Small Molecules

Dasatinib

Tyrosine kinase inhibitor; Inhibits ABL, SRC, LCK, and YES

Catalog # 73082	10 mg
73084	100 mg

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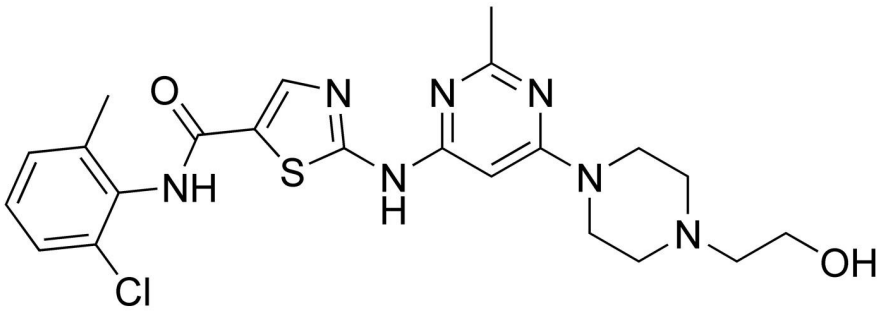
Product Description

Dasatinib is a potent, ATP-competitive tyrosine kinase inhibitor. It is specific for SRC/ABL kinases, for example, ABL, SRC, LCK, and YES with IC_{50} values of < 1.0, 0.5, 0.4, and 0.5 nM, respectively, and also demonstrates activity against c-KIT with an IC_{50} = 5.0 nM (Lombardo et al.; Davis et al.). Dasatinib is a second-generation inhibitor of the oncogenic tyrosine kinase BCR-ABL with 325-fold more potency than Imatinib (Catalog #72532), and is also able to inhibit imatinib-resistant BCR-ABL mutants (Tokarski et al.). It also inhibits a large number of other kinases (76 of 148 kinases tested) when screened at 10 µM (Carter et al.).

Molecular Name:	Dasatinib
Alternative Names:	BMS 354825; Sprycel
CAS Number:	302962-49-8
Chemical Formula:	$C_{22}H_{26}ClN_7O_2S$
Molecular Weight:	488.0 g/mol
Purity:	≥ 98%
Chemical Name:	N-(2-chloro-6-methylphenyl)-2-[[6-[4-(2-hydroxyethyl)-1-piperazinyl]-2-methyl-4-pyrimidinyl]amino]-5-thiazolecarboxamide
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:	· DMSO ≤ 405 mM

For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 2.05 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
· Inhibits proliferation in cell lines derived from chronic myeloid leukemia (CML), prostate, breast, and colon tumors (Lombardo et al.).
· Inhibits proliferation of cells with imatinib-resistant BCR-ABL mutations (Shah et al.).
· Inhibits tumor growth and development of lymph node metastases in orthotopic nude mouse models of prostate cancer (Park et al.).
· Induces cell-cycle arrest and apoptosis and decreases growth in thyroid cancer cells (Chan et al.).
· Inhibits production of extracellular matrix proteins in dermal fibroblasts and prevents development of bleomycin-challenge-induced fibrosis in mice (Distler & Distler; Akhmetshina et al.).

References

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Carter TA et al. (2005) Inhibition of drug-resistant mutants of ABL, KIT, and EGF receptor kinases. Proc Natl Acad Sci USA 102(31): 11011–6.
Chan CM et al. (2012) Targeted inhibition of Src kinase with dasatinib blocks thyroid cancer growth and metastasis. Clin Cancer Res 18(13): 3580–91.
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Distler JHW & Distler O. (2008) Intracellular tyrosine kinases as novel targets for anti-fibrotic therapy in systemic sclerosis. Rheumatology (Oxford) 47 Suppl 5(suppl_5): v10–1.
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Park SI et al. (2008) Targeting SRC family kinases inhibits growth and lymph node metastases of prostate cancer in an orthotopic nude mouse model. Cancer Res 68(9): 3323–33.
Shah NP et al. (2004) Overriding imatinib resistance with a novel ABL kinase inhibitor. Science 305(5682): 399-401.
Tokarski JS et al. (2006) The structure of dasatinib (BMS-354825) bound to activated ABL kinase domain elucidates its inhibitory activity against imatinib-resistant ABL mutants. Cancer Res 66(11): 5790–7.

Related Small Molecules

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