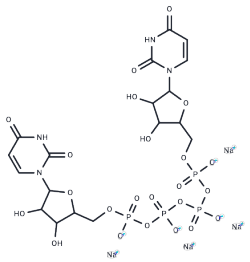
Data Sheet (Cat.No.T7423)

TargetMol

Diquafosol tetrasodium

Chemical Properties



CAS No. : 211427-08-6

Formula: C18H22N4Na4O23P4

Molecular Weight: 878.23

Storage: Keep away from direct sunlight,Store under nitrogen
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	Diquafosol Tetrasodium is a P2Y2 receptor agonist that stimulates the secretion of mucins from ocular tissues Diquafosol tetrasodium (INS365) improves tear film stability and visual function, as a topical treatment of dry eye disease.
Targets(IC50)	P2Y Receptor
In vitro	duration of exposure and diquafosol concentration significantly reduced cell survival and increased cell lysis.?On the other hand, no significant difference was observed in HA groups regardless of exposure time.?Cell viability significantly decreased after treatment for 1 hour with 30% diluted diquafosol and after treatment for 6 hours with all diluted diquafosol.?After treatment with all diluted diquafosol for 24 hours, cell viability decreased and lysis increased, and significant cellular damage was observed[1].
In vivo	In a rat dry eye model, the P2Y(2) agonist INS365 was found to improve surface health, based on increases in tear fluid secretion, corneal epithelial resistance, and release of glycoprotein-containing moieties from goblet cells.??INS365 is a potential therapeutic agent for use in the treatment of dry eye syndrome[2].
Cell Research	The viabilities of human corneal epithelial cells (HCECs) were determined using a MTT assay.?Cells (100 µl;?5×104 cell/mL) were plated in 96-well tissue-culture plates and incubated at 37°C in 5% CO2 for 24 to 48 h until cultures were subconfluent.?Diquafosol (100 µl diluted 10%, 20%, or 30%) or 0.3% or 0.18% HA were added and incubated for 1, 6, or 24 h. DMEM (100 µl) was added to controls.?After 1, 6, and 24 h, plates were washed three times with PBS to remove the drugs.?Cell viabilities were evaluated after incubating for 24 h. MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide;?thiazoyl blue (5 mg/mL) was then added to each well.?Samples were incubated in the dark for 4 h at 37°C, and media were then removed.?Precipitates were resuspended indimethyl sulfoxide (100 µl;?DMSO, Sigma-Aldrich).?Absorbances were measured on a plate reader at 570 nm.?The experiment was performed in triplicate[1].
Animal Research	An SD rat dry eye model was used in which exorbital lacrimal gland extirpation decreased the Schirmer test score by at least 50%. After 8 weeks, when significant increases occurred in corneal epithelial permeability, Diquafosol tetrasodium(INS365)-containing eye drops were applied six times daily for the next 4 weeks at concentrations from 0.03% to 3.0%. Corneal barrier function was evaluated based on measurements with a modified anterior fluorometer of fluorescein penetrance at 1, 2, and 4 weeks after initial application. After INS365 application, the periodic acid-Schiff reagent (PAS)-

Animal Research	stained area was evaluated in histologic sections of the tarsal and bulbar conjunctiva[2].

Solubility Information

Solubility	H2O: 247.5 mg/mL (281.82 mM),Sonication is recommended. DMSO: Insoluble, (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.1387 mL	5.6933 mL	11.3865 mL
5 mM	0.2277 mL	1.1387 mL	2.2773 mL
10 mM	0.1139 mL	0.5693 mL	1.1387 mL
50 mM	0.0228 mL	0.1139 mL	0.2277 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

Lee J H , Lee J S , Kim S , et al. Comparison of cytotoxicities and wound healing effects of diquafosol tetrasodium and hyaluronic acid on Human corneal epithelial cells[J]. Korean Journal of Physiology and Pharmacology, 2017, 21(2):189.

Zhao Y, Li Y, Zhu R, et al.RPS15 interacted with IGF2BP1 to promote esophageal squamous cell carcinoma development via recognizing m6A modification.Signal Transduction and Targeted Therapy.2023, 8(1): 224.

Fujihara T , Murakami T , Fujita H , et al. Improvement of Corneal Barrier Function by the P2Y2 Agonist INS365 in a Rat Dry Eye Model[J]. Investigative Ophthalmology & Visual Science, 2001, 42(1):96-100.