

Product Data Sheet

Product Name: Fidaxomicin

Cat. No.: GC12940

Chemical Properties

Cas. No. 873857-62-6

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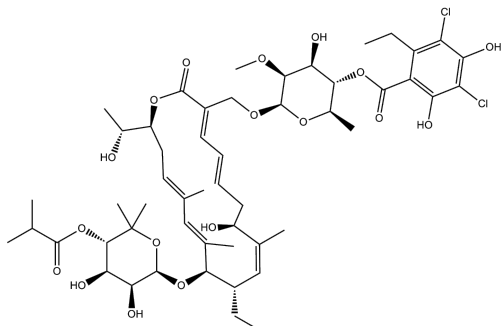
Formula $C_{52}H_{74}Cl_2O_{18}$ M.Wt 1058.04

Solubility $\geq 35.27\text{mg/mL}$ 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:

Cell lines Human colonic fibroblasts

Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation method The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Reacting condition 20 µM for 6 h;

Applications Fidaxomicin (20 µM) prevented toxin A-induced cell rounding in human colonic CCD-18Co fibroblasts [1]. Moreover, Fidaxomicin suppressed toxin production in Clostridium difficile [2].

Animal experiment:

Animal models Male C57BL/6 mice model

Dosage form 5 to 20 µM

Applications Treatment with fidaxomicin (20 µM) significantly inhibited toxin A-mediated histologic damage and reduced the mean histology score and ileal IL-1β protein and mRNA expression in the mouse ileum [1].

Other notes Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

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References:

1. Koon, H. W., Ho, S., Hing, T. C., Cheng, M., Chen, X., Ichikawa, Y., Kelly, C. P. and Pothoulakis, C. (2014) Fidaxomicin inhibits Clostridium difficile toxin A-mediated enteritis in the mouse ileum. Antimicrob Agents Chemother. 58, 4642-4650
2. Babakhani, F., Bouillaut, L., Sears, P., Sims, C., Gomez, A. and Sonenshein, A. L. (2013) Fidaxomicin inhibits toxin production in Clostridium difficile. J Antimicrob Chemother. 68, 515-522

Background

Fidaxomicin is a macrocyclic antibiotic that inhibits RNA polymerase sigma subunit [1].

Antibiotics are a type of antimicrobial used in the treatment of bacterial infection. They can inhibit the growth of bacteria. Bacterial RNA polymerase mediates RNA synthesis.

Fidaxomicin is a narrow spectrum antibiotic that inhibits RNA polymerase sigma subunit. Fidaxomicin was a macrocyclic-lactone antibiotic produced by Actinomycete species. Fidaxomicin inhibited RNA polymerase in Clostridium difficile [1].

In patients infected with Clostridium difficile, fidaxomicin exhibited a higher clinical cure rate and a lower recurrence rate. In rats, fidaxomicin was safe by the intravenous route and exhibited LD50 value of 200 mg/kg. Fidaxomicin for the treatment of Clostridium difficile infection (CDI) had entered Phase III trials [2]. In patients with CDI, fidaxomicin exhibited a lower reappearance of toxin in fecal filtrates and inhibited recurrence of CDI. Also, fidaxomicin preserved the intestinal microbiome during the treatment of CDI [3].

References:

- [1]. Srivastava A, Talaue M, Liu S, et al. New target for inhibition of bacterial RNA polymerase: 'switch region'. Curr Opin Microbiol, 2011, 14(5): 532-543.
- [2]. Poxton IR. Fidaxomicin: a new macrocyclic, RNA polymerase-inhibiting antibiotic for the treatment of Clostridium difficile infections. Future Microbiol, 2010, 5(4): 539-548.
- [3]. Louie TJ, Cannon K, Byrne B, et al. Fidaxomicin preserves the intestinal microbiome during and after treatment of Clostridium difficile infection (CDI) and reduces both toxin reexpression and recurrence of CDI. Clin Infect Dis, 2012, 55 Suppl 2: S132-S142.

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