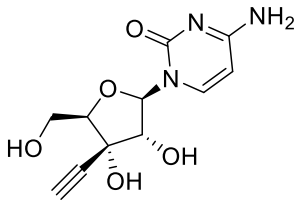
Product data sheet

MedKoo Cat#: 201330 Name: Ethynylcytidine CAS#: 180300-43-0 Chemical Formula: $C_{11}H_{13}N_3O_5$ Exact Mass: 267.08552 Molecular Weight: 267.23802	
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:

Ethynylcytidine is a synthetic cytidine nucleoside containing a covalently bound ethynyl group with potential antineoplastic and radiosensitizing activities. 3'-C-ethynylcytidine is metabolized in tumor cells to ethynylcytidine triphosphate (ECTP), which inhibits RNA synthesis by competitive inhibition of RNA polymerases I, II and III; subsequently, RNase L is activated, resulting in apoptosis. RNase L is a potent antiviral and antiproliferative endoribonuclease that cleaves singled stranded RNA, causes 28s rRNA fragmentation, and activates Janus Kinase (JAK), a mitochondrial-dependent apoptosis signaling molecule. Check for active clinical trials or closed clinical trials using this agent. (NCI Thesaurus).

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	127.5	477.10
DMF	5.0	18.71
PBS (pH 7.2)	10.0	37.42

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.74 mL	18.71 mL	37.42 mL
5 mM	0.75 mL	3.74 mL	7.48 mL
10 mM	0.37 mL	1.87 mL	3.74 mL
50 mM	0.07 mL	0.37 mL	0.75 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. Schott S, Wimberger P, Klink B, Grützmann K, Puppe J, Wauer US, Klotz DM, Schröck E, Kuhlmann JD. The conjugated antimetabolite 5-FdU-ECyd and its cellular and molecular effects on platinum-sensitive vs. -resistant ovarian cancer cells in vitro. Oncotarget. 2017 Aug 14;8(44):76935-76948. doi: 10.18632/oncotarget.20260. PMID: 29100359; PMCID: PMC5652753.
2. Fukushima H, Abe T, Sakamoto K, Tsujimoto H, Mizuarai S, Oie S. 3'-ethynylcytidine, an RNA polymerase inhibitor, combined with cisplatin exhibits a potent synergistic growth-inhibitory effect via Vaults dysfunction. BMC Cancer. 2014 Aug 4;14:562. doi: 10.1186/1471-2407-14-562. PMID: 25087851; PMCID: PMC4131025.

In vivo study

1. Fukushima H, Abe T, Sakamoto K, Tsujimoto H, Mizuarai S, Oie S. 3'-ethynylcytidine, an RNA polymerase inhibitor, combined with cisplatin exhibits a potent synergistic growth-inhibitory effect via Vaults dysfunction. BMC Cancer. 2014 Aug 4;14:562. doi: 10.1186/1471-2407-14-562. PMID: 25087851; PMCID: PMC4131025.

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7. Bioactivity

Biological target:

Ethynylcytidine (ECyD), a nucleoside analog and a potent inhibitor of RNA synthesis, inhibits RNA polymerases I, II and II.

In vitro activity

After short term incubation (48 h), FdU-Ecyd treatment of OC cells conferred a rapid dose-dependent decline of cell viability in platinum-sensitive A2780 and platinum-resistant A2780cis cells, suggesting that the effect of 5-FdU-ECyd is independent from platinum-resistance status (Figure 1A). Response to 5-FdU-ECyd was ~95-fold higher in A2780 cells (IC_{50} 5-FdU-ECyd 0.04 μM vs. IC_{50} cisplatin 3.81 μM) and ~620-fold higher in A2780cis cells (IC_{50} 5-FdU-ECyd 0.02 μM vs. IC_{50} cisplatin 12.4 μM), compared to equimolar cisplatin concentrations.

Reference: Oncotarget. 2017 Sep 29; 8(44): 76935–76948. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5652753/

In vivo activity

Then, to address whether this hypothesis is active in tumor cells not only in vitro but also in vivo, this study assessed the effect of CDDP and ECyd on the expression levels of vRNAs in nude mice xenograft tumors. Consistent with in vitro data, the co-administration of ECyd statistically decreased the expression levels of vRNAs in nude mice xenograft tumors (Figure 4C), while no induction was observed using CDDP alone.

Reference: BMC Cancer. 2014; 14: 562. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4131025/

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.