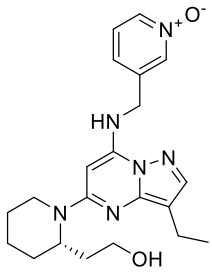
Product data sheet

MedKoo Cat#: 202572 Name: Dinaciclib CAS#: 779353-01-4 Chemical Formula: $C_{21}H_{28}N_6O_2$ Exact Mass: 396.22737 Molecular Weight: 396.48602	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Dinaciclib, also known as SCH727965, is a potent CDK inhibitor with potential antineoplastic activity. Dinaciclib selectively inhibits cyclin dependent kinases CDK1, CDK2, CDK5, and CDK9 activity in vitro with IC(50) values of 1, 1, 3, and 4 nmol/L, respectively. Compared with flavopiridol, Dinaciclib exhibits superior activity with an improved therapeutic index. Dinaciclib induced regression of established solid tumors in a range of mouse models following intermittent scheduling of doses below the maximally tolerated level.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	50.0	126.11
DMF	25.0	63.05
DMF:PBS (pH 7.2) (1:1)	0.5	1.26
Ethanol	32.5	81.97

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.52 mL	12.61 mL	25.22 mL
5 mM	0.50 mL	2.52 mL	5.04 mL
10 mM	0.25 mL	1.26 mL	2.52 mL
50 mM	0.05 mL	0.25 mL	0.50 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Howard D, James D, Murphy K, Garcia-Parra J, Pan-Castillo B, Rex S, Moul A, Jones E, Bilbao-Asensio M, Michue-Seijas S, Lutchman-Singh K, Margarit L, Francis LW, Rees P, Gonzalez D, Conlan RS. Dinaciclib, a Bimodal Agent Effective against Endometrial Cancer. Cancers (Basel). 2021 Mar 6;13(5):1135. doi: 10.3390/cancers13051135. PMID: 33800911; PMCID: PMC7962054.
2. Sungwan P, Lert-Itthiporn W, Silsirivanit A, Klinhom-On N, Okada S, Wongkham S, Seubwai W. Bioinformatics analysis identified CDC20 as a potential drug target for cholangiocarcinoma. PeerJ. 2021 Mar 17;9:e11067. doi: 10.7717/peerj.11067. PMID: 33777535; PMCID: PMC7980698.

In vivo study

Product data sheet

1. Hur S, Kim JH, Yun J, Ju YW, Han JM, Heo W, Kim K, Jeong K, Lee HB, Han W, Noh DY, Kim JI, Moon HG. Protein Phosphatase 1H, Cyclin-Dependent Kinase Inhibitor p27, and Cyclin-Dependent Kinase 2 in Paclitaxel Resistance for Triple Negative Breast Cancers. J Breast Cancer. 2020 Mar 9;23(2):162-170. doi: 10.4048/jbc.2020.23.e20. PMID: 32395375; PMCID: PMC7192749.
2. Yang J, Hu S, Shangguan J, Eresen A, Li Y, Ma Q, Yaghmai V, Benson Iii AB, Zhang Z. Dinaciclib prolongs survival in the LSL-KrasG12D/+ ; LSL-Trp53R172H/+ ; Pdx-1-Cre (KPC) transgenic murine models of pancreatic ductal adenocarcinoma. Am J Transl Res. 2020 Mar 15;12(3):1031-1043. PMID: 32269732; PMCID: PMC7137051.

7. Bioactivity

Biological target:

Dinaciclib (SCH 727965) is a potent inhibitor of CDK, with IC50s of 1 nM, 1 nM, 3 nM, and 4 nM for CDK2, CDK5, CDK1, and CDK9, respectively.

In vitro activity

Here, dinaciclib caused a significant reduction in Bcl-2 expression, which, through subsequent loss of inhibition of the pro-apoptotic proteins Bax and Bak, is likely to account for Ishikawa cell death. Surprisingly, however, despite a reduction in cell proliferation, significant decreases in the expression of both Bcl-2 and Mcl-1 following dinaciclib treatment did not coincide with apoptosis in HEC-1A cells, possibly due to a compensatory effect of other anti-apoptotic proteins such as Bcl-Xl, or suggesting that other processes inhibited by dinaciclib were responsible for its effects.

Reference: Cancers (Basel). 2021 Mar; 13(5): 1135. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7962054/

In vivo activity

To investigate the antitumor effect of dinaciclib in PDAC (pancreatic ductal adenocarcinoma), this study treated the KPC genetic mice with pancreatic tumors that measured 2-5 mm in diameter on MRI (Figure 2A). Interestingly, dinaciclib treatment significantly delayed tumor growth compared with control group (Figure 2B, 2C). In addition, this study evaluated the OS of KPC mice in different groups. Treatment with dinaciclib prolonged the OS of KPC mice from 31 to 57 days ($P < 0.01$ (Median)) (Figure 2D). Taken together, these results confirmed that dinaciclib can potentially elicit tumor specific antitumor immunity in KPC mice.

Reference: Am J Transl Res. 2020; 12(3): 1031–1043. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7137051/