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PRODUCT INFORMATION



Lithocholic Acid-d₄ MaxSpec® Standard

Item No. 31354

CAS Registry No.: 83701-16-0

Formal Name: (3 α ,5 β)-3-hydroxy-cholan-24-oic-2,2,4,4-d₄ acid

Synonym: 3 α -hydroxy Cholanolic Acid-d₄, LCA-d₄, Lithocholate-d₄

MF: C₂₄H₃₆D₄O₃

FW: 380.6

Purity: \geq 95%

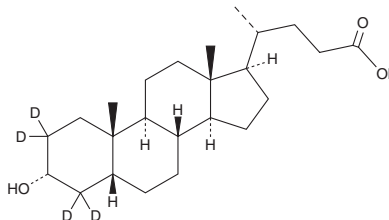
Supplied as: A solution in methanol; in a deactivated glass ampule

Concentration: 100 μ g/ml (nominal); see certificate of analysis for verified concentration

Storage: -20°C

Stability: \geq 2 years; *Stability testing is ongoing to ensure concentration accuracy. The certificate of analysis and product expiry date will be updated upon completion of testing.*

Special Conditions: Store upright and unopened at -20°C. Warm to room temperature prior to opening. Light sensitive.



Description

Lithocholic acid-d₄ is intended for use as an internal standard for the quantification of lithocholic acid (Item No. 20253) by GC- or LC-MS. Lithocholic acid is a secondary bile acid that has been shown to cause cholestasis in animal models and has also been implicated in carcinogenesis.^{1,2} It is produced from chenodeoxycholic acid (Item No. 10011286) 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.³ 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.^{1,4,5}

Lithocholic acid-d₄ MaxSpec® standard is a quantitative grade standard of lithocholic acid-d₄ (Item No. 20831) that has been prepared specifically for mass spectrometry or any application where quantitative reproducibility is required. The solution has been prepared gravimetrically and is supplied in a deactivated glass ampule sealed under argon. The concentration was verified by comparison to an independently prepared calibration standard. This lithocholic acid-d₄ MaxSpec® standard is guaranteed to meet identity, purity, stability, and concentration specifications and is provided with a batch-specific certificate of analysis. Ongoing stability testing is performed to ensure the concentration remains accurate throughout the shelf life of the product. **Note:** *The amount of solution added to the vial is in excess of the listed amount. Therefore, it is necessary to accurately measure volumes for preparation of calibration standards. Follow recommended storage and handling conditions to maintain product quality.*

References

1. Little, J.M., Zimniak, P., Shattuck, K.E., *et al.* Metabolism of lithocholic acid in the rat: Formation of lithocholic acid 3-O-glucuronide *in vivo*. *J. Lipid. Res.* **31**(4), 615-622 (1990).
2. Makishima, M., Lu, T.T., Xie, W., *et al.* Vitamin D receptor as an intestinal bile acid sensor. *Science* **296**(5571), 1313-1316 (2002).
3. Kozoni, V., Tsioulis, G., Shiff, S., *et al.* The effect of lithocholic acid on proliferation and apoptosis during the early stages of colon carcinogenesis: Differential effect on apoptosis in the presence of a colon carcinogen. *Carcinogenesis* **21**(5), 999-1005 (2000).
4. Staudinger, J.L., Goodwin, B., Jones, S.A., *et al.* The nuclear receptor PXR is a lithocholic acid sensor that protects against liver toxicity. *Proc. Natl. Acad. Sci. USA* **98**(6), 3369-3374 (2000).
5. Tan, K.P., Yang, M., and Ito, S. Activation of nuclear factor (erythroid-2 like) factor 2 by toxic bile acids provokes adaptive defense responses to enhance cell survival at the emergence of oxidative stress. *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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