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Technical Datasheet

β - Cyclodextrin

Cell Culture tested

Product Code: TC104

Product Description :

Molecular Weight: 1134.98
Molecular Formula: $C_{42}H_{70}O_{35}$
CAS No: 7585-39-9
Synonym:Caraway, Cycloheptaamylose, Cyclomaltoheptaose, Schrardinger β-Dextrin

Cyclodextrins are cyclic carbohydrates consisting of six, seven or eight α-D-glucopyranose units respectively called α-, β- and -cyclodextrins. They are obtained by the enzymatic degradation of starch.

Cyclodextrins have a unique spatial configuration, with a hydrophilic exterior and hydrophobic inner cavity. The hydrophobic cavity forms an ideal harbor in which poorly water soluble molecules can shelter their hydrophobic parts. Such contact between a poorly water soluble compound and a cyclodextrin in aqueous environment results in complexation. This complex becomes a soluble entity on its own due to the hydrophilic exterior of the cyclodextrin.

The hydrophobic cavity of α-cyclodextrin is smaller with six glucopyranose units and is not capable of accepting larger molecules. β and γ-cyclodextrins have larger internal cavities providing the ability to form complexes with a variety of hydrophobic molecules like aromatics, alcohols, fatty acids, vitamins, hormones, etc.

Applications of cyclodextrins:

• In drug delivery related research

Cyclodextrins are potential candidates as carrier materials because of their ability to alter physical, chemical and biological properties of guest molecules through the formation of inclusion complexes.

• To increase solubility

The hydrophobic cavity allows cyclodextrins to form complexes with a variety of hydrophobic molecules and the hydrophilic exterior increases the solubility and bioavailability of these complexes.

• As a tool for extraction of cholesterol from cultured cells

Cyclodextrins have been used as experimental tools to manipulate the cholesterol content of cultured cells in order to study a variety of aspects of cellular cholesterol metabolism. Methyl-β-cyclodextrins can be used as cholesterol shuttles that have the ability to catalyze the exchange of cholesterol from the cell membrane to serum lipoproteins.

Directions :

Preparation instructions:
β-Cyclodextrin is soluble in 1N NaOH (50mg/ml). Constant stirring is required to dissolve the powder completely in water. Alternatively, sonication with intermittent cooling also facilitates complete dissolution.

Quality Control:

Appearance
White to orange to green crystals or solid or powder

Solubility
10mg soluble in 1ml of water

FTIR
Matches with standard pattern

Specific rotation [alpha]20/D
+160° to +166°(c= 1% in water at 20ºC, on anhydrous basis

Water Content
NMT 14 %

Assay
NLT 95.00%

Cell Culture Test
Passes

Storage and Shelf Life:

Store at 10-30°C away from bright light.
Solutions can be stored at 4ºC for several months.
Shelf life of the product is 36 months.
Use before expiry date given on the product label.

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