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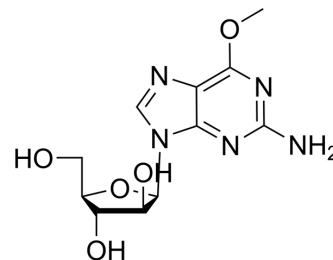
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## Nelarabine

|                    |                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------|
| Cat. No.:          | HY-13701                                                                                         |
| CAS No.:           | 121032-29-9                                                                                      |
| Molecular Formula: | C <sub>11</sub> H <sub>15</sub> N <sub>5</sub> O <sub>5</sub>                                    |
| Molecular Weight:  | 297.27                                                                                           |
| Target:            | Nucleoside Antimetabolite/Analog; Apoptosis                                                      |
| Pathway:           | Cell Cycle/DNA Damage; Apoptosis                                                                 |
| Storage:           | Powder    -20°C    3 years<br>4°C    2 years<br>In solvent   -80°C    2 years<br>-20°C    1 year |



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 100 mg/mL (336.39 mM; Need ultrasonic)  
 H<sub>2</sub>O : 10 mg/mL (33.64 mM; Need ultrasonic)

|                           | Solvent<br>Concentration | Mass | 1 mg      | 5 mg       | 10 mg      |
|---------------------------|--------------------------|------|-----------|------------|------------|
|                           |                          |      |           |            |            |
| Preparing Stock Solutions | 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

- 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
- 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
- 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
- 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)<sup>[1]</sup>.

#### In Vitro

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

Nelarabine (5 or 2  $\mu$ M; 48 h) promotes apoptosis in sensitive T-ALL cell lines and modulates PI3K/AKT/mTOR and MEK signaling<sup>[1]</sup>.

Nelarabine (10  $\mu$ M; 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<sup>[1]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### Cell Viability Assay<sup>[1]</sup>

|                  |                                                                                                                                                                                               |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cell Line:       | T-ALL cell lines                                                                                                                                                                              |
| Concentration:   | 0-20 $\mu$ M                                                                                                                                                                                  |
| Incubation Time: | 48 h                                                                                                                                                                                          |
| Result:          | Cell viability decreased in a concentration-dependent fashion, and the IC <sub>50</sub> values ranged between 2 and 5.5 $\mu$ M for sensitive cell lines (MOLT-4, HSB-2, P12, DND41, JURKAT). |

#### Apoptosis Analysis<sup>[1]</sup>

|                  |                                                                                              |
|------------------|----------------------------------------------------------------------------------------------|
| Cell Line:       | MOLT-4, JURKAT, P12-ICHIKAWA and DND41                                                       |
| Concentration:   | 5 $\mu$ M (2 $\mu$ M 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<sup>[1]</sup>

|                  |                                                                                                                                                                                                                                                                                   |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cell Line:       | MOLT-4, JURKAT, P12-ICHIKAWA and DND41                                                                                                                                                                                                                                            |
| Concentration:   | 5 $\mu$ M (2 $\mu$ M 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.<br>Induced a marked decrease of phosphorylated AKT at Ser473, S6 ribosomal protein (S6RP) at Ser235/236, and GSK3 $\beta$ 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<sup>[2]</sup>.

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 <sup>[2]</sup> |
| Dosage:         | 130 mg/kg/day                                                             |
| Administration: | Intravenous injection, 5 days                                             |
| Result:         | Reduced leukemic burden and extended mouse survival.                      |

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

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## REFERENCES

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- [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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**Caution: Product has not been fully validated for medical applications. For research use only.**

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