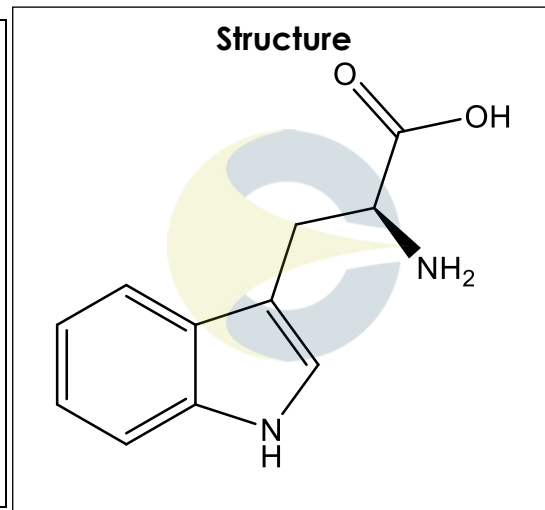


**Certificate of Analysis**
*For Laboratory Use Only*

<b>PRODUCT NAME</b>	L-Tryptophan
<b>PART NUMBER</b>	00020541
<b>STANDARD TYPE</b>	Primary (P)
<b>LOT NUMBER</b>	00020541-368
<b>REPORT NUMBER</b>	CDXA-RSS-3157-02
<b>SAMPLE NUMBER</b>	CDXA-08-2498
<b>DATE OF SAMPLE</b>	10/20/2008
<b>DATE OF RE-EVALUATION</b>	10/15/2013 (1 <sup>st</sup> ); 08/13/2018 (2 <sup>nd</sup> )
<b>DATE OF REPORT</b>	09/05/2018



<b>CHEMICAL NAMES</b>	2-Amino-3-indolylpropanoic acid; (S)-α-Aminoindole-3-propionic acid; Tryptophan
<b>CHEMICAL FORMULA</b>	C <sub>11</sub> H <sub>12</sub> N <sub>2</sub> O <sub>2</sub>
<b>MOLECULAR WEIGHT (MW)</b>	204.23
<b>CHEMICAL FAMILY</b>	Amino acids
<b>CAS NUMBER</b>	[73-22-3]
<b>EC#(EINECS)</b>	200-795-6
<b>RTECS</b>	YN6130000

**ANALYTICAL RESULTS**

TEST	METHOD	SPECIFICATION	RESULT
Adjusted Purity	NA	NA	99.8%
HPLC	CDXA-AM-101-00	NA	99.9%
NMR	99.1-CD-1.0-000122	Conforms to structure	Conforms to structure
Mass Spectrum	Direct Infusion, ESI (-)	Conforms	Conforms
Residual Solvent	99.1-CD-2.0-000115	NA	ND
Water	99.1-04-9.0-000094	NA	0.1%
Appearance	NA	NA	White powder

