

Certificate ID: **25553**

Client Sample ID: **NuLeaf Naturals CBD Oil**

Matrix: **Tincture - Hemp Oil**

Date Received: **1/10/2018**



NuLeaf Naturals

1550 Larimer St. Suite 964

Denver, CO 80202

Attn: Bo Shirley

This test method was performed in accordance with the requirements of ISO/IEC 17025. The sample was provided to the laboratory by the client and tested as received. These results relate only to the test article listed in this report. Reports may not be reproduced except in their entirety.

Authorization: Matthew Silva, Chemical Engineer	Signature: 	Date: 1/18/2018
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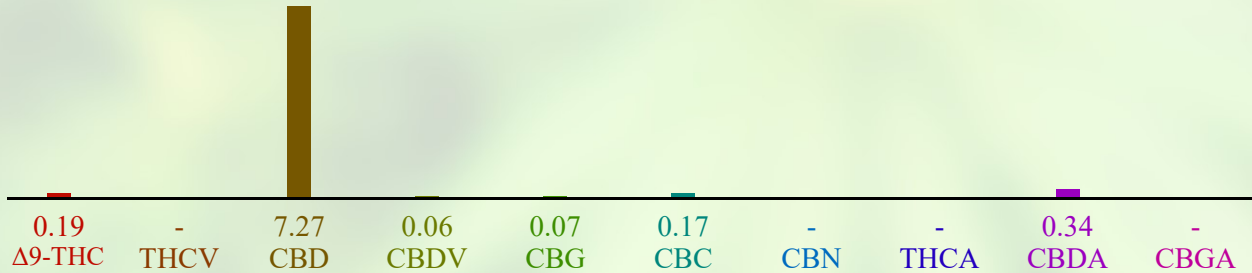
CN: Cannabinoid Profile & Potency [WI-10-04]

Analyst: *JDP*

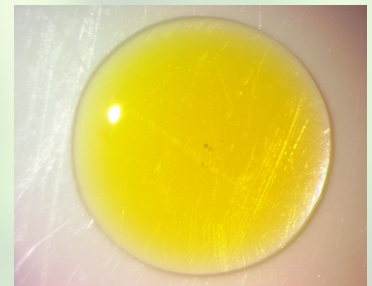
Test Date: 1/18/2018

The client sample was analyzed for plant-based cannabinoids by Convergence Chromatography (CC). The collected data was compared to data collected for certified reference standards at known concentrations.

25553-CN



ID	Weight %	Conc.
Δ 9-THC	0.19 wt %	1.80 mg/mL
THCV	ND	ND
CBD	7.27 wt %	67.98 mg/mL
CBDV	0.06 wt %	0.53 mg/mL
CBG	0.07 wt %	0.70 mg/mL
CBC	0.17 wt %	1.61 mg/mL
CBN	0.01 wt %	0.07 mg/mL
THCA	ND	ND
CBDA	0.34 wt %	3.21 mg/mL
CBGA	0.01 wt %	0.08 mg/mL
Total	8.13 wt%	75.97 mg/mL
Max THC	0.19 wt%	1.80 mg/mL
Max CBD	7.58 wt%	70.80 mg/mL



Max THC (and Max CBD) are calculated values for total cannabinoids after heating, assuming complete decarboxylation of the acid to the neutral form. It is calculated based on the weight loss of the acid group during decarboxylation: $\text{Max THC} = (0.877 \times \text{THCA}) + \text{THC}$. ND = None detected above the limits of detection (LLD)

EA: Elemental Analysis [WI-10-13]

