Small Molecules

AM580

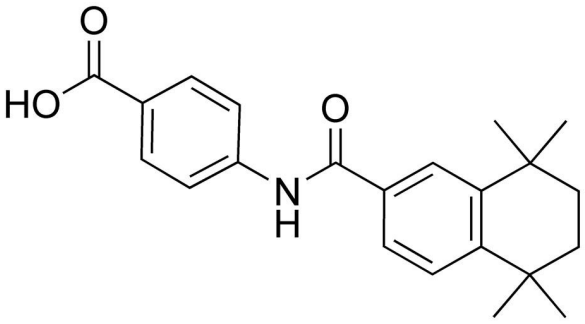
Retinoid pathway activator; RAR alpha activator

Catalog #	72962	1 mg
	72964	10 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

AM580 is a retinoic acid receptor (RAR) agonist that is selective for RARα (EC_{50} = 0.36 nM) compared to RARβ (EC_{50} = 24.6 nM) and RARγ (EC_{50} = 27.9 nM; Bernard et al.) It is a derivative of retinoic acid (RA), however it demonstrates greater specific binding to RARα compared to RA, which exhibits little selectivity across RARα, β, or γ (Gianní et al.; Bernard et al.; Kim et al; Rochette-Egly & Germain).

Molecular Name:	AM580
Alternative Names:	CD336, NSC 608001, Ro 40-6055
CAS Number:	102121-60-8
Chemical Formula:	$C_{22}H_{25}NO_3$
Molecular Weight:	351.4 g/mol
Purity:	≥ 98%
Chemical Name:	4-[[(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl)carbonyl]amino]-benzoic acid
Structure:	

Properties

Physical Appearance:	A 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 ≤ 55 mM · Absolute ethanol ≤ 25 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 285 µL 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
· Promotes reprogramming of somatic cells to induced pluripotent stem cells (Wang et al.).

DIFFERENTIATION
· Induces differentiation of human induced pluripotent stem cells into intermediate mesoderm, in combination with the GSK3β inhibitor CHIR99021 (Araoka et al.).

CANCER
· Inhibits tumor cell proliferation and survival signaling pathways, and induces apoptosis, leading to inhibition of mouse mammary tumor virus (MMTV)-neu- and MMTV-wnt1-induced mammary gland hyperplasia (Lu et al.).
· Inhibits tumor growth in MMTV-Myc mice (Bosch et al.).
· Inhibits endometrial cancer cell proliferation (Cheng et al.).
· Induces differentiation in acute promyelocytic leukemia cells (Gianní et al.).

References

Araoka T et al. (2014) Efficient and Rapid Induction of Human iPSCs/ESCs into Nephrogenic Intermediate Mesoderm Using Small Molecule-Based Differentiation Methods. PLoS One 9(1): e84881.
Bernard BA et al. (1992) Identification of synthetic retinoids with selectivity for human nuclear retinoic acid receptor γ. Biochem Biophys Res Commun 186(2): 977–983.
Bosch A et al. (2012) Reversal by RARα agonist Am580 of c-Myc-induced imbalance in RARα/RARγ expression during MMTV-Myc tumorigenesis. Breast Cancer Res 14(4): R121.
Cheng Y-H et al. (2011) Retinoic acid inhibits endometrial cancer cell growth via multiple genomic mechanisms. J Mol Endocrinol 46(2): 139–53.
Gianní M et al. (1996) AM580, a stable benzoic derivative of retinoic acid, has powerful and selective cyto-differentiating effects on acute promyelocytic leukemia cells. Blood 87(4): 1520–31.
Kim M-J et al. (2000) The Role of Specific Retinoid Receptors in Sebocyte Growth and Differentiation in Culture1. J Invest Dermatol 114(2): 349–353.
Lu Y et al. (2010) Mechanism of inhibition of MMTV-neu and MMTV-wnt1 induced mammary oncogenesis by RARalpha agonist AM580. Oncogene 29(25): 3665–76.
Rochette-Egly C & Germain P. (2009) Dynamic and combinatorial control of gene expression by nuclear retinoic acid receptors (RARs). Nucl Recept Signal 7: e005.
Wang W et al. (2011) Rapid and efficient reprogramming of somatic cells to induced pluripotent stem cells by retinoic acid receptor gamma and liver receptor homolog 1. Proc Natl Acad Sci U S A 108(45): 18283–8.

Related Small Molecules

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