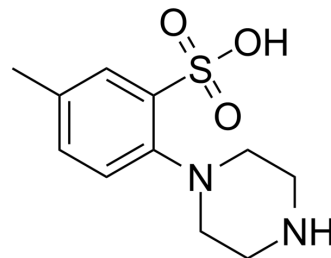


## Caldaret

Cat. No.:	HY-100298
CAS No.:	133804-44-1
Molecular Formula:	C <sub>11</sub> H <sub>16</sub> N <sub>2</sub> O <sub>3</sub> S
Molecular Weight:	256.32
Target:	Na <sup>+</sup> /Ca <sup>2+</sup> Exchanger
Pathway:	Membrane Transporter/Ion Channel
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 4.81 mg/mL (18.77 mM); ultrasonic and warming and adjust pH to 3 with HCl and heat to 60°C)

Concentration	Solvent	Mass	Preparing Stock Solutions		
			1 mg	5 mg	10 mg
1 mM			3.9014 mL	19.5069 mL	39.0137 mL
5 mM			0.7803 mL	3.9014 mL	7.8027 mL
10 mM			0.3901 mL	1.9507 mL	3.9014 mL

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

### BIOLOGICAL ACTIVITY

#### Description

Caldaret is an intracellular Ca<sup>2+</sup> handling modulator that acts through reverse mode Na<sup>+</sup>/Ca<sup>2+</sup> exchanger inhibition.

#### IC<sub>50</sub> & Target

Na<sup>+</sup>/Ca<sup>2+</sup> exchanger<sup>[1]</sup>

#### In Vitro

Caldaret (MCC-135) is demonstrated to restore Ca<sup>2+</sup>-ATPase activity of the sarcoplasmic reticulum (SR) isolated from the myocardium acutely exposed to ischemia and reperfusion in vitro<sup>[2]</sup>.

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

#### In Vivo

Caldaret, an intracellular Ca<sup>2+</sup> handling modulator, limits infarct size of reperfused canine heart. The cardioprotective effect of Caldaret, a novel intracellular Ca<sup>2+</sup> handling modulator that acts through reverse-mode Na<sup>+</sup>/Ca<sup>2+</sup> exchanger inhibition and potential sarcoplasmic reticulum (SR) Ca<sup>2+</sup> uptake enhancement, against reperfusion injury is investigated. Intravenously infused Caldaret (3 or 30 microg/kg per hour) for 30 min at left circumflex (LCX)-reperfusion markedly reduces infarct size (by 51.3% or 71.9%, respectively). The amelioration of intracellular Ca<sup>2+</sup> handling dysfunction achieved by Caldaret leads to cardioprotective effects against reperfusion injury following prolonged ischemia<sup>[1]</sup>. Caldaret (MCC-135) is a new potent compound with beneficial effects in heart failure. In diabetic rats, Caldaret decreases TR80 significantly without significant effect on developed tension (DT). Caldaret has minimal effects on SR Ca<sup>2+</sup> uptake in normal rats, that is observed

as increased SR Ca<sup>2+</sup> uptake at uptake time of 20 and 30 s at the highest concentration of 10 μM. In diabetic rats, Caldaret increases SR Ca<sup>2+</sup> uptake all over the range of uptake time. Both initial rate of SR Ca<sup>2+</sup> uptake and the amount of Ca<sup>2+</sup> accumulated in the SR with longer uptake time are increased by Caldaret<sup>[2]</sup>.

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## PROTOCOL

### Animal Administration <sup>[1]</sup>

#### Dogs<sup>[1]</sup>

Experiments are performed on 69 male healthy dogs (derived from the hybrid dogs of Labrador retriever, beagle, and hound strain; 6-13 month old; weighing from 10-16 kg). The animals are assigned randomly to four treatment groups: a control group (CONT, n=10) intravenously infused with saline, a low dose of Caldaret-treated group (CAL(L), n=10) infused with Caldaret (3 μg/kg per hour), a high dose of Caldaret-treated group (CAL(H), n=10) infused with Caldaret (30 μg/kg per hour), and a Diltiazem-treated group (DIL, n=10) infused with Diltiazem (2000 μg/kg per hour). Saline vehicle or drugs are intravenously administered from 75 min of occlusion to 15 min of reperfusion at a constant rate of 2 mL/kg per hour. Caldaret treatment is designed to evaluate the efficacy against reperfusion injury, thereby the infusion is started 15 min before reperfusion in order to obtain sufficient plasma concentrations at the onset of reperfusion. Caldaret or Diltiazem saline solution is freshly prepared just before the administration in each experimental day. After completion of the successful four hours of reperfusion, ventricular fibrillation (VF) is induced by an intravenous injection of potassium chloride, and the heart is isolated, and processed for postmortem measurement of infarct size and RMBF determinations. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## REFERENCES

- [1]. Kawasumi H, et al. Caldaret, an intracellular Ca<sup>2+</sup> handling modulator, limits infarct size of reperfused canine heart. *J Pharmacol Sci.* 2007 Feb;103(2):222-33.
- [2]. Satoh N, et al. Lusitropic effect of MCC-135 is associated with improvement of sarcoplasmic reticulum function in ventricular muscles of rats with diabetic cardiomyopathy. *J Pharmacol Exp Ther.* 2001 Sep;298(3):1161-6.

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

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