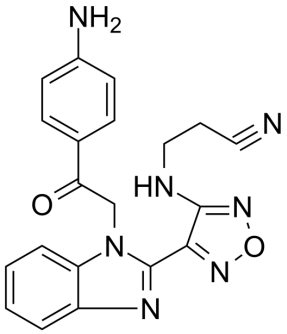
Avanbulin

Cat. No.:	HY-106008
CAS No.:	798577-91-0
Molecular Formula:	$C_{20}H_{17}N_7O_2$
Molecular Weight:	387.39
Target:	Microtubule/Tubulin
Pathway:	Cell Cycle/DNA Damage; Cytoskeleton
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (645.34 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.5814 mL	12.9069 mL	25.8138 mL
5 mM	0.5163 mL	2.5814 mL	5.1628 mL
10 mM	0.2581 mL	1.2907 mL	2.5814 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: ≥ 2.08 mg/mL (5.37 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (5.37 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Avanbulin (BAL27862) is a potent, Colchicine site-binding, tubulin assembly inhibitor. Avanbulin inhibits tubulin assembly at 37 °C with an IC_{50} of 1.4 μM. Avanbulin binds to tubulin with an apparent K_d value of 244 nM. Avanbulin can be used for the research of cancer and cell division[1][2][3][4].

In Vitro

Avanbulin (0-4 μM) binds to tubulin in the site as Colchicine with an apparent K_d value of 244 nM.[1].
Avanbulin (50 μM; 0, 10, 20, 30, 60 min) induces the proteolysis of tubulin[1].
Avanbulin (33 nM; 0, 10, 20, 30, 60 min; HeLa-tubGFP cells) collapses the mitotic spindle and forms the tiny tubulin aggregates[1].
Avanbulin does not induce the formation of tubulin oligomers[1].
Avanbulin induces growth inhibition of 23 tumor cell lines with a median relative IC_{50} of 13.8 nM (96 hours) [2].Avanbulin (6

nM and 20 nM) inhibits the migration of GBM6 and GBM9 cells[3].
Avanbulin (6 nM and 20 nM; GBM6-shEB1 and GBM6-sh0 cells) triggers astrocytic differentiation of GBM6 in an EB1-dependent manner[3].
Avanbulin (12 nM; 4 h) reduces kinetochore-microtubule (KT–MT) occupancy of MG132(10 μM; 2h) treated hTert-RPE1 eGFP-α-tubulin cells[4].
Avanbulin (12 nM; 4 h) reduces average inter-KT distances of cells, shows intact spindle morphology, and lacks obvious chromosome alignment defects[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Cytotoxicity Assay[2]

Cell Line:	23 cell lines, including RD, TC-71, SJ-GBM2, NB-1643.
Concentration:	0.1 nM-1.0 μM
Incubation Time:	96 hours
Result:	Induced growth inhibition of cells with a median relative IC_{50} of 13.8 nM.

REFERENCES

[1]. Prota AE, et al. The novel microtubule-destabilizing drug avanbulin binds to the colchicine site of tubulin with distinct effects on microtubule organization. J Mol Biol. 2014 Apr 17;426(8):1848-60.

[2]. Kolb EA, et al. Initial testing (stage 1) of BAL101553, a novel tubulin binding agent, by the pediatric preclinical testing program. Pediatr Blood Cancer. 2015 Jun;62(6):1106-9.

[3]. Bergès R, et al. The Novel Tubulin-Binding Checkpoint Activator BAL101553 Inhibits EB1-Dependent Migration and Invasion and Promotes Differentiation of Glioblastoma Stem-like Cells. Mol Cancer Ther. 2016 Nov;15(11):2740-2749.

[4]. Dudka D, et al. Complete microtubule-kinetochore occupancy favours the segregation of merotelic attachments. Nat Commun. 2018;9(1):2042. Published 2018 May 23.

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