SBE-β-CD

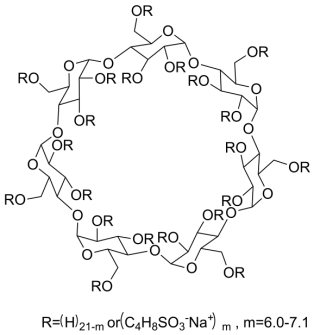
Cat. No.: HY-17031

CAS No.: 182410-00-0

Target: Biochemical Assay Reagents

Pathway: Others

Storage: 4°C, sealed storage, away from moisture and light



SOLVENT & SOLUBILITY

In Vitro

H_2O : ≥ 100 mg/mL

* "≥" means soluble, but saturation unknown.

BIOLOGICAL ACTIVITY

Description

SBE-β-CD is a sulfobutylether β-cyclodextrin derivative used as an excipient or a formulating agent to increase the solubility of poorly soluble agents[1].

In Vitro

SBE-β-CD is a chemically modified β-CD that is a cyclic hydrophilic oligosaccharide which is negatively charged in aqueous media. β-CD functioned is a solubilizer only at low concentrations, whereas SBE7-β-CD exhibits strong solubilizing effects over a wide concentration range[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

20% SBE-β-CD in saline:

Guidelines (Following is our recommended protocol. This protocol only provides a guideline, and should be modified according to your specific needs).

1. Dissolve 0.9 g of NaCl in 100 mL distilled water to make a clear 0.9% saline solution.
2. Measure 2 g of dry SBE-β-CD.
3. Dissolve 2 g of SBE-β-CD in 0.9% saline to make 10 mL with a 20% (w/v) concentration. These may require ultrasonic (20-40 kHz, 30 seconds, repeat 3 times) or heating (37°C for about 30 minutes). If precipitation is observed, the precipitates can be dissolved by heating to 37°C and vortexing before use.

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PROTOCOL

Animal Administration [2]

Rats[2]

A 300 g rat is administered with 1 mL of a 0.1 M SBE-β-CD solution containing 5.64 mg of Compound 1, and assuming an extracellular volume of 90 mL, less than 0.1% of the complex would rapidly dissociate due to the initial effects of dilution. This calculation, combined with the changing blood to plasma ratio in the presence of SBE-β-CD, provides a reasonable

explanation for the observed differences in the blood and plasma profiles of Compound 1 after intravenous administration in either the cyclodextrin or cyclodextrin-free formulations. After IV administration of the cyclodextrin formulation, Compound 1 would initially be prevented from distributing into erythrocytes thereby resulting in a whole blood to plasma ratio of less than one. Subsequently, clearance of SBE-β-CD from the circulation would lead to changes in the complexation equilibrium such that the unbound fraction of Compound 1 would increase, thereby reestablishing normal blood to plasma partitioning (i.e. in favour of whole blood) and clearance.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Med. 2017 Jun;23(6):723-732.
- Cell. 2021 Jul 22;184(15):4032-4047.e31.
- Cancer Cell. 2020 Dec 14;38(6):844-856.e7.
- Sci Transl Med. 2021 Jan 20;13(577):eaba7401.
- Nat Commun. 2024 Mar 16.

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REFERENCES

[1]. Fukuda M, et al.Influence of sulfobutyl ether beta-cyclodextrin (Captisol) on the dissolution properties of a poorly soluble drug from extrudates prepared by hot-melt extrusion.Int J Pharm. 2008 Feb 28;350(1-2):188-196

[2]. Charman SA, et al. Alteration of the intravenous pharmacokinetics of a synthetic ozonide antimalarial in the presence of a modified cyclodextrin. J Pharm Sci. 2006 Feb;95(2):256-67

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