

Title: <b>L-Citrulline Powder 100 grams</b>	
Allergy Research Group* / NutriCology*	
Document No.: 74760CA	Revision: 009

## Certificate of Analysis

<b>Part Number</b>	74760		
<b>Lot Number</b>	0120097		
<b>Product Count &amp; Form</b>	100 grams (3.5 oz) powder		
<b>Packaging, Closure</b>	200 cc bottle		
<b>Storage Condition</b>	Room Temperature		
<b>Shelf Life</b>	24 months	Expiration Date	02   23
<b>Label Number, Size</b>	74760L, C		
<b>Retain Sample</b>	1 bottle per label (2 bottles total)		

### ANALYSIS

#### Physical

Attribute	Method / SOP	Specification	Test Result
Product Color	SOP 515	Fine white-beige powder	Passes
Product Odor	SOP 514	Mildly acid	Passes

#### Purity / Strength per Dosage Form

Ingredients	Label Claim	Specification	Test Result
L-Citrulline	3 grams (≥ 99%)	100-150% LC by HPLC	99%

\*Production and Process Control

#### Identification \ Chemical \ Heavy Metals

Attribute	Method / SOP	Specification	Test Result
Identity	Bulk Certificate of Analysis Review	Approved	Approved
Identity	Near Infrared Spectroscopy	Matches Reference	Matches Reference
Arsenic (inorganic)	ICP-MS per USP <2232>	≤ 15 µg/day Ψ	BQL Ψ
Cadmium	ICP-MS per USP <2232>	≤ 5 µg/day Ψ	BQL Ψ
Mercury (total)	ICP-MS per USP <2232>	≤ 15 µg/day Ψ	BQL Ψ
Lead	ICP-MS per USP <2232>	≤ 10 µg/day Ψ	0.408 µg/day Ψ


Ψ Permitted Daily Exposure, \*Production and Process Control, BQL: Below Quantitative Level

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**Microbiology**

Attribute	Method / SOP	Specification	Test Result
Total Aerobic Count	USP/ AOAC/ FDA BAM	$\leq 1 \times 10^3$ CFU/g	<10 CFU/g
Total Yeast & Mold	USP/ AOAC/ FDA BAM	$\leq 1 \times 10^2$ CFU/g	<10 CFU/g
Coliform	USP/ AOAC/ FDA BAM	$\leq 1 \times 10^2$ CFU/g	<10 CFU/g
Escherichia coli	USP/ AOAC/ FDA BAM	None Detected	None Detected
Staphylococcus aureus	USP/ AOAC/ FDA BAM	None Detected	None Detected
Salmonella	USP/ AOAC/ FDA BAM	None Detected	None Detected

\*Production and Process Control

Approval: 	Date: 03/26/20
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**Project Description:** Product Testing (PO #LJ03052020)  
**Report Issued To:** Allergy Research Group  
 2300 North Loop Rd.  
 Alameda, CA 94502  
**Contact:** Janice Vu

### Certificate of Analysis

**AEMTEK #: 2003359**

**Sampling Date:** 2020-03-05  
**Sample Received:** 2020-03-06  
**Analysis Started:** 2020-03-06  
**Analysis Performed By:** WY, RKC, FH, EL  
**Report Issue Date:** 2020-03-09

Analyte	Aerobic Plate Count	Total Coliforms	Yeast	Mold	Escherichia coli	Salmonella	Staphylococcus aureus		
Method	AOAC OMA 990.12	AOAC OMA 991.14	AOAC OMA 2014.05	AOAC OMA 2014.05	USP 37 <62> (mod.)	USP 37 <62> (mod.)	USP 37 <62> (mod.)		
Reporting Unit	CFU/g	CFU/g	CFU/g	CFU/g	per 10g	per 10g	per 10g		
Method Detection Limit for Reporting	10	10	10	10	P/A	P/A	P/A		
Sample ID	Sample Description	Lot #/Code	RESULTS						
1	L-Citrulline	84760/ 0120097	<10	<10	<10	<10	ND	ND	ND

**Terminology:**

CFU = Colony Forming Units                      g = gram  
 < Indicates less than the reporting limit as noted  
 ND = Not Detected, negative, absent. Sensitivity is about 1 organism per test portion.  
 BAM = FDA Bacteriological Analytical Manual  
 AOAC OMA = Official Methods of Analysis of the AOAC International, 18th ed.

