Product Data Sheet

Product Name: DRB
Cat. No.: GC17015

Chemical Properties

Cas. No.	53-85-0		
Chemical Name	5,6-dichloro-1-β-D-ribofuranosyl-1H-benzimidazole		
SMILES	O[C@@H]1[C@H](O)[C@@H](CO)O[C@H]1N2C=NC3=C2C=C(Cl)C(Cl)=C3		
Formula	$C_{12}H_{12}Cl_2N_2O_4$	M.Wt	319.1
Solubility	≥ 12.6mg/mL in DMSO	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	DRB		

Background

5, 6-dichloro-1-β-D-ribofuranosylbenzimidazole (DRB) is a transcriptional elongation inhibitor.

Cyclin-dependent kinases (CDKs) belong to a family of protein kinases involved in regulating the cell cycle, transcription, mRNA processing, and the differentiation of nerve cells.[1] They are expressed in all known eukaryotes. With cyclin, CDK shows kinase activity. CDKs are serine-threonine kinases [1].

DRB inhibited the activity of several carboxyl-terminal domain (CTD) kinases including casein kinase II, Cdk7, Cdk8, and Cdk9 with the IC50 of 4-10 μM, ~20 μM, ~20 μM, and 3 μM) [2-5]. In HeLa cells, DRB (75 μM) inhibited 60-75% of nuclear heterogeneous RNA (hnRNA) synthesis. DRB (75 μM) reduced the appearance of labeled cytoplasmic poly(A)-containing messenger RNA (mRNA) by approximately 95%. DRB inhibited the initiation of hnRNA chains, but did not directly interfere with labeling of poly(A) [6]. DRB inhibited influenza virus multiplication in the chorioallantoic membrane in vitro [7]. DRB inhibited

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a HeLa protein kinase whihc phosphorylated an RNA polymerase II-derived peptide [8]. DRB can also inhibit HIV transcription (IC50 = ~4 μM) by targeting elongation enhanced by the HIV-encoded transactivator Tat.

References:

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[2]. Yankulov, K.,Yamashita, K.,Roy, R., et al. The transcriptional elongation inhibitor 5,6-dichloro-1-β-D-ribofuranosylbenzimidazole inhibits transcription factor IIH-associated protein kinase. The Journal of Biological Chemisty 270(41), 23922-23925 (1995).
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[6] Tamm I, Tyrrell D A J. Influenza virus multiplication in the chorioallantoic membrane in vitro: kinetic aspects of inhibition by 5, 6-dichloro-1-β-D-ribofuranosylbenzimidazole[J]. The Journal of experimental medicine, 1954, 100(6): 541.
[7] Stevens A, Maupin M K. 5, 6-Dichloro-1-β-d-ribofuranosylbenzimidazole inhibits a HeLa protein kinase that phosphorylates an RNA polymerase II-derived peptide[J]. Biochemical and biophysical research communications, 1989, 159(2): 508-515.

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