 Analyses for industry and science	Al. Zwycięstwa 96/98; 81-451 Gdynia office@spark-lab.pl <a href="http://www.spark-lab.pl">www.spark-lab.pl</a> ; +48 782 811 350 NIP: 586 228 03 65	<b>Report number:</b> 2020/08/0013/003/EN	
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## ANALYSIS REPORT

Particulars of the Client	Description	Order number
EMEN MACIEJ NIEMCZYK ul. Luboszycka 36 45-215 Opole	Quantitative determination of CBDV, CBDVA, CBG, CBD, THCV, CBDA, CBGA, CBN, delta9-THC, delta8-THC, THCVA, CBC, THCA, CBCA in oil sample.	ZO 2020/08/000012

**The analyses have been conducted by:**  
 Laboratorium Analiz Chemicznych Spark-Lab Sp. z o.o.  
 Research and Development Dept.

Date of commencement of analyses	14.08.2020
Date of completion of the analyses	20.08.2020

### Sample identification:

Sample signature	Sample designation	Sample collection method	Additional information	
2020/08/0013/003	20% CBD Amber Oil 06/2021	Sample collected and delivered by the client	Date of delivery:	07.08.2020
			Object of analysis:	brown oil
			Sample evaluation:	unreseededly

### Results:

Sample signature	Subject of determination	Method identification*	The result of the analysis	Uncertainty	Unit
2020/08/0013/003	CBD	modified SL/2019/036, ed. 2 of 14.08.2020, NA	22,8	1,9	%
	CBDA		< 0,25	0,02	
	CBDV		0,25	0,06	
	CBDVA		< 0,005	0,002	
	CBG		0,085	0,020	
	CBGA		< 0,005	0,002	
	THCV		0,005	0,002	
	THCVA		not analysed		
	CBN		< 0,013	0,003	
	Δ8-THC		< 0,005	0,002	
	Δ9-THC		0,089	0,021	
	THCA		< 0,005	0,002	
	CBC		0,099	0,023	
	CBCA		< 0,005	0,002	
	Σ CBD		22,8	1,9	
	Σ THC		0,089	0,021	
Σ CBG	0,085	0,020			

\* Determination method: A-accredited, NA-non-accredited, AS-by accredited subcontractor, NAS-not accredited by the subcontractor.

### Supplements, method deviations:

- Matrix of analysed sample was different than sample matrix described in SL/2019/036 ed. 2 of 14.08.2020.
- Method SL/2019/036 ed. 2 of 14.08.2020 was expanded with extra analytes: CBC, CBCA.
- Determination of THCVA was not possible due to high CBD content.

## ANALYSIS REPORT

### Additional information:

Abbreviations and applied formulas for the calculation of the sum:

CBD – Cannabidiol

CBG – Cannabigerol

CBDV – Cannabidivarin

CBN – Cannabinol

$\Delta 8$ -THC – Delta-8-tetrahydrocannabinol

THCV – Tetrahydrocannabivarin

CBC – Cannabichromene

CBDA – Cannabidiolic acid

CBGA – Cannabigerolic acid

CBDVA – Cannabidivarinic acid

THCA – Tetrahydrocannabinolic acid

$\Delta 9$ -THC – Delta-9-tetrahydrocannabinol

THCVA – Tetrahydrocannabivarinic acid

CBCA – Cannabichromenic acid

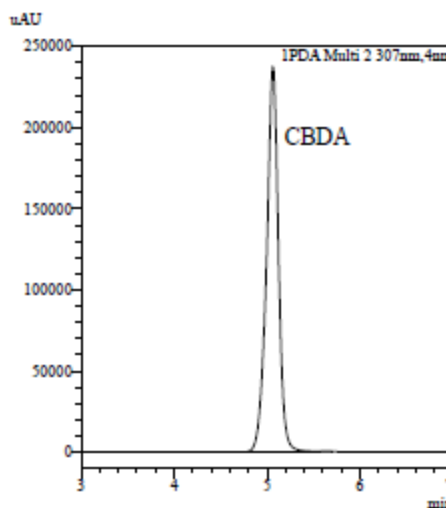
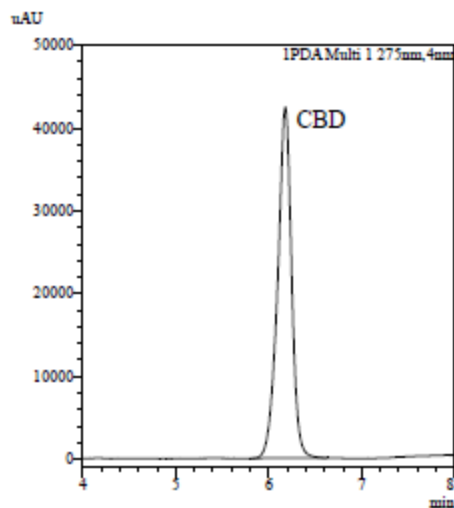
$$\Sigma \text{THC} = \% \text{THC} + (\% \text{THCA} \times 0,877)$$