MPN = Most Probable Number  
 P/A = Presence/Absence                      N/A = Not Applicable or not analyzed  
 CP Staph = Coagulase Positive Staphylococci (Staphylococcus aureus)  
 CMMEF = Compendium of Methods for the Microbiological Examination of Foods, 4th ed.  
 AOAC RI = AOAC Research Institute Performance Tested.



## Analytical Report

March 10, 2020

Tuyen Luong  
Allergy Research Group/NutriCology  
2300 North Loop Road  
Alameda, CA 94502

Page 1 of 1  
WO Number: W20C0217

Client: Allergy Research Group-QC  
Client #: A5537-T  
Sample Type: Powder  
Collector: Client

Customer PO: LJ03052020  
Date Received: 3/6/2020  
Date Completed: 03/10/2020  
Discard Date: 03/24/2020

**CSL#: 20C0444 L-Citrulline - Lot#: 84760/ 0120097**

Parameter	Result	PQL	Method	Date	Analyst
Arsenic	<0.050 ug/g	0.050	ICP MS	03/09/20	JTP
Cadmium	<0.050 ug/g	0.050	ICP MS	03/09/20	JTP
Lead	0.068 ug/g	0.050	ICP MS	03/06/20	TMY
Mercury	<0.050 ug/g	0.050	ICP MS	03/09/20	JTP

**CSL#: 20C0444**

Parameter	Result	Serving Size	Unit Weight	Specification
Arsenic	<0.05 ug/g	1 g	NA	<0.50 ug/g
Cadmium	<0.05 ug/g	1 g	NA	<0.50 ug/g
Lead	0.07 ug/g	1 g	NA	<0.50 ug/g
Mercury	<0.05 ug/g	1 g	NA	<0.50 ug/g

Reviewed and Approved,  
SGS Chemical Solutions Laboratories, Inc.

DocuSigned by:

*Kelli Dempsey*

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QA Representative

**Notes:**

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The units for the PQL are the same as those shown for the result.



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E-Mail: [Karine@MicroQualityLabs.com](mailto:Karine@MicroQualityLabs.com)

**Customer:** Allergy Research Group, LLC  
**Address:** 2300 North Loop Road  
Alameda, CA 94502

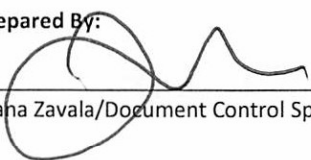
## ANALYTICAL/CHEMICAL CERTIFICATE OF ANALYSIS

**Sample Name:** L-CITRULLINE  
**Product Code:** 84760  
**Batch/Lot:** 0120097  
**MQL Accession:** 200309-0244

**PO#:** LJ03052020  
**Sample Description:** BULK  
**Rush:** N/A  
**Received Date:** 03/09/20

Test Requested:	Test Method:	Specification:	Results:
L-Citrulline	MQLTM-0314 By UPLC	NLT 99%	99%

**Prepared By:**


  
Diana Zavala/Document Control Specialist

MAR 23 2020

03/23/20

MAR 23 2020

**Reviewed By:**

  
Sade Rodriguez / QA Reviewer

03/23/20

*The aforementioned results on this report are representative of the samples submitted and may not be indicative of the entire manufacture, batch, and/or lot. Applicable current GMP's shall always be used when sampling. GLP's shall always be practiced by Micro Quality Labs to ensure the most accurate results.*

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