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Reference Substances
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Certificate of analysis

Article:	89221 Hederacoside C
Certificate # / Lot Number:	188621
Material batch:	1001061
Sample-ID:	171438
End of analysis:	10/2024
Expiry date:	10/2029

Test	Unit	Specified value	Testresult
Appearance, SOP 100005		powder	conform
Color, SOP 100006		white	conform
Identity test (UV spectrum from HPLC-DAD analysis) according to specification, SOP 204311		conform	conform
Identity test (1H-NMR-spectroscopy), (outsourced), SOP 206010		conform	conform
Identity test (13C-NMR-spectroscopy), (outsourced), SOP 206020		conform	conform
Identity test (HPLC-HR/MS), SOP 204125		conform	conform
Identity test (IR-spectroscopy), Ph. Eur. 2.2.24, Absorption Spectrophotometry, Infrared (01/2021:20224) and USP chapter 197, Spectroscopic Identification Tests (Official as of 01-Sep-2021), SOP 206000		conform	conform
Determination of water (coulometric titration), Ph. Eur. 2.5.32, Water: micro determination (07/2019:20532), SOP 304291, Vers. 2018-01 (double	%		7.1

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Test	Unit	Specified value	Testresult
analysis) Mean value			
Hederacoside C (HPLC), method 3 (%AU), SOP 441337	%	≥ 98.00	99.54
Peakpurity, (HPLC), SOP 401367		conform	conform
Inorganic impurities, (ICP-MS), for reference substances, SOP 811701: Calcium	%		<0.1
Potassium	%		<0.1
Magnesium	%		<0.1
Sulfur	%		<1.0
Sodium	%		<0.1
Phosphorus	%		<0.1
Aluminium	%		<0.1
Residual solvents, (headspace-GC), SOP 805765:	%		
Residual solvents (LOQ: 0.050)			<LOQ
Content, SOP 890000, calculated in (%): (100 - water - residual solvents - inorganic impurities) x chromatographic purity / 100	%		92

This PhytoLab phyproof© reference standard is by definition a primary reference standard and does not need to be qualified against any other reference standard. The identity of the reference standard has been substantiated by at least two independent analytical methods such as IR, NMR, UV or MS analysis. A mass balance approach, which takes chromatographic purity into account, as well as the contents of water, residual solvents, inorganic impurities, and the counter ion (if the reference standard is present as a salt) is applied in the calcula-

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tion of the absolute purity as given in this COA (see description of SOP 8900XX).

The absolute purity value (and not just the chromatographic purity result obtained by means of HPLC or GC) must be used in all quantitative calculations as the chromatographic techniques do not yet account for water, residual solvents and inorganic impurities.

Vestenbergsgreuth, 09/Oct/2024

Nicole Fuchs

QC Reference Substances

This is a computer print and valid without signature. A signed certificate of analysis can be taken on request.

PhytoLab
SAFEGUARDING BOTANICAL QUALITY.

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Further information:

Shelf life/stability: The stated expiry date applies when the reference substance is stored in the original unopened container within the specified temperature range. PhytoLab does not guarantee the stability of the reference substance once the vial has been opened.

Long-term storage and handling: The reference standard should be stored in the original unopened vial, protected against light and humidity in an airtight container, within the temperature range given on the label and accompanying data sheet. If stored below room temperature, the vial should be warmed up to room temperature in a desiccator before it is opened in order to avoid condensation of humidity. The user assumes responsibility for deciding how previously opened reference standard vials should be used and the user must ensure that the contents of opened vials are still suitable for their intended use.

Exact weight: the exact weight of each vial is given on the label of the inner vial to two decimal places. This information may be used to produce stock solutions of a known concentration without having to weigh in the reference substance again. If used for this purpose, the content of the vial must be quantitatively transferred to a volumetric flask and filled up to the required level. Please note that PhytoLab is unable to guarantee the stability of the reference standard in solution.

