# (+)-EMD 57033

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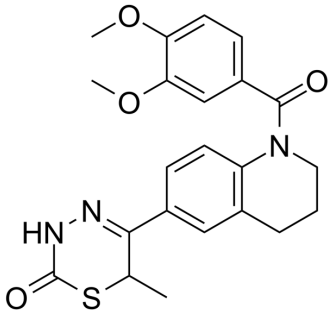
| **Cat. No.:** | HY-106844A | | |
| **CAS No.:** | 147527-31-9 | | |
| **Molecular Formula:** | $C_{22}H_{23}N_3O_4S$ | | |
| **Molecular Weight:** | 425.5 | | |
| **Target:** | Others | | |
| **Pathway:** | Others | | |
| **Storage:** | Powder | -20°C | 3 years |
| | | 4°C | 2 years |
| | In solvent | -80°C | 6 months |
| | | -20°C | 1 month |



## BIOLOGICAL ACTIVITY

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| **Description** | (+)-EMD 57033 is a cardiac troponin C (cTnC) activator, is a dominant $Ca^{2+}$ sensitizer. (+)-EMD 57033 binds the cardiac/slow skeletal troponin C isoform and exerts myocardial contractile promotion function[1]. |
| **$IC_{50}$ & Target** | Cardiac troponin C (cTnC)[1] |
| **In Vitro** | (+)-EMD 57033 (30 μM) recovers the activation and sensitivity of $Ca^{2+}$ in pig single muscle fibres and reduces VIDD (ventilator-induced diaphragm muscle fibre dysfunction) of [2].<br>(+)-EMD 57033 (5.0-5.8 μM; 10-15 min) significantly increases the coronary blood flow and myocardial $Vo_2$ ($O_2$ consumption) in both 100 bpm and 150 bpm heart rates of rabbit heart, with a $[Ca^{2+}]_0$ concentration-dependent manner ($[Ca^{2+}]_0$=1.0 or 2.5 mM)[3].<br>(+)-EMD 57033 (5.0-5.8 μM; 10-15 min) increases left ventricular (LV) end-diastolic pressure and prolongs relaxation[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | (+)-EMD 57033 (0.4 or 0.8 mg/kg/min; i.v.drip; over than 20 min) enhances contractility and achieves $Ca^{2+}$ sensitization in intact failing hearts at substantial energetic savings and without compromise of diastolic function in dogs[4].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

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| Animal Model: | Mongrel dogs implanted with a micromanometer in left ventricle (LV) at the apex via lateral thoracotomy[4] |
| Dosage: | 0.4 or 0.8 mg/kg/min |
| Administration: | Intravenous drip; infused over 20 minutes |
| Result: | Enhanced contractility at both doses, with similar changes in CON (conscious dogs) and HF (heart failure dogs) hearts.<br>Decreased the end-diastolic pressure (EDP) and lowered arterial load or preload at 0.8 mg/kg/min. |

## REFERENCES

[1]. Wang X, et al. Structure of the C-domain of human cardiac troponin C in complex with the Ca2+ sensitizing drug EMD 57033. J Biol Chem. 2001 Jul 6;276(27):25456-66.

[2]. Ochala J, et al. EMD 57033 partially reverses ventilator-induced diaphragm muscle fibre calcium desensitisation. Pflugers Arch. 2010 Feb;459(3):475-83.

[3]. Hgashiyama A, et al. Effects of EMD 57033 on contraction and relaxation in isolated rabbit hearts. Circulation. 1995 Nov 15;92(10):3094-104.

[4]. Senzaki H, et al. Improved mechanoenergetics and cardiac rest and reserve function of in vivo failing heart by calcium sensitizer EMD-57033. Circulation. 2000 Mar 7;101(9):1040-8.



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