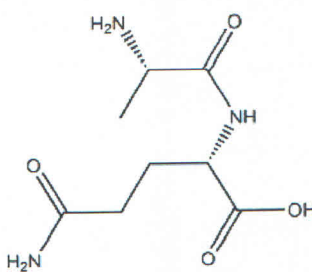




Certificate of Analysis

COA No.: 18143

Product	L-Alanyl-L-glutamine	CAS No.	39537-23-0
Molecular Formula	C ₈ H ₁₅ N ₃ O ₄	Molecular Weight	217.23
Structure			
Batch No.	180601	Quantity	301.0kg
Mfgr. Date	Jul. 13 th , 2018	Retest Date	Jul. 12 th , 2020
【ITEMS】	【SPECIFICATIONS】		【RESULTS】
Appearance	White or off-white powder		White powder
Identification	HPLC: The RT of the main peak in the Assay should be consistent with that of the reference.		Conforms
	IR: The result of IR spectra should be consistent with that of the reference.		Conforms
Specific Rotation	+9.0° to +11.0°		+10.2°
Molecular Ion Mass	217.23		Conforms
Clarity and Color	The solution should be clear and colorless, or color is NMT yellow #1 reference standard solution.		Conforms
Heavy Metals	NMT10ppm		Conforms
pH	5.0-6.0		5.67
Water Content	NMT1.0%		0.62%
Residue on Ignition	NMT0.1%		0.04%
Fe	NMT0.001%		Conforms
Arsenic	NMT0.0001%		Conforms
Sulfate	NMT0.02%		Conforms
Chloride	NMT0.02%		Conforms

Reported By: Hongzhi. Pan Reviewed By: [Signature] Date: Jul. 26th, 2018



Certificate of Analysis

COA No.: 18143

Ammonium Salt	NMT0.02%	Conforms
Residual solvents	Isopropanol: NMT0.5%	Conforms
Purity (HPLC)	NLT 98.0%	99.94%
Related Substances (HPLC)	Total impurities: NMT2.0% Maximum single impurity: NMT1.0%	Total impurities: 0.06% Maximum single impurity: 0.06%
Bacterial Endotoxins	NMT 0.050EU/mg	Conforms
Microbial Limits	TAMC: NMT 1000cfu /g	Conforms
	TYMC: NMT 100cfu /g	Conforms
	Enterobacteriaceae should not be detected	N.D
Assay	98.0% - 101.5% (C ₈ H ₁₅ N ₃ O ₄) Calculated on the anhydrous and solvent-free basis.	99.7%

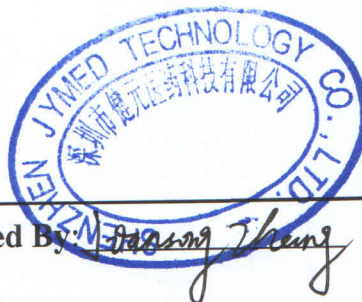
Conclusion: This batch of product complies with Enterprise Standard.

Remark: According to the MSDS data shown on Sigma-Aldrich website and product information of Sustamine (a Kyowa Hakko product), L-Alanyl-L-glutamine can be used as amino acid nutritive ingredient for pharmaceutical products, health care food, drinks sold in regions or countries which is allowed or legally approved, but can't be directly used as drugs, injection or household medicine.

Source:

- [1. https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=1012517&brand=USP&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2F1012517%3Flang%3Den](https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=1012517&brand=USP&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2F1012517%3Flang%3Den)

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