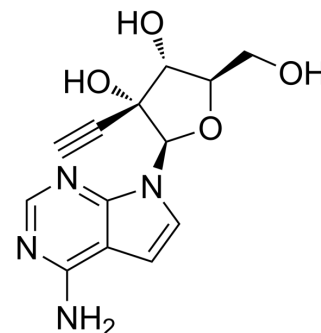


NITD008

Cat. No.:	HY-12957		
CAS No.:	1044589-82-3		
Molecular Formula:	C ₁₃ H ₁₄ N ₄ O ₄		
Molecular Weight:	290.27		
Target:	DNA/RNA Synthesis; Flavivirus; Dengue virus		
Pathway:	Cell Cycle/DNA Damage; Anti-infection		
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 : ≥ 50 mg/mL (172.25 mM)
 * "≥" means soluble, but saturation unknown.

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	3.4451 mL	17.2253 mL	34.4507 mL
	5 mM	0.6890 mL	3.4451 mL	6.8901 mL
	10 mM	0.3445 mL	1.7225 mL	3.4451 mL

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

In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
 Solubility: ≥ 2.5 mg/mL (8.61 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
 Solubility: ≥ 2.5 mg/mL (8.61 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
 Solubility: ≥ 2.5 mg/mL (8.61 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

NITD008 is a potent and selective flavivirus inhibitor which can inhibit Dengue Virus Type 2 (DENV-2) with an EC₅₀ of 0.64 μM. NITD008 is a click chemistry reagent, it contains an Alkyne group and can undergo copper-catalyzed azide-alkyne cycloaddition (CuAAC) with molecules containing Azide groups.

IC₅₀ & Target

EC₅₀: 0.64 μM (DENV-2)^[1]

In Vitro	<p>NITD008 potently inhibits other, including Dengue virus (DENV), West Nile virus, yellow fever virus, and Poissan virus. NITD008 inhibits DENV-2 in a dose-responsive manner, with an EC₅₀ value of 0.64 μM; treatment with 9 μM compound reduces viral titer by >104-fold^[1]. NITD008 also inhibits a luciferase-reporting replicon of hepatitis C virus (HCV, genotype 1b), a member from the genus Hepacivirus, with an EC₅₀ value of 0.11 μM^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>NITD008 is orally bioavailable and has good pharmacokinetic properties. NITD008 exhibits the best pharmacokinetic parameters when formulated using 6 N of HCl (1.5 equimolar amount), 1 N of NaOH (pH adjusted to 3.5), and 100 mM citrate buffer (pH 3.5). Following i.v. injection, NITD008 has a high volume of distribution (3.71 L/kg) and a low systemic clearance (31.11 mL/min per kg), resulting in a long elimination half-life (t_{1/2}=4.99 h). After p.o. dosing, NITD008 is rapidly absorbed (time of peak plasma concentration=0.5 h), with a maximal plasma concentration of 3 μM and bioavailability of 48%.</p> <p>Treatment of the mice immediately after viral infection with 1 mg/kg of NITD008 does not reduce mortality, but treatment with 3 mg/kg partially protects and treatment with ≥10 mg/kg completely protects the infected mice from death. NITD008 can suppress peak viremia, decrease cytokine elevation, and prevent death^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

PROTOCOL

Cell Assay ^[1]	<p>For measurement of compound cytotoxicity, Vero cells (10000 cells per well of a 96-well plate) are incubated with various concentrations of NITD008 (3, 6, 12, 25, 50 μM) for 48 h; cell viability is quantified using a MTT assay^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
Animal Administration ^[1]	<p>Mice^[1]</p> <p>The in vivo efficacy of NITD008 is evaluated in a dengue viremia model and a lethal model in mice. Both models use AG129 mice (with knockout IFN-α/β and IFN-γ receptors). DENV-2 strains TSV01 and D2S10, respectively, are used in the 2 models and are propagated in C6/36 mosquito cells grown in RPMI-1640 medium with 5% FBS (vol/vol) at 28°C. The evaluation in the lethal model is performed by injecting mice i.v. with 0.2 mL of RPMI-1640 medium containing 3×10⁷ pfu/mL DENV-2 strain D2S10; the infected mice are then subjected to different treatment regimens, as indicated in each experiment. NITD008 (1, 3, 10, 25, 50 mg/kg) in 0.2-0.25 mL of formulation solution is administered by p.o. gavage. The mice (6 or 8 mice per group) are monitored twice a day^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Antiviral Res. 2022 Jun;202:105325.
- Eur J Med Chem. 2023 Oct 1;261:115852.
- Viruses. 2022 Jun 5;14(6):1228.
- Viruses. 2022 May 25;14(6):1142.
- Virology. 2023 Nov 11, 109939.

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REFERENCES

[1]. Yin Z, et al. An adenosine nucleoside inhibitor of dengue virus. Proc Natl Acad Sci U S A. 2009 Dec 1;106(48):20435-9.

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

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA