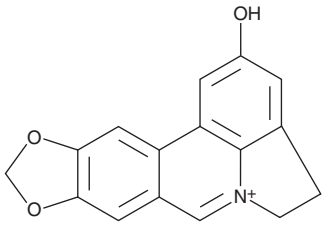
PRODUCT INFORMATION

Ungeremine

Item No. 34549

CAS Registry No.:	2121-12-2
Formal Name:	4,5-dihydro-2-hydroxy-[1,3]dioxolo[4,5-j] pyrrolo[3,2,1-de]phenanthridinium
Synonym:	Lycobetaine
MF:	$C_{16}H_{12}NO_3$
FW:	266.3
Purity:	≥98%
UV/Vis.:	λ_{max}: 262, 277, 369 nm
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Plant/*Lycoris radiata*



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

Laboratory Procedures

Ungeremine is supplied as a solid. A stock solution may be made by dissolving the ungeremine in the solvent of choice, which should be purged with an inert gas. Ungeremine is soluble in the organic solvent methanol at a concentration of approximately 10 mg/ml.

Description

Ungeremine is a betaine-type alkaloid that has been found in *C. zeylanicum* and has diverse biological activities.[1-4] It is an inhibitor of acetylcholinesterase (AChE; IC_{50} = 0.35 µM).[2] Ungeremine acts as a topoisomerase poison, inducing double-strand breaks in DNA by stabilizing the linkage between topoisomerase IIβ and DNA.[3] It inhibits the relaxation of supercoiled DNA by human topoisomerase I and -IIα and *E. coli* topoisomerase I and -IV (IC_{50}s = 6.1, 25.8, 15, and 7.3 µM, respectively).[4] Ungeremine inhibits the growth of HL-60, MOLT-4, K562, U937, and LXFL 529L cells (IC_{50}s = 1.3, 0.7, 0.8, 2.5, and 1.2 µM, respectively). It is cytotoxic to a variety of drug-sensitive and -resistant cancer cells (IC_{50}s = 4.89-6.45 and 3.67-75.24 µM, respectively) and induces ferroptosis, necroptosis, apoptosis, and autophagy in CCRF-CEM leukemia cells. Ungeremine (60 mg/kg twice per week) also reduces tumor growth in a GXF251L mouse xenograft model.[3]

References

1. Mbaveng, A.T., Bitchagno, G.T.M., Kuete, V., *et al*. Cytotoxicity of ungeremine towards multi-factorial drug resistant cancer cells and induction of apoptosis, ferroptosis, necroptosis and autophagy. *Phytomedicine* **60**, 152832 (2019).
2. Rhee, I.K., Appels, N.M.G.M., Hofte, B., *et al*. Isolation of the acetylcholinesterase inhibitor ungeremine from *Nerine bowdenii* by preparative HPLC coupled on-line to a flow assay system. *Biol. Pharm. Bull*. **27(11)**, 1804-1809 (2004).
3. Barthelmes, H.U., Niederberger, E., Roth, T., *et al*. Lycobetaine acts as a selective topoisomerase IIβ poison and inhibits the growth of human tumour cells. *Br. J. Cancer* **85(10)**, 1585-1591 (2001).
4. Casu, L., Cottiglia, F., Leonti, M., *et al*. Ungeremine effectively targets mammalian as well as bacterial type I and type II topoisomerases. *Bioorg. Med. Chem. Lett*. **21(23)**, 7041-7044 (2011).

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