Product Data Sheet

Product Name: Naltrindole hydrochloride
Cat. No.: GC13688

Chemical Properties

Cas. No.	111469-81-9		
Chemical Name	(4bS,8R,8aR,14bR)-7-(cyclopropylmethyl)-5,6,7,8,8a,9,14,14b-octahydro-4,8-methanobenzofuro[2,3-a]pyrido[4,3-b]carbazole-1,8a-diol hydrochloride		
SMILES	O[C@]([C@@H]1N(CC2CC2)CC3)(CC4=C5NC6=CC=CC=C46)[C@@]3(C7=C(C=C8)C1)[C@H]5OC7=C8O.Cl		
Formula	$C_{26}H_{26}N_2O_3$.HCl	M.Wt	450.96
Solubility	DMF: 5 mg/ml,DMSO: 5 mg/ml,Ethanol: 10 mg/ml,Ethanol:PBS(pH 7.2) (1:1): 0.5 mg/ml	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	Naltrindole hydrochloride		

Protocol

Cell experiment:

U266 cells are plated in 96-well plates at 2000 cells per well in 100 µL of RPMI 1640 medium, supplemented with 10% fetal bovine serum, 100 U/mL penicillin, and 100 µg/mL streptomycin sulfate. Cells are incubated in quadruplicate in the presence of the various antineoplastic agents to construct dose-response curves, alone or in combination with various doses of naltrindole. At the end of the incubation 10 µL of WST-1 cell proliferation reagent is added to each well, and the plates are returned to the incubator for 1 h. Absorbance is then measured[2].

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

Product Data Sheet

Animal experiment:

Rats:Effects of neonatal naltrindole treatments on open field activity is tested in 20-day old rats. The animals are injected chronically with saline or naltrindole (1 mg/kg, s.c.) (from birth to day 19), and 1 day after the discontinuation of this treatment are studied for the acute effects of naltrindole (1 mg/kg, i.p.)[5]. Mice:Naltrindole is dissolved in distilled water to make a 3 mg/mL solution, and mice are injected with 10 mL/kg daily. Human RPMI 8226 multiple myeloma cells are inoculated subcutaneously into both flanks of SCID mice (10 million cells per flank). After 8 days, 12 mice are divided into two groups of six mice each: vehicle-injected and naltrindole-injected (30 mg/kg). Animals are dosed daily for 36 days, and body weights and xenograft tumors are measured twice a week with a digital caliper[2].

References:

[1]. Raynor K, et al. Pharmacological characterization of the cloned kappa-, delta-, and mu-opioid receptors. Mol Pharmacol. 1994 Feb;45(2):330-4.
[2]. Mundra JJ, et al. Naltrindole inhibits human multiple myeloma cell

proliferation in vitro and in a murine xenograft model in vivo. J Pharmacol Exp Ther. 2012 Aug;342(2):273-87.
[3]. Chen YL, et al. Inhibition of akt/protein kinase B signaling by naltrindole in small cell lung cancer cells.
[4]. Portoghese PS, et al. Naltrindole, a highly selective and potent non-peptide delta opioid receptor antagonist. Eur J Pharmacol. 1988 Jan 27;146(1):185-6.
[5]. Fernández B, et al. Postnatal naltrindole treatments induce

behavioural modifications in preweanling rats. Neurosci Lett. 2000 Mar 31;283(1):73-6.

Background

Naltrindole hydrochloride is a highly potent and selective non-peptide δ opioid receptor antagonist with a Ki of 0.02 nM.
Opioid drugs exert a wide spectrum of physiological and behavioral effects. These effects are mediated via membrane-bound receptors, of which the best characterized are the kappa, delta, and mu receptors[1]. Naltrindole inhibits the proliferation of cultured human U266 MM cells in a time- and dose-dependent manner with an EC50 of 16 μM. Treatment of U266 cells with naltrindole significantly decreases the level of the active, phosphorylated form of the kinases, extracellular signal-regulated kinase and Akt, which may be related to its antiproliferative activity[2]. Naltrindole inhibits growth and induces apoptosis in the three characteristic SCLC cell lines, NCI-H69, NCI-H345, and NCI-H510. Naltrindole treatment reduces constitutive phosphorylation of Akt/PKB on serine 473 and threonine 308 in cells and also its downstream effectors glycogen synthase kinase-3β and the Forkhead transcription factors AFX and FKHR[3]. Naltrindole significantly decreases tumor cell volumes in human MM cell xenografts in severe combined immunodeficient mice[2]. In mice, naltrindole at 20 mg/kg s.c. antagonizes the δ-selective agonist effect of [D- Ser, Leu, Thr]enkephalin (DSLET) without blocking the antinociceptive effect of morphine or U50488H. Naltrindole is the only highly selective δ antagonist that is active upon peripheral administration[4]. Acute naltrindole induces significant decreases in external and total ambulation (horizontal activity) and rearing behaviour (vertical activity), as well as a significant increase in grooming frequency. In animals chronically treated with naltrindole there is an increase in total ambulation one day after the discontinuation of the treatment[5].
Reference:
[1]. Raynor K, et al. Pharmacological characterization of the cloned kappa-, delta-, and mu-opioid receptors. Mol Pharmacol. 1994 Feb;45(2):330-4.
[2]. Mundra JJ, et al. Naltrindole inhibits human multiple myeloma cell proliferation in vitro and in a murine xenograft model in vivo. J Pharmacol Exp Ther. 2012

Aug;342(2):273-87.
[3]. Chen YL, et al. Inhibition of akt/protein kinase B signaling by naltrindole in small cell lung cancer cells.
[4]. Portoghese PS, et al. Naltrindole, a highly selective and potent non-peptide delta opioid receptor antagonist. Eur J Pharmacol. 1988 Jan 27;146(1):185-6.
[5]. Fernández B, et al. Postnatal naltrindole treatments induce behavioural modifications in preweanling rats. Neurosci Lett. 2000 Mar 31;283(1):73-6.

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