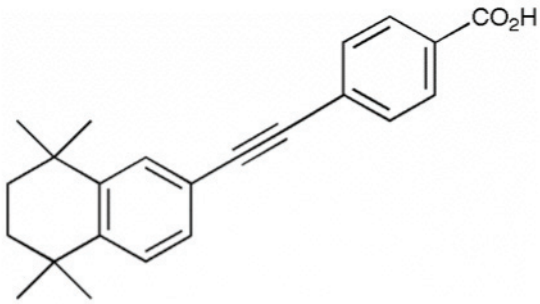
ec23

Product Information



Product Numbers	SRP001, SRP002, SRP003
Product Name	Synthetic retinoid ec23
	(4-(5,5,8,8-Tetramethyl-5,6,7,8-tetrahydronaphthalen-2-ylethynyl) benzoic acid)

Physical Description:

Appearance	White powder
Formula:	C23H24O2
Molecular Weight:	332
Purity	99% by HPLC (area)

Method of Preparation:

Retinoid ec23 is synthetically prepared.

Stability / Storage as Supplied:

Unreconstituted Synthetic Retinoid ec23 remains chemically and physically stable under normal laboratory conditions. It is not light sensitive and does not require storage in the presence of an inert gas.

Solubility / Solution Stability:

Unlike *all-trans* retinoic acid, Synthetic Retinoid ec23 is not sensitive to light, heat and air in solution. Synthetic Retinoid ec23 is insoluble in water but is readily soluble in DMSO at 10mg/ml concentrations. A convenient 10mM stock solution can be prepared by the addition of 1.5ml of anhydrous DMSO (or fresh ≥99.9% ACS grade DMSO) to one vial of ec23 (5mg, 99%HPLC). This can be then divided into suitable aliquots and stored at -20oC until further use. Low temperature storage is required to prevent the breakdown of DMSO into methylmercaptan and formaldehyde in the presence of a weak acid. Avoid the repeated freeze-thaw of aliquots.

Subsequent dilutions can be made from the stock solution into aqueous-based solutions, including cell culture growth medium. The working concentration of Synthetic Retinoid ec23 is dependent on the particular experiment or assay and the nature of the cell system used. Final concentrations varying from 10_M to 0.01_M ec23 have been shown to regulate biological activity. Accordingly, the user should optimise the concentration of ec23 for their purposes.

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Product Information

Usage / Applications:

Synthetic Retinoid ec23 has been developed for research use only. Experimental evidence shows that this compound is a potent inducer of pluripotent stem cell differentiation resulting in the down regulation of markers associated with the pluripotent stem cell phenotype and increased expression of differentiation markers. The differentiation of neural tissues is typically observed. Data show that Synthetic Retinoid ec23 induces the formation of larger numbers of neurons in a more consistent fashion compared to *all-trans* retinoic acid. Moreover, the synthetic retinoid differentially activates *Hox* gene transcription factor expression in a dose dependent manner. Like naturally occurring retinoid acid, Synthetic Retinoid ec23 also triggers digit duplication during targeted release in the chick embryo underlining its potency as a regulator of tissue development. Preliminary evidence indicates that Synthetic Retinoid ec23 modulates cell differentiation through retinoid signalling pathways including activation of retinoic binding proteins.

General Notes:

Synthetic Retinoid ec23 exerts a wide range of biological effects in a similar manner to naturally occurring retinoic acid. Research indicates that it is involved in the control of cellular differentiation and tissue formation during embryogenesis. It is a potent teratogen effecting tissue patterning and malformations when embryos at different developmental stages are exposed to it.

It is essential that the appropriate precautions, protective clothing and equipment are used at all times when preparing or handling Synthetic Retinoid ec23 in powder or soluble forms (see Material Safety Data Sheet (MSDS-EC23-02) for further information).

References:

The following published literature relates to the development of the synthetic retinoid analogues and examples of their biological application:

1. Christie V.B., Maltman D.J., Henderson A.P., Whiting, A.,Marder T.B., Majlinda Lako M., Stefan A. Przyborski S.A. (2010). Retinoid supplementation of differentiating human neural progenitors and embryonic stem cells leads to enhanced neurogenesis in vitro. Journal of Neuroscience Methods, 193, 239–245.
2. Barnard, J.H., Collings, J.C., Whiting, A., Przyborski, S.A., Marder, T.B. (2009). Synthetic retinoids: structure activity relationships. Chemistry, 15, 11430-11452.
3. Maltman, D.J., Christie, V.B., Collings, J.C., Barnard, J.H., Fenyk, S., Marder, T.B., Whiting, A., Przyborski, S.A. (2009). Proteomic profiling of the stem cell response to retinoic acid and synthetic retinoid analogues: identification of major retinoid-inducible proteins. Molecular Biosystems, 5, 458-471.
4. Christie V.B., Barnard, J.H., Bridgens, C.E., Batsanov, A.S., Cartmell, E.B., Collings, J.C., Maltman, D.J., Marder, T.B., Redfern, C.P.F., Whiting, A.P., Przyborski, S.A. (2008). Synthesis and evaluation of synthetic retinoid derivatives as inducers of stem cell differentiation. Organic and Biomolecular Chemistry, 6, 3497-3507.
5. Christie, V.B., Marder, T.B., Whiting, A., Przyborski, S.A. (2008). Role of retinoids in the adult nervous system and their therapeutic potential. Mini Reviews in Medicinal Chemistry, 8, 601-608.

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