

394 - Twisted Berry RCO 3.11.20

Farmer's Friend Extracts
 6451 NE Colwood Wy
 Portland, OR 97218
 503-442-8653

Sample Type: Extracts
Sample Date: 3/12/2020
Analysis Date: 3/12/2020
Report Date: 3/18/2020

Metric Batch ID:
 1A4010300016315000023440
Metric Sample ID:
 1A4010300016315000023451

Harvest/Process Date: 3/11/2020
Report ID: LS-200318-42
Sample Plan ID: SP-200312-2-A
Sample Procedure: 160721_LAB-SOP_SampleCollection-v007

Potency

Potency Analysis Date: 3/13/2020
 Potency Batch ID: CAN_031320A
 Potency Method: JAOAC 2015.1

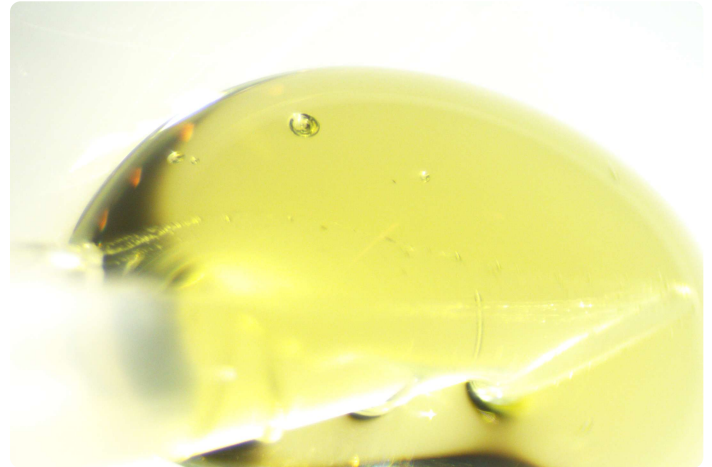
83.9%

**Total
THC**

0.174%




**Total
CBD**

Samples: DXZ-CTT-TMS, ZJM-SPG-DFW



Analyte	Description	LOQ	RPD	Min.	Max.	Avg.	Unit: %
Δ9THC	Delta-9 Tetrahydrocannabinol	0.16	10.8	79.4	88.4	83.9	
THCA	Tetrahydrocannabinolic acid	0.16	0.00	ND	<LOQ	<LOQ	
CBD	Cannabidiol	0.16	4.61	0.170	0.178	0.174	
CBDA	Cannabidiolic acid	0.16	0.00	ND	<LOQ	<LOQ	
Δ8THC	Delta-8 Tetrahydrocannabinol*	0.16	0.00	ND	ND	ND	
THCV	Tetrahydrocannabivarin*	0.16	36.6	0.539	0.781	0.660	
CBG	Cannabigerol*	0.16	13.3	1.93	2.20	2.07	
CBGA	Cannabigerolic acid*	0.16	0.00	ND	<LOQ	<LOQ	
CBC	Cannabichromene*	0.16	7.49	1.05	1.13	1.09	
CBCA	Cannabichromenic acid*	0.16	0.00	ND	ND	ND	
CBN	Cannabinol	0.16	2.50	0.335	0.344	0.340	
Total THC	Δ9THC + (THCA × 0.877)		10.8	79.4	88.4	83.9	
Total CBD	CBD + (CBDA × 0.877)		4.61	0.170	0.178	0.174	
Total			10.9	83.4	93.0	88.2	

Compliance

Pesticides	Within limits	Analysis Date: 3/13/2020	Pass 
Solvents	Within limits	Analysis Date: 3/13/2020	Pass 
Potency	Within limits	Analysis Date: 3/13/2020	Pass 


 Bryce Kidd, Ph.D.
 Lab Director


 Aaron Troyer
 Chief Science Officer



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Terpene Analysis Date: 3/12/2020
Terpene Batch ID: TRP_031220A

Method: JAOAC 2015.1
Unit: %

Analyte	Avg.	Notes
β-Caryophyllene	1.62%	<div style="width: 1.62%;"></div>
β-Farnesene 2	1.35%	<div style="width: 1.35%;"></div>
Humulene	0.487%	<div style="width: 0.487%;"></div>
Linalool	0.442%	<div style="width: 0.442%;"></div>
Limonene	0.305%	<div style="width: 0.305%;"></div>
β-Myrcene	0.244%	<div style="width: 0.244%;"></div>
Guaiol	0.209%	<div style="width: 0.209%;"></div>
α-Terpineol	0.204%	<div style="width: 0.204%;"></div>
Fenchol	0.163%	<div style="width: 0.163%;"></div>
Terpinolene	0.110%	<div style="width: 0.110%;"></div>
Caryophyllene Oxide	0.0897%	<div style="width: 0.0897%;"></div>
β-Ocimene	0.0716%	<div style="width: 0.0716%;"></div>
β-Pinene	0.0584%	<div style="width: 0.0584%;"></div>
Sabinene	0.0538%	<div style="width: 0.0538%;"></div>
α-Pinene	0.0301%	<div style="width: 0.0301%;"></div>
Borneol	0.0208%	<div style="width: 0.0208%;"></div>
Selinadiene	0.0173%	<div style="width: 0.0173%;"></div>
α-Ocimene	0.0141%	<div style="width: 0.0141%;"></div>
α-Terpinene	0.00599%	<div style="width: 0.00599%;"></div>
Fenchone	0.00559%	<div style="width: 0.00559%;"></div>
Δ3-Carene	0.00539%	<div style="width: 0.00539%;"></div>
γ-Terpinene	0.00531%	<div style="width: 0.00531%;"></div>
Camphene	0.00474%	<div style="width: 0.00474%;"></div>
Eucalyptol	0.00267%	<div style="width: 0.00267%;"></div>
Azulene	ND	<div style="width: 0%;"></div>
Camphore	ND	<div style="width: 0%;"></div>
Cedrol	ND	<div style="width: 0%;"></div>
Cymene	ND	<div style="width: 0%;"></div>
Geraniol	ND	<div style="width: 0%;"></div>

Analyte	Avg.	Notes
Geranyl Acetate	ND	<div style="width: 0%;"></div>
Isoborneol	ND	<div style="width: 0%;"></div>
Isopulegol	ND	<div style="width: 0%;"></div>
Nerol	ND	<div style="width: 0%;"></div>
Pulegone	ND	<div style="width: 0%;"></div>
Sabinene Hydrate	ND	<div style="width: 0%;"></div>
Valencene	ND	<div style="width: 0%;"></div>
cis-Nerolidol	ND	<div style="width: 0%;"></div>
trans-Nerolidol	ND	<div style="width: 0%;"></div>
α-Bisabolol	ND	<div style="width: 0%;"></div>
α-Cedrene	ND	<div style="width: 0%;"></div>
α-Phellandrene	ND	<div style="width: 0%;"></div>
β-Farnesene 1	ND	<div style="width: 0%;"></div>
γ-Terpineol	ND	<div style="width: 0%;"></div>
Total	5.52%	

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Sample Plan ID: SP-200312-2-A
Sample Procedure: 160721_LAB-SOP_SampleCollection-v007

Pesticides Sample Data

Pesticides Analysis Date: 3/13/2020
 Pesticides Batch ID: PST_031320A

Method: EN 15662
 Unit: µg/g (ppm)

Pass 

Analyte	ZJM-SPG-DFW	DXZ-CTT-TMS	Limits	LOQ	Notes	Status	Analyte	ZJM-SPG-DFW	DXZ-CTT-TMS	Limits	LOQ	Notes	Status
Abamectin	ND	ND	0.5	0.1		Pass	Metalaxyl	ND	ND	0.2	0.1		Pass
Acephate	ND	ND	0.4	0.1		Pass	Methiocarb	ND	ND	0.2	0.1		Pass
Acequinocyl	ND	ND	2.0	1.5		Pass	Methomyl	ND	ND	0.4	0.1		Pass
Acetamiprid	ND	ND	0.2	0.1		Pass	Methyl Parathion	ND	ND	0.2	0.2		Pass
Aldicarb	ND	ND	0.4	0.1		Pass	MGK-264	ND	ND	0.2	0.2		Pass
Azoxystrobin	ND	ND	0.2	0.1		Pass	Myclobutanil	ND	ND	0.2	0.1		Pass
Bifenazate	ND	ND	0.2	0.1		Pass	Naled	ND	ND	0.5	0.2		Pass
Bifenthrin	ND	ND	0.2	0.1		Pass	Oxamyl	ND	ND	1.0	0.1		Pass
Boscalid	ND	ND	0.4	0.1		Pass	Paclobutrazol	ND	ND	0.4	0.1		Pass
Carbaryl	ND	ND	0.2	0.1		Pass	Permethrins	ND	ND	0.2	0.1		Pass
Carbofuran	ND	ND	0.2	0.1		Pass	Phosmet	ND	ND	0.2	0.1		Pass
Chlorantraniliprole	ND	ND	0.2	0.1		Pass	Piperonyl Butoxide	ND	ND	2.0	0.1		Pass
Chlorfenapyr	ND	ND	1.0	0.1		Pass	Prallethrin	ND	ND	0.2	0.1		Pass
Chlorpyrifos	ND	ND	0.2	0.1		Pass	Propiconazole	ND	ND	0.4	0.1		Pass
Clofentezine	ND	ND	0.2	0.1		Pass	Propoxur	ND	ND	0.2	0.1		Pass
Cyfluthrin	ND	ND	1.0	0.5		Pass	Pyrethrins	ND	ND	1.0	0.5		Pass
Cypermethrin	ND	ND	1.0	0.1		Pass	Pyridaben	ND	ND	0.2	0.1		Pass
Daminozide	ND	ND	1.0	0.5		Pass	Spinosad	ND	ND	0.2	0.1		Pass
Diazinon	ND	ND	0.2	0.1		Pass	Spiromesifen	ND	ND	0.2	0.1		Pass
Dichlorvos (DDVP)	ND	ND	1.0	0.5		Pass	Spirotetramat	ND	ND	0.2	0.1		Pass
Dimethoate	ND	ND	0.2	0.1		Pass	Spiroxamine	ND	ND	0.4	0.1		Pass
Ethoprophos	ND	ND	0.2	0.1		Pass	Tebuconazole	ND	ND	0.4	0.1		Pass
Etofenprox	ND	ND	0.4	0.1		Pass	Thiacloprid	ND	ND	0.2	0.1		Pass
Etoxazole	ND	ND	0.2	0.1		Pass	Thiamethoxam	ND	ND	0.2	0.1		Pass
Fenoxycarb	ND	ND	0.2	0.1		Pass	Trifloxystrobin	ND	ND	0.2	0.1		Pass
Fenpyroximate	ND	ND	0.4	0.1		Pass							
Fipronil	ND	ND	0.4	0.1		Pass							
Flonicamid	ND	ND	1.0	0.1		Pass							
Fludioxonil	ND	ND	0.4	0.1		Pass							
Hexythiazox	ND	ND	1.0	0.1		Pass							
Imazalil	ND	ND	0.2	0.1		Pass							
Imidacloprid	ND	ND	0.4	0.1		Pass							
Kresoxim-methyl	ND	ND	0.4	0.1		Pass							
Malathion	ND	ND	0.2	0.1		Pass							

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Harvest/Process Date: 3/11/2020
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 Sample Plan ID: SP-200312-2-A
 Sample Procedure: 160721_LAB-SOP_SampleCollection-v007

Pesticides Quality Control Data

Pesticides QC Analysis Date: 3/13/2020
 Pesticides QC Batch ID: PST_031320A

Method: EN 15662
 Unit: µg/g (ppm)

Analyte	Blank	LOQ	LCS	LCS Spike	LCS Rec (%)	Limits (%)	Notes	Analyte	Blank	LOQ	LCS	LCS Spike	LCS Rec (%)	Limits (%)	Notes
Abamectin	ND	0.1	0.888	1.00	88.8	50 - 150		Metalaxyl	ND	0.1	0.765	1.00	76.5	50 - 150	
Acephate	ND	0.1	1.01	1.00	101	50 - 150		Methiocarb	ND	0.1	0.884	1.00	88.4	50 - 150	
Acequinocyl	ND	1.5	1.24	1.00	124	50 - 150		Methomyl	ND	0.1	0.914	1.00	91.4	50 - 150	
Acetamiprid	ND	0.1	1.14	1.00	114	50 - 150		Methyl Parathion	ND	0.2	0.383	1.00	38.3	30 - 150	
Aldicarb	ND	0.1	0.871	1.00	87.1	50 - 150		MGK-264	ND	0.2	0.548	0.600	91.4	50 - 150	
Azoxystrobin	ND	0.1	0.918	1.00	91.8	50 - 150		Myclobutanil	ND	0.1	0.939	1.00	93.9	50 - 150	
Bifenazate	ND	0.1	2.68	1.00	268	50 - 150	HB	Naled	ND	0.2	0.670	1.00	67.0	50 - 150	
Bifenthrin	ND	0.1	0.842	1.00	84.2	50 - 150		Oxamyl	ND	0.1	0.909	1.00	90.9	50 - 150	
Boscalid	ND	0.1	0.796	1.00	79.6	50 - 150		Paclobutrazol	ND	0.1	0.978	1.00	97.8	50 - 150	
Carbaryl	ND	0.1	0.903	1.00	90.3	50 - 150		Permethrins	ND	0.1	0.940	1.00	94.0	50 - 150	
Carbofuran	ND	0.1	1.13	1.00	113	50 - 150		Phosmet	ND	0.1	0.756	1.00	75.6	50 - 150	
Chlorantraniliprole	ND	0.1	0.995	1.00	99.5	50 - 150		Piperonyl Butoxide	ND	0.1	0.886	1.00	88.6	50 - 150	
Chlorfenapyr	ND	0.1	0.903	1.00	90.3	50 - 150		Prallethrin	ND	0.1	0.827	1.00	82.7	50 - 150	
Chlorpyrifos	ND	0.1	0.828	1.00	82.8	50 - 150		Propiconazole	ND	0.1	0.749	1.00	74.9	50 - 150	
Clofentezine	ND	0.1	0.824	1.00	82.4	50 - 150		Propoxur	ND	0.1	0.974	1.00	97.4	50 - 150	
Cyfluthrin	ND	0.5	1.24	1.00	124	50 - 150		Pyrethrins	ND	0.5	0.443	1.00	44.3	50 - 150	ME
Cypermethrin	ND	0.1	0.914	1.00	91.4	50 - 150		Pyridaben	ND	0.1	0.923	1.00	92.3	50 - 150	
Daminozide	ND	0.5	1.31	1.00	131	10 - 150		Spinosad	ND	0.1	ND	1.00	9.09	50 - 150	LR
Diazinon	ND	0.1	0.914	1.00	91.4	50 - 150		Spiromesifen	ND	0.1	0.849	1.00	84.9	50 - 150	
Dichlorvos (DDVP)	ND	0.5	0.931	1.00	93.1	50 - 150		Spirotetramat	ND	0.1	0.904	1.00	90.4	50 - 150	
Dimethoate	ND	0.1	0.909	1.00	90.9	50 - 150		Spiroxamine	ND	0.1	0.749	1.00	74.9	50 - 150	
Ethoprophos	ND	0.1	0.957	1.00	95.7	50 - 150		Tebuconazole	ND	0.1	1.00	1.00	100	50 - 150	
Etofenprox	ND	0.1	0.836	1.00	83.6	50 - 150		Thiacloprid	ND	0.1	0.901	1.00	90.1	50 - 150	
Etoazole	ND	0.1	1.79	1.00	179	50 - 150	HB	Thiamethoxam	ND	0.1	0.987	1.00	98.7	50 - 150	
Fenoxycarb	ND	0.1	1.07	1.00	107	50 - 150		Trifloxystrobin	ND	0.1	0.994	1.00	99.4	50 - 150	
Fenpyroximate	ND	0.1	0.901	1.00	90.1	50 - 150									
Fipronil	ND	0.1	0.933	1.00	93.3	50 - 150									
Flonicamid	ND	0.1	1.02	1.00	102	50 - 150									
Fludioxonil	ND	0.1	0.830	1.00	83.0	50 - 150									
Hexythiazox	ND	0.1	1.04	1.00	104	50 - 150									
Imazalil	ND	0.1	0.946	1.00	94.6	50 - 150									
Imidacloprid	ND	0.1	0.852	1.00	85.2	50 - 150									
Kresoxim-methyl	ND	0.1	0.952	1.00	95.2	50 - 150									
Malathion	ND	0.1	0.933	1.00	93.3	50 - 150									

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Sample Procedure: 160721_LAB-SOP_SampleCollection-v007

Residual Solvents Sample Data

Solvents Analysis Date: 3/13/2020
 Solvents Batch ID: RES_031320A

Method: EPA 5021A
 Unit: µg/g (ppm)

