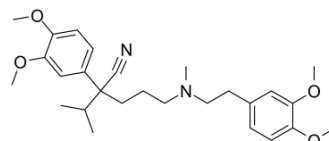


Verapamil

Cat. No.:	HY-14275
CAS No.:	52-53-9
Molecular Formula:	C ₂₇ H ₃₈ N ₂ O ₄
Molecular Weight:	454.6
Target:	Calcium Channel; P-glycoprotein; Cytochrome P450
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling; Metabolic Enzyme/Protease
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Verapamil ((±)-Verapamil) is a calcium channel blocker and a potent and orally active first-generation P-glycoprotein (P-gp) inhibitor. Verapamil also inhibits CYP3A4. Verapamil has the potential for high blood pressure, heart arrhythmias and angina research ^{[1][2][3]} .
IC₅₀ & Target	Calcium channel ^[1] Permeability-glycoprotein (P-gp) ^[1] CYP3A4 ^[1]
In Vitro	The EverFluor FL Verapamil (EFV) uptake by TR-iBRB2 cells is inhibited by cationic drugs, and inhibited by verapamil in a concentration-dependent manner with an IC ₅₀ of 98.0 μM ^[4] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Given orally Verapamil is useful for the prophylaxis of atrioventricular reentry tachycardia, and also in modulating the atrioventricular nodal response in atrial fibrillation ^[2] . Verapamil is injected i.v. into a femoral vein prior to ischemia. Verapamil (1 mg/kg) significantly decreases the incidence of ventricular arrhythmias including premature ventricular contractions (PVC), ventricular tachycardia (VT) and ventricular fibrillation (VF) for 45-min coronary artery occlusion. Total arrhythmia scores are significantly increased when the heart is subjected to ischemia. Verapamil (1 mg/kg) significantly prevents the enhancement of total arrhythmia scores induced by ischemia ^[5] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cancer Cell. 2017 Apr 10;31(4):501-515.e8.
- Cancer Sci. 2018 Apr;109(4):1135-1146.
- Cell Calcium. 2020 Feb.
- Biomed Pharmacother. 2020 Jul.
- Phytomedicine. 2019 Mar 15;56:175-182.

REFERENCES

- [1]. Gowarty JL, et al. Verapamil as a culprit of palbociclib toxicity. J Oncol Pharm Pract. 2019 Apr;25(3):743-746.
- [2]. Krikler DM. Verapamil in arrhythmia. Br J Clin Pharmacol. 1986;21 Suppl 2:183S-189S.
- [3]. Rehnqvist N, et al. Effects of metoprolol vs verapamil in patients with stable angina pectoris. The Angina Prognosis Study in Stockholm (APSIS). Eur Heart J. 1996 Jan;17(1):76-81.
- [4]. Kubo Y, et al. Blood-to-Retina Transport of Fluorescence-Labeled Verapamil at the Blood-Retinal Barrier. Pharm Res. 2018 Mar 12;35(5):93.
- [5]. Zhou P, et al. Anti-arrhythmic effect of Verapamil is accompanied by preservation of cx43 protein in rat heart. PLoS One. 2013 Aug 12;8(8):e71567.
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Caution: Product has not been fully validated for medical applications. For research use only.

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