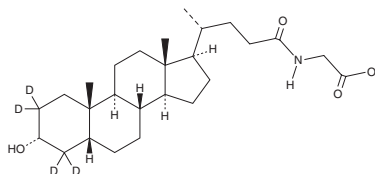


CERTIFICATE of ANALYSIS



Glycolithocholic Acid-d₄ MaxSpec® Standard

N-[(3 α ,5 β)-3-hydroxy-24-oxocholan-24-yl-2,2,4,4-d₄]-glycine



Item No.:	31554
Batch No.:	0600809
CAS Registry No.:	2044276-16-4
Molecular Formula:	C ₂₆ H ₃₉ D ₄ NO ₄
Formula Weight:	437.7 amu
Expiry Date:	11NOV2027 (valid from date of certification)
Supplied as:	A solution in methanol; in a deactivated glass ampule
Verified Concentration:	100.0 µg/ml
Volume per Ampule:	Not less than 1 ml. Ampules are overfilled. It is advised that labs use measured volumes.
Storage & Handling:	Store upright and unopened at -20°C. Warm to room temperature prior to opening. Light sensitive.

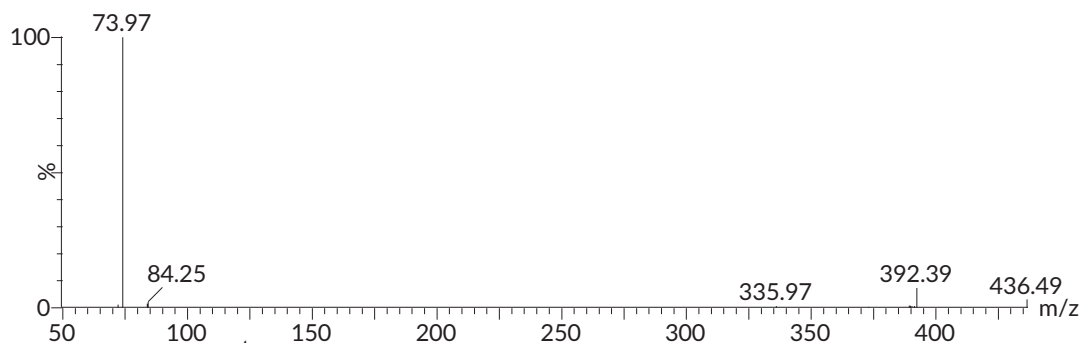
Description

MaxSpec® products are purpose built for mass spectrometry and related applications where quantitative reproducibility is required. This formulated 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. Ongoing stability tests are performed to ensure the concentration remains accurate throughout the shelf life of the product. Follow recommended storage and handling conditions to maintain product quality.

Quality Information

Test	Limit	Result	Meets Specification
Identity, LC-MS	435.8 – 436.8 amu	436.5 amu	✓
Purity, HPLC	≥95%	99.92%	✓
Assay	90 – 110%	100.9%	✓

Product Ion Spectrum



Isotopic Profile		
m/z	Intensity	%
432.3	107	0.4%
433.3	74	0.3%
434.3	13	0.0%
435.3	646	2.4%
436.3	27456	100.0%
437.4	9153	33.3%
438.4	1641	6.0%
439.4	187	0.7%
440.4	20	0.1%
441.4	5	0.0%
442.4	0	0.0%
443.4	0	0.0%

Approval:

Title: Manager, Analytical Chemistry

Certification Date: 12NOV2020

Cayman Chemical certifies that this product meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiry date when stored unopened as recommended.

CERTIFICATE of ANALYSIS



Stability

Stability testing is ongoing to ensure concentration accuracy. The certificate of analysis and product expiry date will be updated upon completion of testing.

Date	Limit	Result	Meets Specification
12NOV2020	90 – 110%	100.9%	✓
29NOV2021	90 – 110%	100.5%	✓
17OCT2022	90 – 110%	98.6%	✓
14AUG2023	90 – 110%	101.1%	✓

Revision History

Revision No.	Date	Reason for Revision
01	12NOV2020	Initial version
02	29NOV2021	Expiry, stability update
03	18OCT2022	Expiry, stability update
04	14AUG2023	Expiry, stability update
05	29APR2026	Expiry date extension

Disclaimers

Material Safety Data

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some but not all of the information required for the safe and proper use of this material. Before use, review the complete Material Safety Data Sheet, which has been sent via email to your institution.

Warranty and Limitation of Remedy

Cayman Chemical Company makes no warranty or guarantee of any kind, whether written or oral, expressed or implied, including without limitation, any warranty of fitness for a particular purpose, suitability and merchantability, which extends beyond the description of the chemicals hereof. Cayman warrants only to the original customer that the material will meet our specifications at the time of delivery.

Cayman will carry out its delivery obligations with due care and skill. Thus, in no event will Cayman have any obligation or liability, whether in tort (including negligence) or in contract, for any direct, indirect, incidental or consequential damages, even if Cayman is informed about their possible existence.

This limitation of liability does not apply in the case of intentional acts or negligence of Cayman, its directors or its employees.

Buyer's exclusive remedy and Cayman's sole liability hereunder shall be limited to a refund of the purchase price, or at Cayman's option, the replacement, at no cost to Buyer, of all material that does not meet our specification.

Said refund or replacement is conditioned on Buyer giving written notice to Cayman within thirty (30) days after arrival of the material at its destination. Failure of Buyer to give said notice within thirty (30) days shall constitute a waiver of Buyer of all claims hereunder with respect to said material. For further details, please refer to our Warranty and Limitations of Remedy located on our website and in our catalog.

This Certificate shall not be reproduced except in full, without written approval from the Cayman Chemical Company.

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