



**ŁUKASIEWICZ RESEARCH NETWORK  
NEW CHEMICAL SYNTHESSES INSTITUTE  
RESEARCH LABORATORY**

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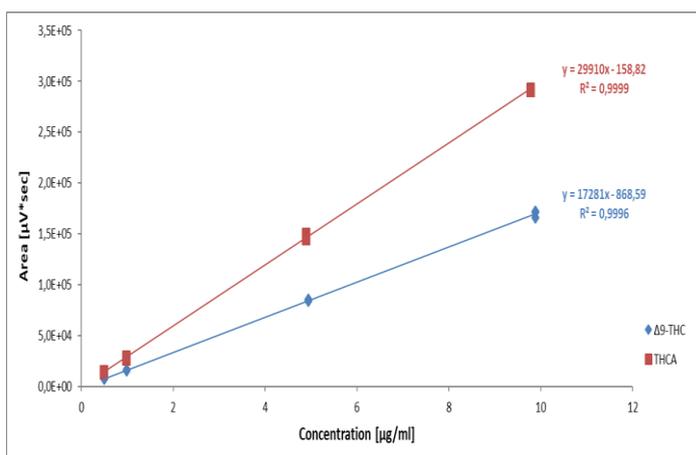
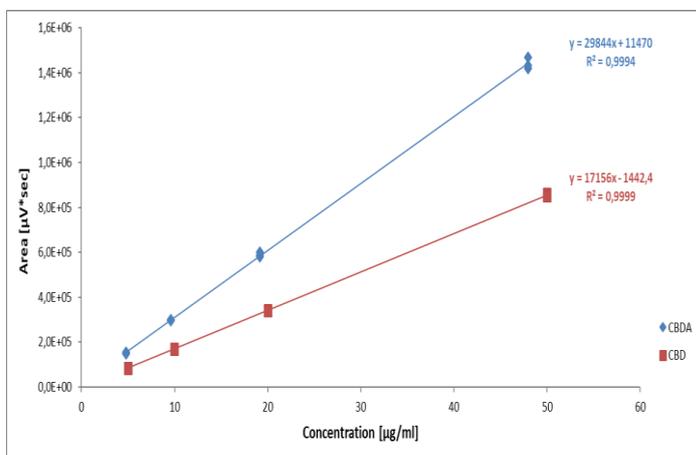
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## QUALITY CERTIFICATE 193/2019

Type of sample: Liquid CBD  
Sample name /Batch: 55,56 mg/ml CBD PG/VG B:01/10/2019 (A.R.)  
CAS13956-29-1  
Client's name: Limucan GmbH  
Kleines Feld 17  
49448 Marl, Deutschland  
No sample identification: 53/2019/19  
Date of start testing: 03.10.2019  
Date of end testing: 09.10.2019  
Operator: E. Józwick

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### Calibration:



## Test results<sup>1)</sup>:

CBDV (cannabidivarine)	< L.O.Q. ....
CBDA (cannabidiolic acid)	< L.O.D. ....
CBG (cannabigerol)	< L.O.D. ....
CBD (cannabidiol)	5,011 ± 0,210 % (w/w) .....
CBN (cannabinol)	< L.O.D. ....
Δ-9-THC (delta-9-tetrahydrocannabinol)	< L.O.D. ....
Δ-8-THC (delta-8-tetrahydrocannabinol)	< L.O.D. ....
CBC (cannabichromene)	< L.O.D. ....
THCA (delta-9-tetrahydrocannabinolic acid)	< L.O.D. ....

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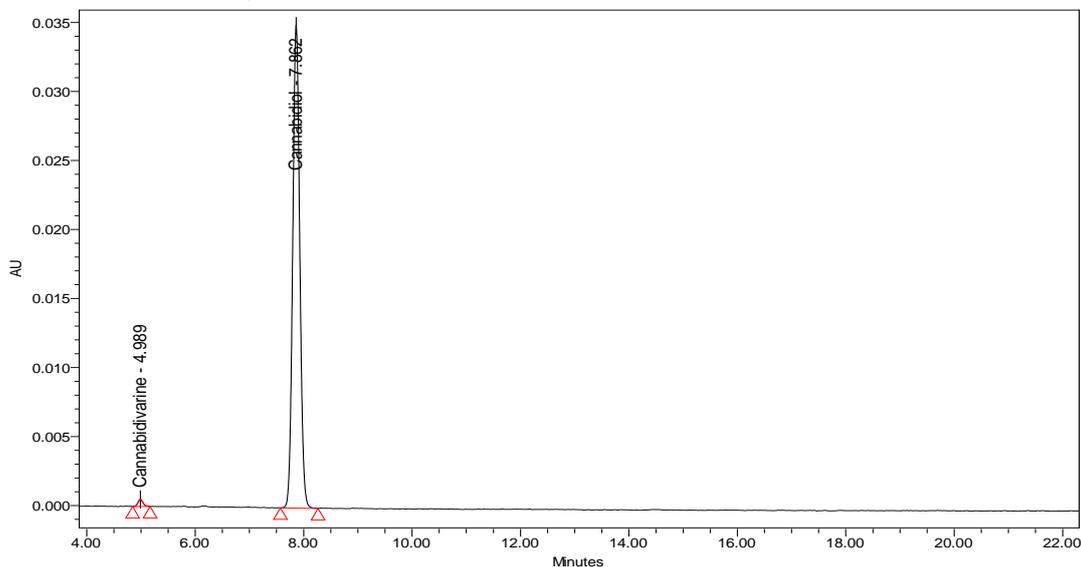
$\Sigma\text{THC} = \text{THC} + (0,8772 \times \text{THCA})$  < L.O.D. ....

*L.O.Q (limit of quantification) = 0,150% (w/w)*

*L.O.D (limit of detection) = 0,063% (w/w)*

<sup>1)</sup> the given extended uncertainty (U) is based on standard uncertainty multiplied by extension factor k=2 providing confidence level of 95%. Sampling uncertainty was not taken into account in calculations.

According to the High Performance Liquid Chromatography (HPLC) method with a Photodiode Array Detector (PAD)



It declares that the above results relate only to the sample identification number 53/2019/19, and that without the written consent of the Head of the Laboratory of Analytical certificate may not be reproduced otherwise than in its entirety.

Date of issue: 09.10.2019

Quality manager: Mariusz Chmiel

END