Data Sheet (Cat.No.T12712)

TargetMol

Reutericyclin

Chemical Properties

CAS No. : 303957-69-9

Formula: C20H31NO4

Molecular Weight: 349.46

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	Reutericyclin is a selective anti-Gram-positive substance with good oral bioavailability, possessing both antibacterial and anti-obesity effects. It disrupts bacterial transmembrane potential specifically, exerting bactericidal or bacteriostatic effects on pathogenic bacteria such as Clostridium difficile and Staphylococcus aureus in a non-bacteriolytic manner, and rapidly eliminates vegetative cells and spores of Clostridium difficile. It is resistant to enzymatic degradation, has iron chelating properties, and is hardly absorbed by colonic epithelial cells. In addition to effectively eliminating Staphylococcus biofilms and inhibiting the proliferation of drug-resistant bacteria, Reutericyclin regulates intestinal flora structure and improves body energy metabolism, thereby alleviating abnormal weight gain induced by risperidone medication. Currently, Reutericyclin has been widely used in basic research on Clostridium difficile infection, drug-induced weight gain and superficial skin infection caused by Staphylococcus.
Targets(IC50)	Antibacterial
In vitro	Methods: The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of Reutericyclin against multiple pathogenic strains were determined. Its cytotoxicity against colon cancer cells was evaluated, and the inhibitory differences between drug-sensitive and drug-resistant strains were compared. In addition, its biological activity under human serum environment and extreme treatment conditions, as well as its spore inactivation effect, were investigated. Results: 1.Reutericyclin inhibited and killed Clostridioides difficile strains 9689, BAA-1803 and BAA-1875 in both logarithmic and stationary growth phases. The MIC values for the logarithmic phase ranged from 0.09 to 0.19 mg/L, and the MBC values for the stationary phase ranged from 0.19 to 0.5 mg/L. 2.Reutericyclin at a concentration of 200 mg/L showed no cytotoxicity against Caco-2 colon cancer cells [1]. 3.Reutericyclin at 0.1-1.6 μg/mL inhibited clinical isolates of methicillin-susceptible and methicillin-resistant Staphylococcus aureus. The MIC_{50} values were 0.8 μg/mL and 3.12 μg/mL, and the MIC_{90} values were 1.6 μg/mL and 6.25 μg/mL, respectively. 4.Reutericyclin at 0.8-3.12 μg/mL inhibited mupirocin-resistant Staphylococcus aureus, with an MIC_{50} of 1.6 μg/mL and an MIC_{90} of 3.12 μg/mL. 5.Reutericyclin at 0.012-0.4 μg/mL inhibited clinical isolates of Streptococcus pyogenes, with both MIC_{50} and MIC_{90} of 0.4 μg/mL.

In vitro	6.In the system containing 50% human serum, the antibacterial activity of reutericyclin against Staphylococcus aureus was completely lost, with MIC ≥ 200 μg/mL. 7.Under treatment conditions of 6.4 mg/L, 60 min, 600 MPa and 90 ℃, reutericyclin produced a tailing effect during spore inactivation of Clostridium perfringens ATCC 7955 and Clostridium beijerinckii ATCC 8260, while showing no obvious effect on spores of Bacillus amyloliquefaciens FAD 11/2 [4].
In vivo	Methods: Female C57BL/6J mice were used to establish a risperidone-induced abnormal body weight gain model. Reutericyclin and (R)-Reutericyclin were administered by daily intragastric gavage with different intervention durations. A combined administration group with a Lactobacillus reuteri mutant strain was also set up. Changes in body weight and energy metabolism-related indicators were comparatively analyzed among groups. Results: 1.Daily intragastric administration of reutericyclin at 2.5 μg/day for 25 consecutive days markedly alleviated risperidone-induced excessive body weight gain in female C57BL/6J mice. Compared with the risperidone-only group, the average body weight gain of mice decreased from 3.58 g to 2.5 g. 2.Continuous intervention with reutericyclin for 50 days effectively restored energy utilization efficiency and significantly inhibited the risperidone-induced obese phenotype in mice. Such beneficial effects were independent of the endogenous reutericyclin synthesis function of Lactobacillus reuteri. 3.Daily intragastric administration of (R)-Reutericyclin at 2.5 μg/day also attenuated risperidone-triggered body weight gain in mice, but its overall intervention efficacy was weaker than that of the (S)-Reutericyclin enantiomer [2].

Solubility Information

Solubility	DMSO: 26.66 mg/mL (76.29 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.8616 mL	14.3078 mL	28.6156 mL
5 mM	0.5723 mL	2.8616 mL	5.7231 mL
10 mM	0.2862 mL	1.4308 mL	2.8616 mL
50 mM	0.0572 mL	0.2862 mL	0.5723 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

Hurdle JG, et al. Reutericyclin and related analogues kill stationary phase Clostridium difficile at achievable colonic concentrations. J Antimicrob Chemother. 2011;66(8):1773-1776.

Aboulalazm F A, et al. Reutericyclin, a specialized metabolite of Limosilactobacillus reuteri, mitigates risperidone-induced weight gain in mice[J]. Gut Microbes, 2025,
17(1): 2477819.

Hurdle JG, et al. Evaluation of analogs of reutericyclin as prospective candidates for treatment of staphylococcal skin infections. Antimicrob Agents Chemother.
2009;53(9):4028-4031.

Hofstetter S, et al. Effects of nisin and reutericyclin on resistance of endospores of Clostridium spp. to heat and high pressure. Food Microbiol. 2013;34(1):46-51.

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