

AGT-50™ Organic Acid and Trace Mineral Complex

Item Number: AD10FA100

Validation of Content

This document contains laboratory reports that reveal the diversity of ingredients found in our AGT-50™. The information herein is a typical example of what our product contains in each batch we manufacture. The number of organic acids and fulvic acid are validation of the product's organic origin.

Fulvic acid content was verified by the standardized Lamar AOAC Vol., 97 and the LGB method of fulvic acid quantification. Humic acid verified by LGB method. 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:

- Microbial Profiles
- Mineral Analytes
- Trace Mineral Analytes
- Trace Element Analytes
- Heavy Metals
- Organic Acid Profile
- Fulvic Acid
- Humic Acid

ANALYTICAL LABORATORIES:

Advanced Laboratories: Mineral, trace mineral, trace element, heavy metals, microbial, fulvic and humic acid 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 09, 2019
Submitted by: Mineral Logic
Report to: Ralf Ostertag
Report #: 6663658
Date Received: June 27, 2019

Fulvic Analysis

| Sender ID | IAS Lab # | *Fulvic Acid % |
|------------------|-----------|----------------|
| TYPICAL ANALYSIS | 717 | 4.85 |

*Fulvic Acid Analysis performed with the Lamar Standardized AOAC Vol., 97 (3) method.



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40 West Louise Ave., Salt Lake City, UT 84115
Phone: (801) 485-1800 Fax: (801) 484-9211
Email: utlab@advancedlabsinc.com
FDA Registration #3006423386

Test Certificate

Description: AGT-50™
Sample ID: PN: AD10FA100
Lot No: TYPICAL ANALYSIS
Part Code:
Location:
PO No: Paid by CC
Received: 2/20/2018

Client: AgTonik LLC
8100 Oakland Drive
Portage, Michigan 49024


Lab No: 148508-01
Completed: 2/20/2018

| Analysis | Result | Per Unit | Method |
|------------|--------|----------|---------------------|
| Carbon | 3.92 | % | LECO |
| Aluminum | 456 | ppm | ICP-OES USP <730> |
| Antimony | <0.5 | ppm | ICP-OES USP <730> |
| Arsenic | 0.274 | ppm | ICP-MS USP <730> |
| Barium | <0.5 | ppm | ICP-OES USP <730> |
| Beryllium | <0.5 | ppm | ICP-OES USP <730> |
| Bismuth | 3.34 | ppm | ICP-OES USP <730> |
| Boron | 10.4 | ppm | ICP-OES USP <730> |
| Cadmium | 0.070 | ppm | ICP-MS USP <730> |
| Calcium | 1,353 | ppm | ICP-OES USP <730> |
| Cerium | 4.008 | ppm | ICP-MS USP <730> |
| Cesium | 0.010 | ppm | ICP-MS USP <730> |
| †Chloride | 203.0 | ppm | USP <221> Titration |
| Chromium | 0.5 | ppm | ICP-OES USP <730> |
| Cobalt | 8.15 | ppm | ICP-OES USP <730> |
| Copper | <0.5 | ppm | ICP-OES USP <730> |
| Dysprosium | 0.427 | ppm | ICP-MS USP <730> |
| Erbium | 0.233 | ppm | ICP-MS USP <730> |
| Europium | 0.105 | ppm | ICP-MS USP <730> |

THESE RESULTS APPLY ONLY TO THE SAMPLE SUBMITTED AND NOT TO THE PRODUCT FROM WHICH IT WAS TAKEN. THESE RESULTS ARE PROVIDED ONLY FOR THE BENEFIT OF CLIENT, WITHOUT REPRESENTATION OR WARRANTY OF ANY KIND, EXCEPT FOR THE EXPRESS LIMITED WARRANTY PROVIDED SOLELY TO CLIENT IN ADVANCED LABORATORIES' TERMS OF SERVICE.

THIS CERTIFICATE SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT WRITTEN APPROVAL FROM ADVANCED LABORATORIES.

