

Small Molecules

9-cis Retinoic Acid

Retinoid pathway activator; Activates retinoic acid receptor (RAR) and retinoid X receptor (RXR)

Catalog # 72382
72384

5 mg
25 mg



Scientists Helping Scientists™ | WWW.STEMCELL.COM

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

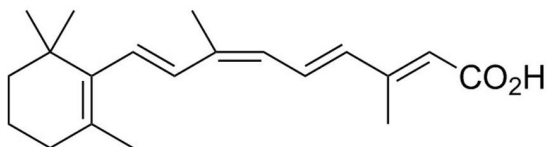
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

Product Description

9-cis-Retinoic Acid is a natural metabolite of vitamin A, derived from the intermediate all-trans retinoic acid (Kane). It potently activates all isoforms of retinoic acid receptor (RAR; $K_i = 0.5 - 27$ nM) as well as retinoid X receptor (RXR; $K_i = 3.8 - 12$ nM) isoforms (Umemiya et al.; Wong et al.). RAR heterodimerizes with RXR, while RXR can homodimerize as well as heterodimerize with numerous partners in addition to RAR, thus allowing 9-cis-Retinoic Acid to evoke a wide range of effects (Dawson et al.; Kane).

Molecular Name:	9-cis Retinoic Acid
Alternative Names:	9-cis-retinoic acid; Aliretinoin; NSC 659772; Panretin
CAS Number:	5300-03-8
Chemical Formula:	$C_{20}H_{28}O_2$
Molecular Weight:	300.4 g/mol
Purity:	≥ 95%
Chemical Name:	(2E,4E,6Z,8E)-3,7-dimethyl-9-(2,6,6-trimethylcyclohexen-1-yl)nona-2,4,6,8-tetraenoic 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:	· Absolute ethanol ≤ 1.6 mM · DMSO ≤ 65 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 333 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

DIFFERENTIATION

- Increases the number of neurons derived from rat neural stem cell cultures (Laeng et al.).
- Promotes oligodendrocyte precursor cell differentiation and myelination in cultured cells and mouse cerebellar slices (Huang et al.).
- Induces formation of pancreatic ducts, but not acini, in embryonic mouse pancreas grown in collagen gel (Kadison et al.; Kobayashi et al.).
- Enhances BMP9-induced osteogenic differentiation of mesenchymal progenitor cells, in vitro and in vivo (Zhang et al.).
- Induces myogenic differentiation of C2C12 myoblast progenitor cells (Zhu et al.).

CANCER RESEARCH

- Inhibits proliferation of Epstein-Barr virus-infected lymphoblastoid cell lines (Pomponi et al.).
- Inhibits growth of cultured human gastric cancer cells (Naka et al.).
- Inhibits spontaneous proliferation and CD40-induced growth in primary mantle cell lymphoma cells (Guidoboni et al.).

References

- Dawson MI & Xia Z. (2012) The retinoid X receptors and their ligands. *Biochim Biophys Acta* 1821(1): 21–56.
- Guidoboni M et al. (2005) Retinoic Acid Inhibits the Proliferative Response Induced by CD40 Activation and Interleukin-4 in Mantle Cell Lymphoma. *Cancer Res* 65(2): 587–595.
- Huang JK et al. (2011) Retinoid X receptor gamma signaling accelerates CNS remyelination. *Nat Neurosci* 14(1): 45–53.
- Kadison A et al. (2001) Retinoid signaling directs secondary lineage selection in pancreatic organogenesis. *J Pediatr Surg* 36(8): 1150–6.
- Kane MA. (2012) Analysis, occurrence, and function of 9-cis-retinoic acid. *Biochim Biophys Acta* 1821(1): 10–20.
- Kobayashi H et al. (2002) Retinoid signaling controls mouse pancreatic exocrine lineage selection through epithelial–mesenchymal interactions. *Gastroenterology* 123(4): 1331–1340.
- Laeng P et al. (2004) The mood stabilizer valproic acid stimulates GABA neurogenesis from rat forebrain stem cells. *J Neurochem* 91(1): 238–51.
- Naka K et al. (1997) Growth inhibition of cultured human gastric cancer cells by 9-cis-retinoic acid with induction of cdk inhibitor Waf1/Cip1/p21 protein. *Differentiation* 61(5): 313–20.
- Pomponi F et al. (1996) Retinoids irreversibly inhibit in vitro growth of Epstein-Barr virus-immortalized B lymphocytes. *Blood* 88(8): 3147–59.
- Umemiya H et al. (1997) Regulation of retinoid actions by diazepinylbenzoic acids. Retinoid synergists which activate the RXR-RAR heterodimers. *J Med Chem* 40(26): 4222–34.
- Wong MF et al. (1997) Synthesis and receptor binding affinity of conformationally restricted retinoic acid analogues. *Bioorg Med Chem Lett* 7(17): 2313–2318.
- Zhang W et al. (2010) Retinoic Acids Potentiate BMP9-Induced Osteogenic Differentiation of Mesenchymal Progenitor Cells R. Linden (Ed.). *PLoS One* 5(7): e11917.
- Zhu G-H et al. (2009) Activation of RXR and RAR signaling promotes myogenic differentiation of myoblastic C2C12 cells. *Differentiation* 78(4): 195–204.

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.

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

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2016 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design and Scientists Helping Scientists are trademarks of STEMCELL Technologies Inc. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.