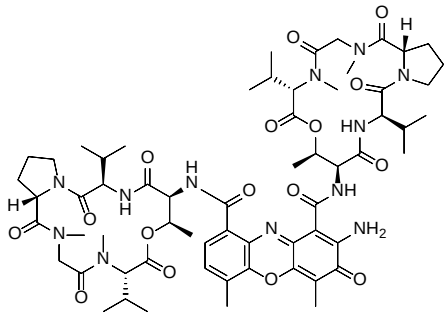
Product data sheet

MedKoo Cat#: 100220 Name: Dactinomycin CAS#: 50-76-0 Chemical Formula: $C_{62}H_{86}N_{12}O_{16}$ Exact Mass: 1254.6285 Molecular Weight: 1255.42	
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:
Dactinomycin (also known generically as Actinomycin D) is the most significant member of actinomycines, which are a class of polypeptide antibiotics isolated from soil bacteria of the genus Streptomyces. As one of the older chemotherapy drugs, it has been used for many years. Actinomycin D was the first antibiotic shown to have anti-cancer activity. It was first isolated by Selman Waksman and his co-worker H. B. Woodruff in 1940. It was approved by the US FDA on December 10, 1964 and launched by Merck Sharp and Dohme under the trade name Cosmegen.

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	90.69	72.24
DMF	20.0	15.93
DMF:PBS (pH 7.2)(1:1)	0.50	0.40

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	0.80 mL	3.98 mL	7.97 mL
5 mM	0.16 mL	0.80 mL	1.59 mL
10 mM	0.08 mL	0.40 mL	0.80 mL
50 mM	0.02 mL	0.08 mL	0.16 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. Merkel O, Wacht N, Sifft E, Melchardt T, Hamacher F, Kocher T, Denk U, Hofbauer JP, Egle A, Scheideler M, Schlederer M, Steurer M, Kenner L, Greil R. Actinomycin D induces p53-independent cell death and prolongs survival in high-risk chronic lymphocytic leukemia. Leukemia. 2012 Dec;26(12):2508-16. doi: 10.1038/leu.2012.147. Epub 2012 Jun 1. PMID: 22743622.

In vivo study

1. Liu Y, He S. [The effect of dactinomycin on retinal injury induced by argon laser in mouse]. Zhonghua Yan Ke Za Zhi. 2000 Jul;36(4):299-301. Chinese. PMID: 11853620.

7. Bioactivity
Biological target: Actinomycin D (Dactinomycin) inhibits DNA repair and rests the cell cycle at G1 phase with IC50 of 0.42 μM and 0.4 nM, respectively.

Product data sheet

In vitro activity

In an extensive screen for p53-independent apoptosis inducers, actinomycin D was identified and shown to induce apoptosis in primary chronic lymphocytic leukemia (CLL) cells derived from high-risk patients including those with aberrations in the p53 pathway, such as a deleted (del17p13) or mutated p53 gene, revealing a novel p53-independent mechanism of action. Both pro-survival genes BCL2 and MCL1 are targeted by actinomycin D.

Reference: Leukemia. 2012 Dec;26(12):2508-16. https://www.nature.com/articles/leu2012147

In vivo activity

Whether the administration of the RNA synthesis inhibitor dactinomycin can prevent retinal photoreceptor cell injury induced by green wavelength of argon laser was tested in SD mice. Intraocular administration of dactinomycin diminished the degeneration induced by argon laser, there were marked differences between the experimental group and the control group, dactinomycin showed to be more effective if administered immediately after exposure and 8 h later, after this time the higher concentration of the drug could not result in higher effect. These data suggest that dactinomycin can inhibit the occurrence of the laser injury, but the time selected for the administration is critical for its efficacy.

Reference: Zhonghua Yan Ke Za Zhi. 2000 Jul;36(4):299-301. https://pubmed.ncbi.nlm.nih.gov/11853620/

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.