Results Approved By:


Alisa Farnsworth-Quality Technician

Dated: 2/20/2018

Tests marked with † were done at Atlas Bioscience Labs, LLC, a joint venture with Advanced Laboratories. - 1775 S. Pantano Rd - Ste #110, Tucson, AZ 85710

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|------------|--------|----------|-------------------|
| †Fluoride | 6.05 | ppm | AOAC 939.11 |
| Gadolinium | 0.520 | ppm | ICP-MS USP <730> |
| Gallium | 0.087 | ppm | ICP-MS USP <730> |
| Germanium | <0.001 | ppm | ICP-MS USP <730> |
| Gold | <0.5 | ppm | ICP-OES USP <730> |
| Hafnium | 0.476 | ppm | ICP-MS USP <730> |
| Holmium | 0.031 | ppm | ICP-MS USP <730> |
| Indium | 0.006 | ppm | ICP-MS USP <730> |
| †Iodine | 3.11 | ppm | Titration |
| Iridium | 0.001 | ppm | ICP-MS USP <730> |
| Iron | 3,224 | ppm | ICP-OES USP <730> |
| Lanthanum | 5.15 | ppm | ICP-OES USP <730> |
| Lead | 0.016 | ppm | ICP-MS USP <730> |
| Lithium | <0.5 | ppm | ICP-OES USP <730> |
| Lutetium | 0.019 | ppm | ICP-MS USP <730> |
| Magnesium | 305 | ppm | ICP-OES USP <730> |
| Manganese | 17.8 | ppm | ICP-OES USP <730> |
| Mercury | 0.001 | ppm | ICP-MS USP <730> |
| Molybdenum | <0.5 | ppm | ICP-OES USP <730> |

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Client: AgTonik LLC
 8100 Oakland Drive
 Portage, Michigan 49024

Lab No: 148508-01
 Completed: 2/20/2018

| Analysis | Result | Per Unit | Method |
|--------------|--------|----------|-------------------|
| Neodymium | 2.180 | ppm | ICP-MS USP <730> |
| Nickel | 2.77 | ppm | ICP-OES USP <730> |
| Niobium | 13.2 | ppm | ICP-OES USP <730> |
| Osmium | 0.001 | ppm | ICP-MS USP <730> |
| Palladium | 0.025 | ppm | ICP-MS USP <730> |
| Phosphorus | 3.23 | ppm | ICP-OES USP <730> |
| Platinum | 0.001 | ppm | ICP-MS USP <730> |
| Potassium | 118 | ppm | ICP-OES USP <730> |
| Praseodymium | 0.542 | ppm | ICP-MS USP <730> |
| Rhenium | <0.001 | ppm | ICP-MS USP <730> |
| Rhodium | 0.003 | ppm | ICP-MS USP <730> |
| Rubidium | 0.510 | ppm | ICP-MS USP <730> |
| Ruthenium | <0.001 | ppm | ICP-MS USP <730> |
| Samarium | 0.500 | ppm | ICP-MS USP <730> |
| Scandium | 0.404 | ppm | ICP-MS USP <730> |
| Selenium | <0.5 | ppm | ICP-OES USP <730> |
| Silicon | 23.9 | ppm | ICP-OES USP <730> |
| Silver | <0.5 | ppm | ICP-OES USP <730> |
| Sodium | 3,800 | ppm | ICP-OES USP <730> |

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| Analysis | Result | Per Unit | Method |
|--------------|--------|----------|--------------------------|
| Strontium | 1.63 | ppm | ICP-OES USP <730> |
| Sulfur | 7,997 | ppm | ICP-OES USP <730> |
| Tantalum | 0.041 | ppm | ICP-MS USP <730> |
| Tellurium | <0.5 | ppm | ICP-OES USP <730> |
| Terbium | 0.089 | ppm | ICP-MS USP <730> |
| Thallium | <0.5 | ppm | ICP-OES USP <730> |
| Thorium | 8.41 | ppm | ICP-OES USP <730> |
| Thulium | 0.030 | ppm | ICP-MS USP <730> |
| Tin | 0.091 | ppm | ICP-MS USP <730> |
| Titanium | 1.39 | ppm | ICP-OES USP <730> |
| Tungsten | 9.69 | ppm | ICP-OES USP <730> |
| Vanadium | <0.5 | ppm | ICP-OES USP <730> |
| Ytterbium | 0.196 | ppm | ICP-MS USP <730> |
| Yttrium | 1.664 | ppm | ICP-OES USP <730> |
| Zinc | 5.55 | ppm | ICP-OES USP <730> |
| Zirconium | 9.81 | ppm | ICP-OES USP <730> |
| †Fulvic Acid | 5.891 | % | Modified Larry G. Butler |
| †Humic Acid | 0.156 | % | Modified Larry G. Butler |
| †Nitrogen | 0.26 | % | DUMAS AOAC 990.03 |

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| Analysis | Result | Per Unit | Method |
|-------------------------------|----------|--------------|----------------------|
| pH | 3.88 | | EPA 150.1 |
| Total Aerobic Microbial Count | <10 | CFU/g | USP <2021> |
| Coliform | <3 | MPN/g | FDA BAM |
| E Coli | <3 | MPN/g | FDA BAM |
| Salmonella | Negative | per 25 grams | Modified AOAC 998.09 |
| Staphylococcus aureus | Absent | per 10 grams | USP <2022> |
| Total Yeast & Mold | <10 | CFU/g | USP <2021> |
| Yeast * | <10 | CFU/g | |
| Mold * | <10 | CFU/g | |
| Specific Gravity | 1.063 | | Modified USP <841> |
| Total Dissolved Solids | 9.28 | % | AOAC 920.193 |

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| Analysis | Result | Per Unit | Method |
|----------|--------|----------|--------|
|----------|--------|----------|--------|

* For informational purposes only.