Analyst: JFD

Test Date: 1/12/2018

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25553-EA

Symbol	Metal	Conc. ¹	MDL	Limits ²	Status
Al	Aluminum	1,596 ug/kg	5 ug/kg	-	
As	Arsenic	ND	4 ug/kg	1500 ug/kg	PASS
Cd	Cadmium	ND	1 ug/kg	1500 ug/kg	PASS
Ca	Calcium	1,635 ug/kg	500 ug/kg	-	
Cr	Chromium	55 ug/kg	5 ug/kg	25000 ug/kg	PASS
Co	Cobalt	ND	10 ug/kg	-	
Cu	Copper	ND	500 ug/kg	100000 ug/kg	PASS
Fe	Iron	2,315 ug/kg	5 ug/kg	-	
Pb	Lead	54 ug/kg	2 ug/kg	5000 ug/kg	PASS
Mg	Magnesium	9,342 ug/kg	500 ug/kg	-	
Mn	Manganese	679 ug/kg	500 ug/kg	-	
Hg	Mercury	ND	2 ug/kg	1500 ug/kg	PASS
Mo	Molybdenum	ND	5000 ug/kg	10000 ug/kg	PASS
Ni	Nickel	ND	500 ug/kg	1500 ug/kg	PASS
P	Phosphorus	ND	500 ug/kg	-	
K	Potassium	37,948 ug/kg	5 ug/kg	-	
Se	Selenium	ND	10 ug/kg	-	
Ag	Silver	ND	10 ug/kg	-	
S	Sulfur	2,441 ug/kg	5 ug/kg	-	
Sn	Tin	ND	5000 ug/kg	-	
Zn	Zinc	534 ug/kg	5 ug/kg	-	

1) ND = None detected to the Method Detection Limit (MDL)

2) USP recommended limits for Elemental Analysis.

PST: Pesticide Analysis [WI-10-11]*Analyst: KSB**Test Date: 1/18/2018*

The client sample was analyzed for pesticides using Liquid Chromatography with Mass Spectrometric detection (LC/MS/MS). The method used for sample prep was based on the European method for pesticide analysis (EN 15662).

25553-PST

Analyte	CAS	Result	Units	LLD	Limits (ppb)	Status
Abamectin	71751-41-2	ND	ppb	0.2	10	PASS
Azoxystrobin	131860-33-8	ND	ppb	0.1	10	PASS
Bifenazate	149877-41-8	ND	ppb	0.1	10	PASS
Bifenthrin	82657-04-3	ND	ppb	0.2	10	PASS
Cyfluthrin	68359-37-5	ND	ppb	0.5	10	*
Daminozide	1596-84-5	ND	ppb	10	10	PASS
Dichlorvos	62-73-7	ND	ppb	3	10	*
Etoxazole	153233-91-1	ND	ppb	0.1	10	PASS
Fenoxycarb	72490-01-8	ND	ppb	0.1	10	PASS
Imazalil	35554-44-0	ND	ppb	0.1	10	PASS
Imidacloprid	138261-41-3	ND	ppb	0.1	10	PASS
Myclobutanil	88671-89-0	ND	ppb	0.1	10	PASS
Paclobutrazol	76738-62-0	ND	ppb	0.1	10	PASS
Piperonyl butoxide	51-03-6	ND	ppb	0.1	10	PASS
Pyrethrin	8003-34-7	ND	ppb	0.1	10	PASS
Spinosad	168316-95-8	ND	ppb	0.1	10	PASS
Spiromesifen	283594-90-1	ND	ppb	0.1	10	PASS
Spirotetramat	203313-25-1	ND	ppb	0.1	10	PASS
Trifloxystrobin	141517-21-7	ND	ppb	0.1	10	PASS

