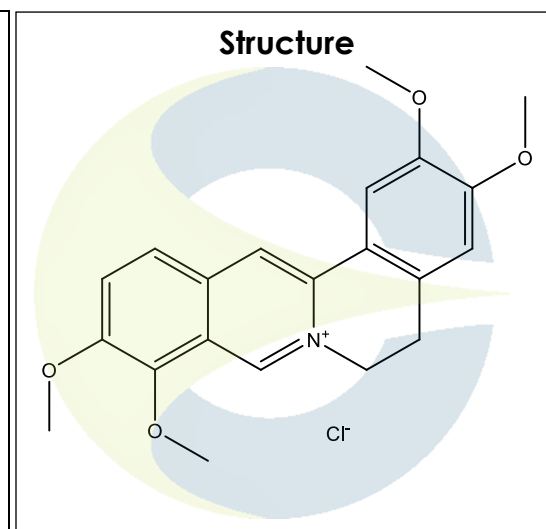


**Certificate of Analysis**

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<b>PRODUCT NAME</b>	Palmatine chloride
<b>PART NUMBER</b>	00016049
<b>STANDARD TYPE</b>	Primary (P)
<b>LOT NUMBER</b>	00016049-602
<b>REPORT NUMBER</b>	CDXA-RSS-403-03
<b>SAMPLE NUMBER</b>	CDXA-05-0614
<b>DATE OF SAMPLE</b>	07/28/2005
<b>DATE OF RE-EVALUATION</b>	02/26/2010 (1 <sup>st</sup> ); 06/12/2014 (2 <sup>nd</sup> ); 10/29/2018 (3 <sup>rd</sup> ); 08/09/2022 (4 <sup>th</sup> )
<b>DATE OF REPORT</b>	09/09/2022



<b>CHEMICAL NAMES</b>	5,6-Dihydro-2,3,9,10-tetramethoxy-dibenzo(a,g)quinolizinium chloride
<b>CHEMICAL FORMULA</b>	C <sub>21</sub> H <sub>22</sub> NO <sub>4</sub> Cl
<b>MOLECULAR WEIGHT (MW)</b>	387.86
<b>CHEMICAL FAMILY</b>	Alkaloids
<b>CAS NUMBER</b>	[10605-02-4]
<b>EC#(EINECS)</b>	830-625-1
<b>RTECS</b>	DR9890000

**ANALYTICAL RESULTS**

TEST	METHOD	SPECIFICATION	RESULT
Adjusted Purity	NA	≥ 85%	82.7%
HPLC	0.700.10.2.METH22	≥ 90%	96.3%
NMR	0.700.12.4	Conforms to structure	Conforms to structure
Mass Spectrum	Direct Infusion, ESI (+)	Conforms	Conforms
Residual Solvent	CDXA-AM-001-00	NA	Acetone – 1.3%; Dichloromethane – 0.2%; Ethanol – 0.5%
Water	0.700.12.37	NA	12.1%
Appearance	NA	NA	Yellow powder

ADJUSTED PURITY: 82.7% IS BASED ON (100 - 2.0 SOLVENTS - 12.1 WATER) X 96.3% HPLC

**STORAGE CONDITIONS**

<b>STORAGE</b>	-20 °C in a dry place.
<b>EXPIRATION DATE</b>	08/2027 under the above conditions.

