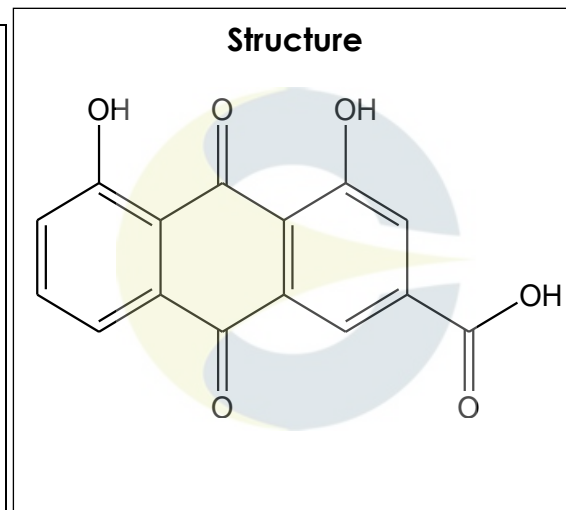


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PRODUCT NAME	Rhein
PART NUMBER	00018230
STANDARD TYPE	Primary (P)
LOT NUMBER	00018230-116
REPORT NUMBER	CDXA-RSS-7428-01
SAMPLE NUMBER	CDXA-17-000987
DATE OF SAMPLE	01/23/2017
DATE OF RE-EVALUATION	01/07/2021
DATE OF REPORT	01/28/2021



CHEMICAL NAMES	9,10-Dihydro-4,5-dihydroxy-9,10-dioxo-2-anthracenecarboxylic acid; Chryszazin-3-carboxylic acid; Monorhein; Cassic acid; Rheic acid; Rhubarb yellow
CHEMICAL FORMULA	C ₁₅ H ₈ O ₆
MOLECULAR WEIGHT (MW)	284.22
CHEMICAL FAMILY	Anthraquinones
CAS NUMBER	[478-43-3]
EC#(EINECS)	207-521-4
RTECS	CA9516000

ANALYTICAL RESULTS

TEST	METHOD	SPECIFICATION	RESULT
Adjusted Purity	NA	≥ 85%	97.7%
HPLC	0.700.10.2.METH22	≥ 90%	99.0%
NMR	4.5.3-CD-4.0-000338	Conforms to structure	Conforms to structure
Mass Spectrum	99.1-CDXA-2.0-000126	Conforms	Conforms
Residual Solvent	99.1-CD-10.0-000115	NA	MeOH – 0.4 %; DMF – 0.9%
Water	0.700.12.37	NA	ND
Appearance	NA	NA	Orange powder

ADJUSTED PURITY: 97.7% IS BASED ON (100 - 1.3 SOLVENTS - 0.0 WATER) X 99.0% HPLC

STORAGE CONDITIONS

STORAGE	Room Temperature in a dry place.
EXPIRATION DATE	01/2026 under the above conditions.

