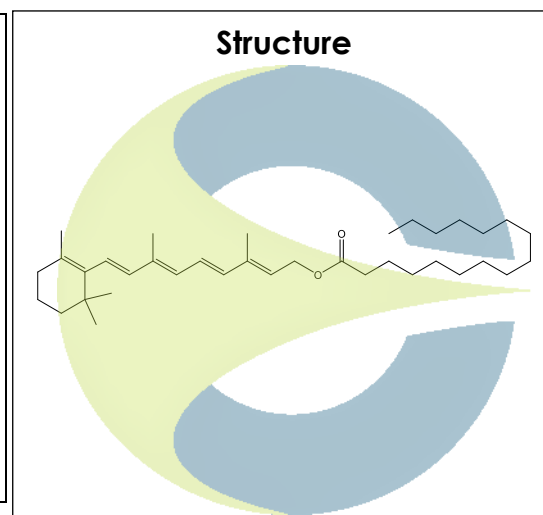


Certificate of Analysis

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PRODUCT NAME	Vitamin A Palmitate
PART NUMBER	00022717
STANDARD TYPE	Primary (P)
LOT NUMBER	00022717-891
REPORT NUMBER	CDXA-RSS-8585-01
SAMPLE NUMBER	CDXP-19-00279
DATE OF SAMPLE	04/16/2019
DATE OF RE-EVALUATION	08/01/2022
DATE OF REPORT	08/29/2022



CHEMICAL NAMES	all-trans Retinol palmitate, Aquasol A; Arovit; Optovit-A; Retinol palmitate; Retinyl palmitate
CHEMICAL FORMULA	C ₃₆ H ₆₀ O ₂
MOLECULAR WEIGHT (MW)	524.86
CHEMICAL FAMILY	Vitamins
CAS NUMBER	[79-81-2]
EC#(EINECS)	201-228-5
RTECS	VH6860000

ANALYTICAL RESULTS

TEST	METHOD	SPECIFICATION	RESULT
Adjusted Purity	NA	≥ 85%	96.7%
HPLC	99.1-CDXA-01-000450	≥ 90%	96.7%
NMR	99.1-04-2.0-000122	Conforms to structure	Conforms to structure
Mass Spectrum	99.1-04-3.0-000126	Conforms	Conforms
Residual Solvent*	99.1-CDXA-3.0-000621	NA	Toluene < 0.1%
Water	0.700.12.37	NA	ND
Appearance	NA	NA	Yellow solid to oil

*Testing performed at an ISO 17025 accredited subcontracted laboratory.

ADJUSTED PURITY: 96.7% IS BASED ON (100 - 0.0 SOLVENTS - 0.0 WATER) X 96.7% HPLC

STORAGE CONDITIONS
STORAGE -20 °C in a dry place. Protect from light.

