



Certificate of Analysis

Bighorn Botanicals, Inc
113 Pilgrim Creek Rd
Noxon, MT 59853,

Order ID: 18112002
Lab Sample #: 42641
Receive Date: 11/20/2018 10:47:54 AM

Sample Description: Montana Yew Tip Capsules

Sample Lot #: YCR2218
Receive Condition: Good
Storage Condition: Ambient
Disposal Instructions: Dispose after 30 days

<u>Chemical Analysis</u>	<u>Result</u>	<u>Specification</u>	<u>Analyst</u>	<u>Date</u>	<u>Method</u>
5-MTH Folate	0.1 mcg/cap	Report	ThereseVacek	11/27/2018	MML170.05.02.01
Aluminum	18.170 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML180.04.02
Barium	24.070 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Beta Carotene	0.1 mcg/cap	Report	ThereseVacek	12/10/2018	MML170.06.02
Biotin	3.2 mcg/cap	Report	ThereseVacek	11/27/2018	MML170.05.02
Boron	4.89 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Caffeine	0.470 mcg/cap	Report	ThereseVacek	11/27/2018	MML170.05.01
Calcium	1.7 mg/cap	Report	AmandaMulcahy	11/20/2018	MML180.05.01
Chromium	0.11 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Copper	0.158 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Folic acid	<1.278 mcg/cap	Report	ThereseVacek	11/27/2018	MML170.05.02.01
Beta-Sitosterol	1.320 mg/cap	Report	ThereseVacek	11/29/2018	MML190.01.08
Brassicasterol	0.000 mg/cap	Report	ThereseVacek	11/29/2018	MML190.01.08
Campesterol	0.000 mg/cap	Report	ThereseVacek	11/29/2018	MML190.01.08
Cholesterol	2.060 mg/cap	Report	ThereseVacek	11/29/2018	MML190.01.08
Stigmasterol	0.000 mg/cap	Report	ThereseVacek	11/29/2018	MML190.01.08
Total Sterols	3.370 mg/cap	Report	ThereseVacek	11/29/2018	MML190.01.08
Iodine	0.738 mcg/cap	Report	AmandaMulcahy	11/26/2018	MML210.07
Iron	33.700 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML180.04.09
Magnesium	0.5 mg/cap	Report	AmandaMulcahy	11/20/2018	MML180.05.02
Manganese	524.90 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Molybdenum	0.042 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Niacinamide	<4.408 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.01
Nickel	0.127 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Nicotinic acid	<4.39 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.01
Pantothenic acid	1.6 mcg/cap	Report	ThereseVacek	11/27/2018	MML170.05.02
Phosphorous	287.390 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML210.07
Potassium	2.33 mg/cap	Report	AmandaMulcahy	11/20/2018	MML180.05.03
Pyridoxal-5-phosphate	<10.73 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.01
Quercetin	<15.22 mcg/cap	Report	ThereseVacek	11/29/2018	MML170.07.15
Riboflavin	2.0 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.01
Rutin	1.8 mcg/cap	Report	ThereseVacek	11/29/2018	MML170.07.15
Selenium	< 1.0 ppb	Report	AmandaMulcahy	11/20/2018	MML210.07
Sodium	< 0.1 ppm	Report	AmandaMulcahy	11/20/2018	MML180.05.04
Thiamine	<4.14 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.01
Vitamin A acetate	<0.379 mcg/cap	Report	ThereseVacek	11/28/2018	MML170.06.01



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Vitamin A palmitate	<2.198 mcg/cap	Report	ThereseVacek	11/28/2018	MML170.06.01
Vitamin B12	5 mcg/cap	Report	AmandaMulcahy	3/29/2019	MML170.05.02
Vitamin B6	2.1 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.01
Vitamin C	0.1 mcg/cap	Report	ThereseVacek	11/26/2018	MML170.05.03
D3	0.1 mcg/cap	Report	ThereseVacek	11/28/2018	MML170.06.01
Vitamin E Acetate	2.6 mcg/cap	Report	ThereseVacek	11/28/2018	MML170.06.01
Vitamin E Succinate	<4.02 mcg/cap	Report	ThereseVacek	11/29/2018	MML170.06.01
Vitamin K1	0.120 mcg/cap	Report	ThereseVacek	12/4/2018	MML170.06.01
Vitamin K2-4	0.590 mcg/cap	Report	ThereseVacek	12/4/2018	MML170.06.01
Vitamin K2-7	0.160 mcg/cap	Report	ThereseVacek	12/4/2018	MML170.06.01
Zinc	27.60 mcg/cap	Report	AmandaMulcahy	11/20/2018	MML180.05.08

