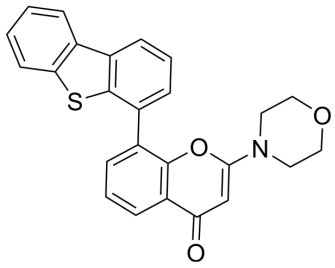
KU-57788

Cat. No.:	HY-11006
CAS No.:	503468-95-9
Molecular Formula:	$C_{25}H_{19}NO_3S$
Molecular Weight:	413
Target:	DNA-PK; CRISPR/Cas9
Pathway:	Cell Cycle/DNA Damage; PI3K/Akt/mTOR
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 1 year -20°C 6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 14.29 mg/mL (34.60 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.4213 mL	12.1065 mL	24.2131 mL
	5 mM	0.4843 mL	2.4213 mL	4.8426 mL
	10 mM	0.2421 mL	1.2107 mL	2.4213 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1.43 mg/mL (3.46 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

KU-57788 (NU7441) is a highly potent and selective DNA-PK inhibitor with an IC_{50} of 14 nM. KU-57788 is an NHEJ pathway inhibitor. KU-57788 also inhibits PI3K and mTOR with IC_{50}s of 5.0 and 1.7 μM, respectively[1].

IC_{50} & Target

DNA-PK	mTOR	PI3K	CRISPR/Cas9
14 nM (IC_{50})	1.7 μM (IC_{50})	5.0 μM (IC_{50})	

In Vitro

NU7441 (0.5 to 10 μM) inhibits the growth of liver cancer HepG2 cells dose- and time-dependently. NU7441 reduces pDNA-PKcs (S2056) protein expression in liver cancer cells. Furthermore, double treatment of NU7441 and 60Coγ IR affects DNA damage repair[2].

NU7441 is solvent-exposed in BRD4, this inhibitor can be classified as a Type I BRD inhibitor[4].

NU7441 reduces the frequency of NHEJ while increasing the rate of HDR following Cas9-mediated DNA cleavage[5].

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

PROTOCOL

Cell Assay [2]

HepG2 cells (4000 per well) are cultured in a 96-well plate for 24 h. Once the cells complete the attachment, 0.1 μM, 1 μM, 5 μM, and 10 μM of KU-57788 are added to the culture media. After 12 h of KU-57788 treatment, 10% CCK-8 solution is added into the culture media, and the incubation continued for two h. OD450 values are determined by a spectrometer, and the results are analyzed to measure the cell growth.

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

CUSTOMER VALIDATION

- Nat Methods. 2024 Feb 1.
- Nat Biotechnol. 2023 Aug 3.
- Cell Metab. 2021 Jul 28;S1550-4131(21)00325-9.
- Genome Biol. 2021 Aug 20;22(1):236.
- J Exp Clin Cancer Res. 2022 Apr 12;41(1):140.

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REFERENCES

[1]. Justin J J Leahy, et al. Identification of a highly potent and selective DNA-dependent protein kinase (DNA-PK) inhibitor (NU7441) by screening of chromenone libraries. Bioorg Med Chem Lett. 2004 Dec 20;14(24):6083-7.

[2]. Yang C, et al. NU7441 Enhances the Radiosensitivity of Liver Cancer Cells. Cell Physiol Biochem. 2016;38(5):1897-905

[3]. Hardcastle IR, et al. Discovery of potent chromen-4-one inhibitors of the DNA-dependent protein kinase (DNA-PK) using a small-molecule library approach. J Med Chem. 2005 Dec 1;48(24):7829-46

[4]. Ember SW, et al. The acetyl-lysine binding site of bromodomain-containing protein 4 (BRD4) interacts with diverse kinase inhibitors. ACS Chem Biol. 2014 Feb 25.

[5]. Robert F, et al. Pharmacological inhibition of DNA-PK stimulates Cas9-mediated genome editing. Genome Med. 2015 Aug 27;7:93

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