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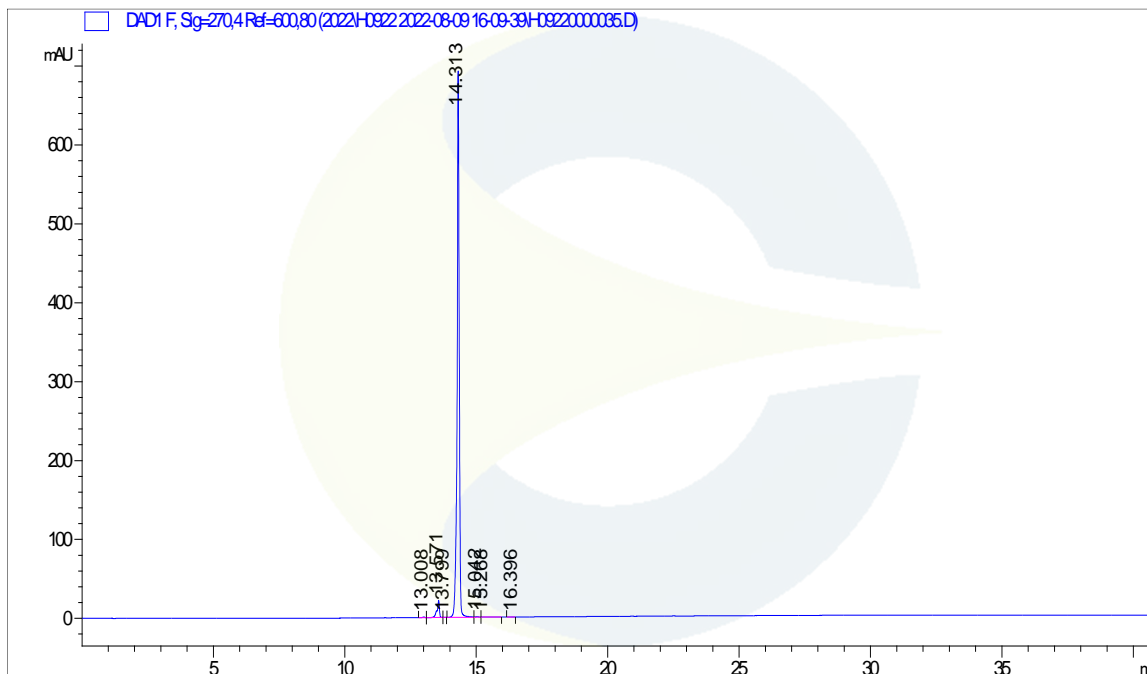
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**ANALYTICAL CONDITIONS**

<b>INSTRUMENT</b>	AGILENT 1260 HPLC UV-VIS (DAD); FINNIGAN LCQ-DECA
<b>COLUMN</b>	Phenomenex Luna C18(2) 150 x 2.00 mm, 5 µm particle size
<b>MOBILE PHASE</b>	A - 0.1% Trifluoroacetic acid in Ultrapure water, B - Acetonitrile; Isocratic 5% B for 5 minutes, then increasing to 95% B over 20 minutes. Hold at 95% B for 15 minutes, then decreasing to 5% B over 1 minute.
<b>COLUMN TEMP.</b>	60 °C
<b>FLOW RATE</b>	0.4 mL/minute
<b>INJECTION VOL.</b>	0.4 µL
<b>INJECTION CONC.</b>	1.1 mg/mL in Methanol
<b>DETECTION</b>	270 ± 2 nm

