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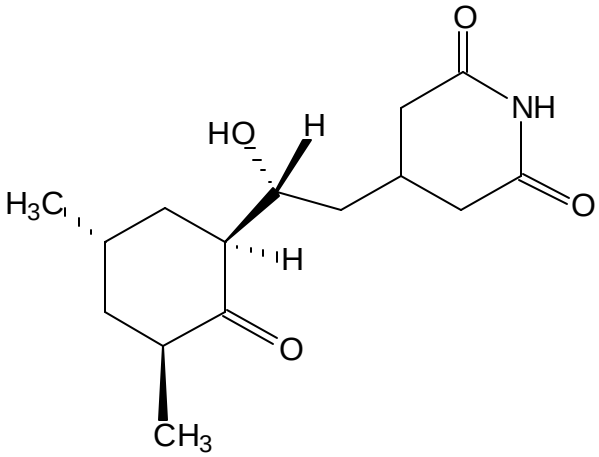
ProductInformation

Cycloheximide
from a microbial source

Product Number **C7698 and C1988**
Storage Temperature 2-8 °C

CAS RN 66-81-9
Synonyms: Actidione, Naramycin A, (3-[2-(3,5-Dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]glutarimide)



Product Description

Molecular Formula: $C_{15}H_{23}NO_4$
Molecular Weight: 281.4

Cycloheximide is a glutarimide antibiotic derived from a microbial source. It inhibits eukaryotic, but not prokaryotic protein synthesis. This selective inhibition makes it active against many yeasts and fungi, but tolerated by most bacteria. Classically, it has been used in bacteriological media to isolate or count bacteria in the presence of yeast and molds (100–1000 µg/ml).

At the cellular level, cycloheximide blocks the translation of messenger RNA on cytosolic, 80S ribosomes, but does not inhibit organelle protein synthesis.[1,2,3] This biochemical action makes cycloheximide a powerful tool in the study of many cellular processes. For example, studies of cells pretreated with cycloheximide (1-20 µg/ml) and untreated cells have helped determine the role of protein synthesis in apoptosis,[4,5,6] gene expression,[7,8,9] and steroidogenesis.[10,11]

Cycloheximide is also used in plant research. It stimulates ethylene production in fruit and leaves.[12]

Preparation Instructions

Cycloheximide has been reported to be soluble up to 2% (w/v) in water (20 mg/ml).[14] The powder will dissolve slowly in water and this process may be aided by mixing or sonication. More dilute solutions (5 mg/ml) may be prepared without sonication. Aqueous solution stability is pH dependent. Solutions are stable for several weeks in the pH range of 3 to 5, which is the range optimal for stability. For longer term solution storage, refrigeration is suggested. Solutions refrigerated over 18 months, retained 75% of the original activity.[13] Solutions prepared in distilled water may be sterile filtered or autoclaved without serious loss of activity.[13] Autoclaving of medium containing cycloheximide is not recommended. The sterile cycloheximide solution should be added to sterile broth or cooled, sterile, melted agar.[13] Boiling for one hour at pH 7 destroys activity, but no loss of activity is observed after 15 minutes. Under acidic conditions (pH 2), activity is not destroyed after one hour of boiling.[14] Under dilute alkali conditions, decomposition occurs rapidly in solution at room temperature with the formation of 2,4-dimethylcyclohexanone.[14]

Cycloheximide is also soluble in most organic solvents, including ethanol, with the exception of saturated hydrocarbons.[14]

Storage/Stability

Store desiccated at 2-8 °C. The product as supplied should be stable for 5 years if properly stored.

References

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