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17 beta-Estradiol

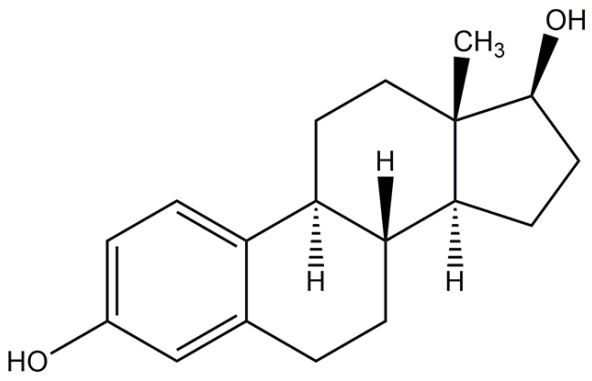
Steroid hormone

Catalog #100-1647 5 g

Product Description

17 beta-Estradiol is the most predominant circulating estrogen secreted by the premenopausal ovary. 17 beta-Estradiol is converted from testosterone primarily in the ovarian granulosa cells and in small amounts in the adrenal gland and brain (Azcoitia et al.; Tsuchiya et al.). 17 beta-Estradiol impacts physiological processes such as reproduction, bone remodeling, and the anti-inflammatory responses by binding to estrogen receptors and regulating gene expression. It has also been implicated to have a role in several diseases including cancer and neurodegenerative disorders (Deroo & Korach).

Alternative Names:	17β-Oestradiol, β-Estradiol, E2, Estradiol
CAS Number:	50-28-2
Chemical Formula:	$C_{18}H_{24}O_2$
Molecular Weight:	272.4 g/mol
Purity:	≥ 98%
Chemical Name:	estra-1,3,5(10)-triene-3,17β-diol
Structure:	



Properties

Product Format: A crystalline solid

Stability and Storage: Product stable at -20°C as supplied. As a precaution, STEMCELL recommends storing all small molecules away from direct light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.

Preparation:

- DMSO ≤ 70 mM
- Absolute ethanol ≤ 9.2 mM

For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 3.67 mL 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 or absolute ethanol concentration above 0.1% due to potential cell toxicity.

Published Applications

IMMUNOLOGY

- Induces immune cell recruitment and a pro-inflammatory response in an influenza mouse model, resulting in improved outcomes (Davis et al.).
- Promotes recruitment of M1-polarized macrophages to inflammation sites in a rat model in a dose-dependent manner (Kou et al.).

CANCER RESEARCH

- Induces epithelial-to-mesenchymal transition activation in human glioblastoma multiforme cells (Hernández-Vega et al.).
- Induces human breast cancer cell cytoskeleton remodeling and enhances migration and invasiveness (Zheng et al.).
- Regulates cell proliferation, migration, and self-renewal capacity of human breast cancer stem cells in a dose-dependent manner (Guo et al.).

References

Azcoitia I et al. (2011) Estradiol synthesis within the human brain. Neurosci 191: 139–47.
Davis SM et al. (2017) Estradiol and progesterone influence on influenza infection and immune response in a mouse model. Am J Reprod Immunol 78(4): e12695.
Deroo BJ & Korach KS. (2006) Estrogen receptors and human disease. J Clin Invest 116(3): 561–70.
Guo L et al. (2018) 17β-estradiol regulates the malignancy of cancer stem-like cells derived from the MCF7 cell line partially through Sox2. Oncol Lett 15(3): 3790–5.
Hernández-Vega AM et al. (2020) Estradiol induces epithelial to mesenchymal transition of human glioblastoma cells. Cells 9(9): 1930.
Kou XX et al. (2015) Estradiol promotes M1-like macrophage activation through cadherin-11 to aggravate temporomandibular joint inflammation in rats. J Immunol 194(6): 2810–8.
Tsuchiya Y et al. (2005) Cytochrome P450-mediated metabolism of estrogens and its regulation in human. Cancer Lett 227(2): 115–24.
Zheng S et al. (2011) 17β-Estradiol enhances breast cancer cell motility and invasion via extra-nuclear activation of actin-binding protein ezrin. PLoS One 6(7): e22439.

Related Products

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

Warning

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