$$\Sigma \text{CBD} = \% \text{CBD} + (\% \text{CBDA} \times 0,877)$$

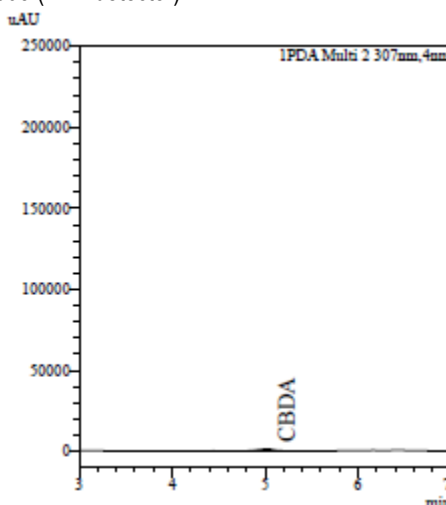
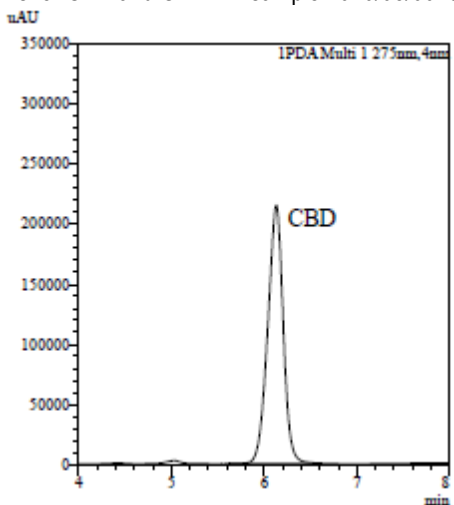
$$\Sigma \text{CBG} = \% \text{CBG} + (\% \text{CBGA} \times 0,878)$$

### Chromatograms:

1. Chromatograms for CBD and CBDA standards (100 ppm, PDA detector)

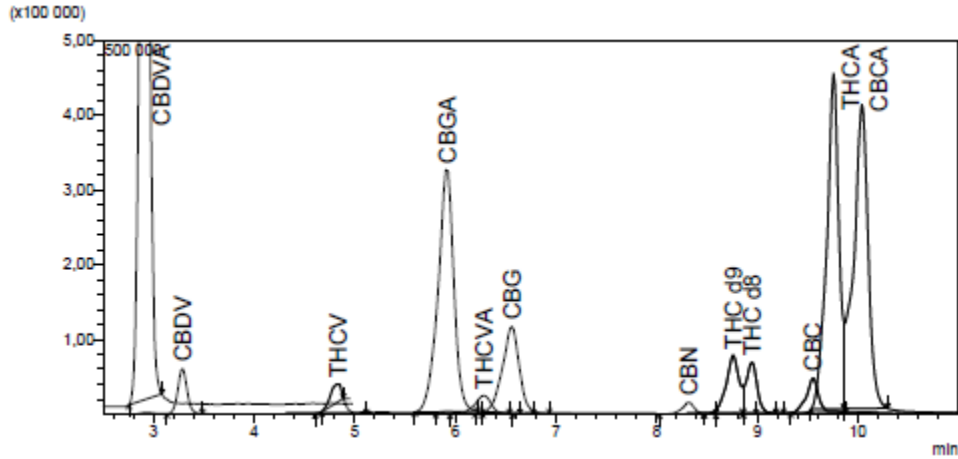


2. Chromatograms for CBD and CBDA in sample 2020/08/0013/003 (PDA detector)

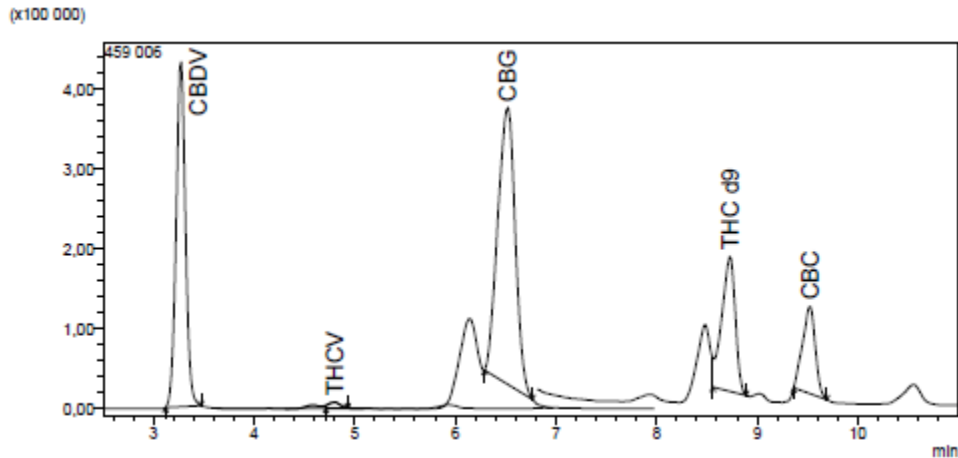


**ANALYSIS REPORT**

3. Chromatogram for CBDV, CBDVA, CBGA, THCVA, CBN, Δ9-THC, Δ8-THC, CBC, THCA, CBCA (1 ppm), CBG, THCV (0,8 ppm) standards (MS detector)



4. MS chromatogram for sample 2020/08/0013/003



<p><b>Approved of the results and report</b></p>		
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**END OF REPORT**

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