HIGH NORTH ID:
00465316
Date: 2024-04-17
Certificate: 1713373212

High North Inc.
241 Hanlan Rd, Unit 7
Woodbridge, ON, L4L 3R7
1-416-864-6119
LIC-P4PNJMAC20-2022

Product:	Apples & Bananas
Lot:	AQAAB006B
Matrix:	Flower
Sub-matrix:	Dried Flower
Sampled:	2024-04-10
Received:	2024-04-11

Certificate of Analysis

Anhydrous Cannabinoid Analysis	LOD (%)	LOQ (%)	wt%	mg/g
Total THC [(THCA x 0.877) + D9-THC]			24.9546	249.5455
Total CBD [(CBDA x 0.877) + CBD]			0.0785	0.7847
THCA-A	0.03	0.06	26.1504	261.5037
D9-THC	0.03	0.06	2.0207	20.2068
CBCA	0.03	0.06	1.0655	10.6547
CBGA	0.03	0.06	1.0062	10.0624
THCVA	0.03	0.06	0.1411	1.4114
CBG	0.03	0.06	0.1393	1.3925
CBDA	0.03	0.06	0.0895	0.8947
CBC	0.03	0.06	0.0699	0.6994
D8-THC	0.03	0.06	ND	ND
CBCVA	0.03	0.06	ND	ND
CBN	0.03	0.06	ND	ND
CBCV	0.03	0.06	ND	ND
THCV	0.03	0.06	ND	ND
CBD	0.03	0.06	ND	ND
CBDV	0.03	0.06	ND	ND
CBDVA	0.03	0.06	ND	ND
Total of all quantified cannabinoids:			30.6826	306.8256

Loss on Drying (EP 2.2.32 Vacuum Oven) used for Anhydrous Cannabinoids Calculation

Moisture Analysis	Result
Loss on Drying (EP 2.2.32 Vacuum Oven)	8.2960%

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

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Cannabinoid Analysis	LOD (%)	LOQ (%)	wt%	mg/g
Total THC [(THCA x 0.877) + D9-THC]			22.8842	228.8432
Total CBD [(CBDA x 0.877) + CBD]			0.0719	0.7196
THCA-A	0.03	0.06	23.9809	239.8093
D9-THC	0.03	0.06	1.8530	18.5304
CBCA	0.03	0.06	0.9771	9.7708
CBGA	0.03	0.06	0.9228	9.2277
THCVA	0.03	0.06	0.1294	1.2943
CBG	0.03	0.06	0.1277	1.2770
CBDA	0.03	0.06	0.0820	0.8205
CBC	0.03	0.06	0.0641	0.6414
D8-THC	0.03	0.06	ND	ND
CBCVA	0.03	0.06	ND	ND
CBN	0.03	0.06	ND	ND
CBCV	0.03	0.06	ND	ND
THCV	0.03	0.06	ND	ND
CBD	0.03	0.06	ND	ND
CBDV	0.03	0.06	ND	ND
CBDVA	0.03	0.06	ND	ND
Total of all quantified cannabinoids:			28.1370	281.3714

Water Activity Analysis	Result
Water Activity	0.5737aw

Visual Inspection/Olfactory	Result
Foreign Matter	None Detected

Total Ash Analysis	Result
Total Ash (EP 2.4.16)	10.0814%

Mycotoxin Analysis	LOD (ppb)	LOQ (ppb)	RL (ppb)	Result (ppb)	Status
Aflatoxin-B1	0.5000	2	2	ND	PASS
Aflatoxin-B2	0.5000	2		ND	
Aflatoxin-G1	0.3000	2		ND	
Aflatoxin-G2	0.6000	2		ND	
Sum of Aflatoxins:			4	0	PASS
Ochratoxin-A	5.6000	20	20	ND	PASS

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Microbial Analysis	LOD (CFU/g)	RL (CFU/g)	Result (CFU/g)	Status
Total Aerobic Count	10	200	< 10	PASS
Total Yeast and Mold Count	10	20	< 10	PASS
Salmonella			Absent in 10g	PASS
S.aureus/P.aeruginosa			Absent in 1g	PASS
E.coli			Absent in 1g	PASS
Bile-Tolerant Gram-Negative			Absent in 1g	PASS

Heavy Metals Analysis	LOD (mg/kg)	LOQ (mg/kg)	RL (mg/kg)	Result (mg/kg)	Status
Arsenic	0.034	0.2	3.0	ND	PASS
Cadmium	0.016	0.06	0.5	ND	PASS
Lead	0.014	0.49	5.0	ND	PASS
Mercury	0.009	0.06	0.5	ND	PASS

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Pesticides Analysis	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Acephate	0.0422	0.10	0.10	ND	PASS
Alachlor	0.0170	0.05	0.05	ND	PASS
Aldrin and Dieldrin (Sum of)	0.0238	0.05	0.05	ND	PASS
Azinphos-ethyl	0.0416	0.10	0.10	ND	PASS
Azinphos-methyl	0.1154	1.00	1.00	ND	PASS
Bromophos-ethyl	0.0241	0.05	0.05	ND	PASS
Bromophos-methyl	0.0195	0.05	0.05	ND	PASS
Brompropylate	0.0874	3.00	3.00	ND	PASS
Chlordane (Sum of cis-, trans- and oxychlordane)	0.0236	0.05	0.05	ND	PASS
Chlorfenvinphos	0.0694	0.50	0.50	ND	PASS
Chlorpyriphos-ethyl	0.0396	0.20	0.20	ND	PASS
Chlorpyriphos-methyl	0.0281	0.10	0.10	ND	PASS
Chlorthal-dimethyl	0.0032	0.01	0.01	ND	PASS
Cyfluthrin (Sum of)	0.0300	0.10	0.10	ND	PASS
Cypermethrin and isomers (Sum of)	0.0632	1.00	1.00	ND	PASS
DDT (Sum of o,p'-DDE, p,p'-DDE, o,p'-DDT, p,p'-DDT, o,p'-TDE and p,p'-TDE)	0.2493	1.00	1.00	ND	PASS
Deltamethrin	0.1299	0.50	0.50	ND	PASS
Diazinon	0.0836	0.50	0.50	ND	PASS
Dichlofluanid	0.0341	0.10	0.10	ND	PASS
Dichlorvos	0.0589	1.00	1.00	ND	PASS
Dicofol	0.1476	0.50	0.50	ND	PASS
Dimethoate and Omethoate (Sum of)	0.0416	0.10	0.10	ND	PASS
Dithiocarbamates (Expressed as CS2)	0.1133	2.00	2.00	ND	PASS
Endosulfan (Sum of isomers and endosulfan sulfate)	0.0836	3.00	3.00	ND	PASS
Endrin	0.0113	0.05	0.05	ND	PASS
Ethion	0.0474	2.00	2.00	ND	PASS
Etrimphos	0.0190	0.05	0.05	ND	PASS
Fenchlorophos (sum of fenchlorophos and fenchlorophos-oxon)	0.0498	0.10	0.10	ND	PASS
Fenitrothion	0.1398	0.50	0.50	ND	PASS
Fenpropathrin	0.0084	0.03	0.03	ND	PASS
Fensulfothion (Sum of fensulfothion, fensulfothion-oxon, fensulfothion-oxonsulfon and fensulfothion-sulfon)	0.0247	0.05	0.05	ND	PASS
Fenthion (Sum of fenthion, fenthion-oxon, fenthion-oxon-sulfon, fenthion-oxon-sulfoxid, fenthion-sulfon and fenthion-sulfoxid)	0.0246	0.05	0.05	ND	PASS

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Pesticides Analysis	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Fenvalerate	0.1202	1.50	1.50	ND	PASS
Flucytrinate	0.0245	0.05	0.05	ND	PASS
Fonophos	0.0205	0.05	0.05	ND	PASS
Heptachlor (Sum of heptachlor, cis-heptachlorepoxide and trans-heptachlorepoxide)	0.0230	0.05	0.05	ND	PASS
Hexachlorbenzene	0.0204	0.10	0.10	ND	PASS
Hexachlorocyclohexane (Sum of a-,b-, d- and e)	0.1396	0.30	0.30	ND	PASS
Lambda-Cyhalothrin	0.0860	1.00	1.00	ND	PASS
Lindan (gamma-hexachlorocyclohexane)	0.0574	0.60	0.60	ND	PASS
Malathion and Malaoxon (Sum of)	0.1445	1.00	1.00	ND	PASS
Mecarbam	0.0133	0.05	0.05	ND	PASS
Methacriphos	0.0240	0.05	0.05	ND	PASS
Methamidophos	0.0203	0.05	0.05	ND	PASS
Methidathion	0.0273	0.20	0.20	ND	PASS
Methoxychlor	0.0204	0.05	0.05	ND	PASS
Mirex	0.0031	0.01	0.01	ND	PASS
Monocrotophos	0.0438	0.10	0.10	ND	PASS
Parathion-ethyl and Paraoxon-ethyl (Sum of)	0.1292	0.50	0.50	ND	PASS
Parathion-methyl and Paraoxon-methyl (Sum of)	0.0461	0.20	0.20	ND	PASS
Pendimethalin	0.0463	0.50	0.50	ND	PASS
Pentachloranisol	0.0023	0.01	0.01	ND	PASS
Permethrin and isomers (sum of)	0.0492	1.00	1.00	ND	PASS
Phosalone	0.0324	0.10	0.10	ND	PASS
Phosmet	0.0209	0.05	0.05	ND	PASS
Piperonyl butoxide	0.1260	3.00	3.00	ND	PASS
Pirimiphos-ethyl	0.0237	0.05	0.05	ND	PASS
Pirimiphos-methyl (Sum of pirimiphos-methyl and N-desethyl-pirimiphos-methyl)	0.1332	4.00	4.00	ND	PASS
Procymidone	0.0404	0.10	0.10	ND	PASS
Profenophos	0.0422	0.10	0.10	ND	PASS
Prothiophos	0.0166	0.05	0.05	ND	PASS
Pyrethrum (Sum of cinerin I, cinerin II, jasmolin I, jasmolin II, pyrethrin I and pyrethrin II)	0.1233	3.00	3.00	ND	PASS
Quinalphos	0.0177	0.05	0.05	ND	PASS
Quintozene (Sum of quintozene, pentachloraniline and methyl penthachlorphenyl sulfide)	0.0804	1.00	1.00	ND	PASS
S-421	0.0093	0.02	0.02	ND	PASS
Tau-fluvalinate	0.0181	0.05	0.05	ND	PASS

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Pesticides Analysis	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Tecnazene	0.0183	0.05	0.05	ND	PASS
Tetradifon	0.1194	0.30	0.30	ND	PASS
Vinclozolin	0.1031	0.40	0.40	ND	PASS

Identification A (Macroscopic) DAB Monograph

Bracts and flowers of the overall inflorescence form the flattened branched raceme in which each branch has more than one flower.
This highly compressed panicle is approximately 1 to 5 cm in length and width.

The flower husks are green to light green, covered with dense yellow-white hairs, and stuck together with resin. The flower is about 5 to 10 mm long, consisting of a hooded, green to light green bloom.

Light brown to brown pistils and stigma branches, within an individual flower, having an overall length of up to 1 cm.

The crumbled inflorescence contains peduncle fragments, bracts, and panicle sections, as well as individual flowers and flower organs.

Bracts and all flower organs, except pistils, are more or less densely covered with excreted resin-adhesive glandular hairs.

Identification B (Microscopic) DAB Monograph

Peduncle fragments having covered trichomes, helicoidal vessels and rows of crystal cells containing calcium oxalate cluster; the upper epidermis of which has cells with straight or slightly sinuate cell walls, and the lower epidermis of which has highly undulating anticlinate cell walls

Fragments of the brown pistils and stigmata, densely covered with long, club-shaped papillae

Isolated Stalks

Identification C (by HPLC) In-House Method

The retention time of the THCA peak in the chromatogram of the Assay preparation corresponds to the retention time of THCA in the standard (Conforms).

Comments

Testing has been conducted as per TGO specifications.

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Details of Testing

Cannabinoid Analysis

LAB-MTD-020: Determination of 16 Cannabinoids in Cannabis Flowers, Extracts, Topicals, Tablets and Isolates by HPLC
LAB-MTD-039: Determination of 11 Cannabinoids in Cannabis Edibles by HPLC
LAB-MTD-051: Assay of Cannabinoids in Cannabis Flower as per DAB by HPLC
LAB-MTD-052: Identification of CBD and THCA as per DAB by Thin-Layer Chromatography

Terpene Analysis

LAB-MTD-044: Determination of Terpene Content in Cannabis Dried Flower, Fresh Flower and Extracts by GC-MS

