

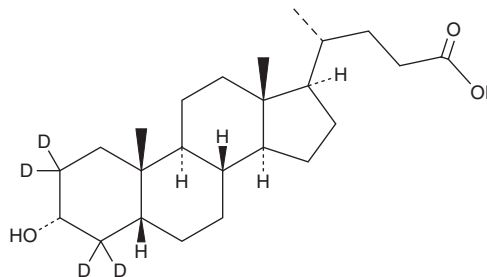
# PRODUCT INFORMATION



## Lithocholic Acid-d<sub>4</sub>

Item No. 20831

**CAS Registry No.:** 83701-16-0  
**Formal Name:** (5β)-3α-hydroxy-cholan-24-oic-2,2,4,4-d<sub>4</sub> acid  
**Synonyms:** 3α-hydroxy Cholanolic Acid-d<sub>4</sub>, LCA-d<sub>4</sub>, Lithocholate-d<sub>4</sub>  
**MF:** C<sub>24</sub>H<sub>36</sub>D<sub>4</sub>O<sub>3</sub>  
**FW:** 380.6  
**Chemical Purity:** ≥95% (Litholic Acid)  
**Deuterium Incorporation:** ≥99% deuterated forms (d<sub>1</sub>-d<sub>4</sub>); ≤1% d<sub>0</sub>  
**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

Lithocholic acid-d<sub>4</sub> is intended for use as an internal standard for the quantification of lithocholic acid (Item No. 20253) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated versus unlabeled).

Lithocholic acid-d<sub>4</sub> is supplied as a crystalline solid. A stock solution may be made by dissolving the lithocholic acid-d<sub>4</sub> in the solvent of choice. Lithocholic acid-d<sub>4</sub> is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of lithocholic acid-d<sub>4</sub> in ethanol and DMSO is approximately 20 mg/ml and approximately 30 mg/ml in DMF.

Lithocholic acid-d<sub>4</sub> is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, lithocholic acid-d<sub>4</sub> should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Lithocholic acid-d<sub>4</sub> 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

Lithocholic acid is a secondary bile acid that has been shown to cause cholestasis in animal models and has also been implicated in carcinogenesis.<sup>1,2</sup> It is produced from chenodeoxycholic acid by bacterial action in the colon and can be conjugated with glycine or taurine. Whereas in normal colonic epithelium lithocholic acid promotes apoptosis, it has been shown to suppress apoptosis in pre-malignant colonic epithelium in the presence of a carcinogen.<sup>3</sup> Lithocholic acid can activate the pregnane X receptor and the vitamin D receptor, which may serve as a biological sensor to regulate lithocholic acid-induced toxicity.<sup>2,4,5</sup>

### References

1. Marcireau, C., Guilloton, M., and Karst, F. *Antimicrob. Agents Chemother.* **34(6)**, 989-993 (1990).
2. Makishima, M., Lu, T.T., Xie, W., et al. *Science* **296(5571)**, 1313-1316 (2002).
3. Kozoni, V., Tsioulis, G., Shiff, S., et al. *Carcinogenesis* **21(5)**, 999-1005 (2000).
4. Staudinger, J.L., Goodwin, B., Jones, S.A., et al. *Proc. Natl. Acad. Sci. USA* **98(6)**, 3369-3374 (2000).
5. Tan, K.P., Yang, M., and Ito, S. *Mol. Pharmacol.* **72(5)**, 1380-1390 (2007).

#### 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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