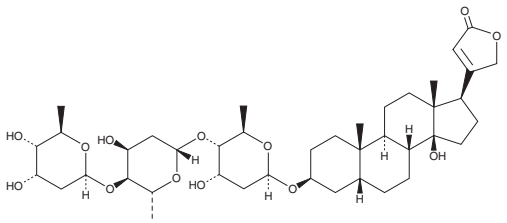
PRODUCT INFORMATION

Digitoxin

Item No. 27825

CAS Registry No.: 71-63-6
Formal Name: (3β,5β)-3-[(O-2,6-dideoxy-β-D-ribo-hexopyranosyl-(1→4)-O-2,6-dideoxy-β-D-ribo-hexopyranosyl-(1→4)-2,6-dideoxy-β-D-ribo-hexopyranosyl)oxy]-14-hydroxy-card-20(22)-enolide
Synonyms: Digitoxoside, Lanatoxin, NSC 7529
MF: $C_{41}H_{64}O_{13}$
FW: 765.0
Purity: ≥98%
UV/Vis.: λ_{max}: 217 nm
Supplied as: A solid
Storage: -20°C
Stability: ≥4 years
Item Origin: Plant/*Digitalis lanata*



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

Laboratory Procedures

Digitoxin is supplied as a solid. A stock solution may be made by dissolving the digitoxin in the solvent of choice, which should be purged with an inert gas. Digitoxin is soluble in organic solvents such as ethanol, chloroform, DMSO, and dimethyl formamide (DMF). The solubility of digitoxin in ethanol is approximately 5 gm/ml, approximately 20 mg/ml in chloroform and DMSO, and approximately 25 mg/ml in DMF.

Digitoxin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, digitoxin should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Digitoxin has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Digitoxin is a cardiac glycoside that has been found in *Digitalis* and has diverse biological activities.[1-5] It inhibits human recombinant $\alpha_1\beta_1$, $\alpha_2\beta_2$, and $\alpha_3\beta_1$ subunit-containing Na^+/K^+-ATPases with K_i values of 250, 63, and 136 nM, respectively.[1] Digitoxin inhibits the human-ether-a-go-go (hERG) potassium channel, also known as $K_v11.1$, in HEK293 cells expressing hERG (IC_{50} = 11.1 nM).[2] It enhances developed tension and contractile force in electrically stimulated isolated guinea pig left atrial muscle when used at concentrations of 0.2 and 0.4 µM, respectively.[3] Dietary administration of digitoxin (~1 mg/kg per day) attenuates congestive heart failure and reduces myocardial hypertrophy in a rat model of myocardial infarction induced by coronary artery ligation.[4] Digitoxin is also cytotoxic to a panel of 10 human cancer cell lines, including myeloma, lymphoma, and leukemia cancer cells, with IC_{50} values ranging from 12 to 76 nM.[5] Formulations containing digitoxin have previously been used in the treatment of congestive heart failure and cardiac arrhythmias.

References

1. Katz, A., Lifshitz, Y., Bab-Dinitz, E., *et al. J. Biol. Chem.* **285(25)**, 19582-19592 (2010).
2. Wang, L., Wible, B.A., Wan, X., *et al. J. Pharmacol. Exp. Ther.* **320(2)**, 525-534 (2007).
3. Temma, K., Akera, T., and Brody, T.M. *Eur. J. Pharm.* **76(4)**, 361-370 (1981).
4. Picollo, C.T., dos Santos, A.A., Antonio, E.L., *et al. Pharmacol. Ther.* **25(3)**, 265-272 (2019).
5. Johansson, S., Lindholm, P., Gullbo, J., *et al. Anticancer Drugs* **12(5)**, 475-483 (2001).

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