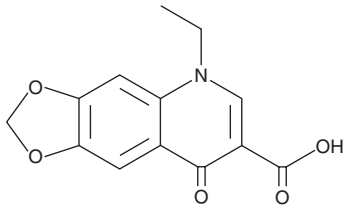
PRODUCT INFORMATION

Oxolinic Acid

Item No. 16789

CAS Registry No.:	14698-29-4
Formal Name:	5-ethyl-5,8-dihydro-8-oxo-1,3-dioxolo[4,5-g]quinoline-7-carboxylic acid
Synonyms:	NSC 110364, Urinox
MF:	$C_{13}H_{11}NO_5$
FW:	261.2
Purity:	≥98%
UV/Vis.:	λ_{max}: 220, 260, 325, 335 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Oxolinic acid is supplied as a crystalline solid. Oxolinic acid is sparingly soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. For biological experiments, we suggest that organic solvent-free aqueous solutions of oxolinic acid be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of oxolinic acid in 0.5 M NaOH is approximately 50 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Bacterial DNA gyrase is a heterodimeric type II topoisomerase that negatively supercoils circular double-stranded DNA.[1,2] Oxolinic acid is a quinolone antibiotic that inhibits bacterial DNA gyrase, but not eukaryotic topoisomerases, reversibly binding gyrase subunit A in gyrase-DNA complexes, blocking supercoiling activity and inhibiting DNA synthesis at 0.5-5 µg/ml.[1,3,4] Oxolinic acid also blocks neuronal uptake of dopamine in mammals (IC_{50} = 4.3 µM), leading to an increase in locomotor activity.[5]

References

1. Drlica, K. and Zhao, X. DNA gyrase, topoisomerase IV, and the 4-quinolones. *Microbiol. Mol. Biol. Rev.* **61(3)**, 377-392 (1997).
2. Collin, F., Karkare, S., and Maxwell, A. Exploiting bacterial DNA gyrase as a drug target: Current state and perspectives. *Appl. Biochem. Biotechnol.* **92(3)**, 479-497 (2011).
3. Hays, J.B. and Boehmer, S. Antagonists of DNA gyrase inhibit repair and recombination of UV-irradiated phage λ. *Proc. Natl. Acad. Sci. USA* **75(9)**, 4125-4129 (1978).
4. Engle, E.C., Manes, S.H., and Drlica, K. Differential effects of antibiotics inhibiting gyrase. *J. Bacteriol.* **149(1)**, 92-98 (1982).
5. Garcḳa de Mateos-Verchere, J., Vaugeois, J.M., Naudin, B., *et al.* Behavioural and neurochemical evidence that the antimicrobial agent oxolinic acid is a dopamine uptake inhibitor. *Eur. Neuropsychopharmacol.* **8(4)**, 255-259 (1998).

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