Chloride <221> titration procedure with AgNO3 precipitation reaction.
Fluoride 939.11.

Fulvic Acid analyzed as total vanillin-catechin conjugates using modified methodology of Larry G. Butler et al., "Vanillin Assay for Proanthocyanidins [Condensed Tannins]: Modification of the solvent for Estimation of the degree of Polymerization" as published in J. Agric. Food Chem., 30, 1087-1089, vanillin reagent prepared as 750ml with 15g ammonium iron sulfate in n-butanol/hydrochloric acid (95:5). For the determination of total catechin on 2% sol of initial extract in a 50ml volumetric flask containing 25ml of methanol; 2.5ml of Vanillin reagent added and heated to 95°C for 40mins after cooling diluted to volume with methanol, the absorbance of both the standard solutions and sample is measured at 550nm. Authentic reference material obtained from Sigma-Aldrich.

analysis performed pre and post hydrolysis on a SEC column with isocratic mobile phase of 5 mM boric acid (pH 7.0 adjusted by 10 mM NaOH) and elution on a TSKgel G3000SWXL (300 x 8.5 mm) with PDA detection. Authentic humic acid reference material obtained from Sigma-Aldrich

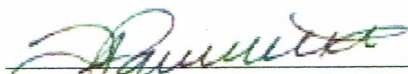
Iodine analysis performed by sodium 0.1N thiosulfate titration of acidified digest centrifuged supernatant. Starch indicator solution was used to determine the end-point of the titration. Reagents employed were obtained from Sigma-Aldrich.

Nitrogen pyrolysis.

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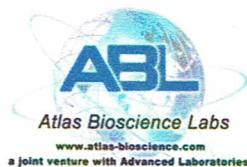
Results Approved By:


Alisa Farnsworth-Quality Technician

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ANALYTICAL REPORT

TO: Ralf Ostertag
AgTonik, LLC
7136 East "N" Ave.
Kalamazoo, MI 49048

EMAIL: ralf@minerallogic.com
P.O.#: COC# 2001

Organic Acid Profile

| | | | |
|---------|--------|-------------|------------------|
| Sample: | AGT-50 | Lab Number: | 22998-01 |
| | | Lot Number: | TYPICAL ANALYSIS |

| Analyte | Result | Unit |
|-----------------------------|---------|------|
| Acetic acid | 0.02 | % wt |
| Adipic Acids | < 0.001 | % wt |
| Butyric Acid | < 0.001 | % wt |
| Citric Acid | < 0.001 | % wt |
| Formic Acid | < 0.001 | % wt |
| Fumaric Acid | 0.05 | % wt |
| Glycolic Acids | < 0.001 | % wt |
| Isocitric Acid | < 0.001 | % wt |
| Lactic Acid | 0.01 | % wt |
| Malic Acid | 0.02 | % wt |
| Malonic Acid | < 0.001 | % wt |
| Oxalic Acid | < 0.001 | % wt |
| Propionic Acid | < 0.001 | % wt |
| Succinic Acid | 0.02 | % wt |
| Tartaric Acid | < 0.001 | % wt |
| Aconitic Acid (all isomers) | < 0.001 | % wt |
| Benzoic | 0.08 | % wt |
| Phenylacetic | 0.02 | % wt |
| Shikimic | 0.09 | % wt |

| Analyte | Result | Unit |
|-------------------------------|---------|------|
| Phthalic | 0.04 | % wt |
| Ferulic | 0.09 | % wt |
| Syringic | < 0.001 | % wt |
| Coumaric (all isomers) | < 0.001 | % wt |
| Vanillic | < 0.001 | % wt |
| Hydroxy-benzoic (all isomers) | < 0.001 | % wt |
| Caffeic | 0.075 | % wt |
| Protocatechuic | 0.03 | % wt |
| Gallic | 0.18 | % wt |
| Gentesic | < 0.001 | % wt |
| Sinapic | < 0.001 | % wt |
| Rosmarinic | < 0.001 | % wt |
| Cinnamic (all isomers) | 0.06 | % 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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