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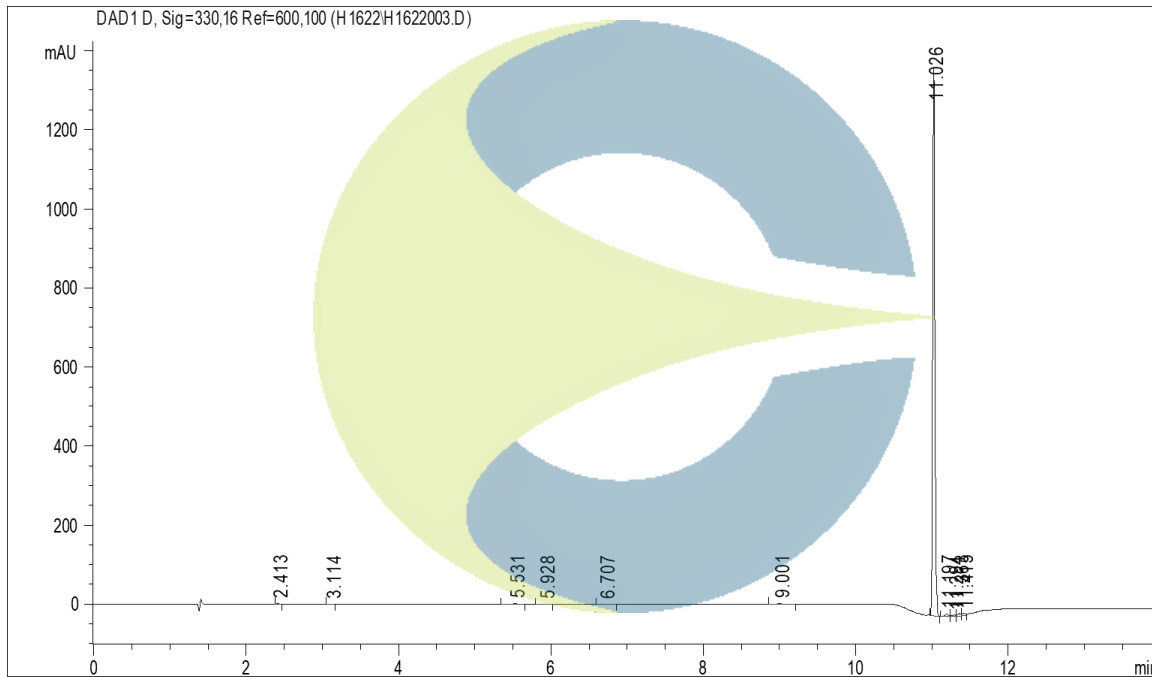
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EXPIRATION DATE 08/2027 under the above conditions.

ANALYTICAL CONDITIONS

INSTRUMENT	AGILENT 1260 HPLC UV-VIS (DAD); AB-SCIEX 6600 TRIPLE TOF
COLUMN	Kinetex C18 - 150 x 4.60 mm, 2.6 µm particle size
MOBILE PHASE	A - 0.1% Phosphoric acid in Methanol, B - 0.1% Phosphoric acid in Tetrahydrofuran; Isocratic 10% B for 8 minutes, then increasing to 90% B over 1 minute. Hold at 90% B for 3 minutes, then decreasing to 10% B over 2 minutes.
COLUMN TEMP.	30 °C
FLOW RATE	1.0 mL/minute
INJECTION VOL.	0.4 µL
INJECTION CONC.	1.4 mg/mL in Tetrahydrofuran
DETECTION	330 ± 8 nm

HPLC CHROMATOGRAM OF VITAMIN A PALMITATE (CDXP-19-00279)

