



CERTIFICATE OF ANALYSIS

Customer: Root Bioscience - Morrisville, NC 27560

Order #: 704561
Batch #: FS240004
Order Date: 08/30/2019
Collection Date: 08/30/2019
Report Date: 09/06/2019

Specimen Type: Extract
Description: Tincture w/ MCT Oil
Extracted From: Hemp
Method: SOP-3

Initial Gross Weight: 39123.00(mg)
Specimen Weight: 96.06(mg)

Potency

(HPLC)

| Analyte | Result (mg/g) | (%) | LOQ (%) | Analyte | Result (mg/g) | (%) | LOQ (%) | Analyte | Result (mg/g) | (%) | LOQ (%) |
|-------------|---------------|-------|---------|-----------|---------------|-------|---------|-------------|---------------|-------|---------|
| CBC | 1.841 | 0.184 | 0.001 | CBCA | ND | ND | 0.001 | CBD | 96.690 | 9.669 | 0.001 |
| CBDA | ND | ND | 0.001 | CBDV | 1.222 | 0.122 | 0.001 | CBDVA | ND | ND | 0.001 |
| CBG | 0.872 | 0.087 | 0.001 | CBGA | ND | ND | 0.001 | CBL | ND | ND | 0.001 |
| CBN | 0.150 | 0.015 | 0.001 | CBNA | ND | ND | 0.001 | Delta-8-THC | ND | ND | 0.001 |
| Delta-9-THC | 2.146 | 0.215 | 0.001 | THCA-A | ND | ND | 0.001 | THCV | ND | ND | 0.001 |
| THCVA | ND | ND | 0.001 | Total CBD | 96.690 | 9.669 | 0.001 | Total THC | 2.146 | 0.215 | 0.001 |

Pesticides (Passed)

(LCMS/MS)

| Analyte | Action Level (ppm) | Result (ppm) | LOQ (ppm) | Analyte | Action Level (ppm) | Result (ppm) | LOQ (ppm) | Analyte | Action Level (ppm) | Result (ppm) | LOQ (ppm) |
|-------------------|--------------------|--------------|-----------|--------------|--------------------|--------------|-----------|---------------------|--------------------|--------------|-----------|
| Abamectin | 0.500 | <LOQ | 0.100 | Acephate | 0.400 | <LOQ | 0.100 | Acequinocyl | 2.000 | <LOQ | 0.750 |
| Acetamiprid | 0.200 | <LOQ | 0.100 | Aldicarb | 0.400 | <LOQ | 0.100 | Azoxystrobin | 0.200 | <LOQ | 0.100 |
| Bifenazate | 0.200 | <LOQ | 0.100 | Bifenthrin | 0.200 | <LOQ | 0.100 | Boscalid | 0.400 | <LOQ | 0.100 |
| Carbaryl | 0.200 | <LOQ | 0.100 | Carbofuran | 0.200 | <LOQ | 0.100 | Chlorantraniliprole | 0.200 | <LOQ | 0.100 |
| Chlorpyrifos | 0.200 | <LOQ | 0.100 | Clofentezine | 0.200 | <LOQ | 0.100 | Cypermethrin | 1.000 | <LOQ | 0.100 |
| Daminozide | 1.000 | <LOQ | 0.100 | Diazinon | 0.200 | <LOQ | 0.100 | Dichlorvos | 0.100 | <LOQ | 0.100 |
| Dimethoate | 0.200 | <LOQ | 0.100 | Ethoprophos | 0.200 | <LOQ | 0.100 | Etofenprox | 0.400 | <LOQ | 0.100 |
| Etoazole | 0.200 | <LOQ | 0.100 | Fenoxycarb | 0.200 | <LOQ | 0.100 | Fipronil | 0.400 | <LOQ | 0.100 |
| Flonicamid | 1.000 | <LOQ | 0.100 | Fludioxonil | 0.400 | <LOQ | 0.100 | Hexythiazox | 1.000 | <LOQ | 0.100 |
| Imazalil | 0.200 | <LOQ | 0.100 | Imidacloprid | 0.400 | <LOQ | 0.100 | Kresoxim Methyl | 0.400 | <LOQ | 0.100 |
| Malathion A | 0.200 | <LOQ | 0.100 | Metalaxyl | 0.200 | <LOQ | 0.100 | Methiocarb | 0.200 | <LOQ | 0.100 |
| Methomyl | 0.400 | <LOQ | 0.100 | MGK-264 | 0.200 | <LOQ | 0.100 | Myclobutanil | 0.200 | <LOQ | 0.100 |
| Naled | 0.500 | <LOQ | 0.100 | Oxamyl | 1.000 | <LOQ | 0.100 | Paclbutrazol | 0.400 | <LOQ | 0.100 |
| Parathion-methyl | 0.200 | <LOQ | 0.250 | Permethrin | 0.200 | <LOQ | 0.100 | Phosmet | 0.200 | <LOQ | 0.100 |
| Piperonylbutoxide | 2.000 | <LOQ | 0.100 | Prallethrin | 0.200 | <LOQ | 0.100 | Propiconazole | 0.400 | <LOQ | 0.100 |
| Propoxur | 0.200 | <LOQ | 0.100 | Pyrethrins | 1.000 | <LOQ | 0.100 | Pyridaben | 0.200 | <LOQ | 0.100 |
| Spinosyn A | 0.200 | <LOQ | 0.100 | Spinosyn D | 0.200 | <LOQ | 0.100 | Spiromesifen | 0.200 | <LOQ | 0.100 |
| Spirotetramat | 0.200 | <LOQ | 0.100 | Spiroxamine | 0.400 | <LOQ | 0.100 | Tebuconazole | 0.400 | <LOQ | 0.100 |
| Thiacloprid | 0.200 | <LOQ | 0.100 | Thiamethoxam | 0.200 | <LOQ | 0.100 | Trifloxystrobin | 0.200 | <LOQ | 0.100 |

Thomas Farrell, MD
Lab Director

* Total CBD = CBD + (CBD-A * 0.877). Total THC = THCA-A * 0.877 + Delta 9 THC, ND = <LOQ, T-Caryophyllene = Trans-Caryophyllene, <LOQ = Less Than Limit of Quantitation, QNS = Quantity Not Sufficient. (%) = Percent, (ppm) = Parts per Million, (ppb) = Parts per Billion, (µg/Kg) = Microgram per Kilogram, (mg/g) = Milligram per Gram, ppm = (µg/g), ppb = (µg/kg).

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721 Cortaro Drive
 Sun City Center, FL - 33573

P: +1 (866) 762-8379
 F: +1 (813) 634-4538

E: info@acslabcannabis.com
<http://www.acslabcannabis.com>

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CERTIFICATE OF ANALYSIS

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Order #: 704561
Batch #: FS240004
Order Date: 08/30/2019
Collection Date: 08/30/2019
Report Date: 09/06/2019

Specimen Type: Extract
Description: Tincture w/ MCT Oil
Extracted From: Hemp
Method: SOP-3

Initial Gross Weight: 39123.00(mg)
Specimen Weight: 96.06(mg)

Residual Solvents (Passed)

(GC/GCMS)

| Analyte | Action Level (ppm) | Result (ppm) | LOQ (ppm) | Analyte | Action Level (ppm) | Result (ppm) | LOQ (ppm) | Analyte | Action Level (ppm) | Result (ppm) | LOQ (ppm) |
|----------|--------------------|--------------|-----------|----------|--------------------|--------------|-----------|-------------|--------------------|--------------|-----------|
| Acetone | 5,000.000 | <LOQ | 87.900 | Benzene | 1.600 | <LOQ | 1.600 | Chloroform | 53.000 | <LOQ | 53.000 |
| Ethanol | 5,000.000 | <LOQ | 26.700 | I-Butane | 5,000.000 | <LOQ | 100.000 | Isopropanol | 5,000.000 | <LOQ | 52.300 |
| Methanol | 3,000.000 | <LOQ | 87.900 | N-Butane | 5,000.000 | <LOQ | 200.000 | Pentane | 5,000.000 | <LOQ | 389.500 |
| Toluene | 890.000 | <LOQ | 38.400 | | | | | | | | |

Heavy Metals (Passed)