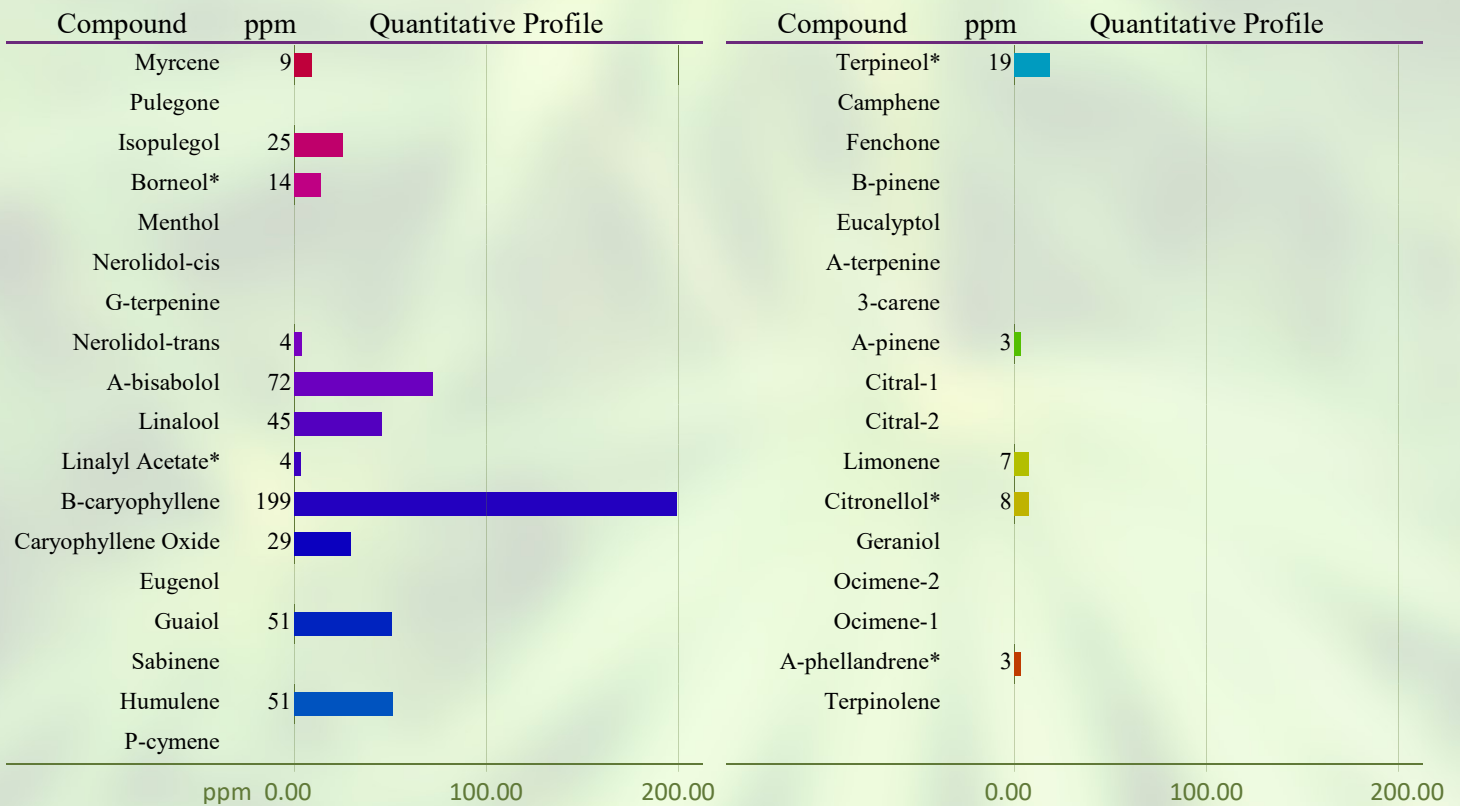
* Testing limits established by the Massachusetts Department of Public Health, Protocol for Sampling and Analysis of Finished Medical Marijuana Products and Marijuana-Infused Products for Massachusetts Registered Medical Marijuana Dispensaries, Exhibit 5. ND indicates "none detected" above the lower limit of detection (LLD). Analytes marked with (*) indicate analytes for which no recovery was observed for a pre-spiked matrix sample.

TP: Terpenes Profile [WI-10-08]

Analyst: CJH

Test Date: 1/10/2018

The client sample was analyzed by Head-Space Gas Chromatography (HS-GC). The collected data was compared to data collected for certified reference standards at known concentrations.

25553-TP

Total Terpene: 0.1 wt%

* Indicates qualitative calculation based on recorded peak areas.

END OF REPORT