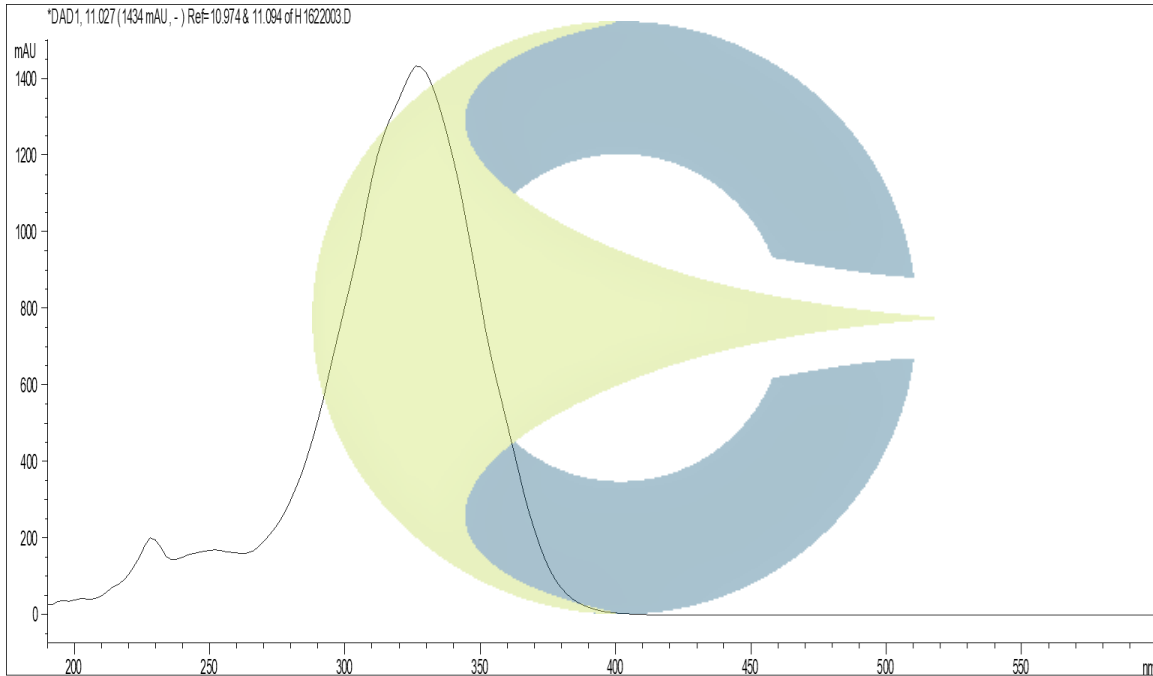


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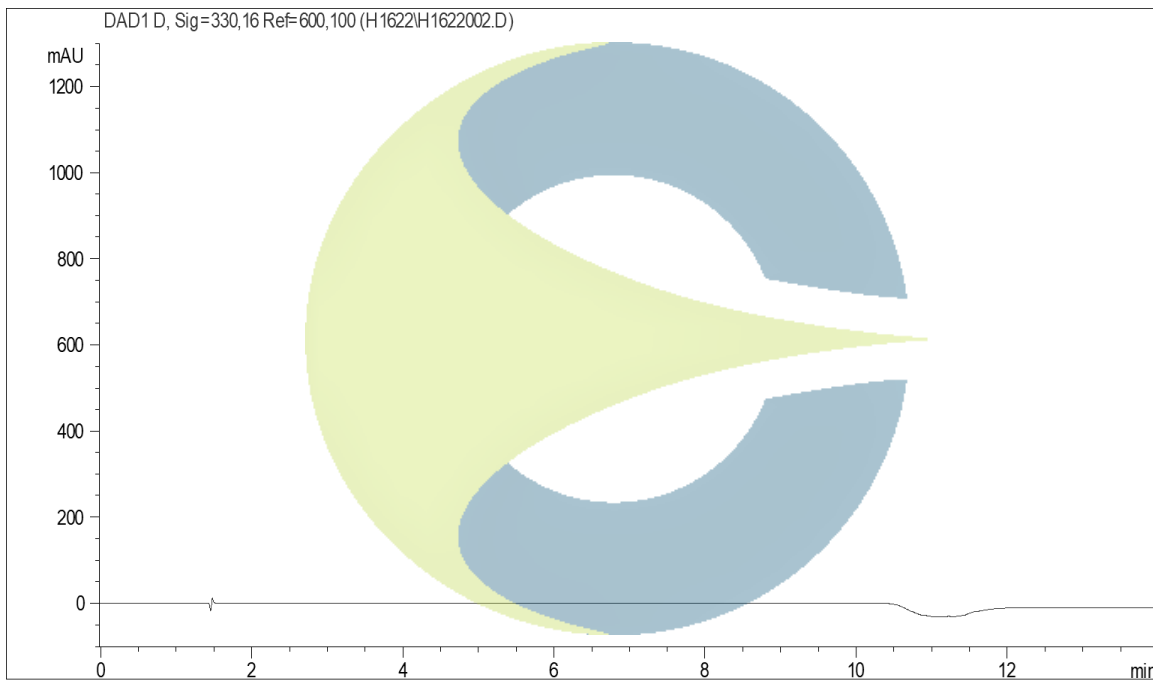
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UV SPECTRUM AT RT = 11.0 MINUTES

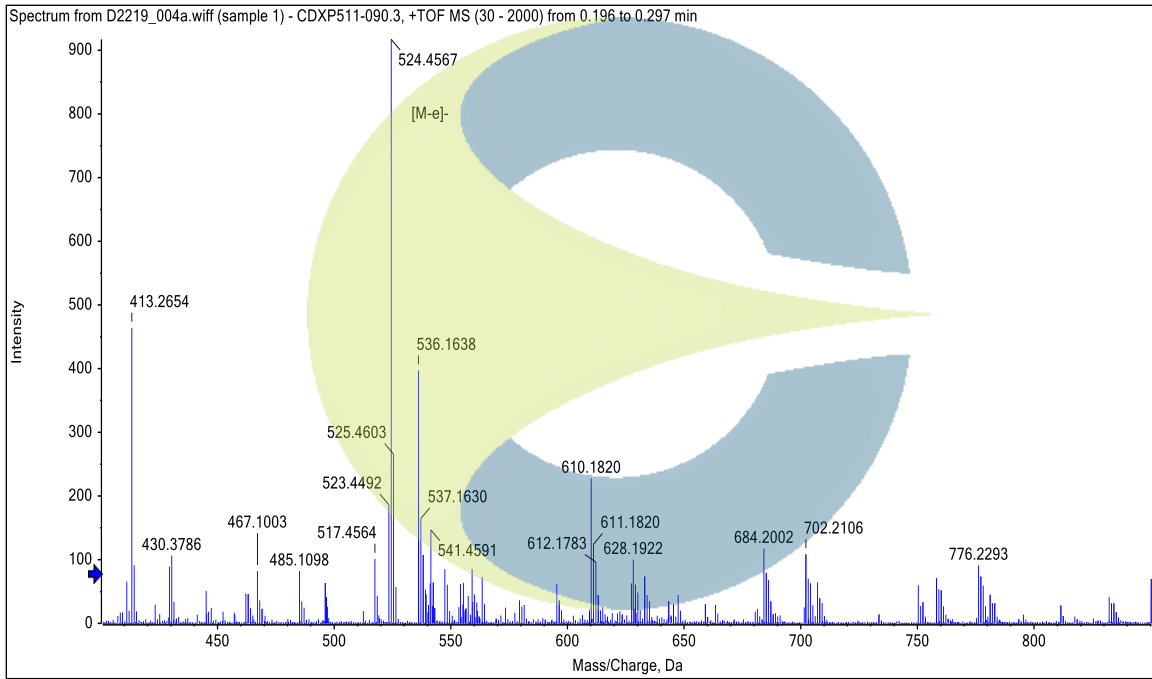


HPLC CHROMATOGRAM OF DILUENT BLANK

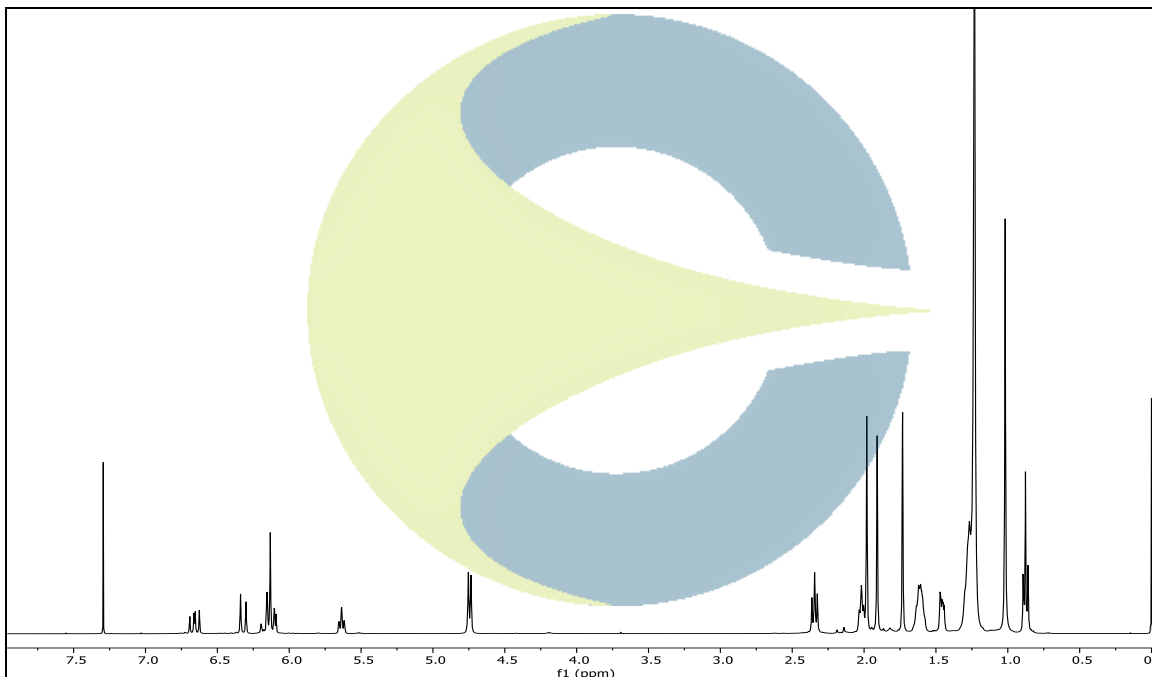


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MASS SPECTRUM OF VITAMIN A PALMITATE (CDXP-19-00279)

