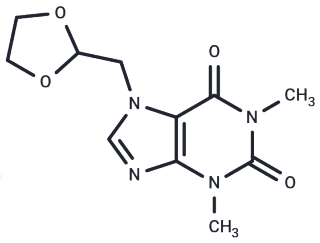
Data Sheet (Cat.No.T0480)

TargetMol

Doxofylline

Chemical Properties



CAS No. : 69975-86-6

Formula: C11H14N4O4

Molecular Weight: 266.25

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Doxofylline (Doxophylline) is a methylxanthine derivative with the presence of a dioxolane group in position 7. As a drug used in the treatment of asthma, doxofylline has shown similar efficacy to theophylline but with significantly fewer side effects in animal and human studies.
Targets(IC50)	Reactive Oxygen Species,Adenosine Receptor,PDE,ROS
In vitro	At an effective therapeutic dose, Doxofylline exhibits a less pronounced cardiac stimulant effect compared to theophylline. As a result, Doxofylline does not significantly increase heart rate, nor does it induce arrhythmias. Administration of 30 mg/kg of Doxofylline results in an increase of 13 beats/min in the heart rate of anesthetized cats.
In vivo	Doxofylline exhibits the activity of a phosphodiesterase (PDE) inhibitor and enhances the levels of cyclic adenosine monophosphate (cAMP), thus it is utilized in the treatment of asthma and chronic obstructive pulmonary disease (COPD). Compared to theophylline, doxofylline significantly reduces the affinity for adenosine A1 and A2 receptors, which may contribute to its improved safety profile. Additionally, doxofylline does not interfere with calcium ion influx nor antagonize calcium channel blockers. In terms of inhibitory potency, the half-maximal effective concentration (EC50) of doxofylline against adenosine-induced tracheal smooth muscle relaxation is 15-fold higher than that of aminophylline, and it also displays a 15-fold higher EC50 in reducing the negative inotropic effect of adenosine on guinea pig atria than aminophylline.

Solubility Information

Solubility	DMSO: 50 mg/mL (187.79 mM),Sonication is recommended. H2O: 22 mg/mL (82.63 mM),Sonication is recommended. Ethanol: 2 mg/mL (7.51 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (7.51 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.7559 mL	18.7793 mL	37.5587 mL
5 mM	0.7512 mL	3.7559 mL	7.5117 mL
10 mM	0.3756 mL	1.8779 mL	3.7559 mL
50 mM	0.0751 mL	0.3756 mL	0.7512 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Shukla D, et al. Expert Opin Pharmacother, 2009, 10(14), 2343-2356.
Dini FL, et al. Curr Med Res Opin, 2001, 16(4), 258-268.