Cyclovirobuxine D
Item No. 22260

CAS Registry No.: 860-79-7
Formal Name: (3β,5α,16α,20S)-4,4,14-trimethyl-3,20-bis(methylamino)-9,19-cyclopregnan-16-ol
Synonyms: CVB-D, NSC 91722
MF: C_{26}H_{46}N_{2}O
FW: 402.7
Purity: ≥95%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥2 years

Laboratory Procedures

Cyclovirobuxine D (CVB-D) is supplied as a crystalline solid. A stock solution may be made by dissolving the CVB-D in the solvent of choice. CVB-D is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of CVB-D in these solvents is approximately 1, 0.25, and 25 mg/ml, respectively.

CVB-D is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, CVB-D should first be dissolved in DMF and then diluted with the aqueous buffer of choice. CVB-D has a solubility of approximately 0.2 mg/ml in a 1:4 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

CVB-D is an alkaloid, and the main active component of the traditional Chinese medicine B. microphylla, that has diverse biological activities.\(^1\)\(^-\)\(^6\) It is an ether-a-go-go related gene (ERG) potassium channel blocker with an IC\(_{50}\) value of 19.7 μM using whole-cell patch-clamp electrophysiology in HEK293 cells expressing the human receptor.\(^1\) ERG blockade is activation-dependent, indicating CVB-D binds to open ERG channels. CVB-D increases the amount and rate of calcium release from intracellular stores in healthy neonatal rat cardiac myocytes and those isolated from adult rats with heart failure in a concentration-dependent manner.\(^2\) It also increases expression of ryanodine receptor 2 (Ryr2) and sarcoplasmic reticulum calcium ATPase 2a (Serca2a) and decreases expression of the sodium-calcium exchanger (Ncx). In vivo, CVB-D (0.5-2.0 mg/kg) reduces mortality and improves cardiac function in a rat model of congestive heart failure.\(^3\) CVB-D pretreatment (1 mg/kg per day for 4 days) inhibits myocardial apoptosis and mitochondrial cytochrome C release induced by doxorubicin (Item No. 15007) in mice.\(^4\) CVB-D also induces cellular autophagy and inhibits growth of MCF-7 breast cancer cells and induces mitochondrial apoptosis in MGC803 and MKN26 gastric cancer cells.\(^5\)\(^,\)\(^6\)

References