Small Molecules

O6-Benzylguanine

Epigenetic modifier; Inactivates methylguanine DNA methyltransferase (MGMT)

Catalog # 73762

50 mg

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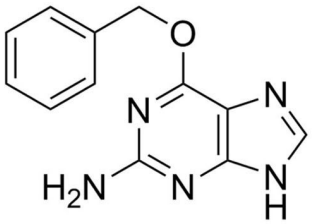
Product Description

O6-Benzylguanine is an efficient irreversible inactivator of the DNA repair protein O6-alkylguanine-DNA alkyltransferase (AGT, also known as methylguanine DNA methyltransferase, or MGMT). AGT directly removes alkyl groups located on the O6 position of guanine from DNA, thereby restoring DNA integrity. O6-Benzylguanine is an antineoplastic agent that can be used to investigate the role of AGT in carcinogenesis and mutagenesis (Dolan et al.; Pegg 2011).

Molecular Name:	O6-Benzylguanine
Alternative Names:	NSC 637037
CAS Number:	19916-73-5
Chemical Formula:	$C_{12}H_{11}N_5O$
Molecular Weight:	241.2 g/mol
Purity:	≥ 98%
Chemical Name:	O(6)-Benzylguanine
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 120 mM · Absolute ethanol ≤ 20 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 4.15 mL of DMSO. 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. Compound has low solubility in aqueous media. 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

CANCER RESEARCH
· Enhances the activity of alkylating agents (nitrosourea, temozolomide, and cyclophosphamide) in malignant glioma xenografts growing in athymic nude mice (Pegg 1990).
· Sensitizes CD34+ hematopoietic progenitor cells and a breast cancer cell line to bis-chloroethylnitrosourea (BCNU; Gerson et al.).

References

Dolan ME et al. (1990) Depletion of mammalian O6-alkylguanine-DNA alkyltransferase activity by O6-benzylguanine provides a means to evaluate the role of this protein in protection against carcinogenic and therapeutic alkylating agents. Proc Natl Acad Sci USA 87(14): 5368–72.
Gerson SL et al. (1996) Human CD34+ hematopoietic progenitors have low, cytokine-unresponsive O6-alkylguanine-DNA alkyltransferase and are sensitive to O6-benzylguanine plus BCNU. Blood 88(5): 1649–55.
Pegg AE. (1990) Mammalian O6-alkylguanine-DNA alkyltransferase: regulation and importance in response to alkylating carcinogenic and therapeutic agents. Cancer Res 50(19): 6119–29.
Pegg AE. (2011) Multifaceted roles of alkyltransferase and related proteins in DNA repair, DNA damage, resistance to chemotherapy, and research tools. Chem Res Toxicol 24(5): 618–39.

Related Small Molecules

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