Small Molecules

PP1

SRC family kinase inhibitor; Inhibits LCK, FYN, HCK, SRC

Catalog #	73112	1 mg
	73114	10 mg

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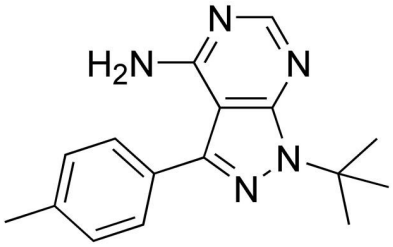
Product Description

PP1 is a reversible inhibitor of the SRC family of tyrosine kinases. It inhibits LCK, FYN, HCK and SRC with IC_{50} values of 5, 6, 20, and 170 nM, respectively (Hanke et al.). It is relatively selective for SRC family kinases versus other kinases, inhibiting epidermal growth factor receptor (EGFR), janus-activated kinase 2 (JAK2) and zeta-chain-associated protein kinase 70 (ZAP70) with IC_{50} values of 0.25, > 50, and > 100 µM, respectively, and c-KIT, platelet-derived growth factor receptor (PDGFR), and RET tyrosine kinase in the 75 - 100 nM range (Carlomagno et al.; Tatton et al.; Waltenberger et al.; Hanke et al.). PP1 also blocks TGF-β-mediated cellular responses by directly inhibiting type I TGF-β receptors (IC_{50} = 50 nM; Ungefroren et al.; Maeda et al.).

Molecular Name:	PP1
Alternative Names:	AGL 1872, EI 275
CAS Number:	172889-26-8
Chemical Formula:	$C_{16}H_{19}N_5$
Molecular Weight:	281.4 g/mol
Purity:	≥ 98%
Chemical Name:	4-Amino-5-(methylphenyl)-7-(t-butyl)pyrazolo-(3,4-d)pyrimidine
Structure:	

Properties

Physical Appearance:	A white crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com.
Solubility:	· DMSO ≤ 3 mM · Absolute ethanol ≤ 0.5 mM For example, to prepare a 1 mM stock solution in DMSO, resuspend 1 mg in 3.55 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

REPROGRAMMING
· Enables reprogramming of mouse embryonic fibroblasts to induced pluripotent stem cells in the absence of reprogramming factor SOX2 (Staerk et al.; Ma et al.).

CANCER
· Blocks TGF-β-mediated migration of primary non-small cell lung carcinoma cells and pancreatic ductal adenocarcinoma cell lines (Bartscht et al.).
· Induces apoptosis in non-small cell lung cancer cell lines (Zhang et al.).

References

Bartscht T et al. (2012) The Src family kinase inhibitors PP2 and PP1 effectively block TGF-beta1-induced cell migration and invasion in both established and primary carcinoma cells. Cancer Chemother Pharmacol 70(2): 221–30.
Carlomagno F et al. (2002) The kinase inhibitor PP1 blocks tumorigenesis induced by RET oncogenes. Cancer Res 62(4): 1077–82.
Hanke JH et al. (1996) Discovery of a novel, potent, and Src family-selective tyrosine kinase inhibitor. Study of Lck- and FynT-dependent T cell activation. J Biol Chem 271(2): 695–701.
Ma T et al. (2013) Progress in the reprogramming of somatic cells. Circ Res 112(3): 562–74.
Maeda M et al. (2006) Src activation is not necessary for transforming growth factor (TGF)-beta-mediated epithelial to mesenchymal transitions (EMT) in mammary epithelial cells. PP1 directly inhibits TGF-beta receptors I and II. J Biol Chem 281(1): 59–68.
Staerk J et al. (2011) Pan-Src family kinase inhibitors replace Sox2 during the direct reprogramming of somatic cells. Angew Chem Int Ed Engl 50(25): 5734–6.
Tatton L et al. (2003) The Src-selective kinase inhibitor PP1 also inhibits Kit and Bcr-Abl tyrosine kinases. J Biol Chem 278(7): 4847–53.
Ungefroren H et al. (2011) The Src family kinase inhibitors PP2 and PP1 block TGF-beta1-mediated cellular responses by direct and differential inhibition of type I and type II TGF-beta receptors. Curr Cancer Drug Targets 11(4): 524–35.
Waltenberger J et al. (1999) A dual inhibitor of platelet-derived growth factor beta-receptor and Src kinase activity potently interferes with motogenic and mitogenic responses to PDGF in vascular smooth muscle cells. A novel candidate for prevention of vascular remodeling. Circ Res 85(1): 12–22.
Zhang J et al. (2007) SRC-family kinases are activated in non-small cell lung cancer and promote the survival of epidermal growth factor receptor-dependent cell lines. Am J Pathol 170(1): 366–76.

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