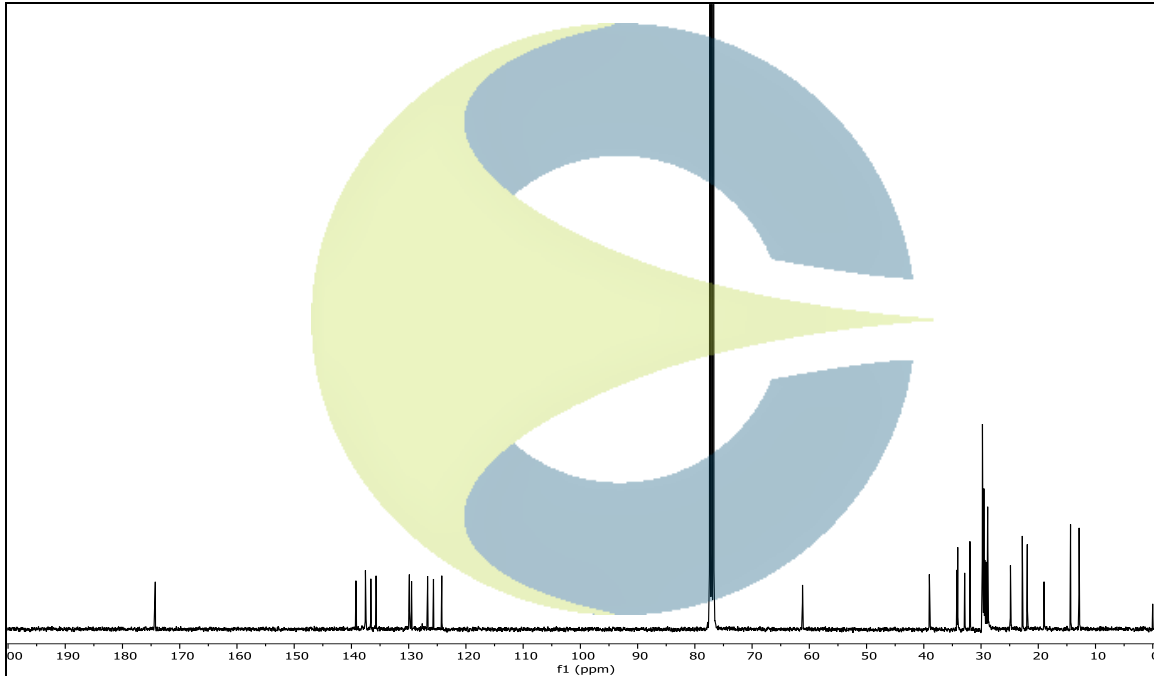


¹H-NMR SPECTRUM OF VITAMIN A PALMITATE (CDXP-19-00279) IN CDCl₃ AT -40°C

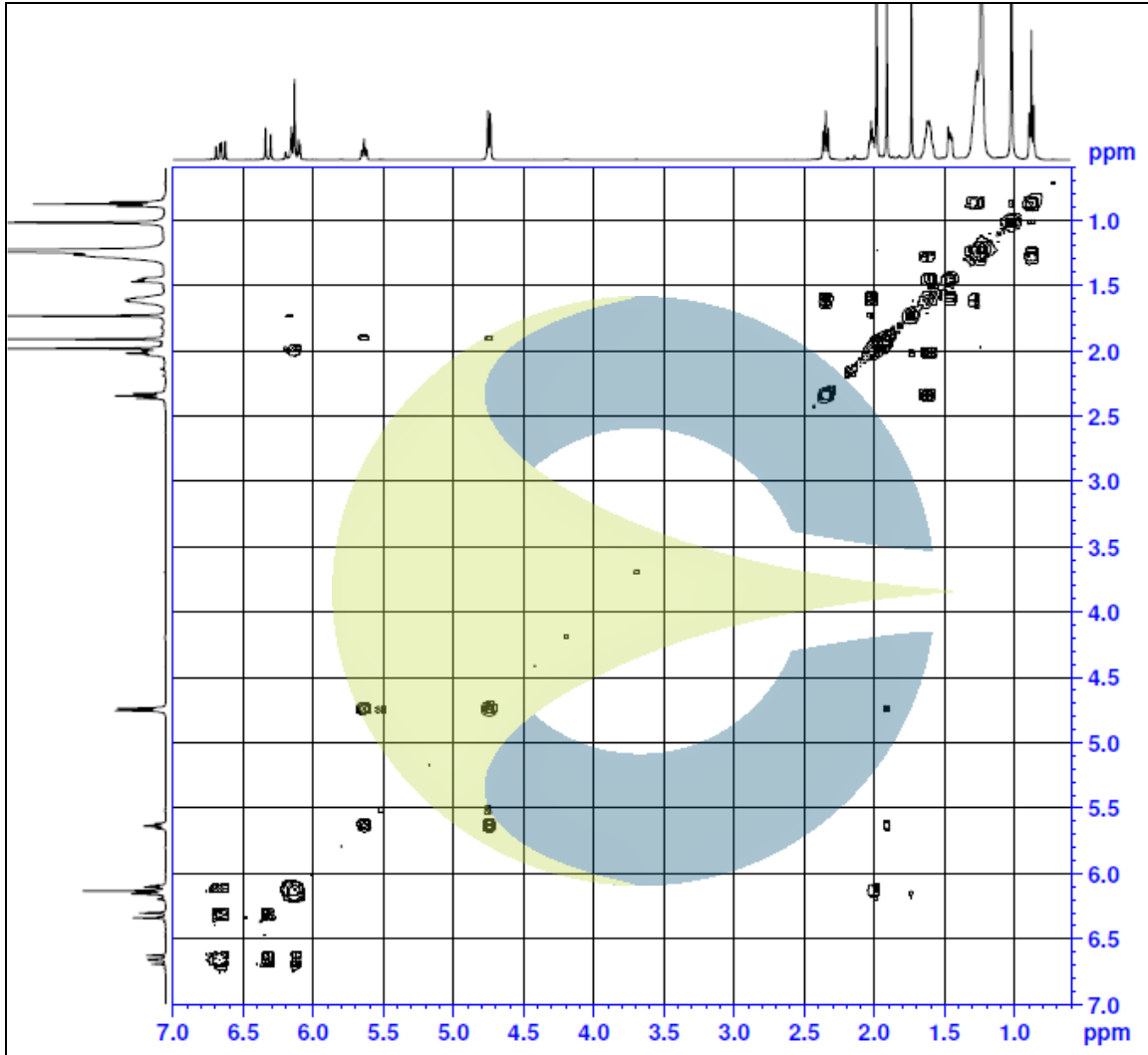


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¹³C-NMR SPECTRUM OF VITAMIN A PALMITATE (CDXP-19-00279) IN CDCl₃ AT -40°C



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COSY-NMR SPECTRUM OF VITAMIN A PALMITATE (CDXP-19-00279) IN CDCl₃ AT -40°C

REVISION HISTORY

<u>Revision History</u>	<u>Date of Revision</u>	<u>Document/Changes</u>
00	05/13/2019	New report
01	08/29/2022	Passed re-evaluation by HPLC, KF. Updated expiration date, analytical results, analytical conditions, and chromatograms.

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