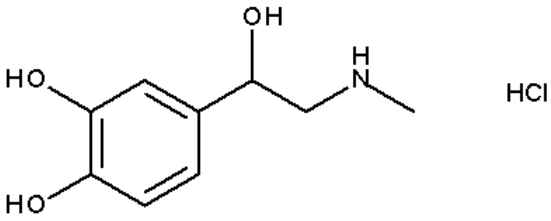
Certificate of Analysis

Reference Standard

DL-Adrenaline Hydrochloride



Molecular Formula:	$C_9H_{13}NO_3$. HCl
Molecular Weight:	219.67
CAS Number:	329-63-5

Catalogue Number:	LGCFOR0614.12
Lot Number:	996802
Long-term Storage:	2 to 8 °C, dark
Appearance:	light grey solid
Melting Point (DSC):	162 °C
Assay 'as is':	100.1 %

Date of shipment: **2020-November-30**

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

LGC GmbH, Louis-Pasteur-Str. 30, D-14943 Luckenwalde, Germany

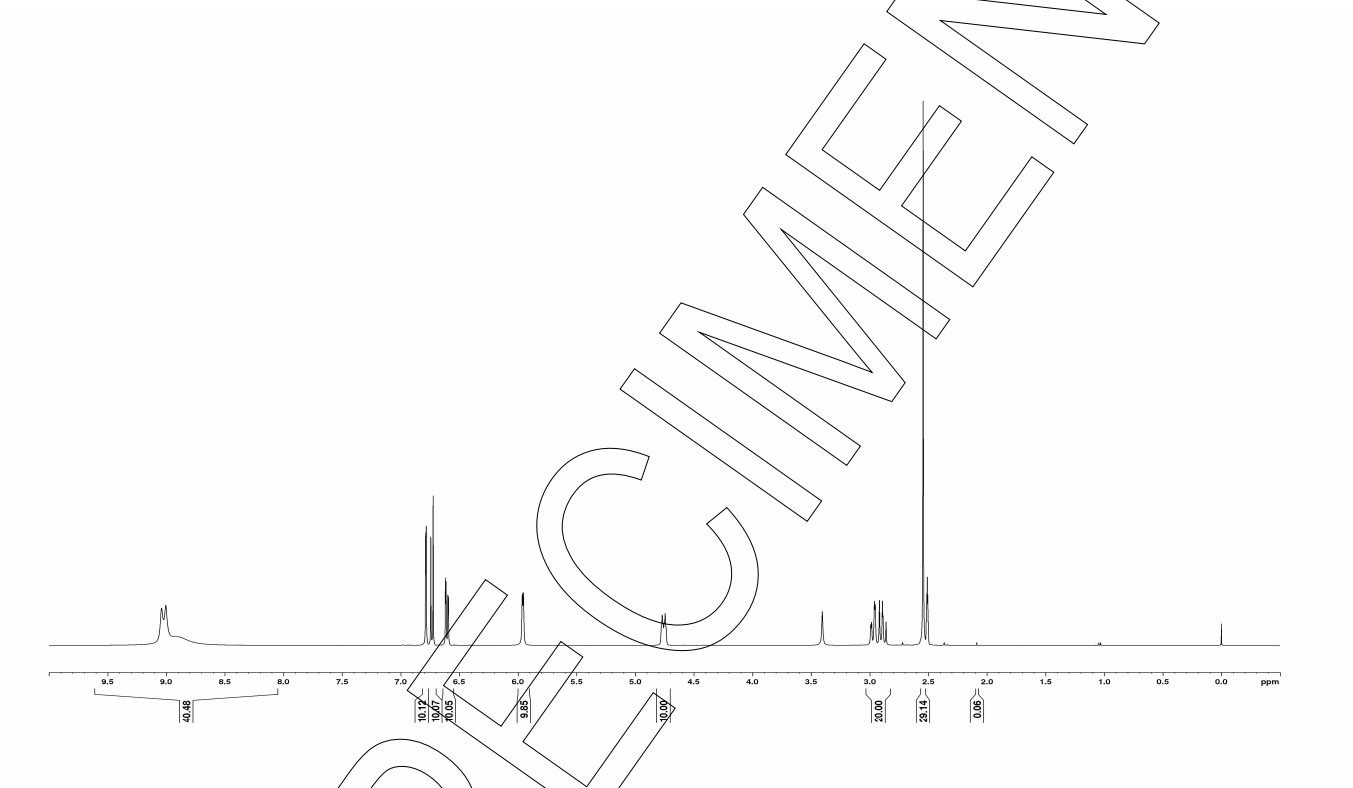
LoGiCal® produced by LGC

I. Identity

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

Ia. ^{1}H-NMR Spectrum

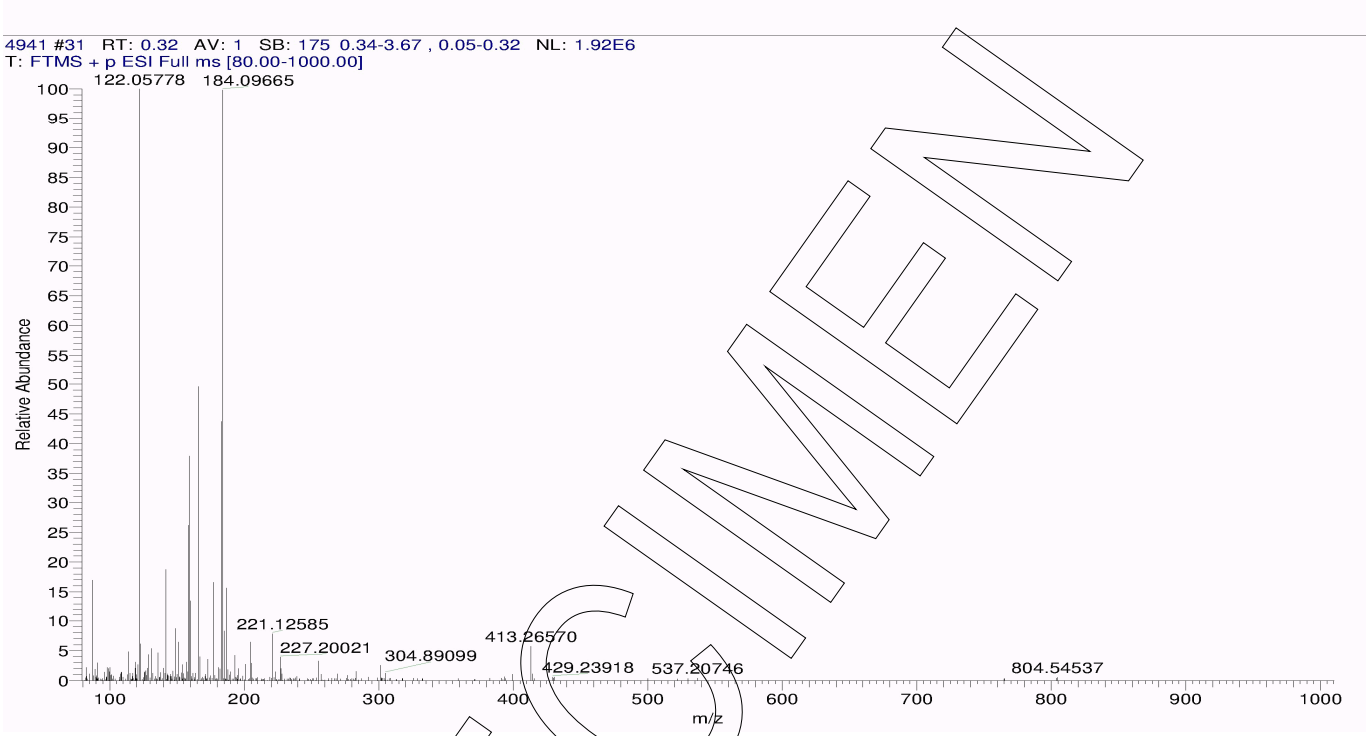
Conditions: 400 MHz, DMSO-d_6