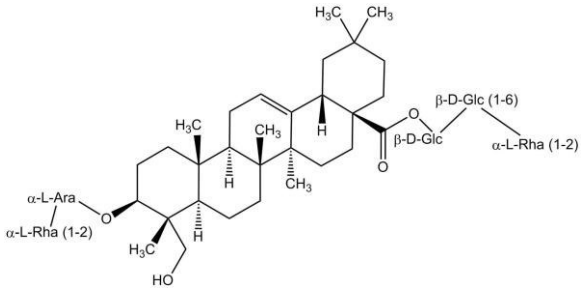
Intended use: this reference standard is solely intended for laboratory analytical purposes, research & development, and scientific teaching and training purposes. It may not be used for any other purpose and particularly not for use in, or the production of, food, animal feed, human or veterinary drugs, cosmetics, medicinal products or diagnostic agents, including in-vitro diagnostic agents. PhytoLab is unable to guarantee the suitability of this reference standard for any particular application other than its qualitative and quantitative use in chromatography and identification testing.

Further information about this reference standard can be found on the accompanying data sheet or in our webshop. Spectral and chromatographic data, and a description of the applied chromatographic method, are provided in the attachments to this COA. A detailed explanation of all data given on the COA can be found in the guide that is available from the download area in our webshop, where you can also download all of the safety data sheets.

Product Data Sheet

Hederacoside C

Product #: 89221



Physicochemical Data

CAS #:	14216-03-6
Molecular formula:	C59H96O26
Molecular weight [g/mol]:	1221.40
Synonyms	Akebia saponin PK; Hederasaponin C; Hederoside H1; Kalopanaxsaponin B; Kizuta saponin K12; Koronaroside B; Pericarsaponin Pk; Pulsatilla saponin F; Saponin K12; Saponin PK; Tauroside H2
Substance class:	Isoprenoids
Subgroup 1:	Terpenoid-type
Subgroup 2:	Triterpenes
Subgroup 3:	Triterpene saponins
Solubility:	freely soluble in water; soluble in methanol; sparingly soluble in ethanol Please note that this solubility information is based on in-house experience or taken from published data. It is not meant to guarantee solubility up to a specific concentration, nor does it guarantee stability of the reference substance in solution.

Additional Information

Source:	botanical origin
Long-term storage conditions:	15-25 °C

Manufacturer:

Phytolab GmbH & Co.KG
Dutendorfer Straße 5-7
91487 Vestenbergsgreuth
Germany

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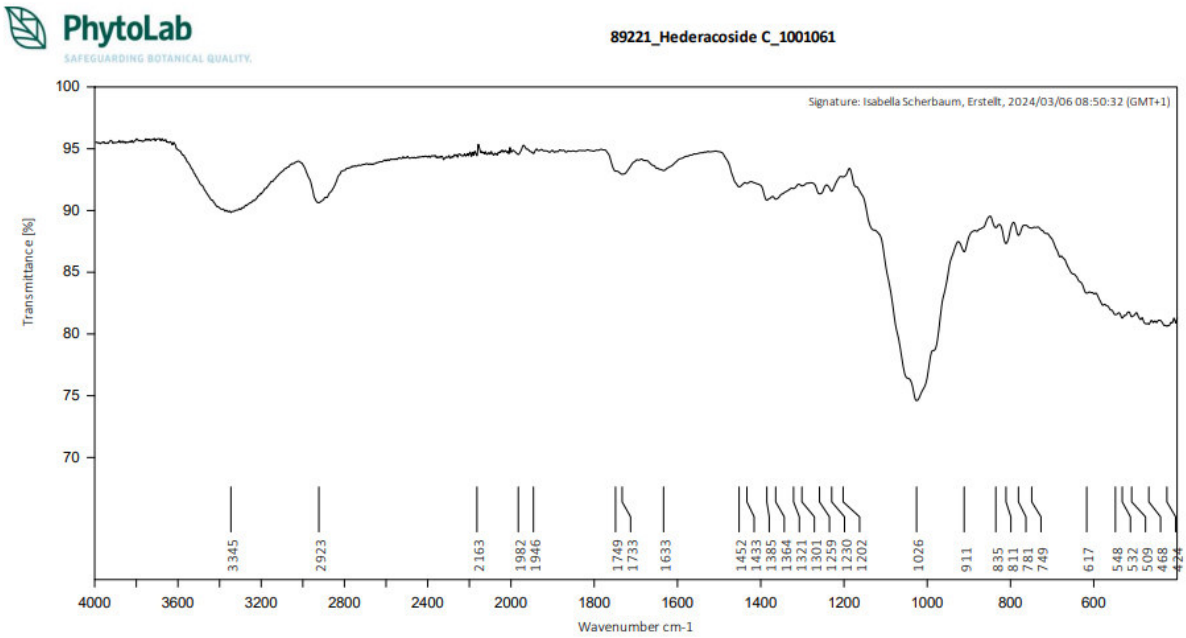
Mail: ref-substances@phytolab.de
Shop: https://phyproof.phytolab.com

