Capzimin

Cat. No.: HY-110404

CAS No.: 2084868-04-0

Molecular Formula: $C_{30}H_{24}N_6O_2S_4$

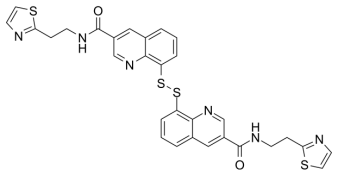
Molecular Weight: 628.81

Target: Proteasome; Deubiquitinase

Pathway: Metabolic Enzyme/Protease; Cell Cycle/DNA Damage

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 : ≥ 55.67 mg/mL (88.53 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.5903 mL	7.9515 mL	15.9031 mL
5 mM	0.3181 mL	1.5903 mL	3.1806 mL
10 mM	0.1590 mL	0.7952 mL	1.5903 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (3.98 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (3.98 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Capzimin is a potent and moderately specific proteasome isopeptidase Rpn11 inhibitor.

IC_{50} & Target

Target: Rpn11[1]

In Vitro

Capzimin (3027) shows 80-fold selectivity for Rpn11 over Csn5, 10-fold over AMSH and 6-fold over BRCC36 (IC_{50}=30 μM, 4.5 μM and 2.3 μM respectively. Capzimin is screened against the NCI panel of 60 cancer cell lines. The median GI_{50} is 3.3 μM. Capzimin exhibits promising activity in leukemia cells including the SR and K562 cell lines (GI_{50} values of 0.67 μM and 1 μM respectively), as well as several solid tumor cell lines including NCI-H460 (non-small cell lung cancer; GI_{50}= 0.7 μM) and MCF7 (breast cancer; GI_{50}=1.0 μM). Immunoblotting for the processed form of caspase 3 and caspase-cleaved poly ADP-ribose

polymerase in HCT116 cells confirm that Capzimin not only blocks cell growth, but also induces apoptosis[1].

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

PROTOCOL

Kinase Assay [1]

Fluorescence polarization assays are performed in low-volume 384 well solid black plates in quadruplicate. The assays are performed in buffer containing 50 mM Tris-HCl pH7.5, 1mM $MgCl_2$, 50 μM ATP, 1 mM DTT and 0.01% NP-40. The components for the assay are added in the follow sequence: 1) 5 μL compound (Capzimin, et al.) (in 3% DMSO) at different concentrations, 2) 5 μL of diluted human 26S proteasome, and 3) 5μL of substrate (3 nM Ub4- peptideOG). 100 μM Zn(cyclen)$^{2+}$ is present in the titration reaction for the experiments performed with Zn(cyclen)$^{2+}$. Fluorescence polarization is measured at 30°C with excitation at 480 nm and emission at 520 nm. Collected data is normalized to DMSO control and fitted to a dose-response curve to determine the IC_{50} value[1].

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

Cell Assay [1]

HCT116 cells are treated with different concentrations of 3021 or Capzimin for 72 hours in normal or low serum medium and then mixed with CellTiter-Glo reagent to estimate cell proliferation. Measured luminescence values are normalized to DMSO control and data are fitted to a dose-response equation to determine the GI_{50}[1].

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

CUSTOMER VALIDATION

- Sci Immunol. 2021 Apr 30;6(58):eabe2933.
- Prostate. 2019 Aug;79(11):1304-1315.

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REFERENCES

[1]. Li J, et al. Capzimin is a potent and specific inhibitor of proteasome isopeptidase Rpn11. Nat Chem Biol. 2017 May;13(5):486-493.

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