

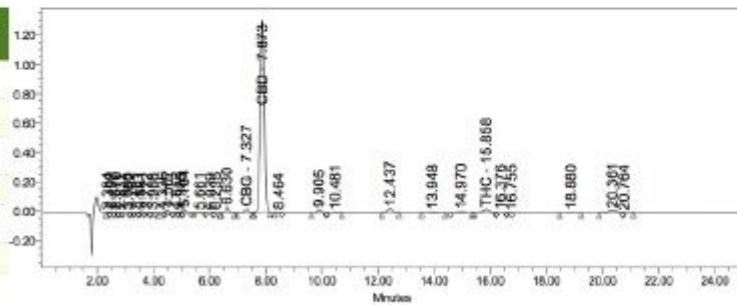
Organic Hemp CO₂ Extract Cannabinoid Profile

Responsible Supervisor:	Martin Vangkilde
Responsible Technician:	Paul K.
Sample:	Batch# 233
Date samples received:	20-October 2015
Date analysis began:	20-October 2015
Date sample report produced:	20-October 2015
ID Number when available:	
Sample Mass:	10 µL

45.46% Total CBD: Cannabinoid Profile

Component	Mass (%)	Amount (mg/g)	Limit
CBD	45.46	454.60	N/A
CBDA	<0.10	<1.00	N/A
CBG	1.57	15.70	N/A
CBGA	0.51	5.10	N/A
CBN	<0.10	<1.00	N/A
D9THC	<0.10	<1.00	N/A
THCA	<0.10	<1.00	N/A
Total CBD	45.46	454.60	N/A

HPLC Chromatograph Raw Data



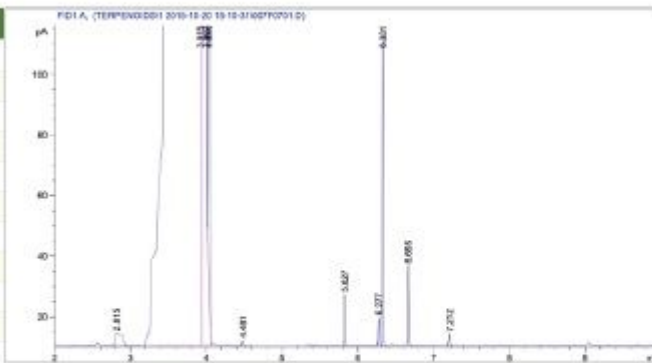
Cannabinoids as Percent of Total Mass



The report is for informational purposes only and should not be used to diagnose, treat, or prevent any medical related symptoms. Results are applicable only for samples tested, and for the specific tests conducted. All tests carried are done so under strict certified laboratory protocols, guidelines and supervision.

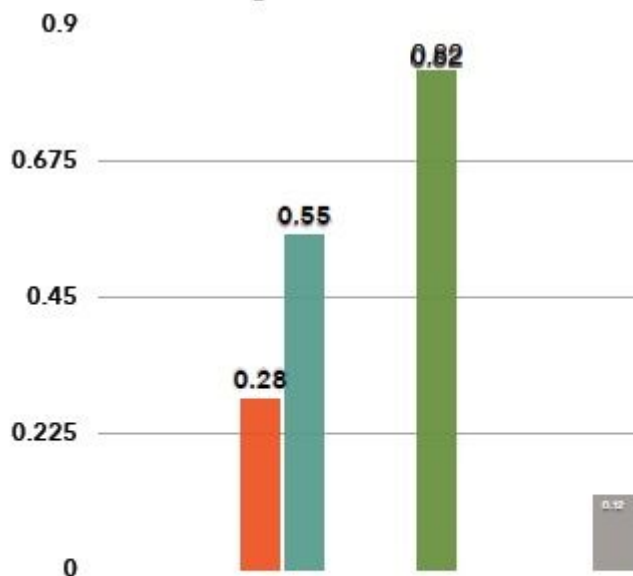
45.46% Total CBD:
Terpenoid Profile:

Component	Amount %
β -Caryophyllene	<0.01
α -Humulene	<0.01
Caryophyllene oxide	<0.01
Myrcene	0.28
α -Pinene	0.55
Terpinolene	<0.01
Humulene epoxide II	<0.01
Limonene	0.82
β -Pinene	<0.01
E- β -Ocimene	<0.01
Sabinene	<0.01
Linalool	0.12



Terpenoid Distribution

- β -Caryophyllene
- α -Humulene
- Caryophyllene oxide
- Myrcene
- α -Pinene
- Terpinolene
- Humulene epoxide II
- Limonene
- β -Pinene
- E- β -Ocimene
- Sabinene
- Linalool



**45.46% Total CBD:
Microbial Profile:**

Component	Mass (%)	Amount (mg/g)	Limit
Listeria Monocytogenes	< 0.01	ND	ND
E-Coli	< 0.01	ND	ND
Fungi	< 0.01	ND	ND
Salmonella	< 0.01	ND	ND
Molds	< 0.01	ND	ND

**All Mycotoxins at
Non Detectable (ND) levels**



Conclusions:

All microbial residues including Listeria, Monocytogenes, E-Coli, Fungi, Salmonella and Molds are all below detectable thresholds

**45.46% Total CBD:
Heavy Metals Profile:**

Component	Mass (%)	Amount (mg/g)	Limit
Arsenic	< 0.01	ND	ND
Cadmium	< 0.01	ND	ND
Lead	< 0.01	ND	ND
Mercury	< 0.01	ND	ND
Flammables	< 0.01	ND	ND

All Heavy Metals at Non Detectable (ND) levels



Conclusions:

No heavy metal residues detected.

No flammable residues detected.

No chemical residues detected.

Pesticide Analysis: Our tests looked for residue of nearly 300 known pesticides finding no evidence of any over detectable limits.

Nearly 300 of the below pesticides concentrations were measured and we are proud to say that all tests measured below our detectable limits. Most tests have a threshold of 0.01 mg/kg, while only a handful of tests have a threshold value of <0.05 mg/kg.

PESTICIDES MEASURED

Acrinathrin Azoxystrobin Biphenlin Bitertanol Biphenyl Bromopropylate Bromuconazole Bupirimate Cadusafos Captan Chlorophenon Chlorfenapyr Chlorfenvinphos Chlorothalonil Chlorprophame 3,5-Dichloraniline Chlorpyrifos Chlorpyrifos-methyl Chlorthal-dimethyl Cyfluthrin Cypermethrin Cyproconazole Cyprodinil Clomazone α , β -DDE P,P-DDE α , β -DDD P,P-DDD α , β -DDT p,p-DDT Deltamethrin Diazinon Dicyclofop-methyl Dieldrin Dichlobenil Dichlofuanid Dichlorvos Dieldran Dicofol Dicrotophos Diethofencarb Diflufenbutir Dimetachlor Diniconazole Dodemorph Diphenylamine Alpha-Endosulfan Beta-Endosulfan Endosulfan-sulphate Ethion Etofumesate Ethoprophos Etoxyquin Etoxazole Etridiazole Etrifliphos Famoxadone Fenarimol Fenazaquin Fenchlorphos Fenhexamid Fenithiothion Fenpropidin Fenpropimorph Fenvalerate Formothion Fipronil Fipronil-sulfone Fludioxonil Flusilazole Flutriafol Folpet Fuberidazole Furathiocarb Hexaconazole HCB Alpha-HCH Beta-HCH Delta-HCH Heptachlor Heptachlor-epoxideis Heptachlor-epoxidtreans Iprodione Iprovalicarb Lambda-cyhalothrin Lindane Mecarbam Metalax Metazachlor Methidathion Metribuzin Mevinphos Myclobutanil Nuarimol Orthophenylphenol Oxadixyl Paclobutrazol Parathion Parathion-methyl Paraoxon-methyl Paraoxon-ethyl Penconazole Pendimethaline Permethrin Phenthoate Phorate Procymidone Profenofos Propiconazole Propyzamide Pyrazophos Pyrethrins Pyridaben Pymethanil Piryproxyfen Quinoxifen Quitozene Pentachloraniline Phosphamidon Pyrifoxen Prometryn Propanil Propoxur Proquinazid Prothiofos Simazine Spiroxamine T au-fluvalinate T ebucorazole T ebufenpyrad T ecnazene T efulthrin T erbuthylazine T etaconazole T etradifon T etramethrine T olclofos-methyl T oylfluorid Transfluthrin Triadimephon Triadimenol Trialate Trifloxystrobin Triflumizole Vindozolin DDT isomersum Heptachlor (heptachlorand heptachlor poxidsum) Trifluraline Chlorobenzilate 3-Chloraniline Abamectin (AvermectinB1a and AvermectinB1b sum) Acetamiprid Aldicarb Aldikarbsulphone Aldikarbsulphoxide Azinphos-ethyl Azinphos-methyl Benalaxyl Benfuracarb Boscalid Buprofezin Carbaryl Carbazim Carbofuran 3-hydroksicarbofuran Carbosulfan Chloridazon Cymoxanil Clofentazin Clothianidin Demeton-S-methyl Demeton-S-methylsulfoxid Disfenhiuron Difenoconazole Dimethoate Dimethomorph Diuron EPN Epoxiconazole Ethirimol Etofenprox Fenamidone Fenbuconazole Fenbutatinoxid Fenoxycarb Fenpyroximate Fenpropathrin Fensulfothion Fenthion Fenthionsulphone Fenthionsulphoxide Fluziazinam Flufenoxuron Fluquinconazole Fonofos Formetanate Fosthizate Hexythiazox Imazail Imidacloprid Indoxacarb Isofenphos Methacrifos Isofenphos-methyl Krezoxim-methyl Linuron Lufenuron Malaoxon Malathion Mepanipirim Mepronil Metamitron Metconazole Methamidophos Methiocarb Methiocarbsulphone Methiocarbsulfoxide Methomyl Methoxyfenozide Metobromuron Monocrotophos Monolinuron Omethoate Oxamyl Pencycuron Phenmedipham Phosalone Phosmet Phosmet xon Phoxim Pymetrozine Piperonylbutoxide Pyraclostrobin Pyridaphenthion Pyridate Pyrifoxen Pirimicarb Pirimicarbdesmethyl Pirimiphos-methyl Primisulfuron-methyl Prochloraz Propamocarb Propargite Prothioconazole Prothioconazole-desithio Quinalphos SpinosynA SpinosynD Sulfotep T ebufenozide T eflubenzuron Thiabendazole Thiacloprid Thiamethoxam Thiodicar Thiophanate-methyl Tralkoxydim Triazophos Trichlorfon Triflumuron Triflorine Triflucanazole Zoxamide Acephate Amitraz Fenamiphos Fenamiphosulphone Fenamiphosulfoxid Nitentpiram Fenthionoxonsulphone Fenthionoxonsulfoxid Kumapho Piriphenox Mehilazine DEET

