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Progesterone

Steroid hormone

Catalog #100-1648 5 g

Product Description

Progesterone is a 21-carbon steroid hormone that is synthesized primarily in the ovaries and placenta during pregnancy, with lower levels from other tissues such as the adrenal cortex and testes (Sundström-Poromaa et al.). By binding to progesterone receptors (PR) A and B, progesterone impacts gene regulation and signaling pathway activation in its target cells. Progesterone is critical in regulation of the menstrual cycle and the physiology of other organs such as bone, mammary gland, and nervous system (Kolatorova et al.).

Alternative Names: Cyclogest, NSC 9704, NSC 64377

CAS Number: 57-83-0

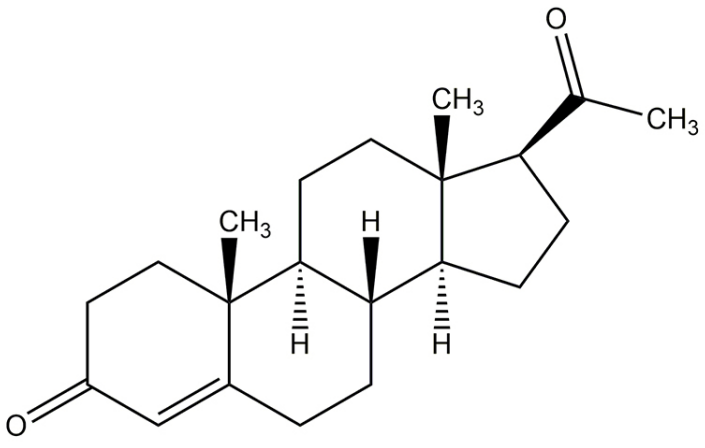
Chemical Formula: $C_{21}H_{30}O_2$

Molecular Weight: 314.5 g/mol

Purity: ≥ 98%

Chemical Name: Pregn-4-ene-3,20-dione

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:

• Absolute ethanol ≤ 3.2 mM
For example, to prepare a 1 mM stock solution in absolute ethanol, resuspend 1 mg in 3.18 mL of absolute ethanol.

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 ethanol 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 absolute ethanol concentration above 0.1% due to potential cell toxicity.

Published Applications

MAINTENANCE AND SELF-RENEWAL
• Induces expansion of mouse mammary stem cells (Asselin-Labat et al.; Joshi et al.).
DIFFERENTIATION
• Induces expression of Elf5 transcription factor, resulting in well-developed ductal side-branching (Lee et al.).
CANCER RESEARCH
• Induces high grade serous carcinoma with metastatic potential in a mouse model (Kim et al.).
• Promotes cell growth of triple-negative breast cancer (TNBC) cells and increases tumor size in a TNBC mouse model (An et al.).
• Inhibits cell migration and invasion of human breast cancer cell lines (Godbole et al.).

References

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Asselin-Labat M-L et al. (2010) Control of mammary stem cell function by steroid hormone signaling. Nature 465(7299): 798–802.
Godbole M et al. (2017) Progesterone suppresses the invasion and migration of breast cancer cells irrespective of their progesterone receptor status - a short report. Cell Oncol 40(4): 411–7.
Joshi PA et al. (2010) Progesterone induces adult mammary stem cell expansion. Nature 465(7299): 803–7.
Kim O et al. (2020) Targeting progesterone signaling prevents metastatic ovarian cancer. Proc Natl Acad Sci U S A 117(50): 31993–2004.
Kolatorova L et al. (2022) Progesterone: A steroid with wide range of effects in physiology as well as human medicine. Int J Mol Sci 23(14): 7989.
Lee HJ et al. (2013) Progesterone drives mammary secretory differentiation via RankL-mediated induction of Elf5 in luminal progenitor cells. Development 140(7): 1397–401.
Sundström-Poromaa I et al. (2020) Progesterone – friend or foe?. Front Neuroendocrinol 59: 100856.

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).