Supplements

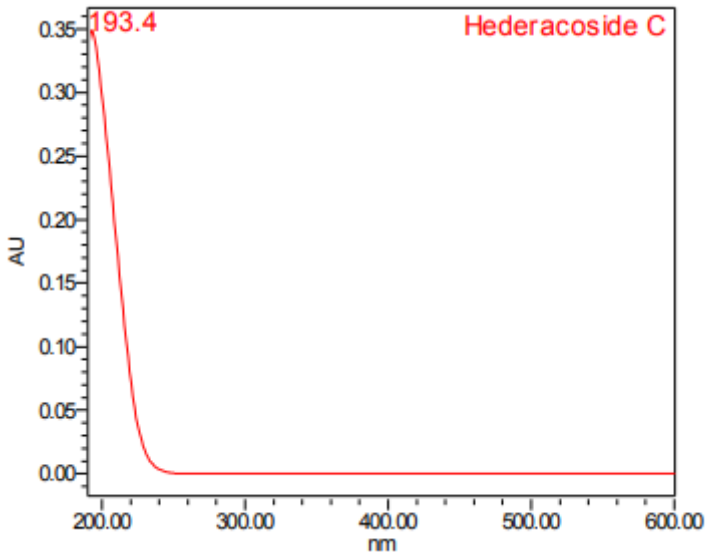
Hederacoside C **Batch # 1001061**
Product # 89221

Identity tests:

IR spectrum

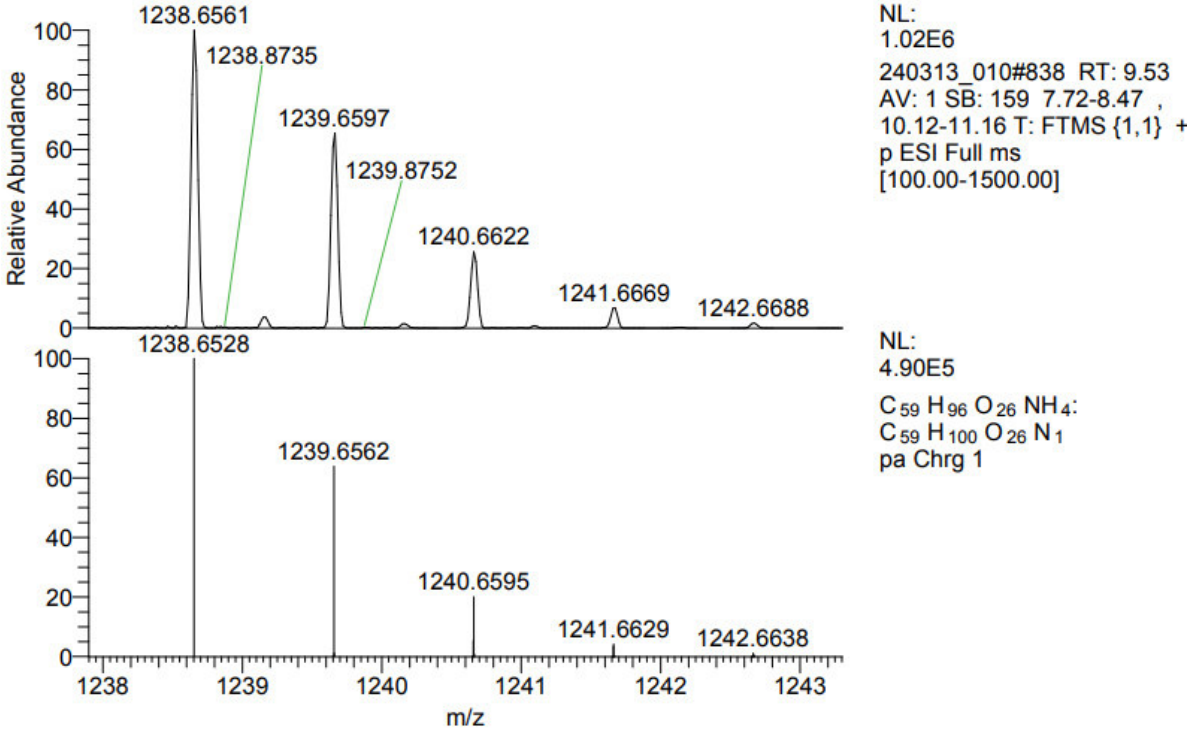


UV spectrum (derived from HPLC/PDA)

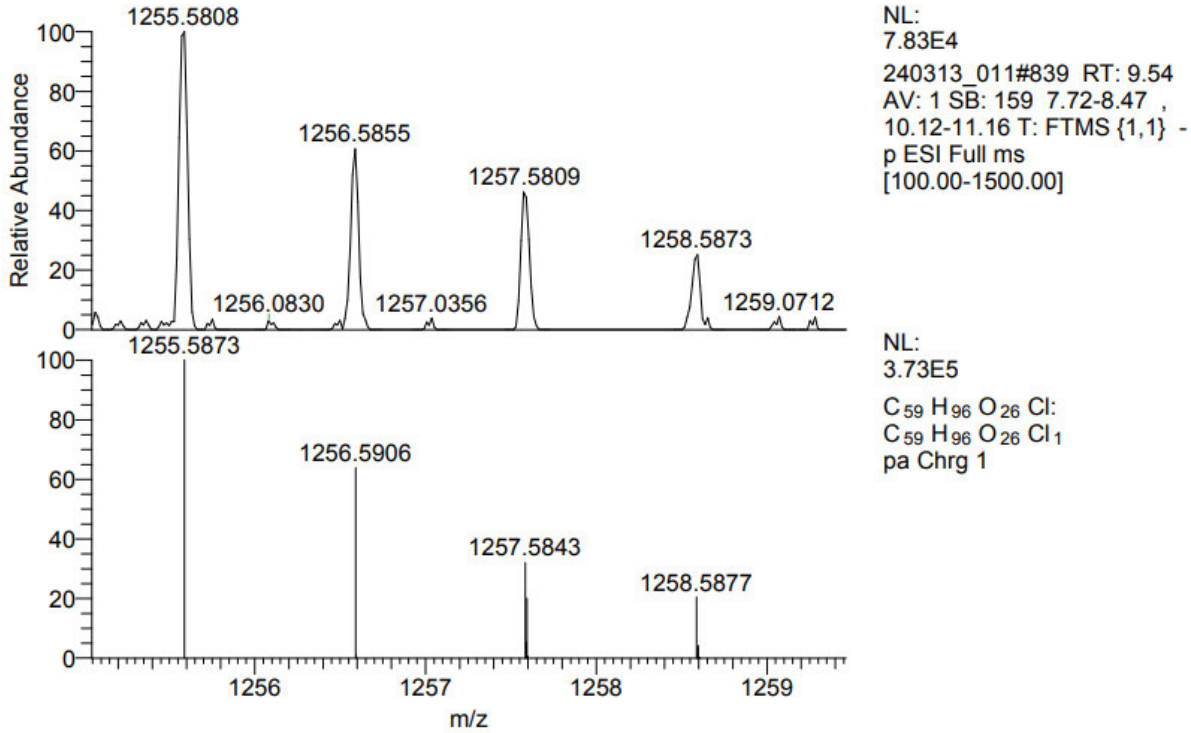


MS spectrum (ESI)

Detection: positive mode (compared with predicted spectrum)

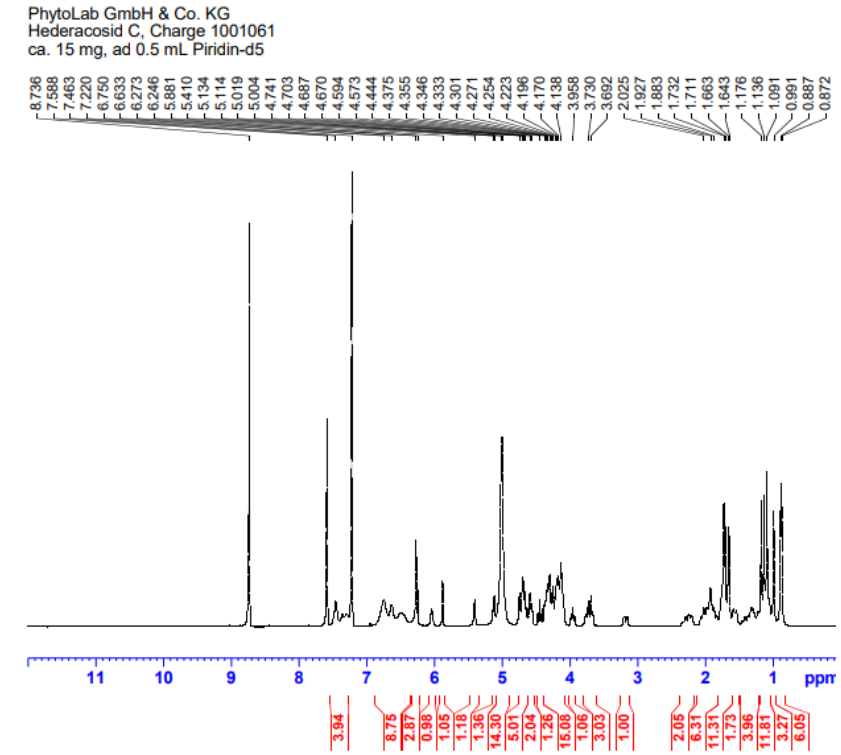


Detection: negative mode (compared with predicted spectrum)

