Small Molecules

SB203580 (Hydrochloride)

p38 MAPK inhibitor

Catalog #72222

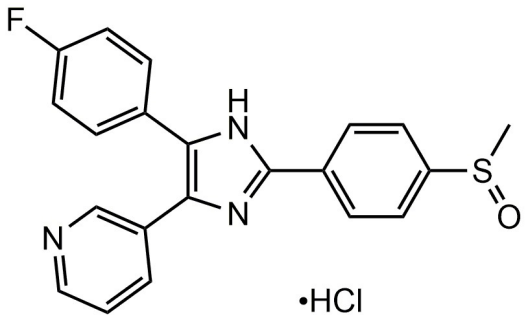
5 mg

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

SB203580 (Hydrochloride) is a potent inhibitor of p38 mitogen-activated protein kinase (MAPK) activity (IC_{50} = 0.6 µM). It inhibits both the α and β isoforms of p38 MAPK and does not inhibit ERK or JNK (Bain et al.; Cuenda et al.). This product is supplied as a hydrochloride salt of the molecule, which has greater solubility than the free base form.

Molecular Name:	SB203580 (Hydrochloride)
Alternative Names:	PB 203580; RWJ 64809
CAS Number:	869185-85-3
Chemical Formula:	$C_{21}H_{16}FN_3OS \cdot HCl$
Molecular Weight:	413.9 g/mol
Purity:	≥ 98%
Chemical Name:	4- [4- (4- fluorophenyl)- 2- [4- (methylsulfinyl)phenyl]- 1H- imidazol- 5- yl]- pyridine, monohydrochloride
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 ≤ 70 mM • Absolute ethanol ≤ 70 mM

For example, to prepare a 10 mM stock solution in DMSO, resuspend 5 mg in 1.21 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

MAINTENANCE AND SELF-RENEWAL

· Enhances the growth and self-renewal of mouse embryonic stem (ES) cells (Qi et al.).
· Promotes long-term maintenance of human naïve pluripotent stem cells (Gafni et al.).
· Promotes proliferation of human endothelial progenitor cells (Seeger et al.).
· Promotes proliferation of neonatal and adult rat cardiomyocytes (Engel et al.).

DIFFERENTIATION

· Enhances differentiation of cardiomyocytes from human ES cells (Gaur et al.; Graichen et al.).
· Inhibits differentiation of cardiomyocytes from mouse ES cells by inhibition of early mesoderm (Davidson & Morange).

References

Bain J et al. (2007) The selectivity of protein kinase inhibitors: a further update. Biochem J 408(3): 297–315.

Cuenda A et al. (1995) SB 203580 is a specific inhibitor of a MAP kinase homologue which is stimulated by cellular stresses and interleukin-1. FEBS Lett 364(2): 229–33.

Davidson SM & Morange M. (2000) Hsp25 and the p38 MAPK pathway are involved in differentiation of cardiomyocytes. Dev Biol 218(2): 146–60.

Engel FB et al. (2005) p38 MAP kinase inhibition enables proliferation of adult mammalian cardiomyocytes. Genes Dev 19(10): 1175–87.

Gafni O et al. (2013) Derivation of novel human ground state naive pluripotent stem cells. Nature 504(7479): 282–6.

Gaur M et al. (2010) Timed inhibition of p38MAPK directs accelerated differentiation of human embryonic stem cells into cardiomyocytes. Cytotherapy 12(6): 807–17.

Graichen R et al. (2008) Enhanced cardiomyogenesis of human embryonic stem cells by a small molecular inhibitor of p38 MAPK. Differentiation 76(4): 357–70.

Qi X et al. (2004) BMP4 supports self-renewal of embryonic stem cells by inhibiting mitogen-activated protein kinase pathways. Proc Natl Acad Sci USA 101(16): 6027–32.

Seeger FH et al. (2005) p38 mitogen-activated protein kinase downregulates endothelial progenitor cells. Circulation 111(9): 1184–91.

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).