

Product Data Sheet

Product Name: Moxifloxacin

Cat. No.: GC11992

Chemical Properties

Cas. No. 151096-09-2

Chemical Name 7-[(4aS,7aS)-1,2,3,4,4a,5,7,7a-octahydropyrrolo[3,4-b]pyridin-6-yl]-1-cyclopropyl-6-fluoro-8-methoxy-4-oxoquinoline-3-carboxylic acid

SMILES COC1=C2C(=CC(=C1N3CC4CCCN4C3)F)C(=O)C(=CN2C5CC5)C(=O)O

Formula C₂₁H₂₄FN₃O₄ M.Wt 401.43

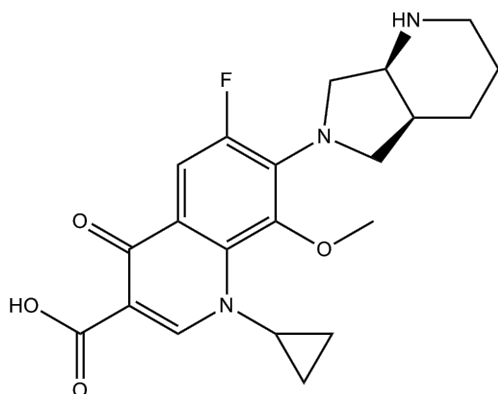
Solubility ≥ 50.8 mg/mL in DMSO with gentle warming, ≥ 11.62 mg/mL in EtOH with ultrasonic and warming, ≥ 25.6 mg/mL in Water with ultrasonic and warming

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]:

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Cell lines	Immortalized human corneal endothelial cells (B4G12 cell line)
Preparation Method	B4G12 cells were cultured in human endothelial serum-free medium supplemented with 10ng/ml fibroblast growth factor-2. The cells were treated with various concentrations of Moxifloxacin (0.05-1mg/ml) for 24, 48, and 72 hours.
Reaction Conditions	0.05-1mg/ml; 24-72h
Applications	Moxifloxacin induced dose-dependent cytotoxicity in HCECs. Moxifloxacin exposure increased reactive oxygen species (ROS) generation and induced autophagy in HCECs. Moxifloxacin exposure resulted in significant dose-dependent increases of caspase 2, 3, and 8 activation and induced apoptosis in HCECs.

Animal experiment [2]:

Animal models	Wistar mice (weighing 17.5-19.0g)
Preparation Method	Mice were divided into four groups. Group A served as the control and received 2ml of distilled water, while Groups B, C and D were orally administered Moxifloxacin at doses of 12.5, 25 and 50mg/kg body weight once daily for 7 days, respectively.
Dosage form	12.5, 25, 50mg/kg; p.o.; once daily for 7 days

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Applications

Moxifloxacin administration significantly increased serum creatinine, cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, triglyceride, urea levels and aspartate transaminase, alanine transaminase, alkaline phosphatase activities, while decreasing total bilirubin levels in a dose-dependent manner.

References:

- [1] Park JH, Kim M, Chuck RS, et al. Evaluation of moxifloxacin-induced cytotoxicity on human corneal endothelial cells. Sci Rep. 2021 Mar 18;11(1):6250.
- [2] Ukpo GE, Ebuehi OA, Kareem AA. Evaluation of Moxifloxacin-induced Biochemical Changes in Mice. Indian J Pharm Sci. 2012 Sep;74(5):454-7.

Background

Moxifloxacin is a fourth-generation, broad-spectrum 8-methoxyfluoroquinolone antibacterial agent. Moxifloxacin inhibits the activity of bacterial DNA topoisomerase II (DNA gyrase) and topoisomerase IV, thereby blocking bacterial DNA replication and transcription processes, ultimately leading to bacterial death. Moxifloxacin can be used in research related to respiratory tract infections, skin and skin structure infections, intra-abdominal infections, and tuberculosis (especially drug-resistant tuberculosis)[1-4].

In vitro, Moxifloxacin (5-50µg/ml) was co-treated with TNF-α (50ng/ml) in cystic fibrosis bronchial epithelial cell lines IB3 and C38 cells for 48 hours. Moxifloxacin significantly inhibited the secretion of IL-8 and IL-6; Moxifloxacin (5-20µg/ml) was co-treated with TNF-α (50ng/ml) in IB3 and C38 cells for 15-60 minutes. Moxifloxacin significantly inhibited the activation of ERK1/2, JNK, and NF-κB[5]. Moxifloxacin (0.05-1mg/ml) was used to treat immortalized human corneal endothelial cells (B4G12 cells) for 24-72 hours. Moxifloxacin induced dose-dependent cytotoxicity, increased reactive oxygen species generation and autophagy, activated caspase 2, 3, 8 pathways and induced apoptosis[6].

In vivo, Moxifloxacin (12.5, 25, 50mg/kg; once daily) was orally administered to Wistar mice for 7 days. Moxifloxacin significantly increased serum creatinine, cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, triglyceride, urea levels and aspartate transaminase,

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alanine transaminase, alkaline phosphatase activities, while decreasing total bilirubin levels in mice^[7]. Moxifloxacin (100mg/kg; twice daily) was intraperitoneally injected into C57BL/6N mice for 2 days. Moxifloxacin significantly reduced the numbers and concentrations of total immune cells, neutrophils, and inflammatory mediators (KC, IL-1 β , IL-17A) in the lungs after infection with live or heat-killed bacteria^[8].

References:

- [1] Balfour JA, Wiseman LR. Moxifloxacin. Drugs. 1999 Mar;57(3):363-73; discussion 374.
- [2] Al Omari MM, Jaafari DS, Al-Sou'od KA, Badwan AA. Moxifloxacin hydrochloride. Profiles Drug Subst Excip Relat Methodol. 2014;39:299-431.
- [3] Miravittles M, Anzueto A. Moxifloxacin: a respiratory fluoroquinolone. Expert Opin Pharmacother. 2008 Jul;9(10):1755-72.
- [4] Khan F, Ismail M, Khan Q, et al. Moxifloxacin-induced QT interval prolongation and torsades de pointes: a narrative review. Expert Opin Drug Saf. 2018 Oct;17(10):1029-1039.
- [5] Blau H, Klein K, Shalit I, et al. Moxifloxacin but not ciprofloxacin or azithromycin selectively inhibits IL-8, IL-6, ERK1/2, JNK, and NF-kappaB activation in a cystic fibrosis epithelial cell line. Am J Physiol Lung Cell Mol Physiol. 2007 Jan;292(1):L343-52.
- [6] Park JH, Kim M, Chuck RS, et al. Evaluation of moxifloxacin-induced cytotoxicity on human corneal endothelial cells. Sci Rep. 2021 Mar 18;11(1):6250.
- [7] Ukpo GE, Ebuehi OA, Kareem AA. Evaluation of Moxifloxacin-induced Biochemical Changes in Mice. Indian J Pharm Sci. 2012 Sep;74(5):454-7.
- [8] Beisswenger C, Honecker A, Kamyschnikow A, et al. Moxifloxacin modulates inflammation during murine pneumonia. Respir Res. 2014 Jul 17;15(1):82.

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