Pass 

Analyte	ZJM-SPG-DFW	DXZ-CTT-TMS	RPD (%)	Limits	LOQ	Notes	Status
1,4-Dioxane	ND	ND	0.00	380.0	50.0		Pass
2-Butanol	ND	ND	0.00	5000.0	250.0		Pass
2-Ethoxyethanol	ND	ND	0.00	160.0	50.0		Pass
Acetone	ND	ND	0.00	5000.0	250.0		Pass
Acetonitrile	ND	ND	0.00	410.0	50.0		Pass
Benzene	ND	ND	0.00	2.0	2.0		Pass
Butanes	ND	ND	0.00	5000.0	250.0		Pass
Cumene	ND	ND	0.00	70.0	50.0		Pass
Cyclohexane	ND	ND	0.00	3880.0	50.0		Pass
Ethyl Acetate	ND	ND	0.00	5000.0	250.0		Pass
Ethyl Ether	ND	ND	0.00	5000.0	250.0		Pass
Ethylene Glycol	ND	ND	0.00	620.0	250.0		Pass
Ethylene Oxide	ND	ND	0.00	50.0	50.0		Pass
Heptane	ND	ND	0.00	5000.0	250.0		Pass
Hexanes	ND	ND	0.00	290.0	50.0		Pass
Isopropanol (2-Propanol)	ND	ND	0.00	5000.0	50.0		Pass
Isopropyl Acetate	ND	ND	0.00	5000.0	250.0		Pass
Methanol	ND	ND	0.00	3000.0	250.0		Pass
Dichloromethane	ND	ND	0.00	600.0	50.0		Pass
Pentanes	ND	ND	0.00	5000.0	250.0		Pass
Propane	ND	ND	0.00	5000.0	250.0		Pass
Tetrahydrofuran	ND	ND	0.00	720.0	50.0		Pass
Toluene	ND	ND	0.00	890.0	50.0		Pass
Xylenes	ND	ND	0.00	2170.0	50.0		Pass

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Residual Solvents Quality Control Data

Solvents QC Analysis Date: 3/13/2020
 Solvents QC Batch ID: RES_031320A

Method: EPA 5021A
 Unit: µg/g (ppm)

Analyte	Blank	LOQ	LCS	LCS Spike	LCS Rec (%)	Limits (%)	Notes
1,4-Dioxane	ND	50.0	879	1000	87.9	70 - 130	
2-Butanol	ND	250.0	910	1000	91.0	70 - 130	
2-Ethoxyethanol	ND	50.0	867	1000	86.7	70 - 130	
Acetone	ND	250.0	867	1000	86.7	70 - 130	
Acetonitrile	ND	50.0	895	1000	89.5	70 - 130	
Benzene	ND	2.0	17.0	20.0	85.2	70 - 130	
Butanes	ND	250.0	1730	2000	86.3	70 - 130	
Cumene	ND	50.0	849	1000	84.9	70 - 130	
Cyclohexane	ND	50.0	862	1000	86.2	70 - 130	
Ethyl Acetate	ND	250.0	882	1000	88.2	70 - 130	
Ethyl Ether	ND	250.0	865	1000	86.5	70 - 130	
Ethylene Glycol	ND	250.0	902	1000	90.2	70 - 130	
Ethylene Oxide	ND	50.0	857	1000	85.7	70 - 130	
Heptane	ND	250.0	868	1000	86.8	70 - 130	
Hexanes	ND	50.0	4380	5000	87.6	70 - 130	
Isopropanol (2-Propanol)	ND	50.0	918	1000	91.8	70 - 130	
Isopropyl Acetate	ND	250.0	906	1000	90.6	70 - 130	
Methanol	ND	250.0	840	1000	84.0	70 - 130	
Dichloromethane	ND	50.0	883	1000	88.3	70 - 130	
Pentanes	ND	250.0	2610	3000	87.0	70 - 130	
Propane	ND	250.0	854	1000	85.4	70 - 130	
Tetrahydrofuran	ND	50.0	890	1000	89.0	70 - 130	
Toluene	ND	50.0	876	1000	87.6	70 - 130	
Xylenes	ND	50.0	3410	4000	85.2	70 - 130	

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Qualifier Flag Descriptions

J	Reported result is an estimate - the value is less than the minimum calibration level but greater than the estimated detection limit (EDL)
U	The analyte was not detected in the sample at the estimated detection limit (EDL)
E	Exceeds calibration range
D	Dilution data - result was obtained from the analysis of a dilution
B	Analyte found in sample and associated blank
C	Co-eluting compound
R	Relative Percent Difference (RPD) outside control limits
NR	Analyte not reported because of problems in sample preparation or analysis
ND	Non-Detect
X	Results from reinjection/repeat/re-column data
EMC	Estimated maximum possible concentration - indicates that a peak is detected but did not meet the method required criteria
M	Manual integration
PS	Peaks split
HB	Control acceptance criteria are exceeded high and the associated sample exceeds the detection limit
LB	Control acceptance criteria are exceeded low and the associated sample is below the regulatory limit
ME	Marginal Exceedance
LR	Low Recovery Analyte
LOQ	Limit of Quantitation