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ProductInformation

β-Cyclodextrin

Product Number **C 4767**
Store at Room Temperature

Product Description

Molecular Formula: $C_{42}H_{70}O_{35}$
Molecular Weight: 1,135
CAS Number: 7585-39-9

Cyclodextrins are cyclic oligosaccharides consisting of 6, 7, or 8 glucopyranose units with hydrophobic interiors, usually referred to as α-, β-, or γ-cyclodextrins, respectively. Lipophilic drugs of a size compatible with the hydrophobic core of a cyclodextrin can form complexes, resulting in increased aqueous solubility of the drugs. The solubility increases achieved can be dramatic. *In vivo* efficacy is usually maintained when drugs are delivered as cyclodextrin complexes. In addition, cyclodextrins are non-toxic in many species (mice and rabbits), and do not denature proteins or interfere with enzymatic reactions.

α-cyclodextrin (I.D. 6 Å), β-cyclodextrin (I.D. 7.5 Å) and γ-cyclodextrin (I.D. 9-10 Å) should be matched to the materials to be solubilized. The cavity diameter of β-cyclodextrins or 7-glucopyranose unit compounds is well-suited for use with molecules the size of hormones, vitamins, and many compounds frequently used in tissue and cell culture applications. For this reason, β-cyclodextrin is most commonly used as a complexing agent.

The solubility of natural cyclodextrins is very poor. In the late 1960s, it was discovered that chemical substitutions at the 2, 3, and 6 hydroxyl sites would greatly increase solubility. The degree of chemical substitution, as well as the nature of the groups used for substitution, determine the final maximum concentration of cyclodextrin in an aqueous medium. Most chemically modified cyclodextrins are able to achieve a 50% (w/v) concentration in water.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in 1 M NH_4OH (50 mg/ml), yielding a clear solution (with heating). The water solubility of β-cyclodextrin (β-CD) is approximately 16.5 mM, roughly 1/10th the solubility of α-CD and γ-CD.[2] The solubility of β- and γ-CD can be increased with the use of 4-8 M urea or 0.2-1 M NaOH.

Storage/Stability

Hydrolysis in 7.7 M HCl at 30 °C leads to degradative ring opening for β-cyclodextrin of 15.7% within 30 minutes and 50.1% within 120 minutes and 95.7% within 540 minutes.[3] Information on secondary hydrolysis of opened rings has also been reported.

References

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