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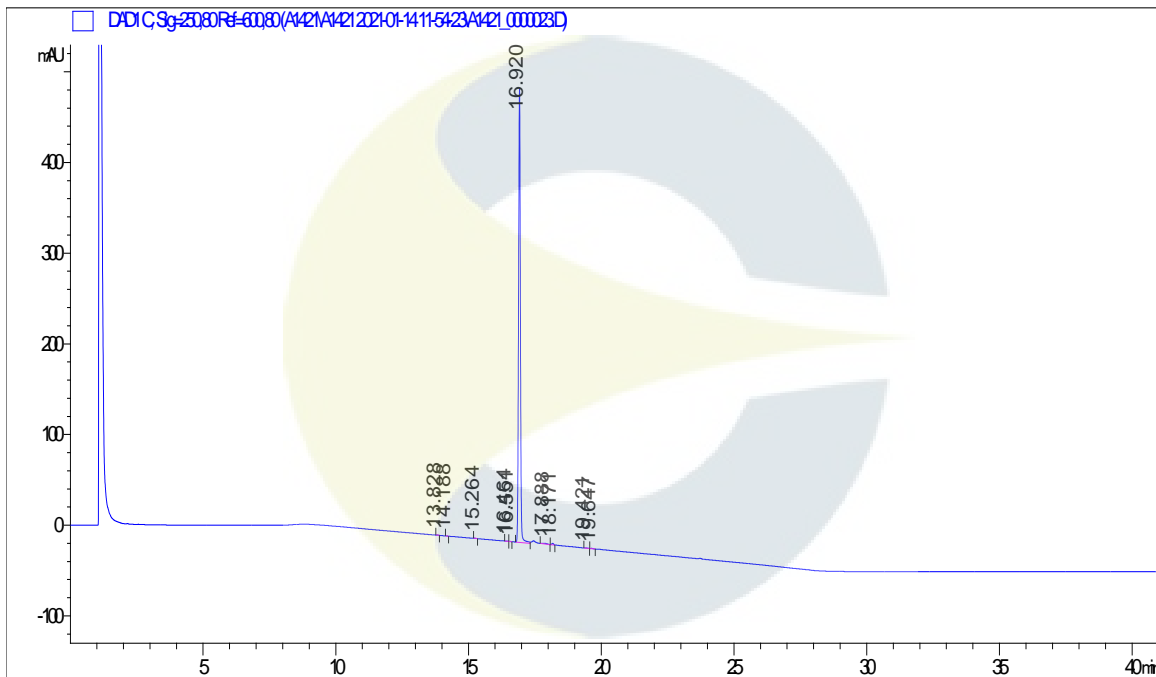
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ANALYTICAL CONDITIONS

INSTRUMENT	AGILENT 1260 HPLC UV-VIS (DAD); AGILENT 6510 QTOF
COLUMN	Phenomenex Luna C18(2) 150 x 2.00 mm, 5 µm particle size
MOBILE PHASE	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.
COLUMN TEMP.	60 °C
FLOW RATE	0.4 mL/minute
INJECTION VOL.	0.2 µL
INJECTION CONC.	1.1 mg/mL in Dimethyl sulfoxide
DETECTION	250 ± 40 nm

HPLC CHROMATOGRAM OF RHEIN (CDXA-17-000987)

