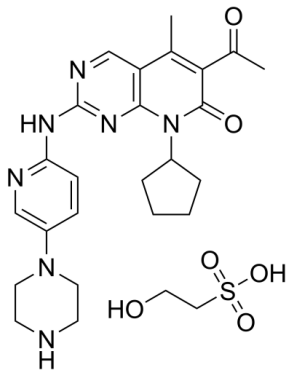
Data Sheet

Product Name:	Palbociclib (isethionate)
Cat. No.:	CS-3110
CAS No.:	827022-33-3
Molecular Formula:	$C_{26}H_{35}N_7O_6S$
Molecular Weight:	573.66
Target:	CDK
Pathway:	Cell Cycle/DNA Damage
Solubility:	DMSO : 10 mg/mL (ultrasonic)



BIOLOGICAL ACTIVITY:

Palbociclib (PD 0332991) isethionate is an orally active selective **CDK4** and **CDK6** inhibitor with **IC_{50}** values of 11 and 16 nM, respectively. Palbociclib isethionate has potent anti-proliferative activity and induces **cell cycle arrest** in cancer cells, which can be used in the research of HR-positive and HER2-negative breast cancer and hepatocellular carcinoma[1][3][4]. IC50 & Target:IC50: 11 nM (CDK4), 16 nM (CDK6)[1] ***In Vitro:***Palbociclib dihydrochloride (0-1 μM, 24 h) inhibits Rb Phosphorylation at Ser^{795} in MDA-MB-435 cells with an IC_{50} value of 0.063 μM, and obtains similar effects on both Ser^{780} and Ser^{795} phosphorylation in the Colo-205 colon carcinoma[1].

Palbociclib dihydrochloride (0-10 μM, 24 h) arrests MDA-MB-453 cells exclusively in G1 phase[1].

Palbociclib dihydrochloride (500 nM, 7 days) increases expression of homologous genes (H2d1, H2k1, and B2m) in MDA-MB-453 and MDA-MB-361 cells[2].

Palbociclib dihydrochloride (0-1 μM, 6 days) inhibits growth of several luminal ER-positive as well as HER2-amplified breast cancer cell lines, with IC_{50} values ranging from 4 nM to 1 μM[3].

Palbociclib dihydrochloride (0-1 μM, 3 days) inhibits the proliferation of human liver cancer cell lines with IC_{50} values ranging from 0.01 μM to 3.49 μM, and induces a reversible cell cycle arrest[4]. ***In Vivo:***Palbociclib isethionate (oral adminstration, 75 or 150 mg/kg, daily for 14 days) produces rapid tumor regressions and delays tumor growth[1].

Palbociclib isethionate (oral adminstration, 90 mg/kg, daily for 12 days) reduces Treg numbers and the Treg:CD8 ratio in the spleen and lymph nodes in tumor-free mice, demonstrating the tumor-independent effects[2].

Palbociclib isethionate (oral administration, 100 mg/kg, daily for 1 week) has potent antitumour effects in genetically engineered mosaic mouse model of liver cancer[4].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay:[3]Cells are seeded in duplicate at 5,000 to 10,000 cells per well in 24-well plates. The day after plating, different concentrations of Palbociclib are added. Control wells without drug are also seeded. At the end of incubation, cells are trypsinizated and placed in Isotone solution and counted immediately using a Coulter Z2 particle counter. **Animal Administration:**[1]Mice (18-22 g) are randomized and then implanted s.c. with tumor fragments (appr 30 mg) into the region of the right axilla. Treatment is initiated when tumors reach 100 to 150 mg. Palbociclib is given according to the schedule and dose indicated in the table and figure legends by gavage as a solution in sodium lactate buffer (50 mM, pH 4.0) based on mean group body weight. In all experiments, there are 12 mice in the control group and 8 mice each in the treated groups. Additional details for each experiment are given in the table legends.

References:

[1]. Fry DW, et al. Specific inhibition of cyclin-dependent kinase 4/6 by PD 0332991 and associated antitumor activity in human tumor xenografts. Mol Cancer Ther. 2004 Nov;3(11):1427-38.

[2]. Goel S, et al. CDK4/6 inhibition triggers anti-tumour immunity. Nature. 2017 Aug 24;548(7668):471-475.

[3]. Richard S Finn, et al. PD 0332991, a selective cyclin D kinase 4/6 inhibitor, preferentially inhibits proliferation of luminal estrogen receptor-positive human breast cancer cell lines in vitro. Breast Cancer Res. 2009;11(5):R77.

[4]. Bollard J, et al. Palbociclib (PD-0332991), a selective CDK4/6 inhibitor, restricts tumour growth in preclinical models of hepatocellular carcinoma. Gut. 2017 Jul;66(7):1286-1296.

CAIndexNames:

Ethanesulfonic acid, 2-hydroxy-, compd. with 6-acetyl-8-cyclopentyl-5-methyl-2-[[5-(1-piperazinyl)-2-pyridinyl]amino]pyrido[2,3-d]pyrimidin-7(8H)-one (1:1)

SMILES:

CC(C1=C(N2C3CCCC3)N=C(NC4=NC=C(N5CCNCC5)C=C4)N=C1)=C(C(C)=O)C2=O.OCCS(O)(=O)=O

Tel: 610-426-3128 Fax: 888-484-5008 E-mail: sales@ChemScene.com

Address: 1 Deer Park Dr, Suite F, Monmouth Junction, NJ 08852, USA