Method References

Method # MML170.05.01 **Desc:** Vitamin B-Alpha/Caffeine/Theacrine

Instrument HPLC

Reference Sather, K and Vernig, T. Determination of Caffeine and Vitamin B6 in Energy Drinks by HPLC Concordia College Journal of Analytical Chemistry 2 (2011), 84-91

Method # MML170.05.02 **Desc:** Vitamin B-Beta

Instrument HPLC

Reference Supelco Application Note 148 Separating Water-Soluble Vitamins by Reversed Phase HPLC Using Discovery C18 Column 2000

Method # MML170.05.02.01 **Desc:** Folic Acid

Instrument HPLC

Reference Supelco Application Note 148 Separating Water-Soluble Vitamins by Reversed Phase HPLC Using Discovery C18 Column 2000

Method # MML170.05.03 **Desc:** Vitamin C

Instrument HPLC

Reference Mitic et al. Rapid and reliable HPLC method for the determination of vitamin C in pharmaceutical samples Trop. J. Pharm. Res., February 2011; 10(1): 105-111 (Modified)

Method # MML170.06.01 **Desc:** Fat Soluble Vitamins

Instrument HPLC

Reference Blake, Christopher J. Status of Methodology for the Determination of Fat-Soluble Vitamins in Foods, Dietary Supplements, and Vitamin Premixes Journal of AOAC International, Volume 90, Number 4, July 2007, pp. 897-910(14)



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Method # MML170.06.02 **Desc:** Carotenoids-Beta Carotene, Lycopene

Instrument HPLC

Reference Schierle et al.: JMethod for the Determination of β -Carotene in Supplements and Raw Materials by RP-LC: Single Laboratory Validation Journal of AOAC International Vol. 87, No. 5, 2004

Method # MML170.07.15 **Desc:** Bioflavonoids-Quercetin/Naringin/Huperzine

Instrument HPLC

Reference Phani et al. Quantitative Analysis of Quercetin in Natural Sources by RP-HPLC Int. J. of Res. In Pharm. And Biomed. Sci. Jul - Sep 2010, Vol. 1 (1) 19-22

Method # MML180.04.02 **Desc:** Aluminum

Instrument

Reference

Method # MML180.04.09 **Desc:** Iron

Instrument Flame AA

Reference EPA 6020 (Modified)

Method # MML180.05.01 **Desc:** Calcium

Instrument Flame AA

Reference EPA 215.2 (Modified)

Method # MML180.05.02 **Desc:** Magnesium

Instrument Flame AA

Reference EPA 242.1 (Modified)

Method # MML180.05.03 **Desc:** Potassium

Instrument Flame AA

Reference EPA 258.1 (Modified)

Method # MML180.05.04 **Desc:** Sodium

Instrument Flame AA

Reference EPA 273.1 (Modified)



**MISSION
MOUNTAIN**
LABORATORIES

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Method # MML180.05.08 **Desc:** Zinc

Instrument Flame AA

Reference EPA 289.2 (Modified)

Method # MML190.01.08 **Desc:** Free Sterols

Instrument GC-MS

Reference AOAC Official Method 994.10 - Cholesterol in Foods

Method # MML210.07 **Desc:** Determination of Nutrients

Instrument ICP-MS

Reference EPA 200.8 (Modified)

Approval

Approved By: KimberlyNuccio Authorized Reviewer

Approved Date: 3/29/2019

Laboratory Location: 82892 US Hwy 93 N, Ravalli, MT 59863

Disclaimer: Results are only applicable to test sample submitted. LOD and Uncertainty are available upon request. This report shall not be reproduced, except in its entirety, without written approval of MML, Inc.



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Order ID: 18112002
Lab Sample #: 42642
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Sample Description: Montana Yew Tip Tincture

Sample Lot #: YNB8218
Receive Condition: Good
Storage Condition: Ambient
Disposal Instructions: Dispose after 30 days

<u>Chemical Analysis</u>	<u>Result</u>	<u>Specification</u>	<u>Analyst</u>	<u>Date</u>	<u>Method</u>
5-MTH Folate	0.2 mcg/ml	Report	ThereseVacek	11/27/2018	MML170.05.02.01
Aluminum	0.221 µg/ml	Report	AmandaMulcahy	12/17/2018	MML180.04.02
Barium	0.086 mcg/ml	Report	AmandaMulcahy	12/17/2018	MML210.07
Beta Carotene	<11.281 mcg/ml	Report	ThereseVacek	12/10/2018	MML170.06.02
Biotin	3.300 mcg/ml	Report	ThereseVacek	11/27/2018	MML170.05.03
Boron	2.190 mg/ml	Report	AmandaMulcahy	12/10/2018	MML210.07
Caffeine	0.160 mcg/ml	Report	ThereseVacek	11/27/2018	MML170.05.01
Calcium	16.810 mcg/ml	Report	AmandaMulcahy	11/27/2018	MML180.05.01
Chromium	228.600 mcg/serving	Report	AmandaMulcahy	12/7/2018	MML210.07
Copper	< 1 µg/L	Report	AmandaMulcahy	12/7/2018	MML210.07
Folic acid	<4.203 mcg/ml	Report	ThereseVacek	11/27/2018	MML170.05.02.01
Beta-Sitosterol	3.460 mg/ml	Report	ThereseVacek	11/29/2018	MML190.01.08
Brassicasterol	0.000 mg/ml	Report	ThereseVacek	11/29/2018	MML190.01.08
Campesterol	0.000 mg/ml	Report	ThereseVacek	11/29/2018	MML190.01.08
Cholesterol	4.820 mg/ml	Report	ThereseVacek	11/29/2018	MML190.01.08
Stigmasterol	0.000 mg/ml	Report	ThereseVacek	11/29/2018	MML190.01.08
Total Sterols	8.280 mg/ml	Report	ThereseVacek	11/29/2018	MML190.01.08
Iodine	1.110 mcg/ml	Report	AmandaMulcahy	11/26/2018	MML210.07
Iron	< 0.1 mg/ml	Report	AmandaMulcahy	11/27/2018	MML180.04.09
Magnesium	42.794 mcg/ml	Report	AmandaMulcahy	11/27/2018	MML180.05.02
Manganese	1.349 mg/serving	Report	AmandaMulcahy	12/7/2018	MML210.07
Molybdenum	< 1 µg/L	Report	AmandaMulcahy	12/7/2018	MML210.07
Niacinamide	<14.5 mcg/ml	Report	ThereseVacek	11/26/2018	MML170.05.01
Nickel	< 1 µg/L	Report	AmandaMulcahy	12/17/2018	MML210.07
Nicotinic acid	<14.44 mcg/ml	Report	ThereseVacek	11/26/2018	MML170.05.01
Pantothenic acid	2.320 mcg/ml	Report	ThereseVacek	11/27/2018	MML170.05.02
Phosphorous	47.600 mcg/ml	Report	AmandaMulcahy	12/14/2018	MML210.07
Potassium	438.670 mcg/ml	Report	AmandaMulcahy	11/27/2018	MML180.05.03
Pyridoxal-5-phosphate	<35.35 mcg/ml	Report	ThereseVacek	11/26/2018	MML170.05.01
Quercetin	<50.07 mcg/ml	Report	ThereseVacek	11/29/2018	MML170.07.15
Riboflavin	0.350 mcg/ml	Report	ThereseVacek	11/28/2018	MML170.05.01
Rutin	1.6 mcg/ml	Report	ThereseVacek	11/29/2018	MML170.07.15
Selenium	< 1 µg/L	Report	AmandaMulcahy	12/7/2018	MML210.07
Sodium	< 0.1 mg/ml	Report	AmandaMulcahy	11/27/2018	MML180.05.04
Thiamine	<13.6 mcg/ml	Report	ThereseVacek	11/26/2018	MML170.05.01
Vitamin A acetate	<1.247 mcg/ml	Report	ThereseVacek	11/28/2018	MML170.06.01