(ICP-MS)

| Analyte | Action Level (ppb) | Result (ppb) | LOQ (ppb) | Analyte | Action Level (ppb) | Result (ppb) | LOQ (ppb) | Analyte | Action Level (ppb) | Result (ppb) | LOQ (ppb) |
|--------------|--------------------|--------------|-----------|--------------|--------------------|--------------|-----------|-----------|--------------------|--------------|-----------|
| Arsenic (As) | 500.000 | <LOQ | 100.000 | Cadmium (Cd) | 500.000 | <LOQ | 100.000 | Lead (Pb) | 500.000 | <LOQ | 100.000 |
| Mercury (Hg) | 500.000 | <LOQ | 100.000 | | | | | | | | |

Mycotoxins (Passed)

(LCMS/MS)

| Analyte | Action Level (ppb) | Result (ppb) | LOQ (ppb) | Analyte | Action Level (ppb) | Result (ppb) | LOQ (ppb) | Analyte | Action Level (ppb) | Result (ppb) | LOQ (ppb) |
|--------------|--------------------|--------------|-----------|-----------------|--------------------|--------------|-----------|--------------|--------------------|--------------|-----------|
| Aflatoxin B1 | | <LOQ | 15.000 | Aflatoxin B2 | | <LOQ | 15.000 | Aflatoxin G1 | | <LOQ | 15.000 |
| Aflatoxin G2 | | <LOQ | 15.000 | Aflatoxin Total | 20.000 | <LOQ | 15.000 | Ochratoxin A | 20.000 | <LOQ | 15.000 |

Terpenes

(GC/GCMS)

| Analyte | Result (mg/g) | (%) | LOQ (%) | Analyte | Result (mg/g) | (%) | LOQ (%) | Analyte | Result (mg/g) | (%) | LOQ (%) |
|---------------------|---------------|-------|---------|-----------------|---------------|-------|---------|-----------------|---------------|-------|---------|
| 3-Carene | ND | 0.001 | 0.001 | Alpha-Bisabolol | ND | 0.001 | 0.001 | Alpha-Pinene | ND | 0.002 | 0.001 |
| Alpha-Terpinene | ND | 0.001 | 0.001 | Alpha-Terpineol | ND | 0.001 | 0.001 | Aromadendrene | ND | 0.001 | 0.001 |
| Beta-Myrcene | ND | 0.001 | 0.001 | Beta-Pinene | ND | 0.001 | 0.001 | Camphene | ND | 0.001 | 0.001 |
| Fenchol | ND | 0.002 | 0.001 | Gamma-Terpinene | ND | 0.001 | 0.001 | Gamma-Terpineol | ND | 0.002 | 0.001 |
| Geraniol | ND | 0.001 | 0.001 | Guaiol | ND | 0.001 | 0.001 | Humulene | ND | 0.001 | 0.001 |
| Isopulegol | ND | 0.001 | 0.001 | Linalool | ND | 0.001 | 0.001 | Nerolidol-1 | ND | 0.001 | 0.001 |
| Nerolidol-2 | ND | 0.001 | 0.001 | Ocimene-1 | ND | 0.001 | 0.001 | Ocimene-2 | ND | 0.001 | 0.001 |
| P-Cymene | ND | 0.001 | 0.001 | R-Limonene | ND | 0.000 | 0.000 | Terpinolene | ND | 0.001 | 0.001 |
| Trans-Caryophyllene | ND | 0.001 | 0.001 | | | | | | | | |

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|------------------------------------|---|---|
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| Batch #: FS240004 | Description: Tincture w/ MCT Oil | Specimen Weight: 96.06(mg) |
| Order Date: 08/30/2019 | Extracted From: Hemp | |
| Collection Date: 08/30/2019 | Method: SOP-3 | |
| Report Date: 09/06/2019 | | |

| Microbiology (qPCR) (Passed) | | | | (qPCR) |
|--------------------------------|--------|----------------|--------|--------------------------|
| Analyte | | Analyte | | Analyte |
| Total Aerobic Count | Passed | Total Coliform | Passed | Total Enterobacteriaceae |
| Total Yeast/Mold | Passed | | | Passed |

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