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

Ib. Mass Spectrum

Method: HRMS; 3.5 kV ESI+; capillary temperature: 269 °C

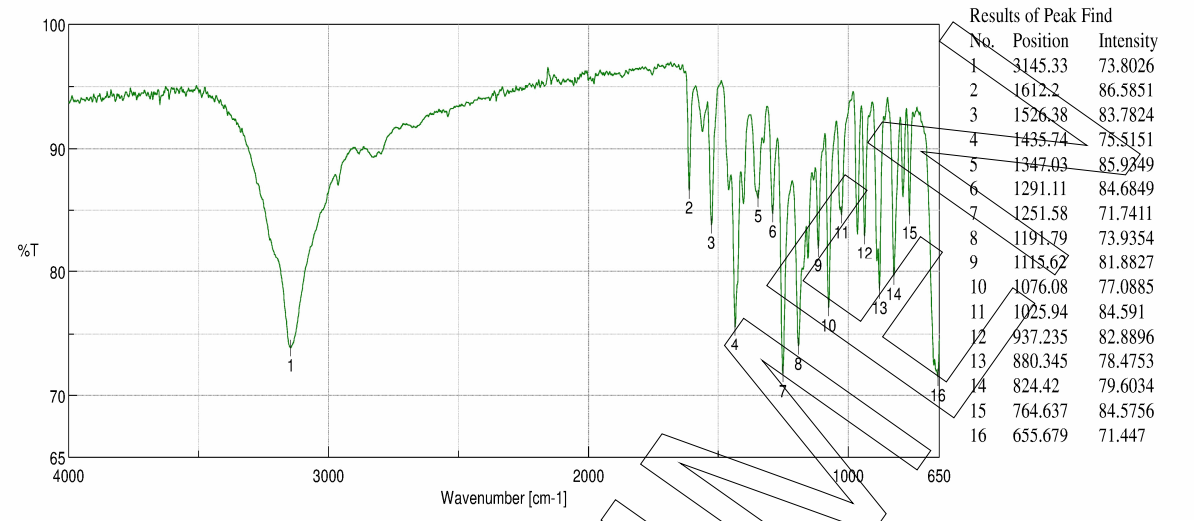


Theoretical value: 184.09681

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	3145.33	73.8026
2	1612.2	86.5851
3	1526.38	83.7824
4	1435.74	75.5151
5	1347.03	85.9349
6	1291.11	84.6849
7	1251.58	71.7411
8	1191.79	73.9354
9	1115.62	81.8827
10	1076.08	77.0885
11	1025.94	84.591
12	937.235	82.8896
13	880.345	78.4753
14	824.42	79.6034
15	764.637	84.5756
16	655.679	71.447

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

II. Purity

IIa. Water Content

Method: Karl Fischer titration

Results:

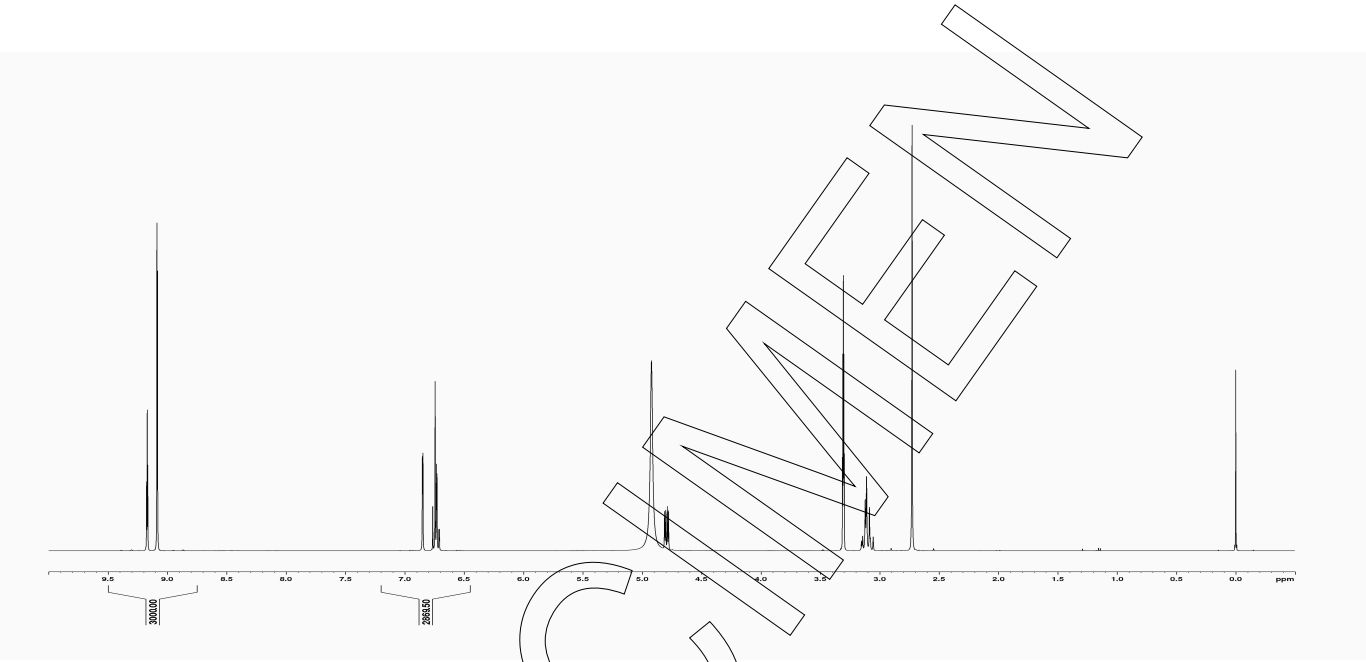
Average	0.08 %
Number of results	n=3
Standard deviation	0.02 %

IIb. Residual Solvents

Residual Solvent	Average	Method
Acetic acid	0.05 %	^{1}H-NMR

III. Assay by quantitative NMR spectroscopy

The assay of the reference substance was established by quantitative NMR spectroscopy using CD_3OD as solvent and with 3,5-Dinitrobenzoic acid (certified reference material, signal 8.8 - 9.5 ppm, 3 H) as internal standard.



Results:

Average	100.12 %
Number of results	n=6
Standard deviation	0.03 %

IV. Final Result

Water content	0.08 %
Residual solvents	0.05 %

Assay

Quantitative NMR spectroscopy	100.12 %

The assay is assessed to be 100.1 % ‘as is’

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

Release Date:

Luckenwalde, 2019-January-09

Signed:

Dr. Sabine Schröder
Product Release