Data Sheet

**Product Name:** SBE-β-CD  
**Cat. No.:** HY-17031  
**CAS No.:** 182410-00-0  
**Molecular Formula:** N/A  
**Molecular Weight:** N/A  
**Target:** Others  
**Pathway:** Others  
**Solubility:**  
H₂O: ≥ 33 mg/mL; DMSO: 5.625 mg/mL

**BIOLOGICAL ACTIVITY:**

SBE-β-CD is a sulfobutylether β-cyclodextrin derivative, it is an excipient or a formulating agent used to increase the solubility of poorly soluble drugs.

**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 as a solubilizer only at low concentrations, whereas SBE7-β-CD exhibits strong solubilizing effects over a wide concentration range[^1].

**In Vivo:** SBE-β-CD is a derivatized form of β-cyclodextrin that has been developed as a safe and effective solubilizing agent for drugs being administered by parenteral and other routes (including oral). SBE-β-CD is a cyclic carbohydrate comprised of seven glucose molecules; the resulting truncated cone-like structure being further derivatized with an average of seven sulfobutyl ether groups[^2]. The calorimetric data for the Compound 1/SBE-β-CD complex indicates an extremely strong interaction, with an association constant of $2.3\pm(0.2)\times10^6$ M⁻¹ at 25°C and $1.6\pm(0.2)\times10^6$ M⁻¹ at 37°C[^3]. SBE-β-CD alone evokes a mild cardio-depressant effect independent of cocaine treatment (p=0.0001 compared to baseline) but attenuates further cocaine-induced decreases in RPP, dP/dtmax, and dP/dtmaxabs at high cocaine concentrations. No significant effect is seen on line pressure SBE-β-CD alleviates the most pronounced cardiac depression associated with cocaethylene toxicity for RPP and dP/dtmax. No differences are observed between ethanol-treated controls and cocaethylene plus SBE-β-CD groups[^4].

**PROTOCOL (Extracted from published papers and Only for reference)**

**Animal Administration:** SBE-β-CD is prepared in saline[^3].[^3] Rats[^3]

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.

**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...


[4]. Fettiplace MR, et al. Cardiac depression induced by cocaine or cocaethylene is alleviated by lipid emulsion more effectively than by sulfobutylether-β-cyclodextrin. Acad Emerg Med. 2015 May;22(5):508-17

Caution: Product has not been fully validated for medical applications. For research use only.