Small Molecules

5-Azacytidine

Epigenetic modifier; Inhibits DNA methyltransferase (DNMT)

Catalog #	72012	50 mg
	72014	250 mg

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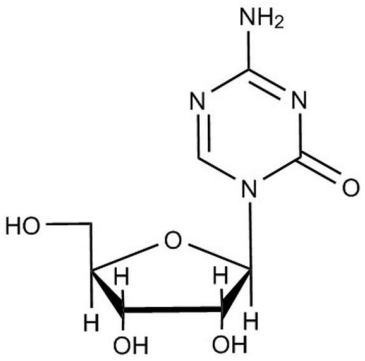
Product Description

5-Azacytidine is an analog of the nucleoside cytidine which can be incorporated into DNA and RNA. 5-Azacytidine acts as an epigenetic modifier by incorporating into DNA where it covalently binds to DNA methyltransferases, sequestering these enzymes and inhibiting their activity. At high concentrations, 5-Azacytidine is extremely cytotoxic (Brueckner et al.; Christman).

Molecular Name:	5-Azacytidine
Alternative Names:	5-AzaC; Antibiotic U 18496; Ladakamycin; Mylosar; NSC 103-627; NSC 102816; U 18496; WR 183027; Zcyd
CAS Number:	320-67-2
Chemical Formula:	$C_8H_{12}N_4O_5$
Molecular Weight:	244.2 g/mol
Purity:	≥ 95%
Chemical Name:	4-amino-1-β-D-ribofuranosyl-1,3,5-triazin-2(1H)-one
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	· PBS (pH 7.2) ≤ 40 mM · DMSO ≤ 120 mM · Absolute ethanol ≤ 120 mM For example, to prepare a 10 mM stock solution in PBS, resuspend 50 mg in 20.5 mL of PBS (pH 7.2).

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

REPROGRAMMING
· Increases reprogramming efficiency of mouse fibroblasts to induced pluripotent stem (iPS) cells by inducing full reprogramming of partially reprogrammed cells (Mikkelsen et al.).
· Resets epigenetic memory in mouse iPS cells, in combination with Trichostatin A (Kim et al.).
DIFFERENTIATION
· Enhances differentiation to cardiomyocytes from human embryonic stem cells (Yoon et al.).
CANCER RESEARCH
· Wide range of anti-metabolic activities when tested against cultured cancer cells and an effective chemotherapeutic agent for acute myelogenous leukemia (Oronsky et al.).

References

Brueckner B et al. (2005) Epigenetic reactivation of tumor suppressor genes by a novel small-molecule inhibitor of human DNA methyltransferases. Cancer Res 65(14): 6305–11.
Christman JK. (2002) 5-Azacytidine and 5-aza-2'-deoxycytidine as inhibitors of DNA methylation: mechanistic studies and their implications for cancer therapy. Oncogene 21(35): 5483–95.
Kim K et al. (2010) Epigenetic memory in induced pluripotent stem cells. Nature 467(7313): 285–90.
Mikkelsen TS et al. (2008) Dissecting direct reprogramming through integrative genomic analysis. Nature 454(7200): 49–55.
Oronsky B et al. (2014) Rewriting the epigenetic code for tumor resensitization: a review. Transl Oncol. 7(5): 626–31.
Yoon BS et al. (2006) Enhanced differentiation of human embryonic stem cells into cardiomyocytes by combining hanging drop culture and 5-azacytidine treatment. Differentiation 74(4): 149–59.

Related Small Molecules

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This product is hazardous. Please refer to the Safety Data Sheet (SDS).