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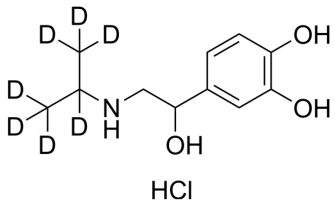
Isoprenaline-d$_7$ hydrochloride

Cat. No.:	HY-B0468S
CAS No.:	2517584-04-0
Molecular Formula:	$C_{11}H_{11}D_7ClNO_3$
Molecular Weight:	254.76
Target:	Endogenous Metabolite; Adrenergic Receptor; Isotope-Labeled Compounds
Pathway:	Metabolic Enzyme/Protease; GPCR/G Protein; Neuronal Signaling; Others
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Isoprenaline-d7 (hydrochloride) is a deuterated labeled Isoprenaline (hydrochloride)[1]. Isoprenaline (Isoproterenol) hydrochloride is a non-selective, orally active β-adrenergic receptor agonist. Isoprenaline has potent peripheral vasodilator, bronchodilator, and cardiac stimulating activities. Isoprenaline can be used for the research of bradycardia and bronchial asthma[2][3][4][5][6][7].

In Vitro

Stable heavy isotopes of hydrogen, carbon, and other elements have been incorporated into drug molecules, largely as tracers for quantitation during the drug development process. Deuteration has gained attention because of its potential to affect the pharmacokinetic and metabolic profiles of drugs[1].

Isoprenaline (Isoproterenol) hydrochloride (300 nM, 3 min) increases particulate cGMP- and cilostamide-inhibited, low-K_m cAMP phosphodiesterase (cAMP-PDE) activity by about 100% in intact rat fat cells[2].

Isoprenaline inhibits insulin-stimulated glucose transport activity in rat adipocytes. Isoprenaline, in the absence of adenosine, promotes a time-dependent (t1/2 approximately 2 min) decrease in the accessibility of insulin-stimulated cell surface GLUT4 of > 50%, which directly correlated with the observed inhibition of transport activity[3].

Isoprenaline (5 nM and 10 μM) increases cyclic AMP levels and this effect is potentiated by cilostamide (10 mM), by rolipram, a cyclic AMP-specific PDE (PDE 4) inhibitor (10 mM) and by cyclic GMP-elevating agents (50 nM ANF or 30 nM SNP plus 100 nM DMPPO)[4].

Isoprenaline increases the transcriptional activity of Gi alpha-2 gene to 140% of the control value, whereas gene specific hybridization for Gs alpha remains unchanged[5].

Isoprenaline (20 nM) increases the amplitude of total iK and causes a negative shift of approximately 10 mV in the activation curve for iK, both in the absence and in the presence of 300 nM nisoldipine to block the L-type Ca^{2+} current[6].

Isoprenaline (20 nM) increases the spontaneous pacemaker rate of sino-atrial node pacemaker cells by 16% in rabbit isolated pacemaker cells[6].

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

In Vivo

Isoprenaline (Isoproterenol) hydrochloride (oral, 0.27-0. 64 μg/kg) is extensively metabolizes by a relatively small number of reactions in dogs[7].

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

REFERENCES

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[3]. M E Conolly, et al. Metabolism of isoprenaline in dog and man. Br J Pharmacol

[4]. Lei M, et al. Modulation of delayed rectifier potassium current, iK, by isoprenaline in rabbit isolated pacemaker cells. Exp Physiol. 2000 Jan;85(1):27-35.

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