

#15021 Store at -20°C

# Actinomycin D

5 mg

**Cell Signaling**  
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## Background

Actinomycin D is an effective anti-tumor agent and the most widely studied member of the actinomycin group of antibiotics (1). The compound, isolated from soil bacteria of the *Streptomyces* genus, is comprised of two cyclic pentapeptides bound by a phenoxazone group (2,3). Actinomycin D inhibits mRNA transcription in mammalian cells. Actinomycin D intercalates DNA and stabilizes topoisomerase I-DNA covalent complexes, blocking RNA chain elongation by RNA polymerase and consequently inhibiting protein synthesis (1,4,5). This mechanism of action induces p53-mediated cell cycle arrest in numerous cancer cell lines (6,7) and at high concentrations can induce apoptosis (8). Additional research studies show that Akt mediates actinomycin D-induced p53 expression (9).

## Molecular Formula

C<sub>62</sub>H<sub>86</sub>N<sub>12</sub>O<sub>16</sub>

## Molecular Weight

1255.4 g/mol

## Purity

&gt;98%

## CAS

50-76-0

## Solubility

Soluble in DMSO at 50mg/ml.

## Storage

Store lyophilized or in solution at -20°C, desiccated. Protect from light. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 1 week to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

## Directions for Use:

Actinomycin D is supplied as a lyophilized powder. For a 10 mM stock, reconstitute the 5 mg in 398.28 µl DMSO. Working concentrations and length of treatment can vary depending on the desired effect, but it is typically used at 10-1,000 nM for 6-48 hr.

## Background References

1. Koba, M. and Konopa, J. (2005) *Postepy Hig Med Dosw (Online)* 59, 290-8.
2. Bensaude, O. (2011) *Transcription* 2, 103-108.
3. Lo, Y.S. et al. (2013) *Nucleic Acids Res* 41, 4284-94.
4. Sobell, H.M. (1985) *Proc Natl Acad Sci U S A* 82, 5328-31.
5. Trask, D.K. and Muller, M.T. (1988) *Proc Natl Acad Sci U S A* 85, 1417-21.
6. Chang, D. et al. (1999) *Cell Growth Differ* 10, 155-62.
7. Khan, Q.A. and Dipple, A. (2000) *Carcinogenesis* 21, 1611-8.
8. Fraschini, A. et al. (2005) *Histol Histopathol* 20, 107-17.
9. Chen, C.S. et al. (2014) *Oncotarget* 5, 693-703.

## Cross-Reactivity Key

**H:** human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster  
**X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse  
**GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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