



# Certificate of Analysis

**UC-II Powder**

Lot No: 1709006

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:         | 1709006   | Country of Origin:   | USA            |
| Date of Report: | 9/25/2017 | Date of Manufacture: | September 2017 |
| 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  | Methodoloav             |
|---------------------------|---------------------------------------|------------------|----------|-------------------------|
| <b>PHYSICAL</b>           |                                       |                  |          |                         |
| 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      | 0.92     | USP <616>               |
| 4.                        | Identification                        | Matches Standard | Complies | USP <197>               |
| 5.                        | Loss on Drying (%)                    | ≤ 10             | 6.8      | USP <731>               |
| <i>Particle Size</i>      |                                       |                  |          |                         |
| 6.                        | Weight % thru 100 Mesh                | ≥ 60             | 65.4     | USP <786>               |
| <b>CHEMICAL</b>           |                                       |                  |          |                         |
| 7.                        | Potassium (%)                         | 14.2 - 19.4      | 16.7     | USP <730>               |
| <i>Active Ingredients</i> |                                       |                  |          |                         |
| 8.                        | Total Collagen (%)                    | ≥ 25             | 30       | HPLC                    |
| 9.                        | Undenatured Type II Collagen (%)      | ≥ 3              | 11.3     | 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>               |
| <b>MICROBIOLOGICAL</b>    |                                       |                  |          |                         |
| 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           | 650      | 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: 9/25/17



# Color Verification Form

Page:

1 of 1

Issued By:

Operations

|               |   |   |
|---------------|---|---|
| Product Name: | <input type="checkbox"/> 7-Keto Powder      | <input type="checkbox"/> Meratrim - M     |
|               | <input type="checkbox"/> 7-Keto Beadlet     | <input type="checkbox"/> Nexrutine        |
|               | <input type="checkbox"/> Aller-7            | <input type="checkbox"/> Relora           |
|               | <input type="checkbox"/> Boswellia Extract  | <input type="checkbox"/> Relora WS        |
|               | <input type="checkbox"/> BX-600             | <input type="checkbox"/> RSV-5000         |
|               | <input type="checkbox"/> CardiaSlim         | <input type="checkbox"/> Seditol          |
|               | <input type="checkbox"/> CM-100M            | <input type="checkbox"/> Sytrinol         |
|               | <input type="checkbox"/> CM-2000            | <input checked="" type="checkbox"/> UC-II |
|               | <input type="checkbox"/> CM-4000-L          | <input type="checkbox"/> ZM-200           |
|               | <input type="checkbox"/> Grape Seed Extract | <input type="checkbox"/> ZMA-2000         |
|               | <input type="checkbox"/> HCA-500            | <input type="checkbox"/> ZMA-2000-E       |
|               | <input type="checkbox"/> HCA-600-SXS        | <input type="checkbox"/> ZMA-3000         |
|               | <input type="checkbox"/> HCA-600-SXM        | <input type="checkbox"/> ZML-200          |
|               | <input type="checkbox"/> Lowat              | <input type="checkbox"/> Zychrome         |
|               | <input type="checkbox"/> Meratrim           | <input type="checkbox"/> Other _____      |

| Lot Number: | 1709004        |        |         |         |
|-------------|----------------|--------|---------|---------|
| Parameter   | Specification  | Result | Initial | Date    |
| Color       | white<br>cream | cream  | EH      | 9-12-17 |

Comments:

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Include this form with the batch record.

**BARROW-AGEE  
LABORATORIES, LLC**



1555 THREE PLACE • MEMPHIS, TN 38116-3507 • (901) 332-1590 • FAX (901) 398-1518  
www.balabs.com

InterHealth Nutraceuticals, Inc  
Attn: Esperanza Ramirez  
5451 Industrial Way  
Benicia, CA 94510 USA

Reporting Date: 09/18/2017

Sample Received: 09/13/2017

Sample Analyzed: 09/18/2017

**CERTIFICATE OF ANALYSIS**

Laboratory Number: 161282

Sample Of: UC-II

P.O. #UC-II 1709006

Sample Identification: LOT# 1709006 9/12/17

| Test   | Result                              |
|--|-------------------------------------|
| Total Aerobic Microbial Count (USP 2021, Modified)         | 650 cfu/g                           |
| Total Combined Molds and Yeasts Count (USP 2021, Modified) | <100 cfu/g                          |
| Enterobacterial Count (USP 2021, Modified)                 | <10 mpn/g                           |
| Staphylococcus Aureus (USP 2022, Modified)                 | NEGATIVE                            |
| Salmonella Species (USP 2022, Modified)                    | NEGATIVE                            |
| Escherichia Coli (USP 2022, Modified)                      | PRESUMPTIVE POSITIVE                |
| Coliforms  | ABSENT (Detection Limit=<3.0) mpn/g |
| Pseudomonas Aeruginosa (USP 62)                            | NEGATIVE /g                         |
| Listeria (AOAC 997.03)                                     | NEGATIVE /25g                       |
| C. Perfringens (AOAC 976.30)                               | <10 cfu/g                           |

\*\*\* CONTINUED \*\*\*

Analytical Chemists Since 1917

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Unless noted otherwise, all samples received in satisfactory condition.

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Laboratory Number: 161282

Sample Of: UC-II

P.O. #UC-II 1709006

Sample Identification: LOT# 1709006 9/12/17

| Test   | Result          |
|--|-----------------|
| Loss On Drying (USP)                               | 6.78 %          |
| Water Activity                                     | 0.262           |
| Sieve (US #20)                                     | 100.0 % Passing |
| Sieve (US #40)                                     | 99.1 % Passing  |
| Sieve (US #60)                                     | 88.1 % Passing  |
| Sieve (US #80)                                     | 73.6 % Passing  |
| Sieve (US #100)                                    | 65.4 % Passing  |
| Bulk Density                                       | 0.60 g/ml       |
| Tap Density  | 0.92 g/ml       |
| Potassium as Potassium Chloride (AOAC 2011.14)     | 28.85 %         |
| Escherichia Coli Confirmation (USP 2022, Modified) | NEGATIVE        |

Approved,

  
Technical Director



Biological Certificate # 3250.01  
Scope of Accreditation to  
ISO/IEC 17025:2005

Questions about this analysis? Please contact [customerservice@balabs.com](mailto:customerservice@balabs.com).

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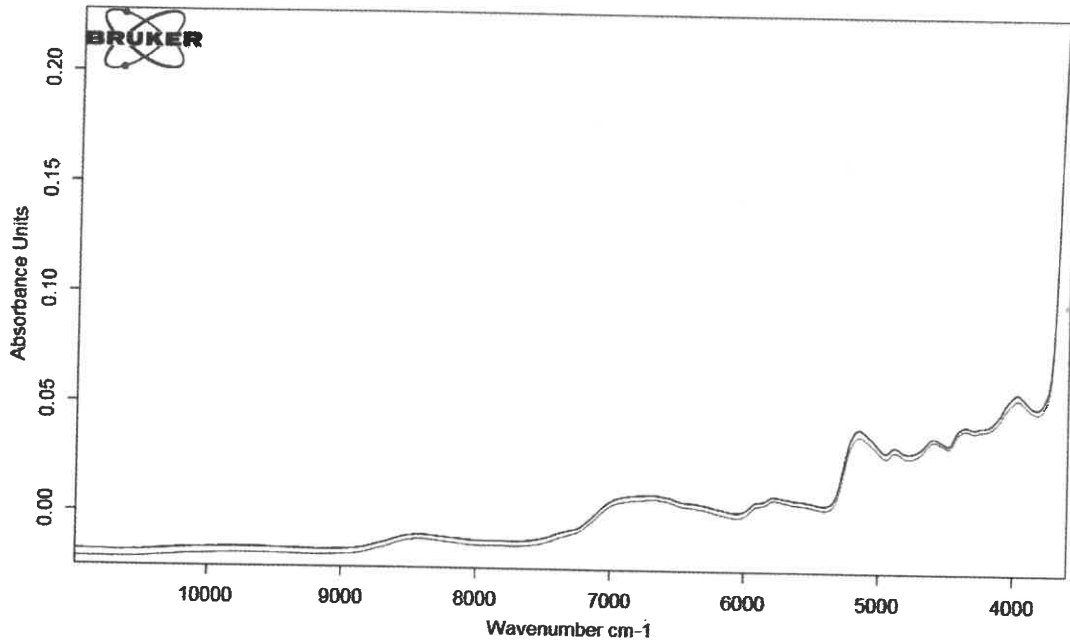
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**BIOCEUTICAL'S RESEARCH & DEVELOPMENT ANALYTICAL LABORATORY**

2376 Main Street, Billings, MT 59105 USA 406-245-5793



|  |                                    |           |
|--|------------------------------------|-----------|
| C:\OPUS_7.0.129\OpusLab\Spec\IR&D\UC-II\UC-II_1709006.0                  | 1709006;UC-II;R&D                  | 9/13/2017 |
| C:\OPUS_7.0.129\OpusLab\Spec\IR&D\UC-II\UC-II_30113 Reference Standard.0 | 30113 Reference Standard;UC-II;R&D | 7/1/2014  |

