

Product Data Sheet

Product Name: Epioxytetracycline

Cat. No.: GC41326

Chemical Properties

Cas. No. 14206-58-7

SMILES O=C1C2=C(O)C=CC=C2[C@](O)(C)[C@]3([H])C1=C(O)[C@@](C(C(C(N)=O)=C(O)[C@@H]4N(C)C)=O)(O)[C@@]4([H])[C@H]3O

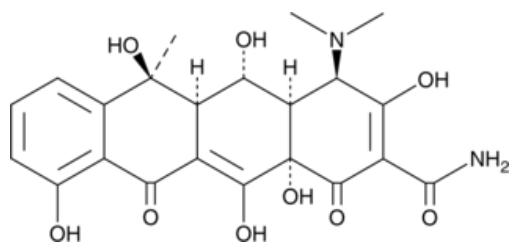
Formula C₂₂H₂₄N₂O₉ M.Wt 460.4

Solubility DMSO: slightly soluble, Methanol: slightly, heated Storage Store at -20°C, protect from light

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

Animal experiment [1]:

Animal models Wistar rats

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

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Preparation Method

Wistar rats (5 weeks old; 140-150g) were housed in plastic cages with stainless steel wire covers under standard conditions at a temperature of $22\pm 2^{\circ}\text{C}$, a relative humidity of $55 \pm 10\%$ and a light/dark period of 12/12h. The rats were randomly divided into the following four groups (12 rats each, 6 males and 6 females): control, low-dose, medium-dose and high-dose, the latter three of which were administered with Epioxytetracycline in normal saline at 50mg/kg/day for 15 consecutive days. Blood samples of the rats are collected every four days for analysis.

Dosage form

50mg/kg/day for 15 days; p.o.

Applications

Epioxytetracycline treatment increased the levels of lysophosphatidylcholine and diacylglycerol, and decreased the contents of sphingomyelin, prostaglandin and triglyceride in the blood of rats.

References:

[1] Han H, Xiao H, Zhang K, et al. Impact of 4-epi-oxytetracycline on the gut microbiota and blood metabolomics of Wistar rats[J]. Scientific reports, 2016, 6(1): 23141.

Background

Epioxytetracycline, a degradation product of the antibiotic oxytetracycline, has high cross-reactivity with the oxytetracycline antibody [1]. Epioxytetracycline significantly elevated the levels of alanine aminotransferase, aspartate transaminase, alkaline phosphatase in rats, caused hematological dysfunction and liver lesions, and affected the glycolytic pathway by promoting glucose phosphorylation [2]. Epioxytetracycline has been widely used as an internal standard to optimize the parameters of liquid chromatography-tandem mass spectrometry for the efficient quantitative determination of the contents of related compounds in chicken feathers [3].

In vivo, Epioxytetracycline treatment via oral administration at a dose of 50mg/kg/day for 15 days significantly increased the relative abundance of Actinobacteria in the intestine of Wistar rats and induced metabolic disorders [4].

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References:

- [1] Hijaz F, Killiny N. Evaluation of oxytetracycline metabolites cross-reactivity with oxytetracycline enzyme-linked immunosorbent assay (ELISA)[J]. Antibiotics, 2020, 9(4): 183.
- [2] Han H, Xiao H, Lu Z. Short-term toxicity assessments of an antibiotic metabolite in Wistar rats and its metabonomics analysis by ultra-high performance liquid chromatography coupled to quadrupole time-of-flight mass spectrometry[J]. Toxicology and Applied Pharmacology, 2016, 293: 1-9.
- [3] Cornejo J, Pokrant E, Krogh M, et al. Determination of oxytetracycline and 4-epi-oxytetracycline residues in feathers and edible tissues of broiler chickens using liquid chromatography coupled with tandem mass spectrometry[J]. Journal of Food Protection, 2017, 80(4): 619-625.
- [4] Han H, Xiao H, Zhang K, et al. Impact of 4-epi-oxytetracycline on the gut microbiota and blood metabolomics of Wistar rats[J]. Scientific reports, 2016, 6(1): 23141.

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