

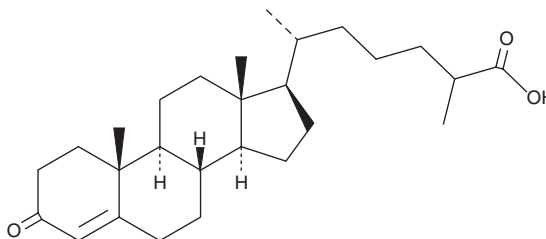
PRODUCT INFORMATION



Δ^4 -Dafachronic Acid

Item No. 14100

CAS Registry No.: 23017-97-2
Formal Name: 3-oxo-cholest-4-en-26-oic acid
Synonyms: 3-keto-4-Cholestenic Acid,
 Δ^4 -DA
MF: $C_{27}H_{42}O_3$
FW: 414.6
Purity: $\geq 95\%$
UV/Vis.: λ_{max} : 241 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥ 2 years



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

Laboratory Procedures

Δ^4 -Dafachronic acid is supplied as a crystalline solid. A stock solution may be made by dissolving the Δ^4 -dafachronic acid in the solvent of choice, which should be purged with an inert gas. Δ^4 -Dafachronic acid is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of Δ^4 -dafachronic acid in these solvents is approximately 12.5, 2.5, and 5 mg/ml, respectively.

Δ^4 -Dafachronic acid is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, Δ^4 -dafachronic acid should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. Δ^4 -Dafachronic acid has a solubility of approximately 0.09 mg/ml in a 1:10 solution of ethanol:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Δ^4 -Dafachronic acid is a racemic mixture of the sterol-derived hormones (25R)- Δ^4 -dafachronic acid and (25S)- Δ^4 -dafachronic acid, ligands of *C. elegans* nuclear hormone receptor family member DAF-12, a nucleoreceptor involved in dauer diapause, reproductive development, fat metabolism, and lifespan.^{1,2} Δ^4 -Dafachronic acid is an agonist of DAF-12 and a metabolite of cholesterol (Item No. 9003100) in *C. elegans*.^{3,4} It induces transactivation of DAF-12 in NIH3T3 cells expressing the *C. elegans* or *D. immitis* receptor (EC_{50} s = 81 and 0.65 nM, respectively).³ Δ^4 -Dafachronic acid induces molting of infective *D. immitis* (heartworm) third-stage larvae into L4 larvae, which is the first stage of the parasitic life cycle in dogs. It also induces the escape trajectory in embryos of the annual killifish *A. limnaeus* at 25°C , a condition that favors entrance into diapause, when used at a concentration of 75 μM .⁵

References

- Sharma, K.K., Wang, Z., Motola, D.L., *et al.* Synthesis and activity of dafachronic acid ligands for the *C. elegans* DAF-12 nuclear hormone receptor. *Mol. Endocrinol.* **23**(5), 640-648 (2009).
- Motola, D.L., Cummins, C.L., Rottiers, V., *et al.* Identification of ligands for DAF-12 that govern dauer formation and reproduction in *C. elegans*. *Cell* **124**(6), 1209-1223 (2006).
- Long, T., Alberich, M., André, F., *et al.* The development of the dog heartworm is highly sensitive to sterols which activate the orthologue of the nuclear receptor DAF-12. *Sci. Rep.* **10**(1), 11207 (2020).
- Witting, M., Rudloff, H.-C., Thondamal, M., *et al.* Fast separation and quantification of steroid hormones Δ^4 - and Δ^7 -dafachronic acid in *Caenorhabditis elegans*. *J. Chromatogr. B. Analyt. Technol. Biomed. Life Sci.* **978-979**, 118-121 (2015).
- Romney, A.L.T., Davis, E.M., Corona, M.M., *et al.* Temperature-dependent vitamin D signaling regulates developmental trajectory associated with diapause in an annual killifish. *Proc. Natl. Acad. Sci. USA* **115**(50), 12763-12768 (2018).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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