ADJUSTED PURITY: 99.8% IS BASED ON (100 - 0.1 WATER - 0.0 SOLVENTS) X 99.9% HPLC

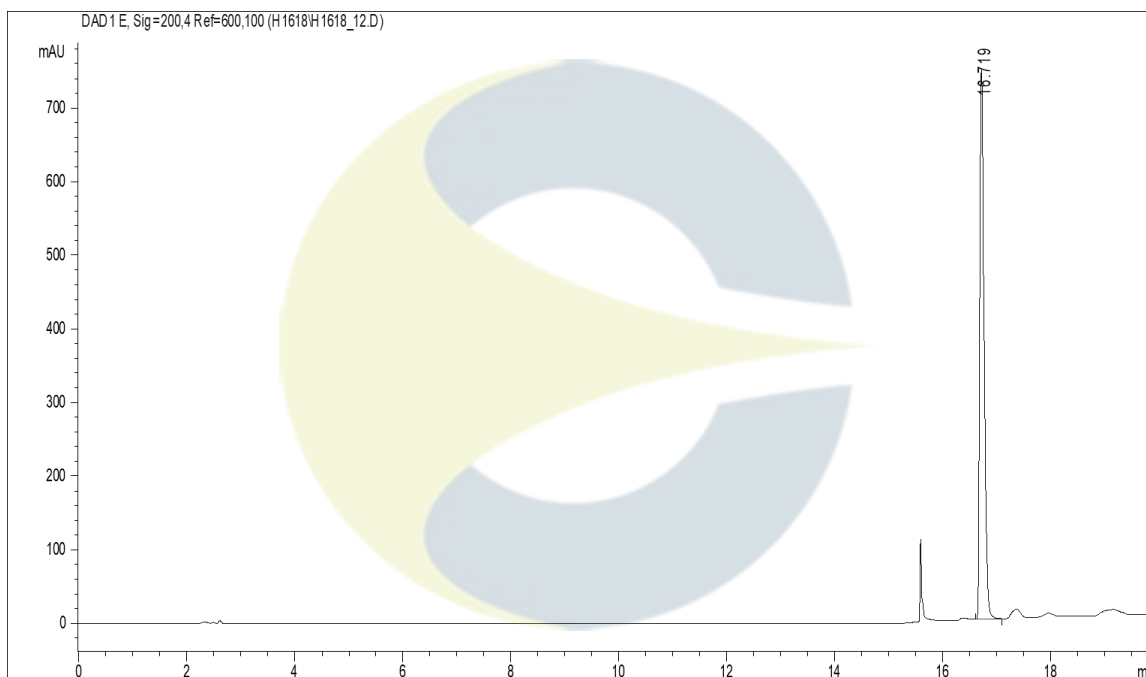
**STORAGE CONDITIONS**

<b>STORAGE</b>	Room Temperature in a dry place.
<b>EXPIRATION DATE</b>	08/2023 under the above conditions.

This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

**Certificate of Analysis**
*For Laboratory Use Only*
**ANALYTICAL CONDITIONS**

<b>INSTRUMENT</b>	AGILENT 1100 HPLC UV-VIS (DAD); FINNIGAN LCQ-DECA
<b>COLUMN</b>	Phenomenex Synergi Hydro-RP 250 x 4.6 mm, 4 μm particle size
<b>MOBILE PHASE</b>	A – 10 mM potassium monophosphate, pH 2.9, B - Acetonitrile; Isocratic 0% B for 10 minutes, then increasing to 40 % B over 5 minutes, hold at 40% B for 4.9 minutes.
<b>COLUMN TEMP.</b>	22 °C
<b>FLOW RATE</b>	1.0 mL/minute
<b>INJECTION VOL.</b>	0.5 μL
<b>INJECTION CONC.</b>	1.4 mg/mL in high purity water
<b>DETECTION</b>	200 ± 2 nm

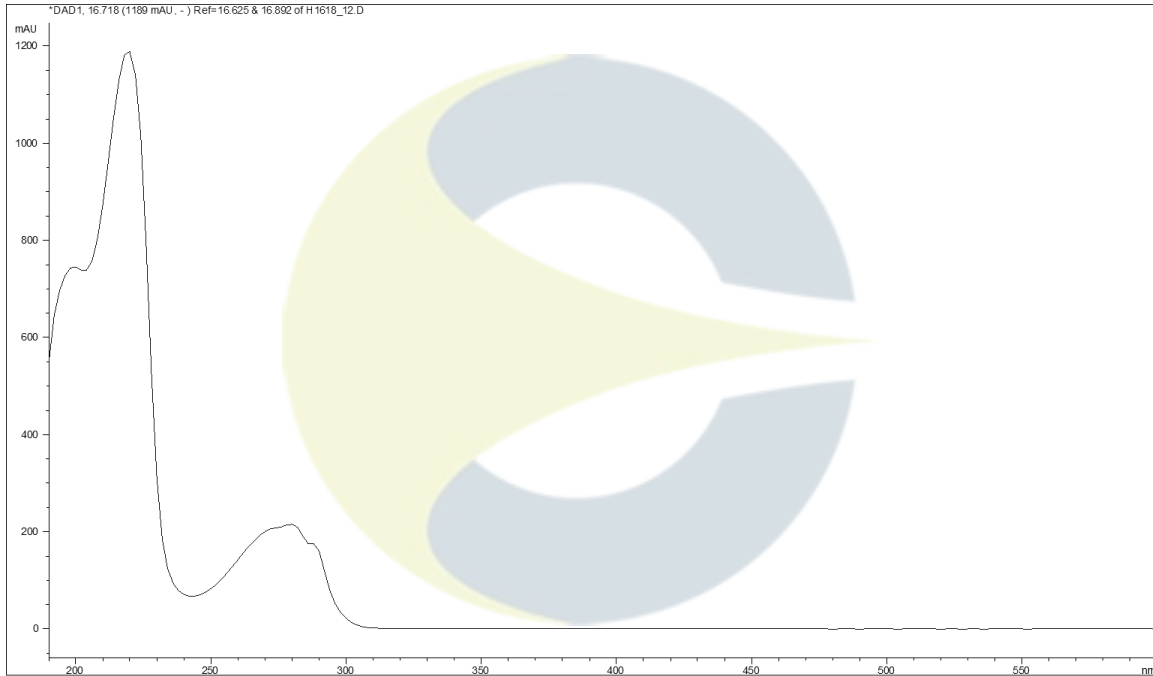
**HPLC CHROMATOGRAM OF L-TRYPTOPHAN (CDXA-08-2498)**