1:37:05 PM 9/13/2017

**NIR Analysis**

Product Name: UC-II

FTNIR Analysis of Lot#: 1709006 against external reference standards <Conforms to USP 197>

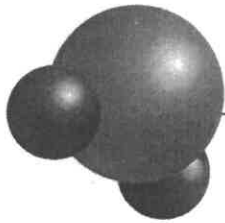
Equipment: Bruker Matrix-I

Transformation: Absorbance/ Normalization

Date: 09/13/17

Operator: Alisha Manning

Identity Positive for: UC-II



**chemical solutions Ltd.**  
trace elemental analysis

**Analytical Report**

September 18, 2017

Esperanza Ramirez  
Interhealth Nutraceuticals, Inc.  
1302 Jackson Street  
Fort Smith, AR 72901

Page 1 of 1  
WO Number: W17I0347

Client: Interhealth Nutraceuticals, Inc.-AR  
Client #: I6837AR  
Sample Type: Powder  
Collector: Client

Customer PO:  
Date Received: 9/13/2017  
Date Completed: 09/18/2017  
Discard Date: 10/02/2017

| CSL#: 17I0845 | UC-II - Lot#: 1709006 | Parameter | Result       | PQL   | Method     | Date     | Analyst |
|---------------|-----------------------|-----------|--------------|-------|------------|----------|---------|
|               |                       | Arsenic   | <0.50 ug/g   | 0.50  | ICP MS     | 09/14/17 | AW      |
|               |                       | Cadmium   | <0.25 ug/g   | 0.25  | ICP MS     | 09/14/17 | AW      |
|               |                       | Chromium  | 0.96 ug/g    | 0.50  | ICP MS/KED | 09/15/17 | EM      |
|               |                       | Copper    | 1.5 ug/g     | 0.50  | ICP MS     | 09/14/17 | AW      |
|               |                       | Lead      | <0.050 ug/g  | 0.050 | ICP MS     | 09/14/17 | ALC     |
|               |                       | Mercury   | <0.10 ug/g   | 0.10  | ICP MS     | 09/14/17 | AW      |
|               |                       | Potassium | 167,000 ug/g | 60    | ICP MS/KED | 09/15/17 | EM      |
|               |                       | Zinc      | 6.6 ug/g     | 0.50  | ICP MS     | 09/14/17 | AW      |

| CSL#: 17I0845 | Parameter | Result   | Serving Size | Unit Weight | Specification |
|---------------|-----------|----------|--------------|-------------|---------------|
|               | Arsenic   | <0.5 ppm | NA           | NA          | <1.5 ppm      |
|               | Cadmium   | <0.2 ppm | NA           | NA          | <0.5 ppm      |
|               | Chromium  | 0.96 ppm | NA           | NA          | NA            |
|               | Copper    | 1.5 ppm  | NA           | NA          | NA            |
|               | Lead      | <0.1 ppm | NA           | NA          | <1.0 ppm      |
|               | Mercury   | <0.1 ppm | NA           | NA          | <0.5 ppm      |
|               | Potassium | 16.7 %   | NA           | NA          | 14.2 - 19.4 % |
|               | Zinc      | 6.6 ppm  | NA           | NA          | NA            |

Respectfully Submitted,  
Chemical Solutions, Ltd.

*Joshua Reichert*  
QA Representative

Joshua Reichert  
Reviewed and Approved  
Sep 18 2017 3:27 PM

cosign

Notes:  
CONFIDENTIAL REPORT. This report is confidential and is for the sole use of the addressee.  
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The units for the PQL are the same as those shown for the result.

**Certificate of Analysis**

**InterHealth Nutraceuticals, Incorporated**

5451 Industrial Way  
Benicia California 94510 United States

|                            |                         |                          |                     |
|----------------------------|-------------------------|--------------------------|---------------------|
| <b>Sample Name:</b>        | <b>UC-II 1709006</b>    | <b>Covance Sample:</b>   | <b>6525641</b>      |
| <b>Project ID</b>          | INTERHLTH-20170913-0118 | <b>Receipt Date</b>      | 13-Sep-2017         |
| <b>PO Number</b>           | 1709006                 | <b>Receipt Condition</b> | Ambient temperature |
| <b>Lot Number</b>          | 1709006                 | <b>Login Date</b>        | 13-Sep-2017         |
| <b>Sample Serving Size</b> |                         | <b>Online Order</b>      | 30                  |

