

PRODUCT INFORMATION



Actinomycin D

Item No. 11421

CAS Registry No.: 50-76-0

Formal Name: 2-amino-N,N'-bis(hexadecahydro-6,13-diisopropyl-2,5,9-trimethyl-1,4,7,11,14-penta-oxo-1H-pyrrolo[2,1-i][1,4,7,10,13]oxatetraazacyclohexadecin-10-yl)-4,6-dimethyl-3-oxo-3H-phenoxazine-1,9-dicarboxamide

Synonyms: Cosmegen, Dactinomycin, Meractinomycin, NCI C04682, NSC 3053, Oncostatin K

MF: $C_{62}H_{86}N_{12}O_{16}$

FW: 1,255.5

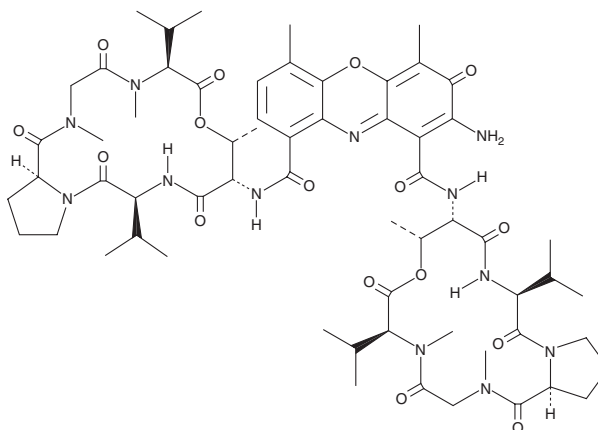
Purity: $\geq 95\%$

UV/Vis.: λ_{max} : 204, 240, 444 nm

Supplied as: A crystalline solid

Storage: $-20^{\circ}C$

Stability: ≥ 4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Actinomycin D is supplied as a crystalline solid. A stock solution may be made by dissolving the actinomycin D in the solvent of choice, which should be purged with an inert gas. Actinomycin D is soluble in organic solvents such as DMSO and dimethyl formamide (DMF). The solubility of actinomycin D in these solvents is approximately 10 and 20 mg/ml, respectively.

Actinomycin D is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, actinomycin D should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Actinomycin D has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Actinomycin D is a cyclic polypeptide-containing antibiotic that binds to DNA and blocks transcription. It binds to pre-melted double-stranded DNA in transcription bubbles and once bound is slow to dissociate.^{1,2} DNA in transcriptionally hyperactive cancer cells efficiently and rapidly bind actinomycin D at low concentrations (~10 nM), which interferes with RNA synthesis and ultimately leads to cell death.^{1,3} Actinomycin D is widely used as an anticancer agent for treating a variety of tumors and along with its fluorescent derivative, 7-aminoactinomycin D (Item No. 11397) has become a useful tool in biochemistry and molecular biology research as a marker for DNA.

References

1. Paramanathan, T., Vladescu, I., McCauley, M.J., *et al.* Force spectroscopy reveals the DNA structural dynamics that govern the slow binding of Actinomycin D. *Nucleic Acids Res.* **40(11)**, 4925-4932 (2012).
2. Sobell, H.M. Actinomycin and DNA transcription. *Proc. Natl. Acad. Sci. USA* **82**, 5328-5331 (1985).
3. Choong, M.L., Yang, H., Lee, M.A., *et al.* Specific activation of the p53 pathway by low dose actinomycin D: A new route to p53 based cyclotherapy. *Cell Cycle* **8(17)**, 2810-2818 (2009).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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