

Certificate of Analysis



Sample Name:	UC-II Powder	Covance Sample:	7444172
Project ID	██████████-20180629-0001	Receipt Date	29-Jun-2018
PO Number	CVD	Receipt Condition	Ambient temperature
Lot Number	1801011	Login Date	29-Jun-2018
Sample Serving Size		Online Order	10

Analysis	Result
Amino Acids	
Hydroxyproline	3410 mg/100g
Collagen	27300 mg/100g
Bacillus cereus Plate Count on MYP agar	
Presumptive Bacillus cereus group	<100 CFU/g
Undenatured Type-II collagen-ELISA method *	
Undenatured Type-II Collagen	6.61 %

Method References	Testing Location
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Amino Acids (TAALC_S)	Covance Laboratories - Madison
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R. Schuster, "Determination of Amino Acids in Biological, Pharmaceutical, Plant and Food Samples by Automated Precolumn Derivatization and HPLC", Journal of Chromatography, 1988, 431, 271-284.

Henderson, J.W., Ricker, R.D. Bidlingmeyer, B.A., Woodward, C., "Rapid, Accurate, Sensitive, and Reproducible HPLC Analysis of Amino Acids, Amino Acid Analysis Using Zorbax Eclipse-AAA columns and the Agilent 1100 HPLC," Agilent Publication, 2000. Barkholt and Jensen, "Amino Acid Analysis: Determination of Cysteine plus Half-Cystine in Proteins after Hydrochloric Acid Hydrolysis with a Disulfide Compound as Additive", Analytical Biochemistry, 177, 318-322 (1989).

Henderson, J.W., Brooks, A., "Improved Amino Acid Methods using Agilent Zorbax Eclipse Plus C18 Columns for a Variety of Agilent LC Instrumentation and Separation Goals," Agilent Application Note 5990-4547 (2010).

Bacillus cereus Plate Count on MYP agar (BCERPC_MYP)	Covance Laboratories - Madison NE
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Tallent, S. M., Rhodehamel, E. J., Harmon, S. M., and Bennett, R. W., "Chapter 14 - *Bacillus cereus*," *Bacteriological Analytical Manual*, Eighth Ed., Revision A, U. S. Food and Drug Administration: Silver Spring, MD (1998), Revised Feb 2012.

Undenatured Type-II collagen-ELISA method (MISC_4027)	Covance Laboratories - Madison
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Client Supplied: UC-II Raw Materials Method

* This analysis is not ISO accredited.

Certificate of Analysis



Testing Location(s)

Released on Behalf of Covance by

Covance Laboratories - Madison

Covance Laboratories Inc.
3301 Kinsman Blvd
Madison WI 53704
800-675-8375

Edward Ladwig - Director



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Covance Laboratories - Madison NE

Covance Laboratories Inc.
2102 Wright Street
Madison WI 53704
800-675-8375

Richard Higby - Director



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These results apply only to the items tested. This certificate of analysis shall not be reproduced, except in its entirety, without the written approval of Covance.



Certificate of Analysis

UC-II Powder

Lot No: 1801011

UC-II® is a standardized cartilage with undenatured (native) Type II collagen in powder form for use as a dietary supplement (U.S. Patents 7,083,820, 7,846,487, EPO Patent EP1435906B1, U.S. and worldwide patents pending).

Lot No:	1801011	Country of Origin:	USA
Date of Report:	2/13/2018	Date of Manufacture:	January 2018
Product ID:	UC-II	Product Code:	FG21020

Excipients: Potassium Chloride

Shelf Life : 3 years when stored in tightly closed containers free of excessive heat, moisture, light and air.

TEST RESULTS

No.	Tests	Specification	Results	Methodology
PHYSICAL				
1.	Color	White / Cream	Complies	Visual
2.	Density, Bulk (g/cc)	0.45 - 0.75	0.60	USP <616>
3.	Density, Tap (g/cc)	0.75 - 1.05	0.88	USP <616>
4.	Identification	Matches Standard	Complies	USP <197>
5.	Loss on Drying (%)	≤ 10	7.1	USP <731>
<i>Particle Size</i>				
6.	Weight % thru 100 Mesh	≥ 60	70.1	USP <786>
CHEMICAL				
7.	Potassium (%)	14.2 - 19.4	14.9	USP <730>
<i>Active Ingredients</i>				
8.	Total Collagen (%)	≥ 25	29	HPLC
9.	Undenatured Type II Collagen (%)	≥ 3	10.3	ELISA
<i>Heavy Metals</i>				
10.	Arsenic (ppm)	≤ 1.5	< 0.5	USP <730>
11.	Cadmium (ppm)	≤ 0.5	< 0.2	USP <730>
12.	Lead (ppm)	≤ 1.0	< 0.1	USP <730>
13.	Mercury (ppm)	≤ 0.5	< 0.1	USP <730>
MICROBIOLOGICAL				
14.	Bacillus Cereus, cfu/g	< 1000	< 100	FDA-BAM, 8th Ed, Ch. 14
15.	Enterobacterial Count, MPN/g	< 10	< 10	USP <2021>
16.	Escherichia coli	Absent	Absent	USP <2022>
17.	Salmonella	Absent	Absent	USP <2022>
18.	Staphylococcus Aureus	Absent	Absent	USP <2022>
19.	Total Aerobic Microbial Count (cfu/g)	≤ 3000	250	USP <2021>
20.	Total Molds & Yeast Count (cfu/g)	≤ 100	< 100	USP <2021>

Confirmation that specification data from independent laboratory is accurately disclosed on this Certification of Analysis.

By: Tyran Richards Head of Quality/Designee Approval Date: 2/13/18