geotrichum sp.</i>	> 1000.0		
<i>Hormodendrum compactum</i>	> 1000.0		
<i>Nocardia asteroides</i>	> 1000.0		
<i>Sporotrichum schenkii</i>	> 1000.0		
<i>Trichophyton rubrum</i>	> 1000.0		
<i>Trichophyton mentagrophytes</i>	> 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 cells¹¹ 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 apoptosis⁴;
- Gene expression^{5,6};
- Glycogenolysis, gluconeogenesis and ureogenesis in isolated rat hepatocytes⁷;
- Studies involving steroidogenesis⁸;
- 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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