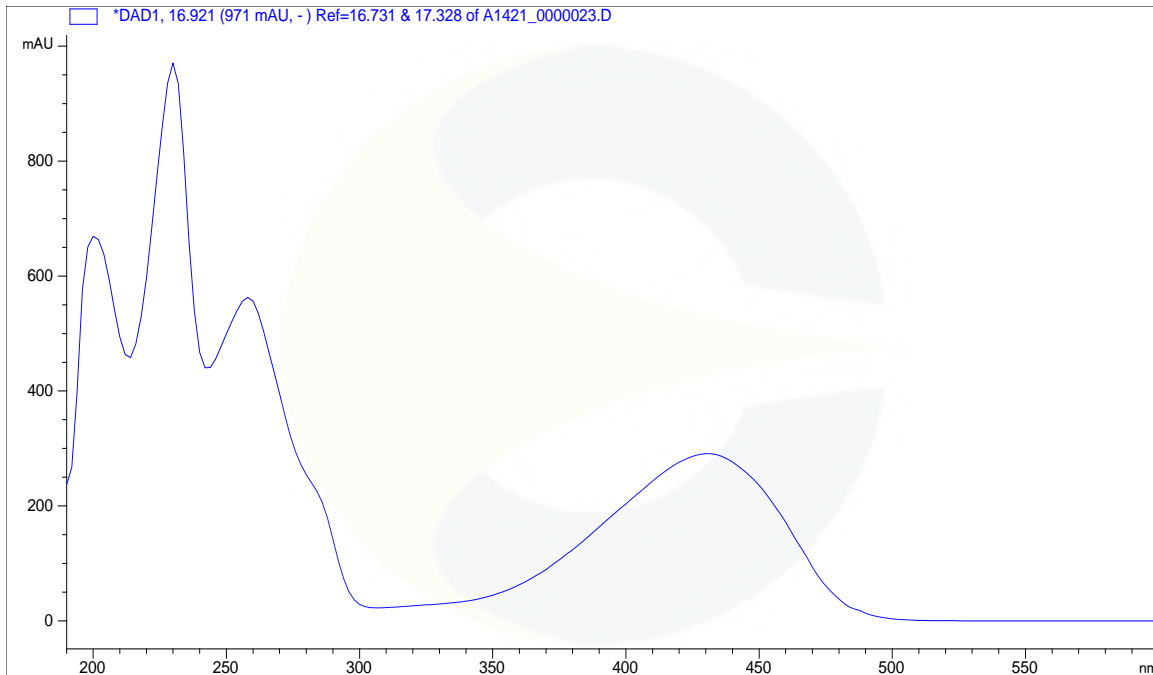


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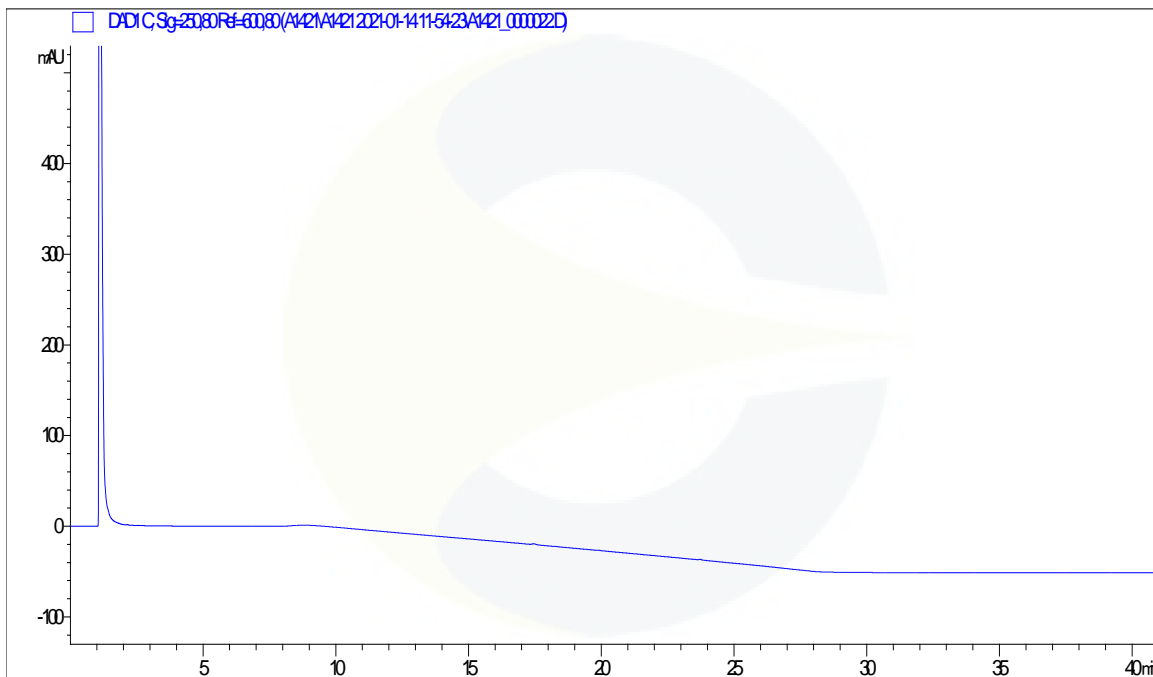
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UV SPECTRUM AT 16.9 MINUTES



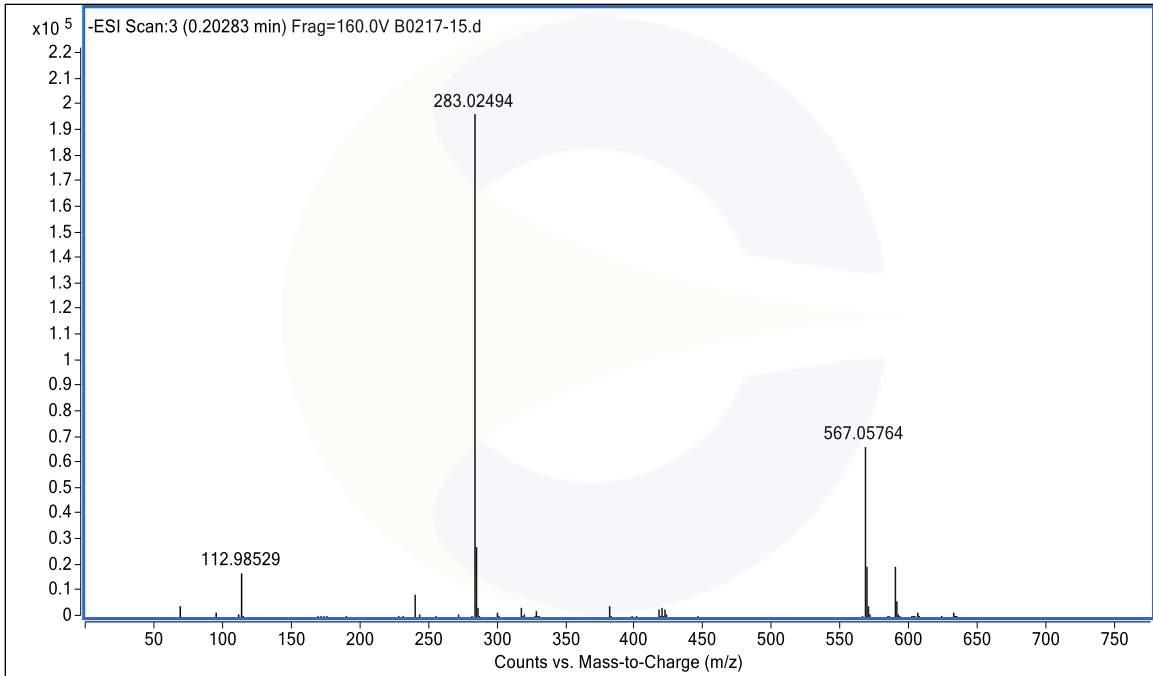
HPLC CHROMATOGRAM OF DILUENT BLANK



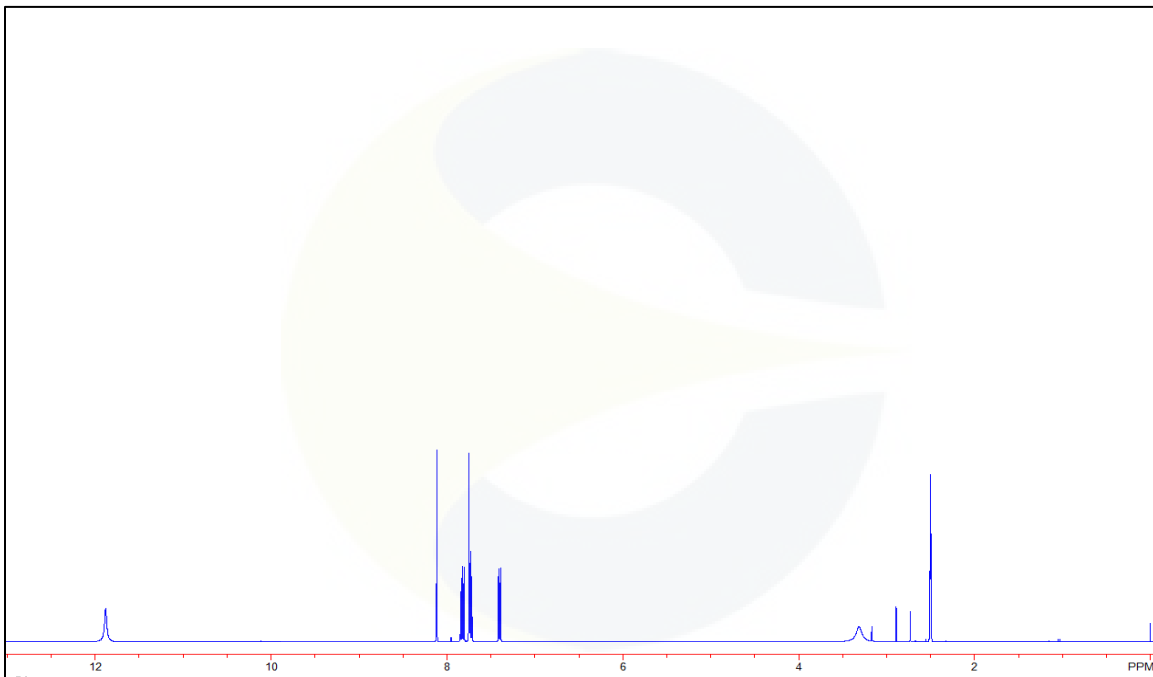
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MASS SPECTRUM OF RHEIN (CDXA-17-000987)