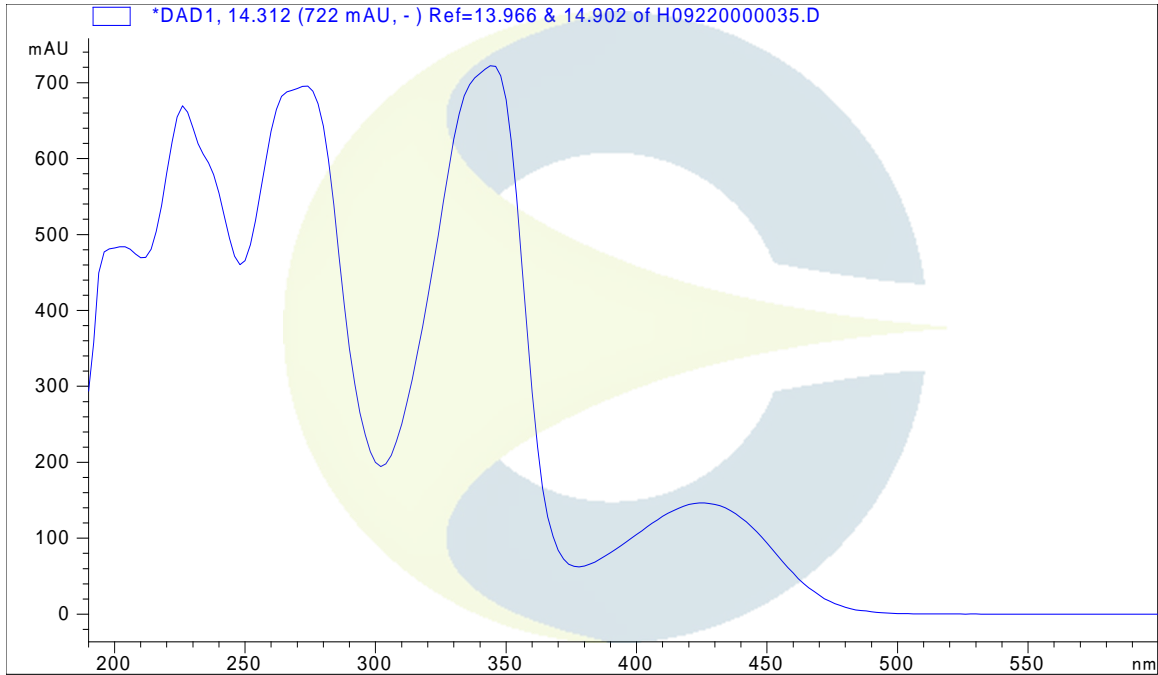
**HPLC CHROMATOGRAM OF PALMATINE CHLORIDE (CDXA-05-0614)**



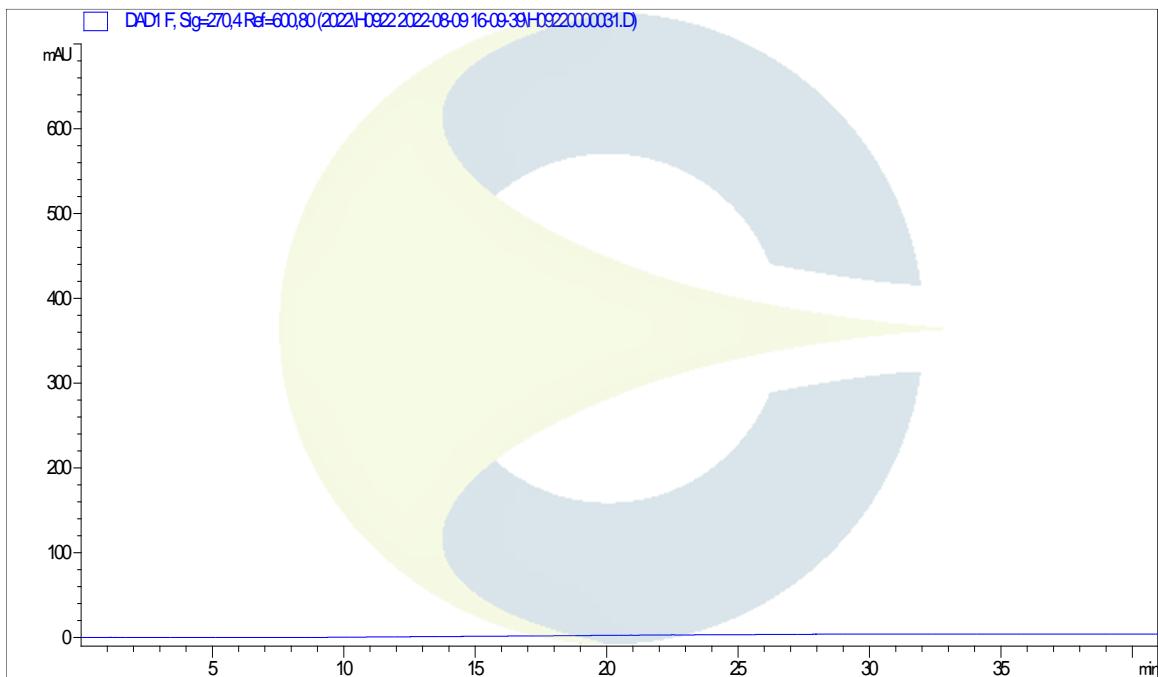
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**UV SPECTRUM AT RT = 14.3 MINUTES**