| Analysis   | Result          |
|--|-----------------|
| <b>Protein (N x 5.55) Dumas Method</b>                           |                 |
| Protein  | 41.3 g/100g     |
| <b>Chloride</b>  |                 |
| Chloride   | 15000 mg/100g   |
| <b>Amino Acids</b>   |                 |
| Collagen   | 300 mg/g        |
| <b>Chondroitin Sulfate *</b>                                     |                 |
| Chondroitin Sulfate  | 7910 mg/100g    |
| <b>Salmonella ELFA method</b>                                    |                 |
| Salmonella   | Negative /375 g |
| <b>Staphylococcus enterotoxin ELFA method *</b>                  |                 |
| Staphylococcus enterotoxin                                       | Negative /25 g  |
| <b>Bacillus cereus Plate Count on MYP agar</b>                   |                 |
| Presumptive Bacillus cereus group                                | <100 CFU/g      |
| Atypical Growth Present  | <100 CFU/g      |
| <b>Regulated Mycotoxins in Raw Materials Using UHPLC-MS/MS *</b> |                 |
| Aflatoxin B1   | <0.300 ppb      |
| Aflatoxin B2   | <0.300 ppb      |
| Aflatoxin G1   | <0.300 ppb      |
| Aflatoxin G2   | <0.300 ppb      |
| <b>Melamine Analogs by LC/MS *</b>                               |                 |
| Melamine   | 10.7 ng/g       |
| <b>Phthalate Analysis in Food by LC/MS *</b>                     |                 |
| Butyl Benzyl phthalate   | <0.10 mg/100g   |
| Dibutyl phthalate  | <0.10 mg/100g   |
| Bis (2-ethylhexyl) phthalate                                     | <0.10 mg/100g   |
| Diisodecyl phthalate   | <0.10 mg/100g   |
| Diisononyl phthalate   | <0.10 mg/100g   |
| Di-n-Octyl phthalate   | <0.10 mg/100g   |
| Dihexyl phthalate  | <0.10 mg/100g   |
| <b>Bisphenol A *</b>   |                 |
| Bisphenol A  | 0.688 ng/g      |
| <b>Polycyclic Aromatic Hydrocarbons-Low Level</b>                |                 |
| Benz(a)anthracene  | <0.250 ppb      |
| Benzo(a)pyrene   | <0.250 ppb      |
| Benzo(b)fluoranthene   | <0.250 ppb      |
| Benzo(g,h,i)perylene   | <0.250 ppb      |

\* This analysis is not ISO accredited.

**Certificate of Analysis**

InterHealth Nutraceuticals, Incorporated

5451 Industrial Way  
Benicia California 94510 United States

|                            |                         |                          |                     |
|----------------------------|-------------------------|--------------------------|---------------------|
| <b>Sample Name:</b>        | <b>UC-II 1709006</b>    | <b>Covance Sample:</b>   | <b>6525641</b>      |
| <b>Project ID</b>          | INTERHLTH-20170913-0118 | <b>Receipt Date</b>      | 13-Sep-2017         |
| <b>PO Number</b>           | 1709006                 | <b>Receipt Condition</b> | Ambient temperature |
| <b>Lot Number</b>          | 1709006                 | <b>Login Date</b>        | 13-Sep-2017         |
| <b>Sample Serving Size</b> |                         | <b>Online Order</b>      | 30                  |

| Analysis   | Result     |
|--|------------|
| <b>Polycyclic Aromatic Hydrocarbons-Low Level</b>  |            |
| Benzo(k)fluoranthene                               | <0.250 ppb |
| Chrysene   | <0.250 ppb |
| Dibenz(a,h)anthracene                              | <0.250 ppb |
| Indeno(1,2,3-c,d)pyrene                            | <0.250 ppb |
| Pyrene   | <0.250 ppb |
| <b>Undenatured Type-II collagen-ELISA method *</b> |            |
| Undenatured Collagen Type II                       | 11.26 %    |

| Method References            | Testing Location                      |
|------------------------------|---------------------------------------|
| <b>Amino Acids (TAALC_S)</b> | <b>Covance Laboratories - Madison</b> |

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).

**acillus cereus Plate Count on MYP agar (BCERPC\_MYP)**

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.

**Covance Laboratories - Madison NE**

**sphenol A (BPA\_S)**

SShi, Z., Fu, H., Xu, D. Huai, Q., Zhang, H., "Salting-Out Assisted Liquid/Liquid Extraction Coupled with Low-Temperature Purification for Analysis of Endocrine-Disrupting Chemicals in Milk and Infant Formula by Ultra High Performance Liquid Chromatography-Tandem Mass Spectrometry," *Food Analytical Methods*, 10 (5): 1523-1534 (2017)

**Covance Laboratories - Madison**

**loride (CL\_SALT\_S)**

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 963.05, 971.27, and 986.26, AOAC INTERNATIONAL, Gaithersburg, MD, (2005) (Modified).

**Covance Laboratories - Madison**

is analysis is not ISO accredited.  
ed: 22-Sep-2017 2:01 pm