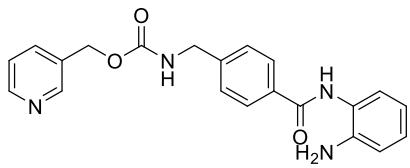
Product data sheet

MedKoo Cat#: 201266 Name: Entinostat CAS#: 209783-80-2 Chemical Formula: $C_{21}H_{20}N_4O_3$ Exact Mass: 376.15354 Molecular Weight: 376.41	
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:

Entinostat, also known as MS-275 or SNDX-275, is a potent HDAC inhibitor with potential antineoplastic activity. Entinostat binds to and inhibits histone deacetylase, an enzyme that regulates chromatin structure and gene transcription. This agent appears to exert dose-dependent effects in human leukemia cells including cyclin-dependent kinase inhibitor 1A (p21/CIP1/WAF1)-dependent growth arrest and differentiation at low drug concentrations; a marked induction of reactive oxygen species (ROS); mitochondrial damage; caspase activation; and, at higher concentrations, apoptosis.

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	30.0	79.7

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.66 mL	13.28 mL	26.57 mL
5 mM	0.53 mL	2.66 mL	5.31 mL
10 mM	0.27 mL	1.33 mL	2.66 mL
50 mM	0.05 mL	0.27 mL	0.53 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. Idso JM, Lao S, Schloemer NJ, Knipstein J, Burns R, Thakar MS, Malarkannan S. Entinostat augments NK cell functions via epigenetic upregulation of IFIT1-STING-STAT4 pathway. Oncotarget. 2020 May 19;11(20):1799-1815. doi: 10.18632/oncotarget.27546. PMID: 32499867; PMCID: PMC7244011.
2. Christmas BJ, Rafie CI, Hopkins AC, Scott BA, Ma HS, Cruz KA, Woolman S, Armstrong TD, Connolly RM, Azad NA, Jaffee EM, Roussos Torres ET. Entinostat Converts Immune-Resistant Breast and Pancreatic Cancers into Checkpoint-Responsive Tumors by Reprogramming Tumor-Infiltrating MDSCs. Cancer Immunol Res. 2018 Dec;6(12):1561-1577. doi: 10.1158/2326-6066.CIR-18-0070. Epub 2018 Oct 19. PMID: 30341213; PMCID: PMC6279584.

In vivo study

1. Bharathy N, Berlow NE, Wang E, Abraham J, Settelmeyer TP, Hooper JE, Svalina MN, Bajwa Z, Goros MW, Hernandez BS, Wolff JE, Pal R, Davies AM, Ashok A, Bushby D, Mancini M, Noakes C, Goodwin NC, Ordentlich P, Keck J, Hawkins DS, Rudzinski ER, Mansoor A, Perkins TJ, Vakoc CR, Michalek JE, Keller C. Preclinical rationale for entinostat in embryonal rhabdomyosarcoma. Skelet Muscle. 2019 May 21;9(1):12. doi: 10.1186/s13395-019-0198-x. PMID: 31113472; PMCID: PMC6528217.

2. Freundt JK, Frommeyer G, Spieker T, Wötzel F, Grotthoff JS, Stypmann J, Hempel G, Schäfers M, Jacobs AH, Eckardt L, Lange PS. Histone deacetylase inhibition by Entinostat for the prevention of electrical and structural remodeling in heart failure. BMC Pharmacol Toxicol. 2019 Mar 6;20(1):16. doi: 10.1186/s40360-019-0294-x. PMID: 30841920; PMCID: PMC6404297.

7. Bioactivity

Biological target:

Entinostat is a class I HDAC inhibitor, with IC50s of 243 nM, 453 nM, and 248 nM for HDAC1, HDAC2, and HDAC3, respectively.

In vitro activity

In summary, entinostat increased surface expression of MICA/B, ULBP1, ULBP2/5/6, HLA, CD155, CD112, and PD-L1 in RD. In A-673, MICA/B surface expression was increased 73% by percent positive ($p = 0.21$) and 46% by MFI ($p = 0.001$) (Figure 2A–2D). ULBP1 was increased 216% by percent positive ($p = 0.15$) and 62% by MFI ($p = 0.003$). Expression of ULBP2/5/6, ULBP3, HLA, CD155, and CD112 was not significantly changed based on the percent of positive or MFI. However, expression of PD-L1 was increased 151% by percent positive cells ($p = 0.06$) and 30% by MFI ($p = 0.02$). In summary, entinostat increased surface expression of MICA/B, ULBP1, and PD-L1 in A-673. Collectively, entinostat significantly upregulated ligands for both activating and inhibitory NK receptors in both RD and A-673.

Reference: Oncotarget. 2020 May 19; 11(20): 1799–1815. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7244011/

In vivo activity

This study next investigated the antitumor efficacy of ENT and VCR as single agents and in combination in three biologically independent patient-derived tumorgraft xenograft mouse models of pleoRMS. PDX model characteristics are given in Additional file 6: Table S8. In all the cases, ENT had single-agent activity relative to control (Fig. 2e–g). Statistical summaries of three different PDX pleoRMS models are given in Additional file 6: Table S9-S11. Residual end-treatment tumors were examined histologically, and rhabdomyoblastic differentiation was scored for the CTG-800 PDX mouse model, which showed the best response to treatment. There was no difference seen between different treatment groups in terms of rhabdomyoblast differentiation (Additional file 6: Table S12). Representative histology of each treatment group is provided in Additional file 2: Figure S2.

Reference: Skelet Muscle. 2019; 9: 12. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6528217/

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.