



## Certificate of Analysis

### L-Alanyl-L-Glutamine

**Catalog Number:** AG1010  
**Lot Number:** 0507803  
**CAS Number:** 39537-23-0  
**Molecular Formula:** C<sub>8</sub>H<sub>15</sub>N<sub>3</sub>O<sub>4</sub>  
**Molecular Weight:** 217.22  
**Storage:** 2°C – 8°C  
**Date of Manufacture:** September 25, 2017  
**Retest Date:** September 24, 2022

Test	Specification	Result
Appearance	White to off-white powder	Conforms
Assay	98.0 – 101.5%	99.8%
Identification IR HPLC	To match reference spectrum Elution	Conforms Conforms
Specific Rotation	+9.0° - +11.0°	+9.9°
pH	Report	5.55
Moisture (LOD)	≤ 1.0%	0.05%
Residue on Ignition	≤ 0.1%	0.04%
Related Substance		
Cyclo-L-Alanyl-L-Glutamine	≤ 0.2%	0.01%
Alanine	≤ 1.0%	0.02%
Glutamine	≤ 0.5%	0.02%
Alanine-Alanine-Glutamine	≤ 0.3%	0.02%
Alanine-Glutamic	≤ 0.2%	0.05%
Single Unknown Impurity	≤ 0.1%	0.03%
Total Unknown Impurities	≤ 0.5%	0.08%
Ammonium	≤ 0.02%	< 0.02%
Chloride	≤ 0.02%	< 0.02%
Sulfate	≤ 0.02%	< 0.02%
Heavy Metal	≤ 10ppm	< 10ppm
Arsenic	≤ 1.0ppm	< 1.0ppm
Iron	≤ 10ppm	< 10ppm
Residual Solvents	To meet USP requirements	Conforms
Total Plate Count	≤ 1,000cfu/g	< 10cfu/g
Yeast & Mold	≤ 100cfu/g	< 10cfu/g
<i>E. coli</i>	Negative	Negative
<i>Salmonella</i>	Negative	Negative

For research or further manufacturing. Not for drug, clinical or a food use in humans or animals.



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All tests were performed according to USP38, where applicable.

Approved by:

Date: March 18, 2019

A handwritten signature in blue ink that reads "John Grubb".

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