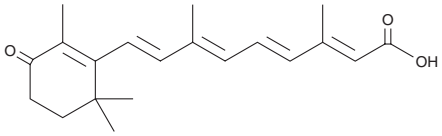
PRODUCT INFORMATION

4-oxo Retinoic Acid

Item No. 35819

CAS Registry No.:	38030-57-8
Synonyms:	all-*trans*-4-keto Retinoic Acid, all-*trans*-4-oxo RA, all-*trans*-4-oxo Retinoic Acid, 4-keto atRA, 4-oxo RA
MF:	$C_{20}H_{26}O_3$
FW:	314.4
Purity:	≥95%
UV/Vis.:	λ_{max}: 280, 360 nm
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Synthetic



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

4-oxo Retinoic acid is supplied as a solid. A stock solution may be made by dissolving the 4-oxo retinoic acid in the solvent of choice, which should be purged with an inert gas. 4-oxo Retinoic acid is slightly soluble in chloroform and methanol.

Description

4-oxo Retinoic acid is an active metabolite of the vitamin A metabolite and retinoic acid receptor (RAR) ligand all-*trans* retinoic acid (Item No. 11017).[1] It is formed from all-*trans* retinoic acid by several cytochrome P450 (CYP) isoforms, including CYP1A1, CYP3A7, and CYP26A1.[2,3] 4-oxo Retinoic acid binds to RARα, RARβ, and RARγ (IC_{50}s = 59, 50, and 142 nM, respectively, in radioligand binding assays) and induces expression of a luciferase reporter in COS-7 cells expressing RARα, RARβ, or RARγ (EC_{50}s = 33, 8, and 89 nM, respectively).[1] It increases protein levels of cytokeratin 7 (CK-7) and CK-19 in human epidermal keratinocytes when used at a concentration of 1 µM.[4] 4-oxo Retinoic acid (10-1,000 nM) inhibits the proliferation of MCF-7 breast cancer cells.[5] It is teratogenic to zebrafish embryos (EC_{50} = 8.1 nM).[6]

References

1. Idrest, N., Marill, J., Flexor, M.A., *et al.* Activation of retinoic acid receptor-dependent transcription by all-*trans*-retinoic acid metabolites and isomers. *J. Biol. Chem.* **277(25)**, 31491-31498 (2002).
2. Marill, J., Cresteil, T., Lanotte, M., *et al.* Identification of human cytochrome P450s involved in the formation of all-*trans*-retinoic acid principal metabolites. *Mol. Pharmacol.* **58(6)**, 1341-1348 (2000).
3. Thatcher, J.E., Buttrick, B., Shaffer, S.A., *et al.* Substrate specificity and ligand interactions of CYP26A1, the human liver retinoic acid hydroxylase. *Mol. Pharmacol.* **80(2)**, 228-239 (2011).
4. Baron, J.M., Heise, R., Blaner, W.S., *et al.* Retinoic acid and its 4-oxo metabolites are functionally active in human skin cells *in vitro*. *J. Invest. Dermatol.* **125(1)**, 143-153 (2005).
5. Van heusden, J., Wouters, W., Ramaekers, F.C.S., *et al.* All-*trans*-retinoic acid metabolites significantly inhibit the proliferation of MCF-7 human breast cancer cells in vitro. *Br. J. Cancer* **77(1)**, 26-32 (1998).
6. Pípal, M., Novák, J., Rafajová, A., *et al.* Teratogenicity of retinoids detected in surface waters in zebrafish embryos and its predictability by *in vitro* assays. *Aquat. Toxicol.* **246**, 106151 (2022).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM