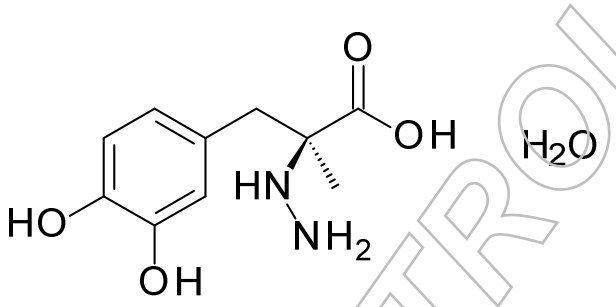
Certificate of Analysis

Reference Standard

Carbidopa



Molecular Formula:	$C_{10}H_{14}N_2O_4 \cdot H_2O$
Molecular Weight:	244.24
CAS Number:	38821-49-7

Catalogue Number:	LGCFOR1501.00
Lot Number:	61111
Long-term Storage:	2 to 8 °C, dark
Appearance:	white solid
Melting Point:	202 °C (dec.)
Assay 'as is':	99.2 %

Date of shipment: **2017-September-05**

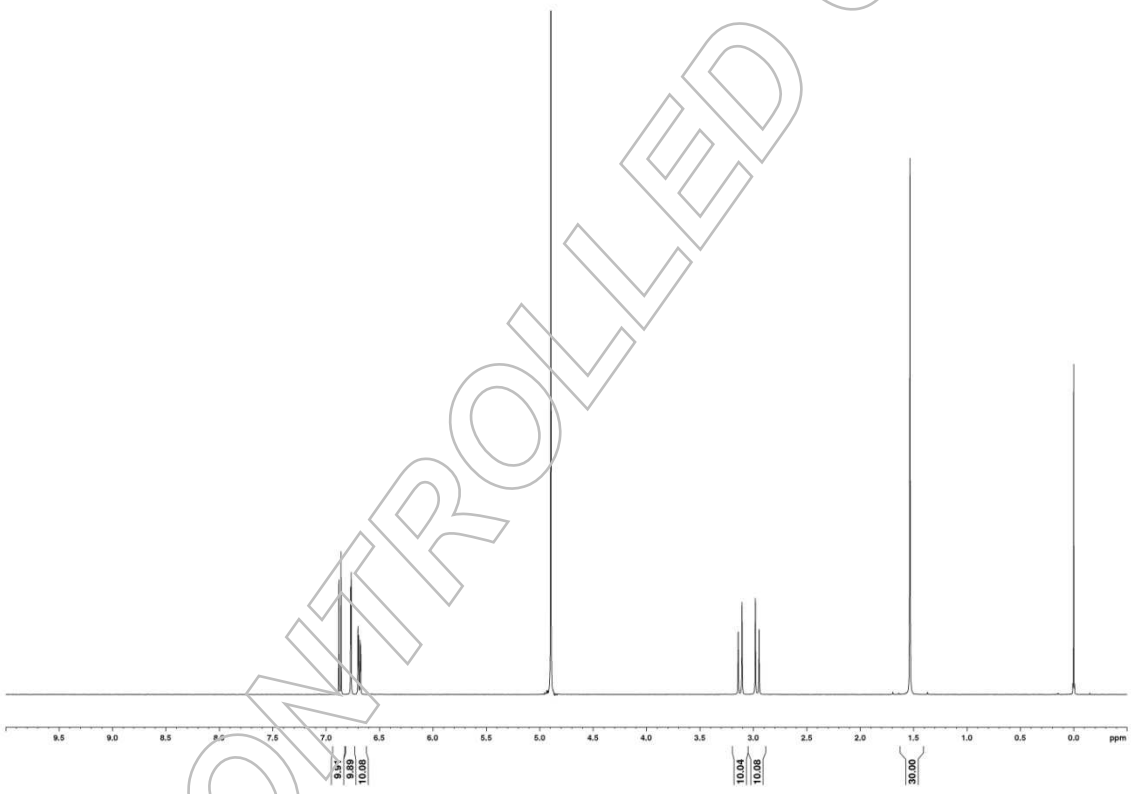
This certificate is valid for two years from the date of shipment provided the substance is stored under the recommended conditions unopened in the original container.

I. Identity

The identity of the reference substance was established by following analyses.

Ia. ^{1}H-NMR Spectrum

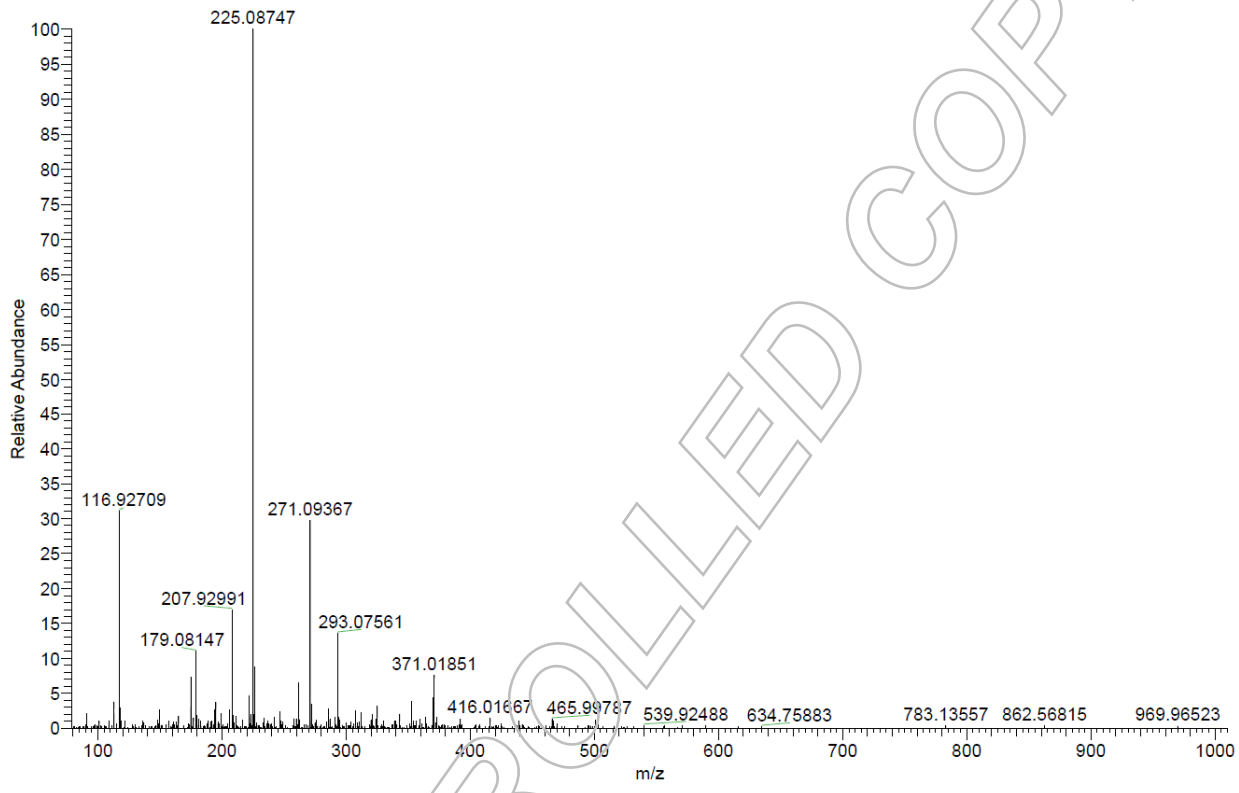
Conditions: 400 MHz, D_2O/DCl



The structure is confirmed by the signals of the spectrum and their interpretation.

Ib. Mass Spectrum

Method: 3.2 kV ESI-; capillary temperature: 269 °C

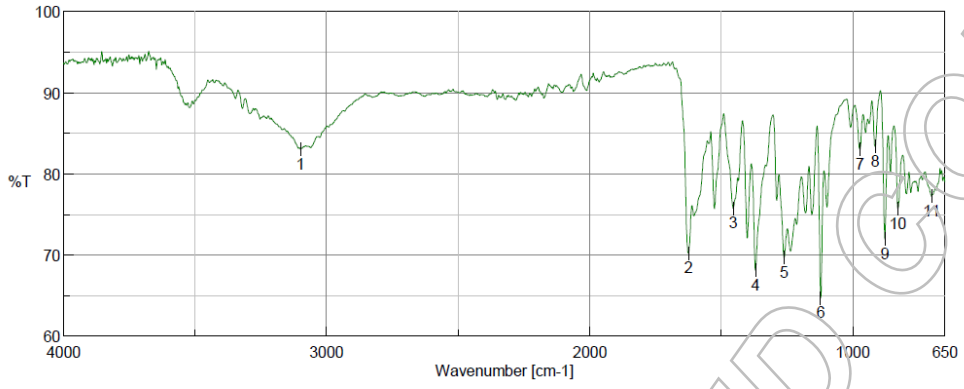


Theoretical value: 225.08808

The signal of the MS spectrum is consistent with the theoretical value and its interpretation is consistent with the structural formula.

Ic. IR Spectrum

Method: Attenuated Total Reflection Fourier Transform Infrared (ATR-FTIR) Spectroscopy



Results of Peak Find

No.	Position	Intensity
1	3100.01	83.0335
2	1625.7	70.2036
3	1455.03	75.7231
4	1370.18	68.0786
5	1261.22	69.6557
6	1122.37	64.6422
7	973.876	83.0201
8	916.022	83.3443
9	878.417	71.9537
10	829.241	75.6578
11	700.998	77.1904

The signals of the IR spectrum and their interpretation are consistent with the structural formula.