This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

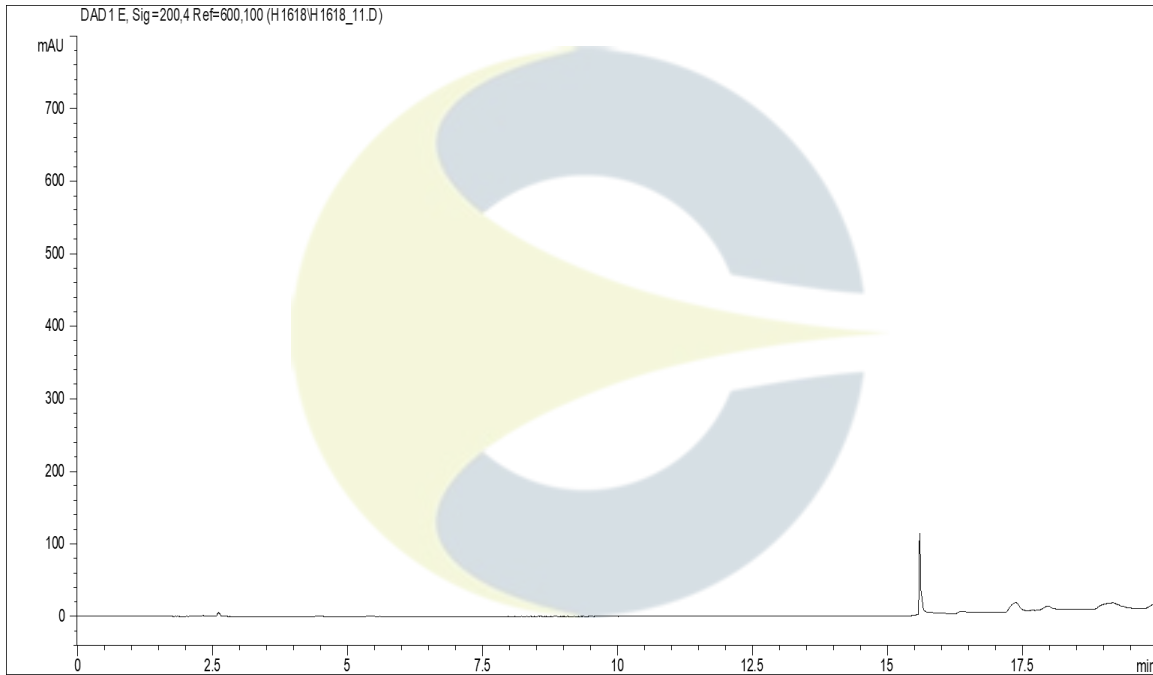
Certificate of Analysis

For Laboratory Use Only

**UV SPECTRUM AT RT = 16.7 MINUTES**

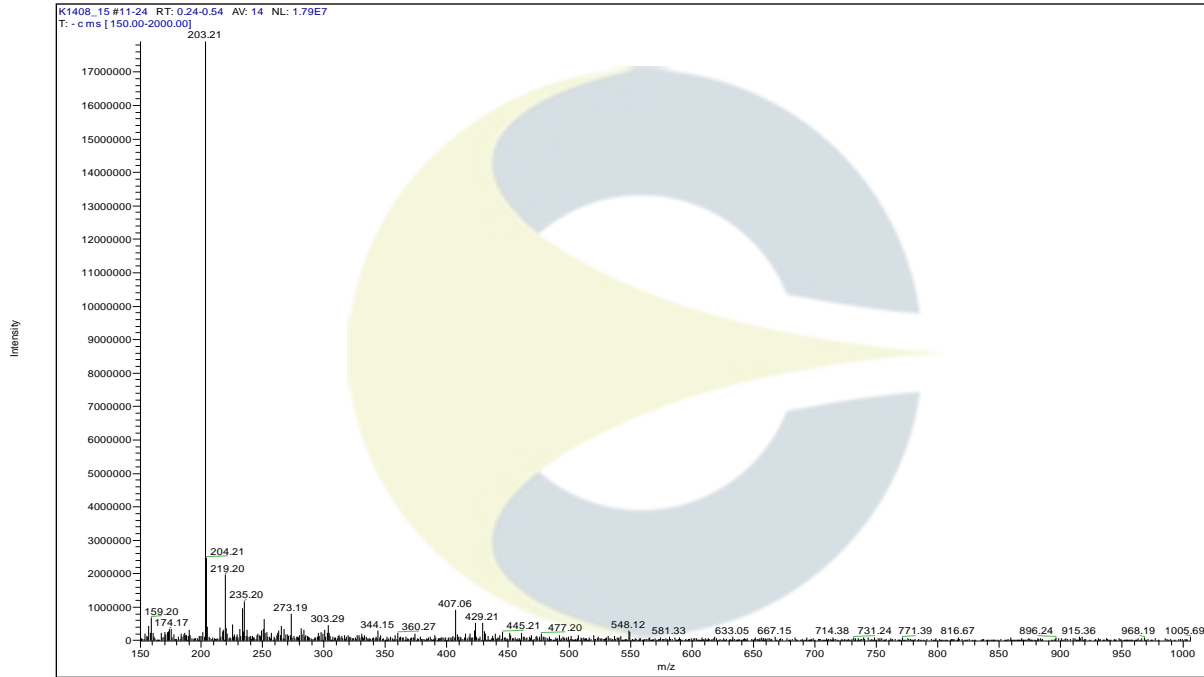


**HPLC CHROMATOGRAM OF DILUENT BLANK**

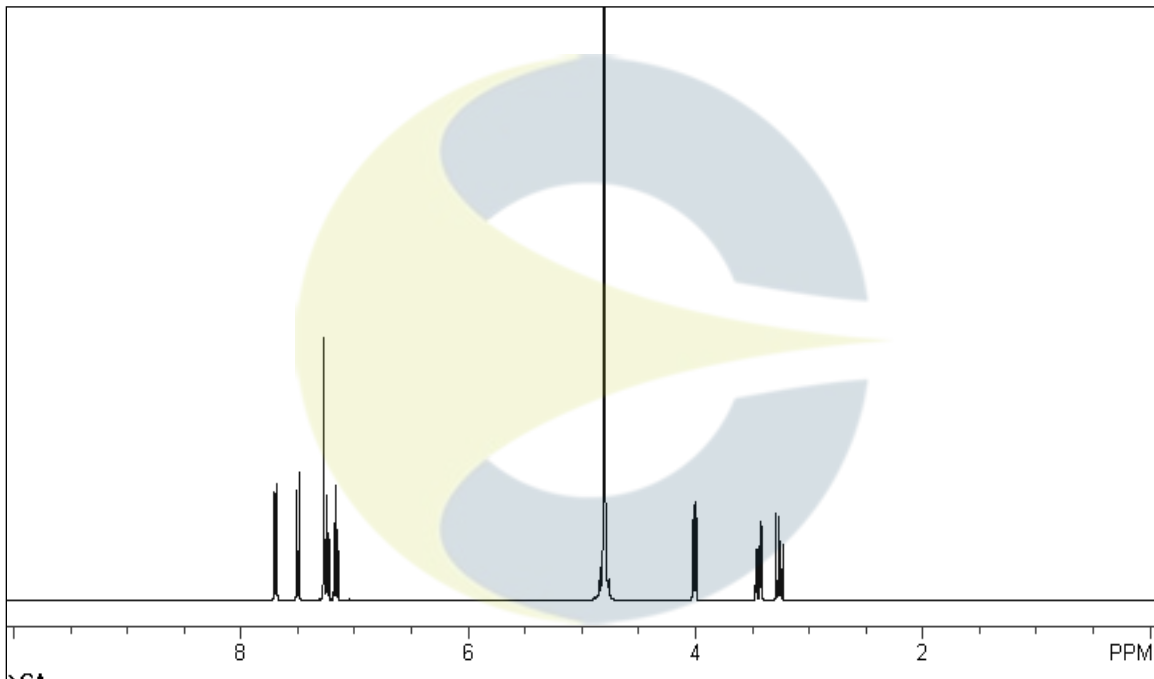


This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

### MASS SPECTRUM OF L-TRYPTOPHAN (CDXA-08-2498)



### <sup>1</sup>H-NMR SPECTRUM OF L-TRYPTOPHAN (CDXA-08-2498) IN D<sub>2</sub>O



This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

## Certificate of Analysis

For Laboratory Use Only

**REVISION HISTORY**

<u>Revision History</u>	<u>Date of Revision</u>	<u>Document/Changes</u>
00	08/15/2011	New report and reformat.
01	11/04/2013	Material passed re-evaluation. Updated expiration date.
02	09/05/2018	Material passed 2 <sup>nd</sup> reevaluation. Updated analytical conditions, analytical results, method, expiration date, and chromatograms. Removed melting point.

This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.