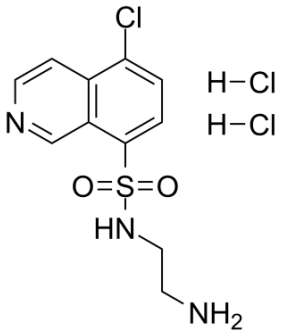
CKI-7

Cat. No.:	HY-W011109
CAS No.:	1177141-67-1
Molecular Formula:	$C_{11}H_{14}Cl_3N_3O_2S$
Molecular Weight:	358.67
Target:	Casein Kinase; CDK; SGK; Ribosomal S6 Kinase (RSK)
Pathway:	Cell Cycle/DNA Damage; Stem Cell/Wnt; Metabolic Enzyme/Protease; MAPK/ERK Pathway
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

CKI-7 is a potent and ATP-competitive casein kinase 1 (CK1) inhibitor with an IC_{50} of 6 μM and a K_i of 8.5 μM. CKI-7 is a selective Cdc7 kinase inhibitor. CKI-7 also inhibits SGK, ribosomal S6 kinase-1 (S6K1) and mitogen- and stress-activated protein kinase-1 (MSK1). CKI-7 has a much weaker effect on casein kinase II and other protein kinases[1][2][3][4].

IC_{50} & Target

CK1 6 μM (IC_{50})	CK1 8.5 μM (Ki)	Cdc7	SGK
S6K1	MSK1		

In Vitro

CKI-7 (0.1-10 μM; 5 days; ES cells) treatment significantly increases the expression of the early neuroectodermal marker Sox1 and the number of cells positive for the neural markers nestin and βIII-tubulin, in a concentration-dependent manner[1].
CKI-7 (5 μM; 5 days; ES cells) treatment suppresses SFEB-induced β-catenin stabilization on day 5, indicating that CKI-7 inhibits Wnt signaling[1].

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

RT-PCR[1]

Cell Line:	Mouse ES cells
Concentration:	0.1-10 μM
Incubation Time:	5 days
Result:	Significantly increased the expression of the early neuroectodermal marker Sox1 and the number of cells positive for the neural markers nestin and βIII-tubulin, in a concentration-dependent manner.

Western Blot Analysis[1]

Cell Line:	Mouse ES cells
Concentration:	5 μM
Incubation Time:	5 days

	Result:	Suppressed SFEB-induced β-catenin stabilization on day 5.
In Vivo	In vivo dose-dependent anti-tumor activity of CKI-7 is demonstrated in a SCID-Beige mouse systemic tumor model utilzing a recently isolated Philadelphia chromosome positive acute lymphoblastic leukemia cell line. Standard cell cycle synchronization studies established that exposure to CKI-7 results in cell cycle dependent caspase 3 activation and apoptotic cell death[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.	

REFERENCES

[1]. Osakada F, et al. In vitro differentiation of retinal cells from human pluripotent stem cells by small-molecule induction. J Cell Sci. 2009 Sep 1;122(Pt 17):3169-79.

[2]. Mark G. Frattini, et al. Small Molecule Inhibition of Cdc7, a Key Cell Cycle Regulator and Novel Therapeutic Target, Successfully Inhibits Leukemia Cell Growth in Vitro and in Vivo. Blood (2008) 112 (11): 2668.

[3]. Chijiwa T, et al. A newly synthesized selective casein kinase I inhibitor, N-(2-aminoethyl)-5-chloroisoquinoline-8-sulfonamide, and affinity purification of casein kinase I from bovine testis. J Biol Chem. 1989 Mar 25;264(9):4924-7.

[4]. Rena G, et al. D4476, a cell-permeant inhibitor of CK1, suppresses the site-specific phosphorylation and nuclear exclusion of FOXO1a. EMBO Rep. 2004 Jan;5(1):60-5.

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