Small Molecules

Busulfan

Alkylating antineoplastic agent

Catalog #100-1125

100 g

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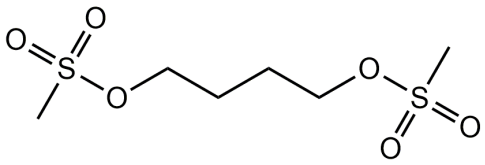
Product Description

Busulfan is a chemotherapeutic agent and an alkyl sulfonate that acts as an alkylating agent against DNA (Iwamoto et al.). Busulfan forms interstrand crosslinks between the DNA bases guanine and adenine and between guanine and guanine (Ponti et al.). DNA breakage induced by busulfan-mediated DNA crosslinking induces senescence in cells (Chen et al.).

Alternative Names:	Busulphan; Mielosan; Milecitan; Myeloleukon; Mylecytan; Myleran; NCI C01592; NSC 750
CAS Number:	55-98-1
Chemical Formula:	$C_6H_{14}O_6S_2$
Molecular Weight:	246.3 g/mol
Purity:	≥ 98%
Chemical Name:	1,4-dimethanesulfonate 1,4-butanediol
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. As a precaution, STEMCELL recommends storing all small molecules away from direct light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	• DMSO ≤ 65 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 4.06 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
· Induces senescence through bypassing the p53-p21 (Cip1/Waf1) pathway in murine bone marrow hematopoietic cells (Meng et al.).
· Induces senescence of WI38 fibroblasts in vitro through ERK-P38 pathways (Probin et al.).
· Inhibits the growth and viability of osteosarcoma cells (U2OS and MG63) in vitro and in orthotopic implants in mice (Mei et al.).

References

Chen X et al. (2018) Progress on the study of the mechanism of busulfan cytotoxicity. Cytotechnology 70(2): 497–502.

Iwamoto T et al. (2004) DNA intrastrand cross-link at the 5'-GA-3' sequence formed by busulfan and its role in the cytotoxic effect. Cancer Sci 95(5): 454–8.

Mei Q et al. (2014) Busulfan inhibits growth of human osteosarcoma through miR-200 family microRNAs in vitro and in vivo. Cancer Sci 105(7): 755–62.

Meng A et al. (2003) Ionizing radiation and busulfan induce premature senescence in murine bone marrow hematopoietic cells. Cancer Res 63(17): 5414–9.

Ponti M et al. (1991) DNA interstrand crosslinking and sequence selectivity of dimethanesulphonates. Br J Cancer 63(5): 743–7.

Probin V et al. (2006) Busulfan selectively induces cellular senescence but not apoptosis in WI38 fibroblasts via a p53-independent but extracellular signal-regulated kinase-p38 mitogen-activated protein kinase-dependent mechanism. J Pharmacol Exp Ther 319(2): 551–60.

Related Small Molecules

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