3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

5,6-Dichlorobenzimidazole 1-β-D-ribofuranoside

Catalog Number **D1916**
Storage Temperature –20 °C

CAS RN 53-85-0
Synonyms: DRB, 5,6-Dichlorobenzimidazole riboside, 5,6-dichloro-1-β-D-ribofuranosylbenzimidazole

Product Description

Molecular formula: $C_{12}H_{12}Cl_2N_2O_4$
Molecular weight: 319.14
Absorbance characteristics:[1]
E^{mM} (260 nm) = 5.65 (methanol)
E^{mM} (287 nm) = 4.60 (methanol)
E^{mM} (296 nm) = 4.73 (methanol)

5,6-Dichlorobenzimidazole 1-β-D-ribofuranoside (DRB) is an adenosine analog, which has been used to inhibit mRNA synthesis. It has been proposed that DRB blocks the synthesis of heterogeneous nuclear RNA and Ad-2 RNA by accentuation of premature termination at attenuation regions on the DNA.[2] The mechanism of inhibition of specific RNA polymerase II transcription was shown to involve casein kinase II; the dibromo analog was shown to be more potent than the dichloro compound.[3]

Human lymphocytes in culture were treated with DRB (40 μM) because it is a reversible inhibitor of RNA transcription.[4] When tested with HeLa cell extract, it was used at concentrations up to 60 μM.[3]

In a study of rat neurons, the death of nerve growth factor-deprived neurons was entirely prevented by inhibiting protein or RNA synthesis. DRB (50 μM) was one of several inhibitors (including cycloheximide, puromycin, anisomycin, and actinomycin D), shown to be effective.[5] Similar research with neurons from chick embryos tested dosages of cycloheximide and actinomycin D to inhibit protein synthesis.[6]

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

DRB is soluble in DMSO at least to 75 mM without heating. DRB is also somewhat soluble in methanol and in pyridine.

Since DRB can be crystallized from hot alcohol, it appears to be stable to heating to 80 °C. Solutions in ethanol or DMSO should be stored at –20 °C for best stability, but should be stable for short times at 2–8 °C.

Storage/Stability

The product should be stored dry at –20 °C.

References

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3. Zandomeni, R. et al., J. Biol. Chem., **261**, 3414-3419 (1986).
4. Efrat, S., and Kaempfer, R., Control of biologically active interleukin 2 messenger RNA formation in induced human lymphocytes. Proc. Natl. Acad. Sci. USA, **81**, 2601-2605 (1984).
5. Martin, D.P. et al., Inhibitors of Protein Synthesis and RNA Synthesis Prevent Neuronal Death Caused by Nerve Growth Factor Deprivation. J. Cell Biology, **106**, 829 (1988).
6. Scott, S.A., and Davies, A.M., J. Neurobiology, **21**, 630 (1991).

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