Dronedarone

Cat. No.: HY-A0016

CAS No.: 141626-36-0

Molecular Formula: $C_{31}H_{44}N_2O_5S$

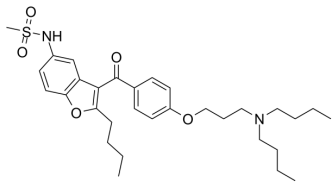
Molecular Weight: 556.76

Target: mAChR; Autophagy; Sodium Channel; Calcium Channel; Adrenergic Receptor; Cytochrome P450

Pathway: GPCR/G Protein; Neuronal Signaling; Autophagy; Membrane Transporter/Ion Channel; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (89.81 mM; Need ultrasonic)

Preparing Stock Solutions

Concentration \ Solvent \ Mass	1 mg	5 mg	10 mg
1 mM	1.7961 mL	8.9805 mL	17.9611 mL
5 mM	0.3592 mL	1.7961 mL	3.5922 mL
10 mM	0.1796 mL	0.8981 mL	1.7961 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (4.49 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (4.49 mM); Suspended solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.49 mM); Suspended solution

BIOLOGICAL ACTIVITY

Description

Dronedarone (SR 33589), a derivative of amiodarone (HY-14187), is a class III antiarrhythmic agent for the study of atrial fibrillation (AF) and atrial flutter. Dronedarone is a potent blocker of multiple ion currents, including potassium current, sodium current, and L-type calcium current, and exhibits antiadrenergic effects by noncompetitive binding to β-adrenergic receptors. Dronedarone is a substrate for and a moderate inhibitor of CYP3A4[1].

In Vitro

In patch clamp experiments using human atrial myocytes, Dronedarone produces potent blockade of peak sodium current, resulting in a 97% block at 3 μM[1].

In guinea pig ventricular myocytes, Dronedarone inhibits the rapidly activating delayed-rectifier potassium current (IC_{50}<3 μM), the slowly activating delayed-rectifier potassium current (IC_{50}=10 μM), the inward rectifier potassium current (IC_{50}>30 μM), and L-type calcium current (IC_{50}=0.18 μM)[1].

Dronedarone exhibits strong inhibitory effects on the acetylcholine-activated potassium current ($I_{K\text{-}Ach}$) in rabbit inoatrial nodal cells (IC_{50}=63 nM) and guinea pig atrial cells (IC_{50}=10 nM). Blockade of $I_{K\text{-}Ach}$ by dronedarone is 100 times more potent than that of amiodarone[1].

Dronedarone exerts its antiadrenergic effects by noncompetitive binding to β-adrenergic receptors (IC_{50}=1.8 μM) and inhibition of agonist-induced increases in adenylate cyclase activity[1].

Dronedarone (0.01-1 μM) induces a concentration-dependent reduction of coronary perfusion pressure in isolated guinea pig hearts, effects that are independent of the nitric oxide synthase pathway and possibly related to its calcium current blockade[1].

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

In Vivo

Dronedarone (intraperitoneal injection; 25-100 mg/kg) exhibits anticonvulsant effects in a dose-dependent manner and increases the threshold for electroconvulsions in mice[2].

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

Animal Model:	Tonic-clonic seizures in male albino Swiss outbred mice[2]
Dosage:	25 mg/kg; 50 mg/kg; 75 mg/kg; 100 mg/kg
Administration:	Intraperitoneal injection
Result:	Showed significant anticonvulsant effects.

REFERENCES

[1]. Chinmay Patel, et al. Dronedarone. Circulation. 2009 Aug 18;120(7):636-44.

[2]. Katarzyna M Sawicka, et al. Influence of dronedarone (a class III antiarrhythmic drug) on the anticonvulsant potency of four classical antiepileptic drugs in the tonic-clonic seizure model in mice. J Neural Transm (Vienna). 2019 Feb;126(2):115-122.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA