FULVIC POWDER

Item Number: HHFMP8090120

Validation of Content

This document contains laboratory reports that reveal the diversity of ingredients found in our Fulvic Powder. The information herein is a typical example of what our product contains in each batch we manufacture. The number of organic acids including amino acids and fulvic acid are validation of the products organic origin.

Fulvic acid content verified by the standardized Lamar AOAC Vol., 97 method of fulvic acid quantification.

All products are manufactured in our cGMP certified facility:
Issued by: UL/NPA (Underwriter's Labs / Natural Products Association)
Conformance to: 21 CFR Part 111: 4-2016
Certificate Number: m18-299368-1
Issued: Nov 13, 2018 / Expires: Nov 13 2021

CONTENTS:

ANALYTICAL LABORATORIES:

Advanced Laboratories - Mineral, trace mineral, trace element, amino acid, heavy metals, microbial analysis.
IAS Laboratories - Fulvic acid quantification.
Atlas Bio-Science Laboratories - Organic acid quantification.

IAS Laboratories

2515 East University Drive
Phoenix, Arizona 85034
(602) 273-7248
Fax (602) 275-3836

Date: July 24, 2019
Submitted by: Mineral Logic, LLC. Report to: Ralf Ostertag
Report #: 6663846
Date Received: July 15, 2019

Fulvic Analysis

*

Sender ID	IAS Lab #	Fulvic Acid %
Typical Analysis	814	42.82

*AOAC Vol.97 - Lamar/IHSS

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Email: utlab@advancedlabsinc.com
FDA Registration #3006423386

Test Certificate

Description: Fulvic Powder
Client: Mineral Logic, LLC
Sample ID:
Lot No: TYPICAL ANALYSIS
Part Code:
Location:
PO No:
Lab No: 163015-01
Received: 12/13/2018
Completed: 12/18/2018

Analysis	Result	Per Unit	Method
Total Aerobic Microbial Count	<10	CFU/g	USP <2021>
Coliform Count	<3	MPN/g	FDA BAM
E. Coli Count	<3	MPN/g	FDA BAM
Salmonella	Absent	per 10 grams	USP <2022>
Total Yeast & Mold	<10	CFU/g	USP <2021>
Yeast *	<10	CFU/g	
Mold *	<10	CFU/g	

* For informational purposes only.

Results Approved By: Alisa Farnsworth-Quality Technician **Dated:** 12/18/2018

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Client: Mineral Logic, LLC

Lab No: 163016-01
Completed: 12/21/2018

Analysis	Result	Per Unit	Method
†Alanine	1.357	mg / g	Derivative-HPLC
†Arginine	1.124	mg / g	Derivative-HPLC
†Aspartic acid	0.579	mg / g	Derivative-HPLC
†Cysteine	0.399	mg / g	Derivative-HPLC
†Glutamine	0.122	mg / g	Derivative-HPLC
†Glycine	0.039	mg / g	Derivative-HPLC
†Histidine	0.666	mg / g	Derivative-HPLC
†Isoleucine	0.220	mg / g	Derivative-HPLC
†Leucine	0.367	mg / g	Derivative-HPLC
†Lysine	0.773	mg / g	Derivative-HPLC
†Methionine	0.871	mg / g	Derivative-HPLC
†Phenylalanine	0.165	mg / g	Derivative-HPLC
†Proline	0.669	mg / g	Derivative-HPLC
†Serine	0.072	mg / g	Derivative-HPLC
†Threonine	0.488	mg / g	Derivative-HPLC
†Tryptophan	0.020	mg / g	Derivative-HPLC
†Tyrosine	1.186	mg / g	Derivative-HPLC
†Valine	0.505	mg / g	Derivative-HPLC
†Total Amino Acids	9.623	mg / g	Derivative-HPLC

Results Approved By: Alisa Farnsworth-Quality Technician **Dated:** 12/21/2018

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Lab No: 163016-01
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Analysis	Result	Per Unit	Method
Color	Brown Powder		Visual
Aluminum	502	ppm	ICP-OES USP <730>
Antimony	1.22	ppm	ICP-OES USP <730>
Arsenic	0.448	ppm	ICP-MS USP <730>
Barium	19.9	ppm	ICP-OES USP <730>
Beryllium	1.24	ppm	ICP-OES USP <730>
Bismuth	<0.5	ppm	ICP-OES USP <730>
Boron	13.4	ppm	ICP-OES USP <730>
Cadmium	0.071	ppm	ICP-MS USP <730>
Calcium	33,840	ppm	ICP-OES USP <730>
Cerium	4.006	ppm	ICP-MS USP <730>
Cesium	0.081	ppm	ICP-MS USP <730>
†Chloride	2203.0	ppm	USP <221> Titration
Chromium	0.678	ppm	ICP-OES USP <730>
Cobalt	3.75	ppm	ICP-OES USP <730>
Copper	0.888	ppm	ICP-OES USP <730>
Dysprosium	0.366	ppm	ICP-MS USP <730>
Erbium	0.196	ppm	ICP-MS USP <730>
Europium	0.102	ppm	ICP-MS USP <730>

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Analysis	Result	Per Unit	Method
†Fluoride	0.228	ppm	AOAC 939.11
Gadolinium	0.479	ppm	ICP-MS USP <730>
Gallium	1.364	ppm	ICP-MS USP <730>
Germanium	<0.001	ppm	ICP-MS USP <730>
Gold	<0.5	ppm	ICP-OES USP <730>
Hafnium	0.015	ppm	ICP-MS USP <730>
Holmium	0.071	ppm	ICP-MS USP <730>
Indium	<0.001	ppm	ICP-MS USP <730>
†Iodine	0.135	ppm	Titration
Iridium	<0.001	ppm	ICP-MS USP <730>
Iron	2,333	ppm	ICP-OES USP <730>
Lanthanum	4.57	ppm	ICP-OES USP <730>
Lead	0.203	ppm	ICP-MS USP <730>
Lithium	1.48	ppm	ICP-OES USP <730>
Lutetium	0.021	ppm	ICP-MS USP <730>
Magnesium	1,769	ppm	ICP-OES USP <730>
Manganese	77.5	ppm	ICP-OES USP <730>
Mercury	0.007	ppm	ICP-MS USP <730>
Molybdenum	1.46	ppm	ICP-OES USP <730>

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Analysis	Result	Per Unit	Method
Neodymium	2.123	ppm	ICP-MS USP <730>
Nickel	4.34	ppm	ICP-OES USP <730>
Niobium	2.77	ppm	ICP-OES USP <730>
Osmium	0.001	ppm	ICP-MS USP <730>
Palladium	0.204	ppm	ICP-MS USP <730>
Phosphorus	108	ppm	ICP-OES USP <730>
Platinum	<0.001	ppm	ICP-MS USP <730>
Potassium	30,340	ppm	ICP-OES USP <730>
Praseodymium	0.538	ppm	ICP-MS USP <730>
Rhenium	0.001	ppm	ICP-MS USP <730>
Rhodium	0.002	ppm	ICP-MS USP <730>
Rubidium	8.120	ppm	ICP-MS USP <730>
Ruthenium	0.015	ppm	ICP-MS USP <730>
Samarium	0.458	ppm	ICP-MS USP <730>
Scandium	0.718	ppm	ICP-MS USP <730>
Selenium	<0.5	ppm	ICP-OES USP <730>
Silicon	65.2	ppm	ICP-OES USP <730>
Silver	<0.5	ppm	ICP-OES USP <730>
Sodium	31,760	ppm	ICP-OES USP <730>

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Lab No: 163016-01
Completed: 12/21/2018

Analysis	Result	Per Unit	Method
Strontium	23.1	ppm	ICP-OES USP <730>
Sulfur	39,710	ppm	ICP-OES USP <730>
Tantalum	0.010	ppm	ICP-MS USP <730>
Tellurium	<0.5	ppm	ICP-OES USP <730>
Terbium	0.074	ppm	ICP-MS USP <730>
Thallium	<0.5	ppm	ICP-OES USP <730>
Thorium	3.96	ppm	ICP-OES USP <730>
Thulium	0.025	ppm	ICP-MS USP <730>
Tin	<0.001	ppm	ICP-MS USP <730>
Titanium	0.718	ppm	ICP-OES USP <730>
Tungsten	<0.5	ppm	ICP-OES USP <730>
Vanadium	<0.5	ppm	ICP-OES USP <730>
Ytterbium	0.166	ppm	ICP-MS USP <730>
Yttrium	2.58	ppm	ICP-OES USP <730>
Zinc	23.2	ppm	ICP-OES USP <730>
Zirconium	0.938	ppm	ICP-OES USP <730>
Moisture	2.38	%	Modified USP <921> Method III
pH	8.82		EPA 150.1

Results Approved By: Alisa Farnsworth-Quality Technician **Dated:** 12/21/2018

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Analysis	Result	Per Unit	Method
#40 Mesh	98.6	% Passing	USP <786>
Aw	0.36		AOAC 978.18

Alanine, Arginine, Aspartic acid, Cysteine, Glutamine, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Proline, Serine, Threonine, Total Amino Acids, Tryptophan, Tyrosine and Valine analysis performed using HPLC following derivatization according to the AccQtag methodology (Waters, Inc.) using 20 mM HCl, Borate buffer, and AQC reagent in acetonitrile (1:3:1, v/v/v), followed by HPLC using Waters Extera C18 column (150x3.5mm, 3µm), 40°C, with isocratic mobile phase consisting of 20mM Potassium phosphate, pH3.0/Acetonitrile (95:5) 1.5ml/min with UV detection (254nm). Authentic chemical reference material obtained from Sigma-Aldrich.
Chloride <221> titration procedure with AgNO3 precipitation reaction.
Fluoride AOAC 939.11.
Iodine analysis performed by sodium 0.1N thiosulfate titration of acidified digest centrifuged supernatant. Starch indicator solution was used to determine the end-point of the titration. Reagents employed were obtained from Sigma-Aldrich.

Results Approved By: Alisa Farnsworth-Quality Technician **Dated:** 12/21/2018

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ANALYTICAL REPORT

TO: Ralf Ostertag
Mineral Logic, LLC

EMAIL: ralf@minerallogic.com
P.O.#:
DATE: February 3, 2019

Sample:	Lab Number:
Fulvic Powder HHFMP8090120	**64090-01**
	Lot Number: **TYPICAL ANALYSIS**

Analyte	Result	Unit
Malic acid	0.015	% wt
Formic acid	0.085	% wt
Propionic acid	< 0.001	% wt
Butyric acid	< 0.001	% wt
Malonic acid	< 0.001	% wt
Lactic acid	0.002	% wt
Adipic acid	< 0.001	% wt
Isocitric acid	< 0.001	% wt
Ferulic acid	0.003	% wt
Oxalic acid	0.012	% wt
Fumaric acid	0.028	% wt
Succinic acid	0.004	% wt
Tartaric acid	< 0.001	% wt
Shikimic	0.026	% wt
Citric acid	0.317	% wt
Acetic acid	0.089	% wt
Caffeic	0.014	% wt
Benzoic	0.027	% wt
Phenylacetic	0.009	% wt

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(520) 495-0399 fax

Phthalic	0.008	% wt
Syringic	< 0.001	% wt
Coumaric (all isomers)	< 0.001	% wt
Glycolic acid	< 0.001	% wt
Hydroxy-benzoic (all isomers)	< 0.001	% wt
Aconitic acid (all isomers)	< 0.001	% wt
Protocatechuic	0.012	% wt
Gallic	0.124	% wt
Gentesic	< 0.001	% wt
Sinapic	< 0.001	% wt
Rosmarinic	< 0.001	% wt
Cinnamic (all isomers)	0.029	% wt
Vanillic	< 0.001	% wt

Organic acid analysis performed using HPLC by method adapted from Lian, H.Z., Mao, L., Ye, X.L., Miao, J. “Simultaneous determination of oxalic, fumaric, maleic and succinic acids in tartaric and malic acids for pharmaceutical use by ion-suppression reversed-phase high performance liquid chromatography” as published in Journal Of Pharmaceutical And Biomedical Analysis, 19(3-4): 621-625, 1999; utilizing reversed-phase ion-suppression high performance liquid chromatography performed on a Nova-Pak C-18 (5µm) (150x4.5mm) column with isocratic elution using water adjusted to pH 2.10-2.15 with perchloric acid, and detection by UV adsorption at 210 nm wavelength. Authentic chemical reference material obtained from Sigma-Aldrich.

Dinesh Patel, Ph.D.
Laboratory Director

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