Nelarabine

Cat. No.: HY-13701

CAS No.: 121032-29-9

Molecular Formula: $C_{11}H_{15}N_5O_5$

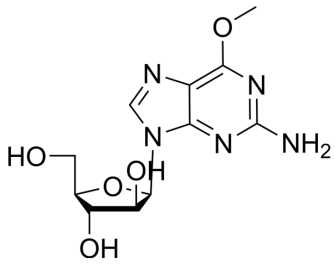
Molecular Weight: 297.27

Target: Nucleoside Antimetabolite/Analog; Apoptosis

Pathway: Cell Cycle/DNA Damage; Apoptosis

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (336.39 mM; Need ultrasonic)

H_2O : 10 mg/mL (33.64 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.3639 mL	16.8197 mL	33.6395 mL
5 mM	0.6728 mL	3.3639 mL	6.7279 mL
10 mM	0.3364 mL	1.6820 mL	3.3639 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 5 mg/mL (16.82 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (8.41 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.41 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.41 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Nelarabine (506U78) is a nucleoside analogue and can be used for the research of T cell acute lymphoblastic leukemia (T-ALL)[1].

In Vitro

Nelarabine (506U78) (0-20 μM; 48 h) induces cytotoxic effects in T-ALL cell lines[1].

Nelarabine (5 or 2 μM; 48 h) promotes apoptosis in sensitive T-ALL cell lines and modulates PI3K/AKT/mTOR and MEK signaling[1].
Nelarabine (10 μM; 0-48 h) resistance does not depend on expression of ENT1/2 transporters and is partly due to upregulation of PI3K, MEK, and Bcl2 signaling[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	T-ALL cell lines
Concentration:	0-20 μM
Incubation Time:	48 h
Result:	Cell viability decreased in a concentration-dependent fashion, and the IC_{50} values ranged between 2 and 5.5 μM for sensitive cell lines (MOLT-4, HSB-2, P12, DND41, JURKAT).

Apoptosis Analysis[1]

Cell Line:	MOLT-4, JURKAT, P12-ICHIKAWA and DND41
Concentration:	5 μM (2 μM for MOLT-4 cells)
Incubation Time:	48 h
Result:	Detected a marked increase in the percentage of early apoptotic and/or late apoptotic cells.

Western Blot Analysis[1]

Cell Line:	MOLT-4, JURKAT, P12-ICHIKAWA and DND41
Concentration:	5 μM (2 μM for MOLT-4 cells)
Incubation Time:	0, 6, 16, 24 and 48 h
Result:	Documented a time-dependent cleavage of caspase 8, caspase 9, caspase 3, and poly(ADP-ribose) polymerase (PARP) in response to drug treatment. Induced a marked decrease of phosphorylated AKT at Ser473, S6 ribosomal protein (S6RP) at Ser235/236, and GSK3β at Ser9.

In Vivo

Nelarabine (506U78) (130 mg/kg/day; i.v.; 5 days) reduces leukemic burden and extends mouse survival in NSG mice xenografted with luciferase-expressing U937 cells[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	NSG mice xenografted with luciferase-expressing U937 cells[2]
Dosage:	130 mg/kg/day
Administration:	Intravenous injection, 5 days
Result:	Reduced leukemic burden and extended mouse survival.

CUSTOMER VALIDATION

- J Mol Med (Berl). 2019 Aug;97(8):1183-1193.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Lonetti A, et al. Improving nelarabine efficacy in T cell acute lymphoblastic leukemia by targeting aberrant PI3K/AKT/mTOR signaling pathway. J Hematol Oncol. 2016 Oct 24;9(1):114.

[2]. Wang H, et al. Repurposing Nelarabine to Induce Differentiation of Acute Myeloid Leukemia. Blood, 2020, 136: 26.

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