

Product Data Sheet

Product Name: Oxolinic acid

Cat. No.: GC14107

Chemical Properties

Cas. No. 14698-29-4

Chemical Name 5-ethyl-8-oxo-5,8-dihydro-[1,3]dioxolo[4,5-g]quinoline-7-carboxylic acid

SMILES CCN1C=C(C(O)=O)C(C2=CC(OCO3)=C3C=C21)=O

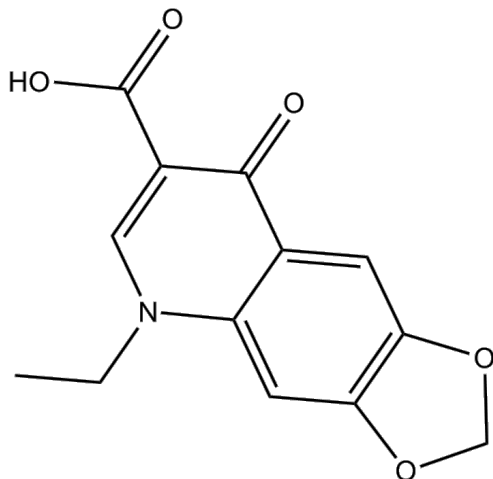
Formula $C_{13}H_{11}NO_5$ M.Wt 261.23

Solubility 0.5 M NaOH: 50 mg/ml 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



Background

IC50: 4.3 μM for dopamine uptake

Oxolinic acid is a quinolone antibiotic inhibiting bacterial DNA gyrase.

DNA gyrase, an enzyme within the class of topoisomerase, relieves strain while double-stranded

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

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DNA is being unwound by helicase.

In vitro: Previous study found that both inhibitors of DNA gyrase of oxolinic acid and coumermycin A1 could block the DNA synthesis in E. coli. Moreover, the rate of bacterial DNA synthesis first rapidly declined but then increased gradually at low concentrations of oxolinic acid. In various DNA mutants, oxolinic acid was able to cause a rapid decline, followed by a slow decrease in synthesis rate of DNA [1].

In vivo: Animal study showed that the i.p. injection of oxolinic acid in mice could induce a dose dependent increase in locomotor activity, and such stimulation culminated at the 32 mg/kg dose and was smaller for higher doses at 64-128 mg/kg. When compared with haloperidol (D2 dopamine receptor antagonist) at increasing doses (50-100-200 mg/kg), the stimulant locomotor effect of oxolinic acid at 32 mg/kg was not reversed significantly. In addition, oxolinic acid at 32 mg/kg did not reverse the reserpine caused akinesia and even opposed the reversion that was induced by dexamphetamine [2].

Clinical trial: Oxolinic acid is an antibiotic developed in Japan in the 1970s. Oral dose at 12–20 mg/kg is administered for 5-10 days (https://en.wikipedia.org/wiki/Oxolinic_acid).

References:

- [1] E C Engle, S H Manes, and K Drlica. Differential effects of antibiotics inhibiting gyrase. J Bacteriol. 1982 Jan; 149(1): 92–98.
- [2] Garcia de Mateos-Verchere J, Vaugeois JM, Naudin B, Costentin J. Behavioural and neurochemical evidence that the antimicrobial agent oxolinic acid is a dopamine uptake inhibitor. Eur Neuropsychopharmacol. 1998 Dec; 8(4): 255-9.

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