Our laboratory analysis is standardized after following protocols:

LST EN ISO 6579:2003 / AC:2006 / P:2007

LST EN ISO 11290-1:2003 / A1:2004 / P:2005

LST ISO 16649-2:2002 / P:2009

LST ISO 21527-2:2008

Method PLM 486G

Note on Cannabinoid Testing:

All cannabinoids in their acid forms (ending in "-A") are convertible to their non-acid forms via a decarboxylation process (heating). The components lose mass through this process. To find the total theoretical active cannabinoids, one multiplies the acid forms by 87.7%. For example, THC-A can be converted to active THC using the formula: $\text{THC-A} \times 0.877 = \text{THC}$. In this case, the Max THC for the sample is: $\text{Max THC} = (\text{THC-A} \times 0.877) + \text{THC}$. This method has been validated according to the principles of the International Conference on Harmonisation.

Chromatographic Analysis:

Analysis of cannabinoids content was performed using Waters 2695 (Milford, MA, USA) separation module equipped with auto injector, sample cooler, vacuum degasser and column heater units. Separation of all cannabinoids was accomplished on YMC PRO C18 (150 x 4 mm I.D., 5- μ m) RP column coupled with C18 precolumn maintained at 30 °C by a CTO-20AC column oven.

Isocratic elution consisted of acetonitrile:water (FA 0.5%) (4:1) was done in 30 min. The flow rate was maintained at 0.8 ml/min. The cannabinoids CBD, CBG, CBN and THC were monitored at 225 and CBDA, CBGA were monitored at 306 nm respectively using dual absorbance detector Waters 2487 (Milford, MA, USA). The injection volume of 0.1 mg/ml sample was 10 μ l. Data evaluation was performed using Clarity software.

Quantification of cannabinoids was obtained from linear regression equation of calibration curve of individual reference standard by plotting concentration versus the area ratio.

The calibration range for CBD, CBG-A, CBG, CBD-A and CBN was linear from 5 to 500 μ g/ml. The calibration range for THC was linear from 5 to 100 μ g/ml.

Elution order CBD-A (RT 6.9 min), CBG-A (RT 7.3 min), CBG (RT 7.3 min) CBD (RT 7.8 min), CBN (RT 12.1), THC (RT 15.5 min).

Sample preparation for HPLC analysis

0.01 g (\pm 0001) of homogeneous cannabis extract was diluted with 1 ml of methanol (HPLC grade). Solution was sonicated for 5 min and vortexing for 10 sec. Samples before HPLC analysis were centrifuged at 4800 rpm and further diluted with methanol to the final concentration of 1 mg/ml.