Tulobuterol hydrochloride

Cat. No.: HY-W011733

CAS No.: 56776-01-3

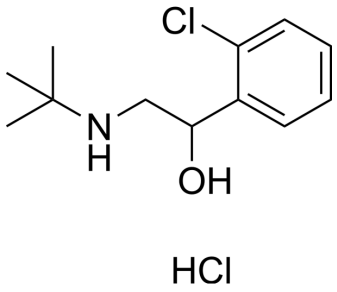
Molecular Formula: $C_{12}H_{19}Cl_2NO$

Molecular Weight: 264

Target: Adrenergic Receptor; Influenza Virus; Antibiotic

Pathway: GPCR/G Protein; Neuronal Signaling; Anti-infection

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (378.79 mM; Need ultrasonic)
DMSO : 50 mg/mL (189.39 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.7879 mL	18.9394 mL	37.8788 mL
5 mM	0.7576 mL	3.7879 mL	7.5758 mL
10 mM	0.3788 mL	1.8939 mL	3.7879 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (378.79 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (9.47 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (9.47 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.47 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Tulobuterol hydrochloride (C-78) is a long-acting β_2-adrenoceptor agonist, which reduces the frequency of exacerbations of chronic obstructive pulmonary disease and bronchial asthma. Tulobuterol hydrochloride is also a sympathomimetic agent used as a transdermal patch, increases normal diaphragm muscle strength[1]. Tulobuterol hydrochloride inhibit rhinovirus replication and modulate airway inflammation[2].

IC_{50} & Target

β2-adrenoceptor[1]

In Vitro

Tulobuterol (0.1 μM; 24 hours or 72 hours; human tracheal epithelial cells) treatment decreases the RV14 RNA levels at 1 day and at 3 days after infection. The concentrations of sICAM-1 in the supernatants of the cells treated with tulobutero are significantly lower than those in the cells treated with vehicle before RV14 infection. Treatment with tulobuterol reduces the number of acidic endosomes with green fluorescence in the cells and the fluorescence intensity of acidic endosomes in the cells. Also reduces the RV14 infection-induced secretion of IL-1β, IL-6, and IL-8. Tulobuterol treatment produces a small but significant reduction in the amount of p50, p65, and c-Rel of NF-κB induced by RV14 infection[1].

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

RT-PCR[1]

Cell Line:	Human tracheal epithelial cells infected with RV14
Concentration:	0.1 μM
Incubation Time:	24 hours or 72 hours
Result:	Decreased the RV14 RNA levels at 1 day and at 3 days after infection. The concentrations of sICAM-1 in the supernatants of the cells were significantly lower. Reduced the number of acidic endosomes with green fluorescence in the cells and the fluorescence intensity of acidic endosomes in the cells. Also reduced the RV14 infection-induced secretion of IL-1β, IL-6, and IL-8. And produced a small but significant reduction in the amount of p50, p65, and c-Rel of NF-κB induced by RV14 infection.

In Vivo

In vivo effect of Tulobuterol is examined the on the contractility of diaphragm muscles prepared from mice (BALBs/c mice; 21.7 ± 0.2 g) treated with Endotoxin. Contractile parameters of force-frequency curves and twitch kinetics using untreated or treated diaphragm muscles at 0 (E0) and 4 (E4) hours after E. coli endotoxin (20 mg/kg) administration are measured. E0 and E4 diaphragm muscles are analyzed at 0, 12, and 24 h after transdermal Tulobuterol treatment. The force-frequency curves of E0 and E4 diaphragm muscles at three time points are not significantly changed each other, indicating that Tulobuterol patch restores the muscle contractility. Thus, diaphragm muscle contractility is maintained during 4 h of endotoxin administration with Tulobuterol patch for over 24 h[3].

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

CUSTOMER VALIDATION

- J Pharmaceut Biomed. 2020, 113870.

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REFERENCES

[1]. Yamaya M, et al. Tulobuterol inhibits rhinovirus infection in primary cultures of human tracheal epithelial cells. Physiol Rep. 2013 Aug;1(3):e00041.

[2]. Shindoh C, et al. Tulobuterol patch maintains diaphragm muscle contractility for over twenty-four hours in a mouse model of sepsis. Tohoku J Exp Med. 2009 Aug;218(4):271-8.

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