II. Purity

IIa. Water Content

Method: Karl Fischer titration

Determined value	7.48 %
Theoretical value	– 7.38 %
Content of excessive water	0.10 %

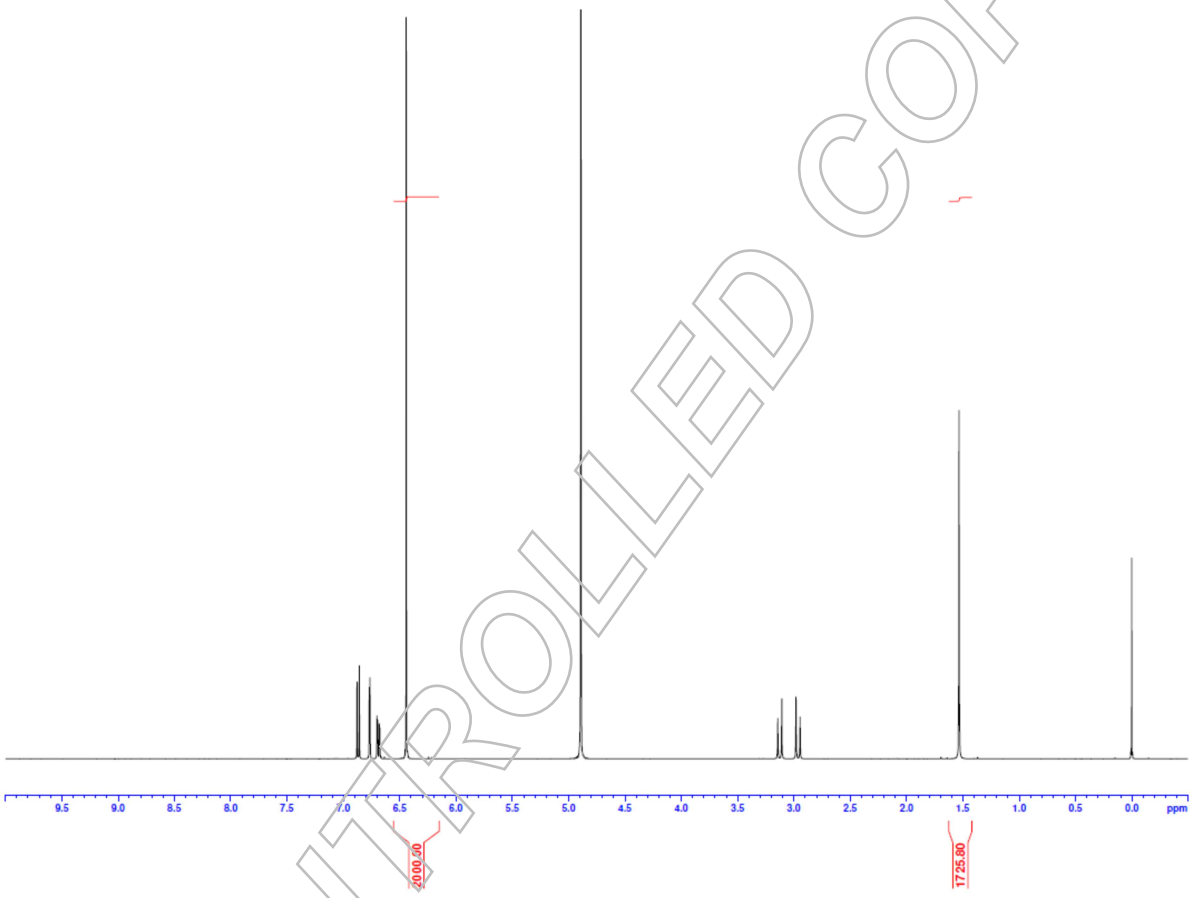
IIb. Residual Solvents

Method: ^{1}H-NMR

No significant amounts of residual solvents were detected (< 0.05 %).

III. Assay by Quantitative NMR Spectroscopy

The assay of the reference substance was established by quantitative NMR spectroscopy using D_2O/DCl as the solvent and with Maleic acid (certified reference material, signal 6.15 – 6.56 ppm, 2 H) as internal standard.



Results:

Average	99.17 %
Number of results	n=6
Standard deviation	0.08 %

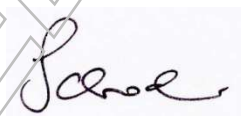
IV. Final Result

Water content	0.10 %
Residual solvents	No significant amounts of residual solvents were detected (< 0.05 %).
Assay (quantitative NMR spectroscopy)	99.17 %

The assay is assessed to be 99.2 % ‘as is’

The assay 'as is' is equivalent to the assay based on the not anhydrous and not dried substance respectively.

Release Date:
Luckenwalde, 2015-06-04



Dr. Sabine Schröder
Product Release