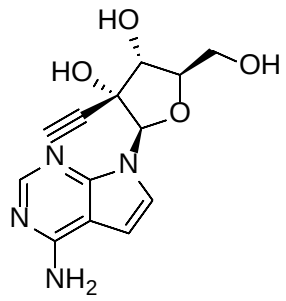
Product data sheet

MedKoo Cat#: 561315 Name: NITD008 CAS: 1044589-82-3 Chemical Formula: $C_{13}H_{14}N_4O_4$ Exact Mass: 290.1015 Molecular Weight: 290.279	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
NITD008 is an antiviral drug. It was developed as a potential treatment for flavivirus infections, and shows broad spectrum antiviral activity against many related viruses such as Dengue virus, West Nile virus, yellow fever virus, Powassan virus, Hepatitis C virus, Kyasanur Forest disease virus, Omsk hemorrhagic fever virus and Zika virus. Unfortunately NITD008 proved too toxic in pre-clinical animal testing to be suitable for human trials, but it continues to be used in research to find improved treatments for emerging viral diseases.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	27.91	96.13

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.45 mL	17.23 mL	34.45 mL
5 mM	0.69 mL	3.45 mL	6.89 mL
10 mM	0.35 mL	1.72 mL	3.45 mL
50 mM	0.07 mL	0.35 mL	0.69 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Enosi Tuipulotu D, Fumian TM, Netzler NE, Mackenzie JM, White PA. The Adenosine Analogue NITD008 has Potent Antiviral Activity against Human and Animal Caliciviruses. Viruses. 2019 May 30;11(6):496. doi: 10.3390/v11060496. PMID: 31151251; PMCID: PMC6631109.
2. Touret F, Baronti C, Goethals O, Van Loock M, de Lamballerie X, Querat G. Phylogenetically based establishment of a dengue virus panel, representing all available genotypes, as a tool in dengue drug discovery. Antiviral Res. 2019 Aug;168:109-113. doi: 10.1016/j.antiviral.2019.05.005. Epub 2019 May 11. PMID: 31085207.

In vivo study

1. Milligan GN, White M, Zavala D, Pyles RB, Sarathy VV, Barrett ADT, Bourne N. Spectrum of activity testing for therapeutics against all four dengue virus serotypes in AG129 mouse models: Proof-of-concept studies with the adenosine nucleoside inhibitor NITD-008. Antiviral Res. 2018 Jun;154:104-109. doi: 10.1016/j.antiviral.2018.04.012. Epub 2018 Apr 14. PMID: 29665374; PMCID: PMC6685202.
2. Deng YQ, Zhang NN, Li CF, Tian M, Hao JN, Xie XP, Shi PY, Qin CF. Adenosine Analog NITD008 Is a Potent Inhibitor of Zika Virus. Open Forum Infect Dis. 2016 Aug 30;3(4):ofw175. doi: 10.1093/ofid/ofw175. PMID: 27747251; PMCID: PMC5063548.

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7. Bioactivity

Biological target:

NITD008 is a potent and selective flaviviruse inhibitor which can inhibit Dengue Virus Type 2 (DENV-2) with an EC_{50} of 0.64 μM.

In vitro activity

This study shows that the nucleoside analogue (NA), NITD008, has limited toxicity and inhibits calicivirus replication in all three model systems with EC_{50} values of 0.94 μM, 0.91 μM, and 0.21 μM for MNV, FCV, and the Norwalk replicon, respectively. NITD008 has a similar level of potency to the most well-studied NA 2'-C-methylcytidine in vitro. Significantly, we also show that continual NITD008 treatment effectively cleared the Norwalk replicon from cells and treatment with 5 μM NITD008 was sufficient to completely prevent rebound.

Reference: Viruses. 2019 May 30;11(6):496. https://pubmed.ncbi.nlm.nih.gov/31151251/

In vivo activity

In DENV-3 inoculated mice, NITD-008 treatment prevented lethality in all animals compared to 83% lethality in vehicle controls ($p<0.0001$; Table 1). NITD-008 treatment of DENV-2 infected mice did not provide complete protection from lethality, but did significantly increase the number of animals that survived to the end of the study from 0% to 50% ($p=0.014$), and in mice that developed lethal infection the mean day of death (MDD) was significantly extended compared vehicle treated controls (14.2 ± 1.9 vs 7.0 ±1.0 days; $p= 0.002$; Table 1).

Reference: Antiviral Res. 2018 Jun;154:104-109. https://pubmed.ncbi.nlm.nih.gov/29665374/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.