5-Azacytidine

DNA methyltransferase inhibitor for epigenetic and cancer research

5-Azacytidine (also known as 5-AzaC) is a cytidine analog and potent DNA methyltransferase (DNMT) inhibitor that incorporates into DNA and RNA, leading to hypomethylation of DNA and reactivation of silenced genes. It is widely used in epigenetic studies and cancer research. 5-Azacytidine exhibits IC_{50} values ranging from 0.4 to 3.2 μM across various cancer cell lines, including multiple myeloma and myelodysplastic syndromes.

Key features and applications include:

- **Epigenetic Modulator:** Inhibits DNMTs by forming covalent adducts with the enzyme, leading to DNA demethylation and gene re-expression.
- **RNA Incorporation:** Alters RNA metabolism and protein synthesis, contributing to its cytotoxic effects.
- **Synergistic Potential:** Enhances the efficacy of chemotherapeutics like doxorubicin and bortezomib in combination therapies.

Research Applications:

- Epigenetic reprogramming and gene expression studies
- Cancer biology and tumor suppressor gene reactivation
- Stem cell differentiation and reprogramming
- Drug resistance and combination therapy models

Relevant disease states include:

- **Myelodysplastic Syndromes (MDS):** Clinically approved for treatment, where it reduces DNA hypermethylation and restores normal hematopoiesis.
- **Acute Myeloid Leukemia (AML):** Used in low-intensity regimens for elderly or unfit patients.
- **Multiple Myeloma:** Demonstrates cytotoxicity and DNA damage response activation in resistant myeloma cells.

- **Solid Tumors and Colorectal Cancer:** Investigated for its ability to demethylate and reactivate tumor suppressor genes silenced by epigenetic mechanisms.

Ordering Information

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ENZ-CHM370-0250	250mg

Manuals, SDS & CofA

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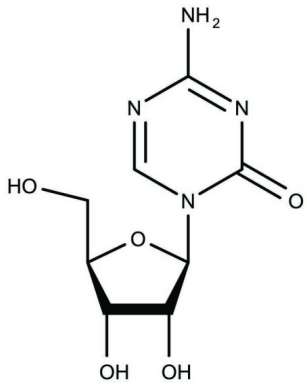	

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Handling & Storage

Use/Stability	As indicated on product label or CoA when stored as recommended.
Short Term Storage	-20°C
Long Term Storage	-20°C
Shipping	Ambient Temperature

Regulatory Status

RUO - Research Use Only

Product Details

Alternative Name	Azacitidine, 5-AzaC, Ladakamycin, 4-amino-1-[(2R,3R,4S,5R)-3,4-dihydroxy-5-(hydroxymethyl)oxolan-2-yl]-1,3,5-triazin-2-one
Appearance	White solid.
CAS	320-67-2
Couple Target	DNA methyltransferase, Dnmt
Formula	$C_8H_{12}N_4O_5$
Identity	Determined by NMR.
MW	244.21
Purity	≥98% (TLC)
Solubility	Soluble in DMSO (up to 25 mg/mL), or in water (up to 12 mg/mL).

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