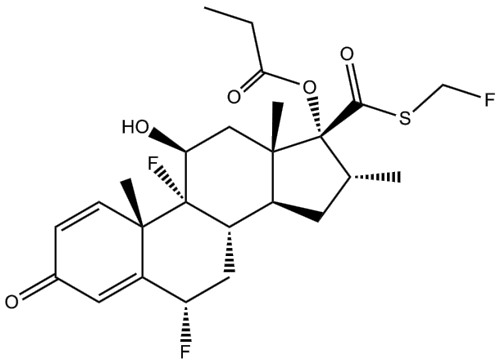
Product Data Sheet

Product Name: Fluticasone propionate
Cat. No.: GC13371

Chemical Properties

Cas. No.	80474-14-2		
Chemical Name	[(6S,8S,9R,10S,11S,13S,14S,16R,17R)-6,9-difluoro-17-(fluoromethylsulfanylcarbonyl)-11-hydroxy-10,13,16-trimethyl-3-oxo-6,7,8,11,12,14,15,16-octahydrocyclopenta[a]phenanthren-17-yl] propanoate		
SMILES	CCC(=O)OC1(C(CC2C1(CC(C3(C2CC(C4=CC(=O)C=CC43C)F)F)O)C)C)C(=O)SCF		
Formula	C25H31F3O5S	M.Wt	500.57
Solubility	≥ 18.5mg/mL in DMSO	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Cell experiment [1]:	
Cell lines	Primary human nasal polyp tissue-derived fibroblasts

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Preparation Method	Fibroblasts were maintained in DMEM medium, supplemented with 20% fetal bovine serum, 100U/ml penicillin, and 100μg/ml streptomycin at 37°C in a humidified atmosphere of 5% CO_2 and 95% air. Cells were then seeded in 96-well plates at a density of 7×10^3 cells per well. After attachment, cells were treated with different concentrations of Fluticasone propionate (0, 0.1, 1, 10, and 100nM) for 24h in the presence of 20ng/ml bFGF, cell viability was measured.
Reaction Conditions	0, 0.1, 1, 10, and 100nM; 48h
Applications	Fluticasone propionate treatment decreased bFGF-induced proliferation in fibroblasts in a dose-dependent manner.
Animal experiment [2]:	
Animal models	C57BL/6 mice
Preparation Method	C57BL/6 mice (8 weeks old) were housed with free access to food and water in plastic cages at room temperature (24-26°C) and kept on a 12h light/dark cycle in a specific pathogen-free environment. C57BL/6 mice were intranasally dosed with Fluticasone propionate (1mg/kg) or vehicle (dimethyl sulfoxide, control), 1h before infection with rhinovirus 1B. The bronchoalveolar lavage (BAL) inflammatory cell numbers, gene expression, protein production of innate mediators and viral loads were measured.
Dosage form	1mg/kg; once; intranasal injection

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Applications	Fluticasone propionate treatment inhibited rhinovirus-induced airway inflammation, impaired viral clearance, and increased lung tissue viral RNA copy numbers in mice.

References:[1] Silvestri M, Sabatini F, Scarso L, et al. Fluticasone propionate downregulates nasal fibroblast functions involved in airway inflammation and remodeling[J]. International archives of allergy and immunology, 2002, 128(1): 51-58. [2] Singanayagam A, Glanville N, Bartlett N, et al. Effect of fluticasone propionate on virus-induced airways inflammation and anti-viral immune responses in mice[J]. The Lancet, 2015, 385: S88.

Background

Fluticasone propionate, a potent topical anti-inflammatory corticosteroid, is a selective glucocorticoid receptor (GR) agonist, with a K_D value of 0.5nM[1]. Fluticasone propionate reduces glucocorticoid production, enhances glucocorticoid receptor binding affinity, and decreases serum eosinophil cationic protein levels[2]. Fluticasone propionate has been widely used in inflammation research to prevent the activation of eosinophils and to reduce plasma cortisol levels[3].

In vitro, pretreatment of 10nM Fluticasone propionate combined with 10nM Formoterol (FO) for 1 hour significantly reversed the increased expression of HDAC3, the increased activity of HDAC2, and the nuclear translocation of GR in 16-HBE cells stimulated by Cigarette smoke extracts (CSE)[4]. Treatment with 100nM Fluticasone propionate for 48 hours markedly suppressed bFGF-induced fibroblast proliferation and reduced ICAM-1 expression[5]. Incubation with 10nM Fluticasone propionate for 72 hours blocked IL-13-elicited activation of the JAK/STAT pathway and reduced NF-κB nuclear translocation in human lung fibroblasts[6].

In vivo, intranasal administration of Fluticasone propionate (1mg/kg) to C57BL/6 mice 1 hour before rhinovirus 1B infection suppressed rhinovirus-induced airway inflammation, impaired antiviral immune responses, increased viral titers, and led to excessive mucus secretion[7]. Daily nasal inhalation of nebulized Fluticasone propionate (300μg/ml suspended in sterile saline containing 0.17% Tween-80) for 8 consecutive days impaired pulmonary clearance of *Klebsiella pneumoniae* and led to increased bacterial burden in mice[8].

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References:

[1] Johnson M. Development of fluticasone propionate and comparison with other inhaled corticosteroids[J]. Journal of allergy and clinical immunology, 1998, 101(4): S434-S439.
[2] Nimmagadda S R, Spahn J D, Nelson H S, et al. Fluticasone propionate results in improved glucocorticoid receptor binding affinity and reduced oral glucocorticoid requirements in severe asthma[J]. Annals of Allergy, Asthma & Immunology, 1998, 81(1): 35-40.
[3] Bryson H M, Faulds D. Intranasal fluticasone propionate: a review of its pharmacodynamic and pharmacokinetic properties, and therapeutic potential in allergic rhinitis[J]. Drugs, 1992, 43(5): 760-775.
[4] Ferraro M, Gjomarkaj M, Siena L, et al. Formoterol and fluticasone propionate combination improves histone deacetylation and anti-inflammatory activities in bronchial epithelial cells exposed to cigarette smoke[J]. Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease, 2017, 1863(7): 1718-1727.
[5] Silvestri M, Sabatini F, Scarso L, et al. Fluticasone propionate downregulates nasal fibroblast functions involved in airway inflammation and remodeling[J]. International archives of allergy and immunology, 2002, 128(1): 51-58.
[6] Cazes E, Giron-Michel J, Baouz S, et al. Novel anti-inflammatory effects of the inhaled corticosteroid fluticasone propionate during lung myofibroblastic differentiation[J]. The Journal of Immunology, 2001, 167(9): 5329-5337.
[7] Singanayagam A, Glanville N, Bartlett N, et al. Effect of fluticasone propionate on virus-induced airways inflammation and anti-viral immune responses in mice[J]. The Lancet, 2015, 385: S88.
[8] Patterson C M, Morrison R L, D'Souza A, et al. Inhaled fluticasone propionate impairs pulmonary clearance of Klebsiella pneumoniae in mice[J]. Respiratory research, 2012, 13(1): 40.

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