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Vitamin A palmitate	<7.23 mcg/ml	Report	ThereseVacek	11/28/2018	MML170.06.01
Vitamin B12	4 mcg/ml	Report	AmandaMulcahy	3/29/2019	MML170.05.02
Vitamin B6	0.1 mcg/ml	Report	ThereseVacek	11/26/2018	MML170.05.01
Vitamin C	<0.004 mcg/ml	Report	ThereseVacek	11/27/2018	MML170.05.03
D3	0.006 mcg/ml	Report	ThereseVacek	11/28/2018	MML170.06.01
Vitamin E Acetate	<60.415 mcg/ml	Report	ThereseVacek	11/28/2018	MML170.06.01
Vitamin E Succinate	<13.23 mcg/ml	Report	ThereseVacek	11/29/2018	MML170.06.01
Vitamin K1	<65.24 mcg/ml	Report	ThereseVacek	11/29/2018	MML170.06.01
Vitamin K2-4	<42.07 mcg/ml	Report	ThereseVacek	11/29/2018	MML170.06.01
Vitamin K2-7	<58.402 mcg/ml	Report	ThereseVacek	11/29/2018	MML170.06.01
Zinc	2.108 mg/serving	Report	AmandaMulcahy	12/7/2018	MML180.05.08

Method References

Method # MML170.05.01 **Desc:** Vitamin B-Alpha/Caffeine/Theacrine

Instrument HPLC

Reference Sather, K and Vernig, T. Determination of Caffeine and Vitamin B6 in Energy Drinks by HPLC Concordia College Journal of Analytical Chemistry 2 (2011), 84-91

Method # MML170.05.02 **Desc:** Vitamin B-Beta

Instrument HPLC

Reference Supelco Application Note 148 Separating Water-Soluble Vitamins by Reversed Phase HPLC Using Discovery C18 Column 2000

Method # MML170.05.02.01 **Desc:** Folic Acid

Instrument HPLC

Reference Supelco Application Note 148 Separating Water-Soluble Vitamins by Reversed Phase HPLC Using Discovery C18 Column 2000

Method # MML170.05.03 **Desc:** Vitamin C

Instrument HPLC

Reference Mitic et al. Rapid and reliable HPLC method for the determination of vitamin C in pharmaceutical samples Trop. J. Pharm. Res., February 2011; 10(1): 105-111 (Modified)

Method # MML170.06.01 **Desc:** Fat Soluble Vitamins

Instrument HPLC

Reference Blake, Christopher J. Status of Methodology for the Determination of Fat-Soluble Vitamins in Foods, Dietary Supplements, and Vitamin Premixes Journal of AOAC International, Volume 90, Number 4, July 2007, pp. 897-910(14)



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Method # MML170.06.02 **Desc:** Carotenoids-Beta Carotene, Lycopene

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Reference Schierle et al.: JMethod for the Determination of β -Carotene in Supplements and Raw Materials by RP-LC: Single Laboratory Validation Journal of AOAC International Vol. 87, No. 5, 2004

Method # MML170.07.15 **Desc:** Bioflavonoids-Quercetin/Naringin/Huperzine

Instrument HPLC

Reference Phani et al. Quantitative Analysis of Quercetin in Natural Sources by RP-HPLC Int. J. of Res. In Pharm. And Biomed. Sci. Jul - Sep 2010, Vol. 1 (1) 19-22

Method # MML180.04.02 **Desc:** Aluminum

Instrument

Reference

Method # MML180.04.09 **Desc:** Iron

Instrument Flame AA

Reference EPA 6020 (Modified)

Method # MML180.05.01 **Desc:** Calcium

Instrument Flame AA

Reference EPA 215.2 (Modified)

Method # MML180.05.02 **Desc:** Magnesium

Instrument Flame AA

Reference EPA 242.1 (Modified)

Method # MML180.05.03 **Desc:** Potassium

Instrument Flame AA

Reference EPA 258.1 (Modified)

Method # MML180.05.04 **Desc:** Sodium

Instrument Flame AA

Reference EPA 273.1 (Modified)



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Instrument Flame AA

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Method # MML190.01.08 **Desc:** Free Sterols

Instrument GC-MS

Reference AOAC Official Method 994.10 - Cholesterol in Foods

Method # MML210.07 **Desc:** Determination of Nutrients

Instrument ICP-MS

Reference EPA 200.8 (Modified)

Approval

Approved By: KimberlyNuccio Authorized Reviewer

Approved Date: 3/29/2019

Laboratory Location: 82892 US Hwy 93 N, Ravalli, MT 59863

Disclaimer: Results are only applicable to test sample submitted. LOD and Uncertainty are available upon request. This report shall not be reproduced, except in its entirety, without written approval of MML, Inc.