Pesticide Analysis

LAB-MTD-010: Determination of Health Canada Pesticide Residues and Toxins in Dried Cannabis Flower by LC-MS/MS and GC-MS/MS
LAB-MTD-040: Determination of EP 2.8.13 Pesticide Residues in Cannabis Extracts by GC-MS/MS
LAB-MTD-041: Determination of EP 2.8.13/USP 561 Pesticide Residues in Cannabis Flower by GC-MS/MS and LC-MS/MS
LAB-MTD-046: Determination of Health Canada Pesticides and Toxins in Cannabis Extracts by LC-MS/MS
LAB-MTD-048: Determination of Health Canada Pesticide Residues and Toxins in Fresh Cannabis Flower by LC-MS/MS and GC-MS/MS
LAB-MTD-055: Determination of Israel Pesticide Residues in Dried/Fresh Cannabis by LC-MS/MS and GC-MS/MS

Mycotoxin Analysis

LAB-MTD-010: Determination of Health Canada Pesticide Residues and Toxins in Dried Cannabis Flower by LC-MS/MS and GC-MS/MS
LAB-MTD-029: Determination of Toxins in Tablet Samples by LC-MS/MS
LAB-MTD-037: Determination of Mycotoxins in Topical/Cream Samples by LC-MS/MS
LAB-MTD-046: Determination of Health Canada Pesticides and Toxins in Cannabis Extracts by LC-MS/MS
LAB-MTD-048: Determination of Health Canada Pesticide Residues and Toxins in Fresh Cannabis Flower by LC-MS/MS and GC-MS/MS

Flavonoid Analysis

LAB-MTD-045: Determination of Flavonoids in Cannabis Dried Flower, Fresh Flower, and Extracts by LC-MS/MS

Peroxide Value, p-Anisidine and Acidity (FFA) Analysis

LAB-MTD-049: Determination of Peroxide Value, p-Anisidine, and Acidity (FFA)

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Details of Testing

Microbial Analysis

MIC-MTD-001: Microbial Analysis of Cannabis Flower and Oil by qPCR
MIC-MTD-006: Determination of Viruses in Cannabis via qPCR and ELISA
MIC-MTD-007: Microbial Analysis of Cannabis by Culture Techniques
MIC-MTD-009: Cannabis Gender Determination by qPCR
MIC-MTD-010: Identification A and Identification B of Cannabis by DAB Monograph
MIC-MTD-011: Analysis of Shigella Species in Cannabis and Cannabis Infused Products
MIC-MTD-008: Analysis of Listeria Monocytogenes in Cannabis and Cannabis Infused Products
MIC-MTD-012: Microbial Analysis of Cannabis and Cannabis Infused Products by TEMPO

Moisture Analysis

LAB-MTD-017: Determination of Moisture Content in Cannabis Flower
LAB-MTD-031: Water Activity Meter Setup and Operation
LAB-MTD-053: Determination of Moisture Content by Loss on Drying Technique using Vacuum Oven
LAB-MTD-056: Determination of Moisture Content by Karl Fischer Titration

Sample Appearance and Foreign Matter

LAB-MTD-022: Sample Appearance and Detection of Foreign Matter Content in Cannabis Samples

Total Ash Analysis

LAB-MTD-043: Total Ash by Muffle Furnace in Cannabis Products

Residual Solvents Analysis

LAB-MTD-036: Determination of Residual Solvents in Cannabis Oil by GC-MS
LAB-MTD-028: Determination of Residual Solvents in Tablet Samples by GC-MS
LAB-MTD-034: Determination of Propane and Butane in Cannabis Oil by GC-MS
LAB-MTD-038: Determination of Toluene in Cannabis Isolate by GC-MS
LAB-MTD-054: Determination of Acetic Acid in Flavour, Cannabis Vape Mix Oil and Cannabis Infused Flower by GC-MS

Heavy Metal Analysis

LAB-MTD-027: Determination of Heavy Metals in Cannabis Samples (Cream/Topicals, Tablets and Edibles) by ICP-MS
LAB-MTD-050: Multi-Element Analysis of Cannabis Dried Flower, Fresh Flower, Extracts, and Rolling Papers by ICP-MS
LAB-MTD-058: Determination of Palladium (Pd) in Cannabis Dried Flower, Fresh Flower and Extracts by ICP-MS

pH Analysis

MIC-MTD-013: Determination of pH using pH Meter

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