Product Data Sheet

Product Name: Lucidin
Cat. No.: GC14424

Chemical Properties

Cas. No.	478-08-0		
Chemical Name	1,3-dihydroxy-2-(hydroxymethyl)anthracene-9,10-dione		
SMILES	C1=CC=C2C(=C1)C(=O)C3=CC(=C(C(=C3C2=O)O)CO)O		
Formula	$C_{15}H_{10}O_5$	M.Wt	270.24
Solubility	Soluble in DMSO	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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	Lucidin		

Protocol

Cell experiment: [1]

Cell lines	PANC-1 cells
Preparation method	The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37 °C for 10 minutes and/or shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

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Reaction Conditions	PC50: 54.7 μM, 24 hours
Applications	After 24 h of incubation, the cells were washed with PBS, and 100 μL of DMEM containing 10% WST-8 cell counting kit solution was added to the wells. After 3 h of incubation, the absorbance was measured at 450 nm. The preferential cytotoxicity was expressed as the concentration at which 50% of cells died preferentially. The PC50 value of lucidin was 54.7 μM in this experiment.

Animal experiment: [2]

Animal models	Male Parkes mice
Dosage form	Oral administration, 2 mg/day
Applications	Mice were treated orally with lucidin for 4 days. 32P-Postlabelling analysis of hepatic DNA from mice treated with lucidin showed three lucidin-caused radioactive spots not present in the chromatograms of DNA from the control animals. The adduct levels calculated from individual animals were 1.16 ± 0.2 total adducts/108 nucleotides.
Other notes	Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

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References:

[1] Dibwe D F, Awale S, Kadota S, et al. Damnacanthal from the Congolese Medicinal Plant Garcinia huillensis has a Potent Preferential Cytotoxicity against Human Pancreatic Cancer PANC-1 Cells. Phytotherapy Research, 2012, 26(12): 1920-1926.

[2] Poginsky B, Westendorf J, Blömeke B, et al. Evaluation of DNA-binding activity of hydroxyanthraquinones occurring in Rubia tinctorum L. Carcinogenesis, 1991, 12(7): 1265-1271.

Background

Lucidin (NSC 30546) is a natural component of Rubia tinctorum L., which is mutagenic in bacteria and mammalian cells [1].

Hydroxyanthraquinones (HAs) are special organic compounds widely distributed in the plant kingdom. The HA plants have been used as laxatives and colorant for thousands of years. In the last century, HAs were also employed as medicine for the treatment of kidney stone. Lucidin is a HA extracted from the root of Rubia tinctorum L. that also known as madder. It was thought to be genotoxic in bacteria and mammalian cells [1].

Lucidin was found to be mutagenic in five Salmonella typhimurium strains without metabolic activation. Additionally, in Chinese hamster fibroblast V79 cells, lucidin was found to be mutagenic at the hypoxanthine-guanine phosphoribosyl transferase gene locus, which induced DNA single-strand breaks and DNA-protein cross-link. In primary rat hepatocytes and transformed C3H/ M2-mouse fibroblasts, it was observed lucidin might induce DNA repair synthesis [1].

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In mouse model, when ACI rats were treated with 1-10% madder roots in the diet and control group without madder roots for 780 days, the dose-dependent increase of benign and malignant tumors were observed in liver and kidney. Additionally, DNA adducts were observed in liver, kidney and colon when treated with 10% madder root for two weeks. The formation of DNA adducts and mutagenicity was thought to be associated with lucidin which was contained in the madder roots [2].

References:

[1] Westendorf J et al. , The genotoxicity of lucidin, a natural component of Rubia tinctorum L., and lucidinethylether, a component of ethanolic Rubia extracts. Cell Biol Toxicol. 1988, 4(2):225-239.
[2] Westendorf J et al. , Carcinogenicity and DNA adduct formation observed in ACI rats after long-term treatment with madder root, Rubia tinctorum L. Carcinogenesis. 1998, 19(12):2163-2168.

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