Specification

## Actinomycin D *BioChemica* A1489

| | |
|---|---|
| **Physical Description:** | Solid |
| **Product Code:** | A1489 |
| **Product Name:** | Actinomycin D *BioChemica* |
| **Specifications:** | Assay (HPLC): min. 92 %<br>Loss on drying: max. 5.0 % |
| **Hazard pictograms** |  |
| **UN:** | 2811 |
| **Class/PG:** | 6.1/I |
| **ADR:** | 6.1/I |
| **IMDG:** | 6.1/I |
| **IATA:** | 6.1/I |
| **WGK:** | 3 |
| **Storage:** | RT<br>protected from light |
| **Signal Word:** | Danger |
| **GHS Symbols:** | GHS06 |
| **H Phrases:** | H300 |
| **P Phrases:** | P264<br>P301+P310 |
| **Molecular Formula:** | $C_{62}H_{86}N_{12}O_{16}$ |
| | |

**AppliChem GmbH**
Ottoweg 4 • D-64291 Darmstadt • Phone +49 6151 9357 0 • Fax +49 6151 9357 11 • **info.de@itwreagents.com** • **www.itwreagents.com**
CEO Joan Roget • Commerzbank Darmstadt • Bank 508 800 50 • Account 0186989900 IBAN DE24 5088 0050 0186 9899 00 • Swiftcode DRESDEFF508 • Finanzamt Darmstadt 07 228 16476 • Register court Darmstadt HRB Nr. 7340

Specification

## Actinomycin D *BioChemica* A1489

| | |
|---|---|
| **M:** | 1255.45 g/mol |
| **CAS:** | 50-76-0 |
| **EINECS:** | 200-063-6 |
| **CS:** | 29419000 |

### Comment

Actinomycin D intercalates into DNA and thereby inhibits the transcription. It binds preferentially to guanine and blocks the RNA polymerase during the elongation step. A high dose (2 µg/ml ≡ 1.59 µM) inhibits the transcription of all RNA species, lower concentrations (40 ng/ml ≡ 32 nM) inhibit the synthesis of rRNA. At very high concentrations (30 µM) the activity of the HIV-1 reverse transcriptase, Klenow fragment or Vent polymerase are inhibited (6). In case of single-stranded DNA, Actinomycin D binds to guanine nucleotides and the GpC motive, respectively (4.6). A concentration of 5 µg/ml (3.97 µM) is sufficient to induce the apoptosis in a human leukemia cell line (3). The activity of actinomycin D is not restricted to the binding to double- or single-stranded DNA. A competitive inhibition of the bacterial serine protease subtilisin DY, proteinase K and thermitase has been shown (5).**Solubility, Stability**: There are different information available: Actinomycin D is soluble in methanol. Alternatively, propylene glycol may be used. According to "Maniatis", solutions in deionized water may be prepared as well. Store solutions of actinomycin D **protecetd from light**. Usually, freezing or refrigeration at 2-8°C of the stock solution (100 mM) is recommended. The U.S. Pharmacopoeia indicates a stability of a refrigerated solution in methanol with up to 90 days. Other sources mention a stablilty of 30 days if kept frozen.

### Bibliography

(1)Meienhofer, J. & Atherton, E. (1977) *Adv. Appl. Microbiol.* **16**, 201-299Review article\: Actinomycin. (2)Hashimoto, Y. *et al.* (1986) *Methods Enzymol.* **121**, 817-828Coating of liposomes with subunits of monoclonal IgM antibody and targeting of the liposomes. (3)Martin, S.J. *et al.* (1990) *J. Immunol.* **145**, 1859-1867Induction of apoptosis (programmed cell death) in human leukemic HL-60 cells by inhibition of RNA or protein synthesis. (4)Wadkins, R.M. & Jovin, T.M. (1991) *Biochemistry* **30,** 9469-9478Actinomycin D and 7-Aminoactinomycin D binding to single stranded DNA. (5)Betzel, C. *et al.* (1993) *Biochim. Biophys. Acta* **1161**, 47-51Actinomycin as proteinase inhibitors. (6)Rill, R.L. & Hecker, K.H. (1996) *Biochemistry* **35**, 3525-3533Sequence specific Actinomycin D binding to single-stranded DNA inhibits HIV reverse transcriptase and other polymerases.

**AppliChem GmbH**
Ottoweg 4 • D-64291 Darmstadt • Phone +49 6151 9357 0 • Fax +49 6151 9357 11 • **info.de@itwreagents.com** • **www.itwreagents.com**
CEO Joan Roget • Commerzbank Darmstadt • Bank 508 800 50 • Account 0186989900 IBAN DE24 5088 0050 0186 9899 00 • Swiftcode DRESDEFF508 • Finanzamt Darmstadt 07 228 16476 • Register court Darmstadt HRB Nr. 7340