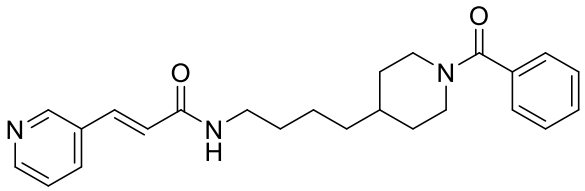
Product data sheet

MedKoo Cat#: 200270 Name: Daporinad CAS#: 658084-64-1 (free base) Chemical Formula: $C_{24}H_{29}N_3O_2$ Exact Mass: 391.22598 Molecular Weight: 391.51	
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:
Daporinad, also known as APO-866 and FK866, is a small molecule with potential antineoplastic and antiangiogenic activities. NMPRTase inhibitor APO866 binds to and inhibits nicotinamide phosphoribosyltransferase (NMPRTase), inhibiting the biosynthesis of nicotinamide adenine dinucleotide (NAD+) from niacinamide (vitamin B3), which may deplete energy reserves in metabolically active tumor cells and induce tumor cell apoptosis. In addition, this agent may inhibit tumor cell prioduction of vascular endothelial growth factor (VEGF), resulting in the inhibition of tumor angiogenesis.

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	52.0	132.82
Ethanol	64.0	163.47

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.55 mL	12.77 mL	25.54 mL
5 mM	0.51 mL	2.55 mL	5.11 mL
10 mM	0.26 mL	1.28 mL	2.55 mL
50 mM	0.05 mL	0.26 mL	0.51 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. Guo E, Li R, Yang J, Zhang J, Li A, Yang Y, Liu S, Liu A, Jiang X. FK866 attenuates acute hepatic failure through c-jun-N-terminal kinase (JNK)-dependent autophagy. Sci Rep. 2017 May 19;7(1):2206. doi: 10.1038/s41598-017-02318-7. PMID: 28526886; PMCID: PMC5438370.
2. Zhang B, Shi D, Zhang X, Liang G, Liu W, Qiao S. FK866 inhibits the epithelial-mesenchymal transition of hepatocarcinoma MHCC97-H cells. Oncol Lett. 2018 Dec;16(6):7231-7238. doi: 10.3892/ol.2018.9541. Epub 2018 Oct 3. PMID: 30546461; PMCID: PMC6256367.

In vivo study

1. Guo E, Li R, Yang J, Zhang J, Li A, Yang Y, Liu S, Liu A, Jiang X. FK866 attenuates acute hepatic failure through c-jun-N-terminal kinase (JNK)-dependent autophagy. Sci Rep. 2017 May 19;7(1):2206. doi: 10.1038/s41598-017-02318-7. PMID: 28526886; PMCID: PMC5438370.

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2. Lee J, Kim H, Lee JE, Shin SJ, Oh S, Kwon G, Kim H, Choi YY, White MA, Paik S, Cheong JH, Kim HS. Selective Cytotoxicity of the NAMPT Inhibitor FK866 Toward Gastric Cancer Cells With Markers of the Epithelial-Mesenchymal Transition, Due to Loss of NAPRT. Gastroenterology. 2018 Sep;155(3):799-814.e13. doi: 10.1053/j.gastro.2018.05.024. Epub 2018 Jul 30. PMID: 29775598.

7. Bioactivity

Biological target:

(E)-Daporinad (FK866) is an effective inhibitor of nicotinamide phosphoribosyltransferase (NMPRTase; Nampt) with an IC50 of 0.09 nM.

In vitro activity

In the present study, FK866 was identified to inhibit the capability of invasion and metastasis of cells from the HCC MHCC97-H line in a dose-dependent manner using a wound healing assay, an invasion assay and a migration assay. Furthermore, FK866 markedly decreased NAD+ and adenosine 5'-triphosphate content in MHCC97-H cells by inhibiting NAMPT expression. The results of the present study also revealed that FK866 led to a decrease in the expression of SIRT1, and to increased and decreased levels of the EMT marker proteins epithelial cadherin and vimentin, respectively, in MHCC97-H cells. Furthermore, FK866 inhibited the SIRT1-mediated EMT, invasion and migration of HCC cells by decreasing the expression of the NAMPT/NAD+ pathway. Taken together, the results of the present study suggest that FK866 may be an effective drug targeting HCC metastasis and invasion, and that the NAMPT/NAD+/SIRT1 pathway may be a potential therapeutic target for HCC.

Reference: Oncol Lett. 2018 Dec; 16(6): 7231–7238. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6256367/

In vivo activity

In vivo, mice were pretreated with FK866 at 24, 12, and 0.5 h before treatment with GaIN/LPS and ConA. 3-methyladenine (3MA) or rapamycin were used to determine the role of autophagy in FK866-conferred hepatoprotection. As shown in Fig. 1f, the ATG7 and LC3B-II levels in the livers with FK866 pretreatment were higher than those without FK866 after GaIN/LPS treatment, whereas the p62 levels were lower in the FK866 + GaIN/LPS group than those in the vehicle + GaIN/LPS group. As shown in Fig. 1g, FK866 pretreatment demonstrated an increase in LC3B-II expression levels, and the administration of CQ led to further significant accumulation of LC3B-II in mice liver tissue, demonstrating that LC3B-II accumulation was not due to impaired autophagic maturation step. Taken together, these findings confirmed that FK866 could enhance hepatic autophagic activity in ALF mice models.

Reference: Sci Rep. 2017; 7: 2206. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5438370/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.