HIGH NORTH LABORATORIES

High North Inc.
241 Hanlan Rd, Unit 7
Woodbridge, ON, L4L 3R7
1-416-864-6119
LIC-P4PNJMAC20-2019

Client:	Grow Cup 241 Hanlan Rd, Unit 7&8, Woodbridge, ON, L4L 3R7	Strain: Lot: Matrix:	Pineapple Express Murray Elliot Flower
Name:	Grow Cup 416-864-6119 rick+growcup@highnorth.com	Sub-matrix: Sampled: Received:	Dried Flower 2021-11-12 2021-11-12

Certificate of Analysis

Cannabinoid Analysis	LOD (%)	LOQ (%)	wt%	mg/g
Total THC [(THCA x 0.877) + D9-THC]			22.775	227.748
Total CBD [(CBDA x 0.877) + CBD]			0.071	0.709
THCA-A	0.0090	0.03	23.125	231.254
D9-THC	0.0093	0.03	2.494	24.938
CBGA	0.0041	0.03	1.122	11.22
CBG	0.0094	0.03	0.198	1.977
CBDA	0.0100	0.03	0.081	0.809
D8-THC	0.0137	0.03	ND	ND
CBC	0.0060	0.03	ND	ND
CBN	0.0067	0.03	ND	ND
CBD	0.0069	0.03	ND	ND
THCV	0.0093	0.03	ND	ND
CBDV	0.0090	0.03	ND	ND
Total of all quantified cannabinoids:			27.020	270.198

Terpene Analysis	LOD (%)	LOQ (%)	wt%
Farnesene*	0.0009	0.005	0.942
Trans-Caryophyllene	0.0002	0.005	0.783
(R)-(+)-Limonene	0.0001	0.005	0.483
Linalool	0.0003	0.005	0.309
Terpinolene	0.0003	0.005	0.252
Beta-Myrcene	0.0003	0.005	0.209
Alpha-Humulene	0.0010	0.005	0.187
alpha-Bisabolol	0.0003	0.005	0.179
Ocimene*	0.0004	0.005	0.148
Terpineol*	0.0001	0.005	0.083
Beta-Pinene	0.0002	0.005	0.058

Abbreviations: wt% = percentage of weight, CFU = colony forming units, ppm = Parts per million, ppb = Parts per billion, ND = None Detected, BLQ = Below Limit of Quantification, LOQ = Limit of Quantification, LOD = Limit of Detection, RL = Reporting Limit, * = Mixture of Isomers

Authorized by: *Amrita Naidu*

Amrita Naidu
QA Specialist

Terpene Analysis

	LOD (%)	LOQ (%)	wt%
Alpha-Phellandrene	0.0002	0.005	0.057
(R)-Endo-(+)-Fenchyl	0.0003	0.005	0.054
Alpha-Pinene	0.0003	0.005	0.047
trans-Nerolidol	0.0004	0.005	0.033
Alpha-Terpinene	0.0003	0.005	0.013
(1S)-3-Carene	0.0007	0.005	0.009
Camphene	0.0002	0.005	0.009
Caryophyllene oxide	0.0008	0.005	0.007
Gamma-Terpinene	0.0003	0.005	0.006
Nerol	0.0002	0.005	BLQ
Geraniol	0.0007	0.005	0.005
Citronellol	0.0003	0.005	0.005
Sabinene Hydrate	0.0001	0.005	BLQ
Eucalyptol	0.0007	0.005	BLQ
Fenchone*	0.0003	0.005	BLQ
Sabinene	0.0013	0.005	BLQ
p-Cymene	0.0003	0.005	BLQ
Phytol*	0.0013	0.010	ND
(+)-Cedrol	0.0010	0.005	ND
Guaiol	0.0003	0.005	ND
cis-Nerolidol	0.0003	0.005	ND
Valencene	0.0002	0.005	ND
Eugenol	0.0004	0.010	ND
Geranyl acetate	0.0002	0.005	ND
Alpha-Cedrene	0.0002	0.005	ND
Pulegone	0.0002	0.005	ND
Isoborneol	0.0002	0.005	ND
Camphor + Borneol*	0.0003	0.010	ND
Hexahydrothymol	0.0005	0.005	ND
Isopulegol	0.0004	0.005	ND

Total of all quantified terpenes: 3.878

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Details of Testing

Cannabinoid Analysis
Analysis of 11 Cannabinoids by HPLC & UHPLC
Method LAB-MTD-020: Flower (LOQ 0.06%), Oil (LOQ 0.03%), Extracts (LOQ 0.6%)
Method LAB-MTD-021: Isolates (LOQ 0.06%)
Method LAB-MTD-023: Tablets & Granules (LOQ 0.025%)
Method LAB-MTD-030: Topicals (LOQ 0.005%)

Terpene Analysis
Profile of 42 terpenes by GC/MS
Method LAB-MTD-035: Cannabis Flower, Oil

Pesticide Analysis
Determination of 96 Pesticide Residues by LC/MS/MS and GC/MS/MS
Method LAB-MTD-010: Cannabis Flower, Oil

Mycotoxin Analysis
Determination of Aflatoxins B1, B2, G1, G2 and Ochratoxin-A by LC/MS/MS
Method LAB-MTD-010: Cannabis Flower, Oil
Method LAB-MTD-029: Tablets
Method LAB-MTD-037: Topicals

Heavy Metal Analysis
Determination of Heavy Metal contamination (Arsenic, Cadmium, Lead & Mercury) by ICP/MS
Method LAB-MTD-027: Cannabis Flower, Oil, Topicals, Tablets

Residual Solvents Analysis
Determination of 24 Residual Solvents by GC/MS
Method LAB-MTD-036: Cannabis Oil
Method LAB-MTD-028: Tablets

Determination of Butane and Propane Residual Solvents in Cannabis Oil
Method LAB-MTD-034 (GC/MS): Cannabis Oil

Microbial Analysis, Powdery Mildew & Gender Determination
Molecular detection and quantitation by PCR & qPCR
Cannabis Flower, Oil, Cannabis-Infused Products
Method MIC-MTD-001 (TAMC, TYMC, BTGN, E.coli, Salmonella, Staph/Pseudomonas)
Method MIC-MTD-005: (Powdery Mildew & Gender Determination)

Moisture Analysis
Water Activity & Moisture Content (Loss on Drying)
Method LAB-MTD-017 (Loss on Drying; Dry flower only)
Method LAB-MTD-031 (Water activity, a_w)

Foreign Matter Analysis
Visual/Magnified Inspection for Foreign Matter
Method LAB-MTD-022

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