

Small Molecules

GW2580

CSF-1 pathway inhibitor; Inhibits cFMS



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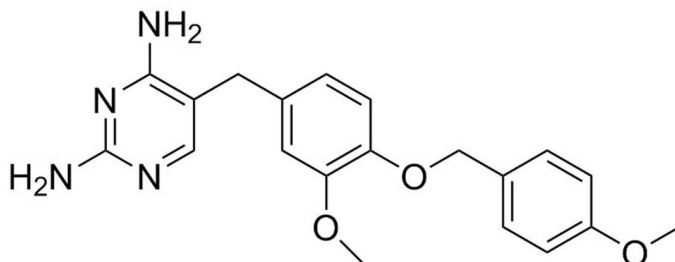
Catalog # 72472
72474

5 mg
25 mg

Product Description

GW2580 is a selective inhibitor of cFMS kinase ($IC_{50} = 0.03 \mu M$; Conway et al. 2008), blocking its ability to autophosphorylate colony-stimulating factor (CSF-1, or M-CSF), which promotes the survival, proliferation, and differentiation of macrophages.

Molecular Name: GW2580
Alternative Names: Not applicable
CAS Number: 870483-87-7
Chemical Formula: $C_{20}H_{22}N_4O_3$
Molecular Weight: 366.4 g/mol
Purity: $\geq 98\%$
Chemical Name: 5-[[[3-methoxy-4-[(4-methoxyphenyl)methoxy]phenyl]methyl]-2,4-pyrimidinediamine
Structure:



Properties

Physical Appearance: A crystalline solid
Storage: Product stable at $-20^{\circ}C$ as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com.
Solubility: $\cdot$ DMSO ≤ 25 mM
For example, to prepare a 1 mM stock solution in DMSO, resuspend 1 mg in 2.73 mL of fresh 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 $-20^{\circ}C$. 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

DIFFERENTIATION

- Demonstrates the importance of CSF-1 in promoting myeloid lineage bias in mouse hematopoietic stem cells (Mossadegh-Keller et al.).
- Demonstrates the importance of CSF-1 in expansion of mouse and human macrophage colonies and monocytes (He et al.; Clanchy et al.; Conway et al. 2008; Conway et al. 2005).
- Inhibits bone degradation in cultures of human osteoclasts, rat calvaria, and rat fetal long bone (Conway et al. 2005), and in mouse models of arthritis (Conway et al. 2008).

References

- Clanchy FIL & Hamilton JA. (2012) HUVEC co-culture and haematopoietic growth factors modulate human proliferative monocyte activity. *Cytokine* 59(1): 31–4.
- Conway JG et al. (2008) Effects of the cFMS kinase inhibitor 5-(3-methoxy-4-((4-methoxybenzyl)oxy)benzyl)pyrimidine-2,4-diamine (GW2580) in normal and arthritic rats. *J Pharmacol Exp Ther* 326(1): 41–50.
- Conway JG et al. (2005) Inhibition of colony-stimulating-factor-1 signaling in vivo with the orally bioavailable cFMS kinase inhibitor GW2580. *Proc Natl Acad Sci U S A* 102(44): 16078–83.
- He H et al. (2012) Endothelial cells provide an instructive niche for the differentiation and functional polarization of M2-like macrophages. *Blood* 120(15): 3152–62.
- Mossadegh-Keller N et al. (2013) M-CSF instructs myeloid lineage fate in single haematopoietic stem cells. *Nature* 497(7448): 239–43.

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