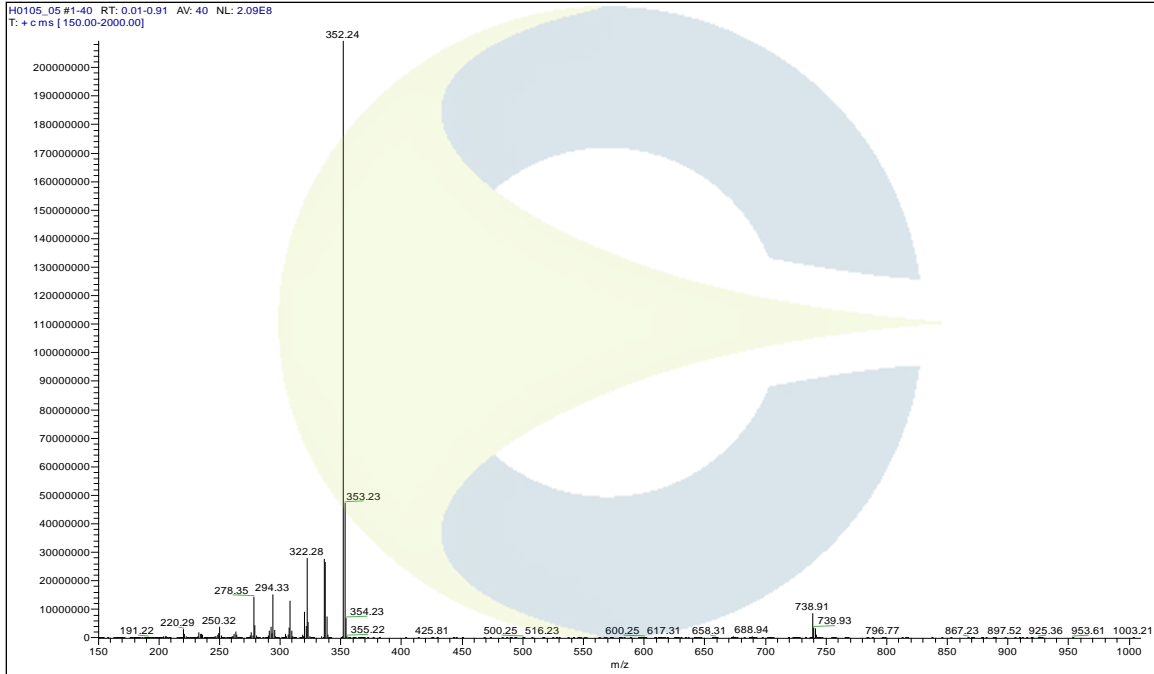
**HPLC CHROMATOGRAM OF DILUENT BLANK**



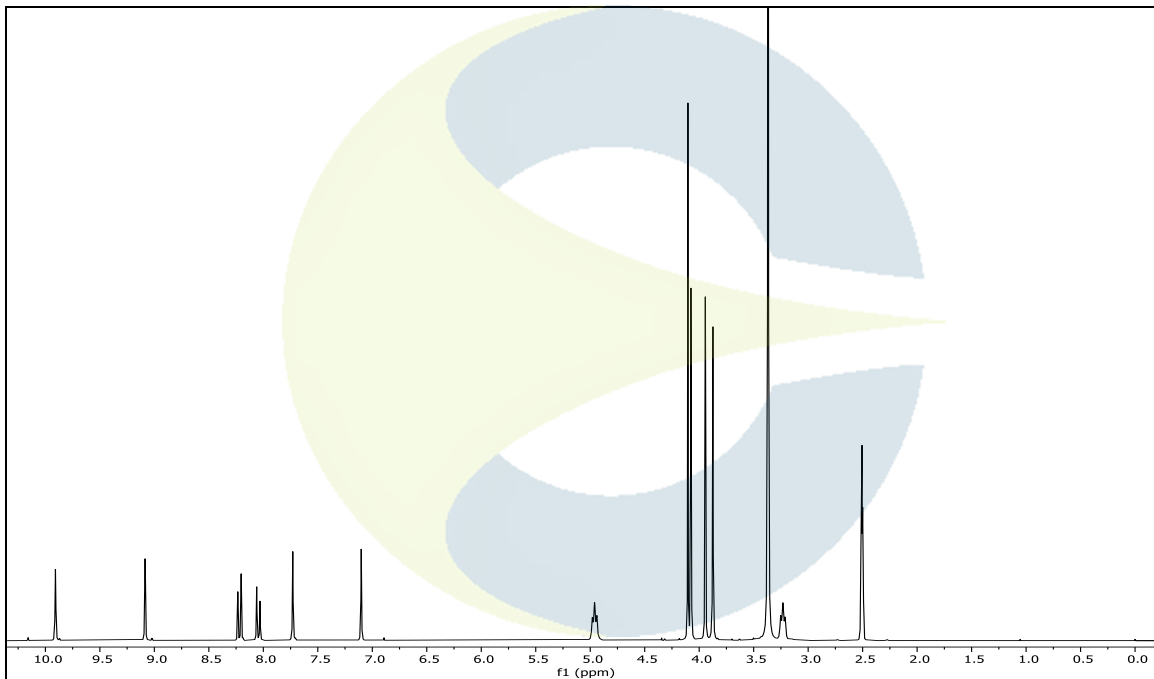
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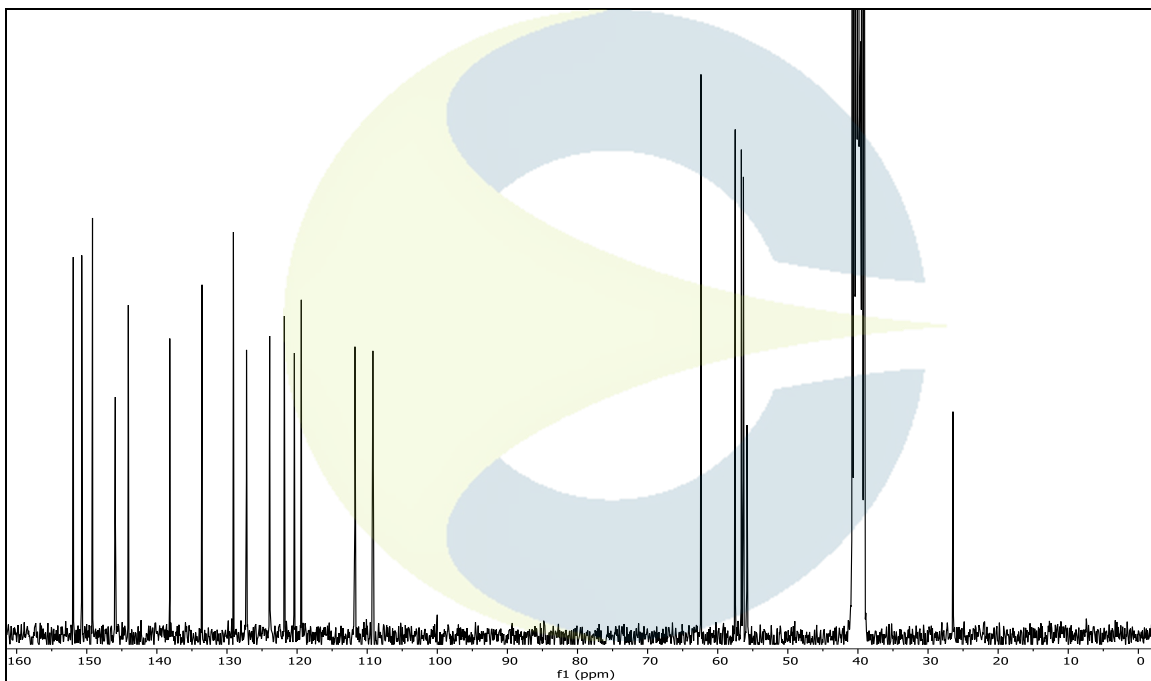
**MASS SPECTRUM OF PALMATINE CHLORIDE (CDXA-05-0614)**



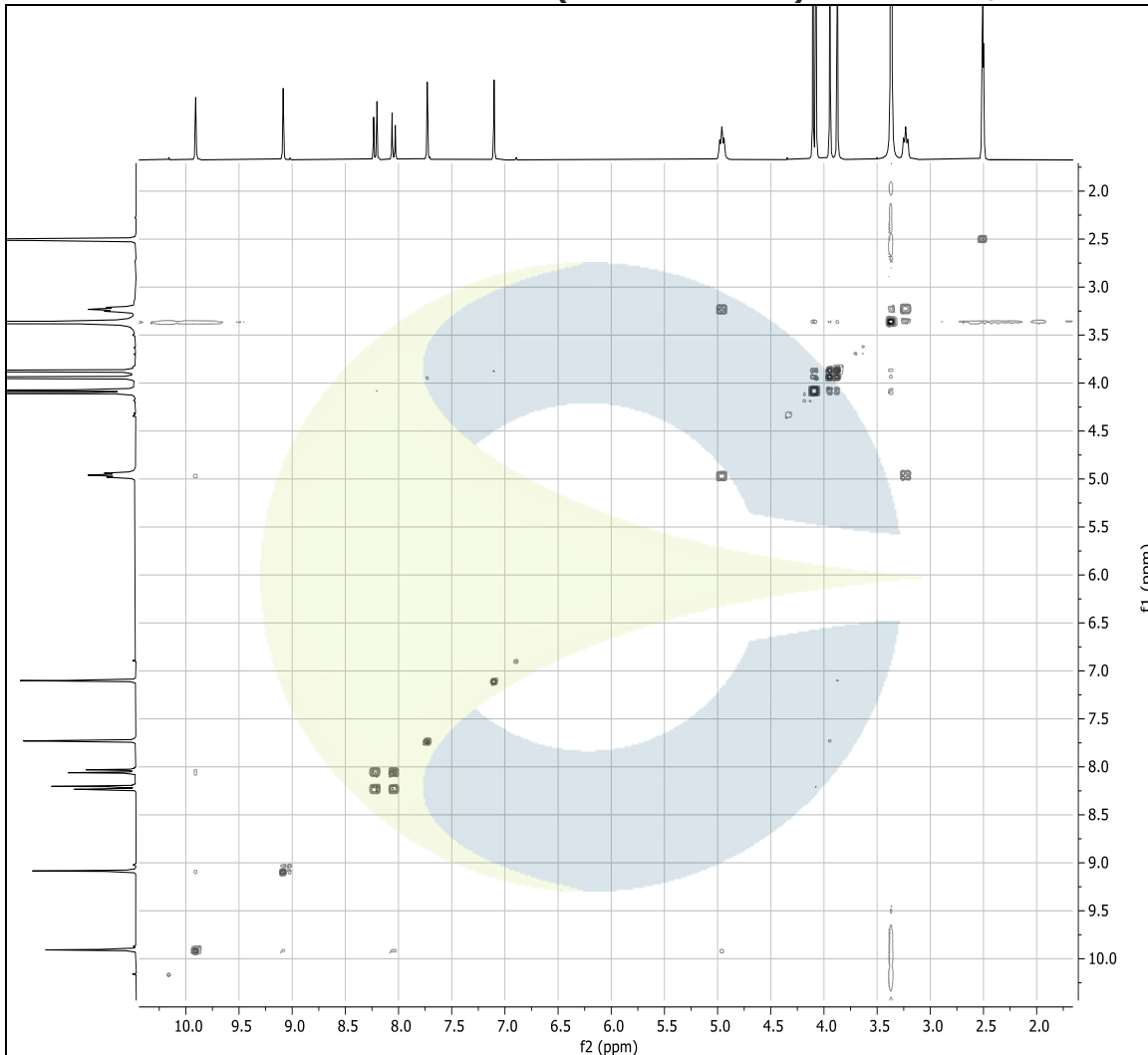
**<sup>1</sup>H-NMR SPECTRUM OF PALMATINE CHLORIDE (CDXA-05-0614) IN DMSO-d<sub>6</sub> + TMS**



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**$^{13}\text{C}$ -NMR SPECTRUM OF PALMATINE CHLORIDE (CDXA-05-0614) IN DMSO- $d_6$  + TMS**

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**COSY-NMR SPECTRUM OF PALMATINE CHLORIDE (CDXA-05-0614) IN DMSO-d<sub>6</sub> + TMS**

**REVISION HISTORY**

<u>Revision History</u>	<u>Date of Revision</u>	<u>Document/Changes</u>
00	03/05/2010	New report and first re-evaluation
01	06/20/2014	Passed second re-evaluation; updated expiration date
02	10/30/2018	Passed third reevaluation by HPLC and KF. Updated expiration date, analytical results, analytical conditions, and chromatograms. Removed RTECS and melting point.
03	09/09/2022	Passed fourth re-evaluation by HPLC, KF and NMR. Updated expiration date, analytical conditions, chromatograms and results. Added EINECS number.

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