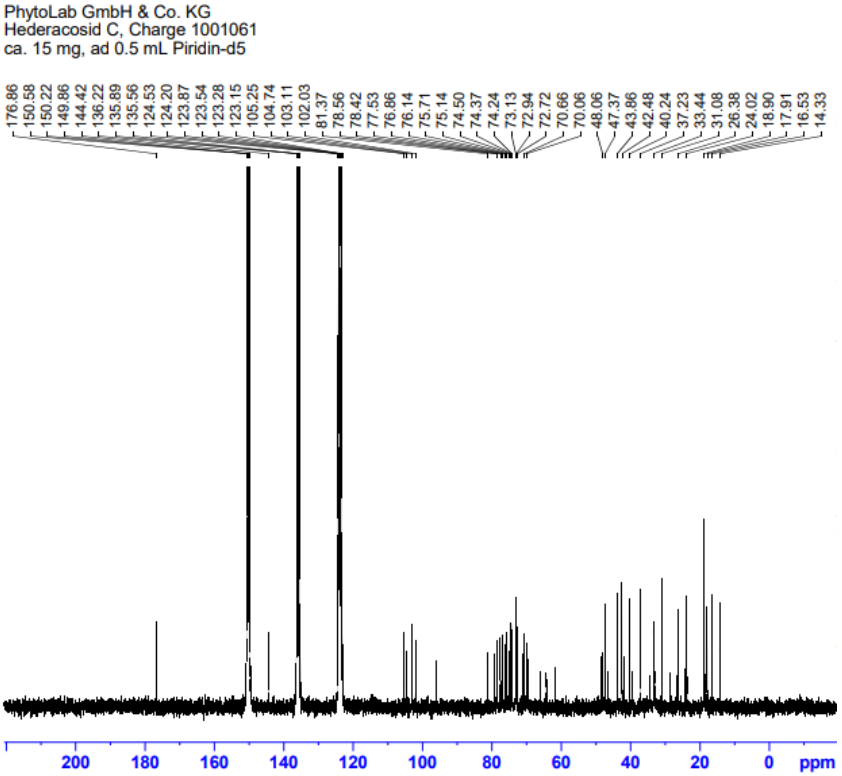


NMR spectra

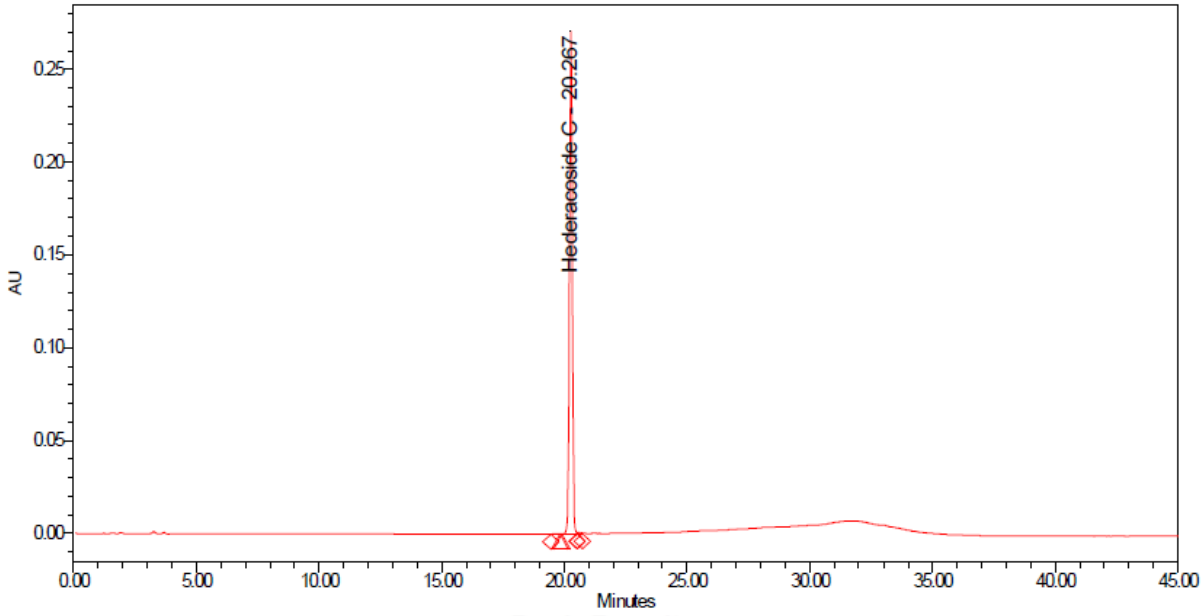
^{1}H-NMR



^{13}C-NMR



Chromatographic purity:



Peak Results

	Name	RT	Area	Height	Chromatographic_Purity	Amount	Units
1		19.645	2544	295	0.11		
2	Hederacoside C	20.267	2260102	270351	99.55	41.520	mg/100mL
3		20.553	7587	969	0.33		

Analytical conditions

Column: Symmetrie C8, 250 x 4.6 mm, 5 µm
Mobile Phase: eluent A: 0.02M KH_2PO_4 pH 2.0 (H_3PO_4)
eluent B: 90% CH_3CN
Mode: gradient

Time [min]	Eluent A [%]	Eluent B [%]
0	90	10
25	50	50
30	50	50
35	90	10
45	90	10

Flow: 1.0 ml/min
Injection Volume: 20 µl
Column Temperature: 40 °C
Sample concentration: approx. 41.5 mg/100 ml
Sample preparation: dissolved in 50% CH_3CN
Detection: UV, 200 nm
Special note: -

Please note: Values on the certificate of analysis may vary as these are average values of at least six injections while above chromatogram and report is only one example. Non-integrated peaks originate from the blank injection.