Small Molecules

Dasatinib

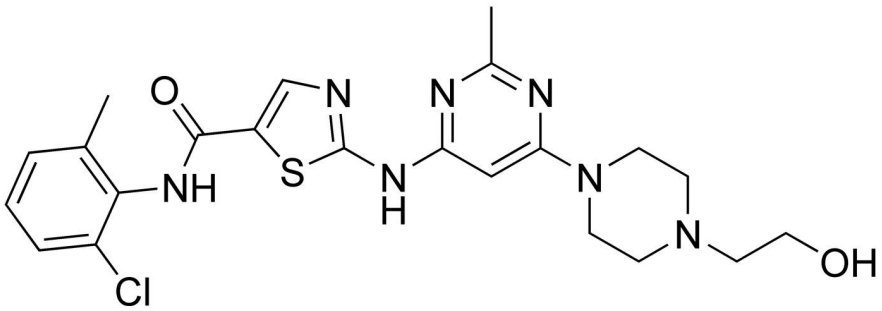
Tyrosine kinase inhibitor; Inhibits ABL, SRC, LCK, and YES

Catalog #	73082	10 mg
	73084	100 mg

STEMCELL™ TECHNOLOGIES
Scientists Helping Scientists™ | WWW.STEMCELL.COM
TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM
FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

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 ≤ 25 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

Akhmetshina A et al. (2008) Dual inhibition of c-abl and PDGF receptor signaling by dasatinib and nilotinib for the treatment of dermal fibrosis. FASEB J 22(7): 2214–22.
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.
Davis MI et al. (2011) Comprehensive analysis of kinase inhibitor selectivity. Nat Biotechnol 29(11): 1046–51.
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.
Lombardo LJ et al. (2004) Discovery of N-(2-chloro-6-methyl- phenyl)-2-(6-(4-(2-hydroxyethyl)- piperazin-1-yl)-2-methylpyrimidin-4-ylamino)thiazole-5-carboxamide (BMS-354825), a dual Src/Abl kinase inhibitor with potent antitumor activity in preclinical assays. J Med Chem 47(27): 6658–61.
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

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

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