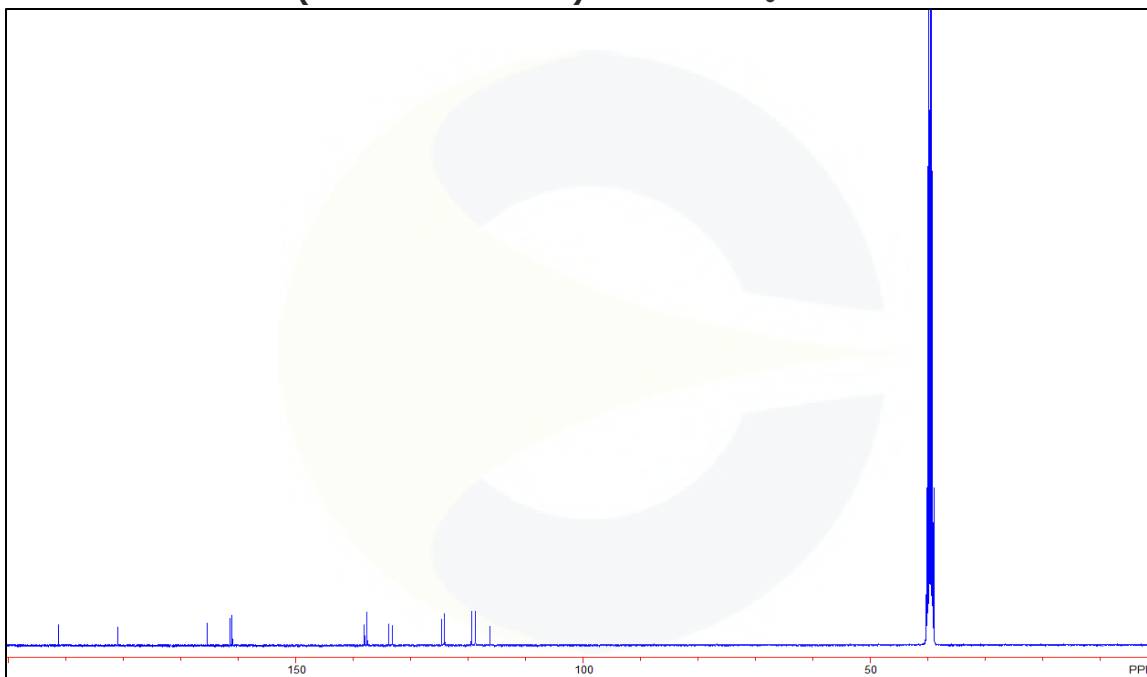


¹H-NMR SPECTRUM OF RHEIN (CDXA-17-000987) IN DMSO-d₆

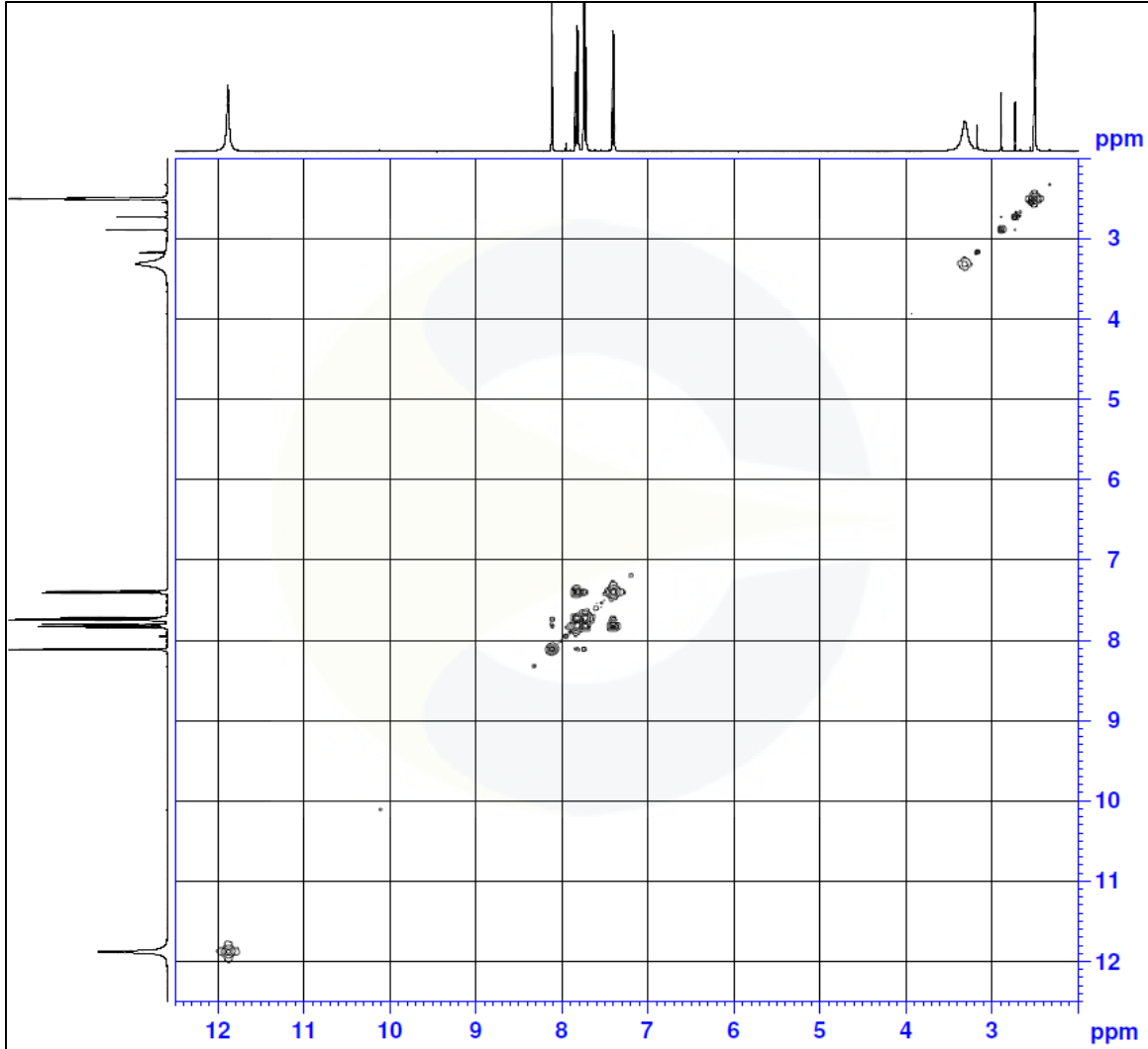


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¹³C-NMR SPECTRUM OF RHEIN (CDXA-17-000987) IN DMSO-d₆



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COSY-NMR SPECTRUM OF RHEIN (CDXA-17-000987) IN DMSO-d₆

REVISION HISTORY

<u>Revision History</u>	<u>Date of Revision</u>	<u>Document/Changes</u>
00	03/07/2017	New report
01	01/28/2021	Passed re-evaluation by HPLC, KF. Updated expiration date, analytical conditions, analytical results, and chromatograms. Removed melting point.

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