

Product Data Sheet

Product Name: Digoxin-d3

Cat. No.: GC47223

Chemical Properties

Cas. No. 127299-95-0

SMILES C[C@@]12[C@@](CC[C@]3([H])[C@]2([H])C[C@@H](O)[C@@]4(C)[C@]3(O)CC[C@@H]4C(C([2H])([2H])O5)=C([2H])C5=O)([H])C[C@@H](O[C@]6([H])O[C@H](C)[C@@H](O[C@@]7([H])C[C@H](O)[C@H](O[C@]8([H])O[C@H](C)[C@@H](O)[C@@H](O)C8)[C@@H](C)O7)[C@@H](O)C6)CC1

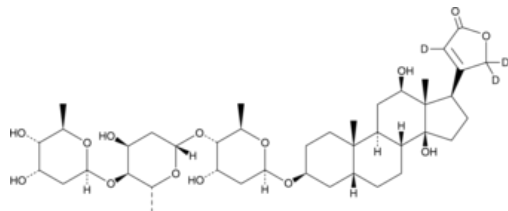
Formula C₄₁H₆₁D₃O₁₄ M.Wt 784

Solubility DMSO: Soluble, Methanol: Heated Storage Store at -20°C

General For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the tips ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Evaluation sample solution : ship with blue ice All other available size: ship with RT, or Condition blue ice upon request.

Structure



Background

Digoxin-d₃ is intended for use as an internal standard for the quantification of digoxin by GC- or LC-MS. Digoxin is a cardiac glycoside and metabolite of digitoxin that binds to and inhibits the Na⁺/K⁺-ATPase in cardiac tissues in an ATP- and Mg²⁺-dependent manner.¹ This inhibition results in loss of the transmembrane Na⁺ gradient, which decreases activity of the Na⁺/Ca²⁺ exchanger, increasing intracellular Ca²⁺ levels, inotropy, and cardiac force.² It increases activity of mitochondrial ATPase and actomyosin ATPase in rat hearts, which is directly correlated with increased myofibrillar contractile strength.³ *In vivo*, digoxin also decreases right atrial pressure and increases cardiac output in a canine model of congestive heart failure produced by pulmonary artery constriction.⁴

Caution: Product has not been fully validated for medical applications. For research use only.

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Formulations containing digoxin have been used to treat atrial fibrillation.⁵

1. Matsui, H., and Schwartz, A. Mechanism of cardiac glycoside inhibition of the (Na⁺-K⁺)-dependent ATPase from cardiac tissue *Biochim. Biophys. Acta.* 151(3)655-663(1968)
2. Neves, C.H., Tibana, R.A., Prestes, J., et al. Digoxin induces cardiac hypertrophy without negative effects on cardiac function and physical performance in trained normotensive rats *Int. J. Sports Med.* 38(4)263-269(2017)
3. Hamrick, M.E., and Fritz, P.J. Enzymatic adaptation: Molecular basis for cardiac glycoside action • 1. Increase in rat heart actomyosin and mitochondrial ATPase specific activities following digoxin injection *Biochem. Biophys. Res. Commun.* 22(5)540-546(1966)
4. Davis, J.O., Howell, D.S., and Hyatt, R.E. Effects of acute and chronic digoxin administration in dogs with right-sided congestive heart failure produced by pulmonary artery constriction *Circ. Res.* 3(3)259-263(1955)
5. Kotecha, D., Calvert, M., Deeks, J.J., et al. A review of rate control in atrial fibrillation, and the rationale and protocol for the RATE-AF trial *BMJ Open* 7(7)e015099(2017)

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