

CERTIFICATE OF ANALYSIS

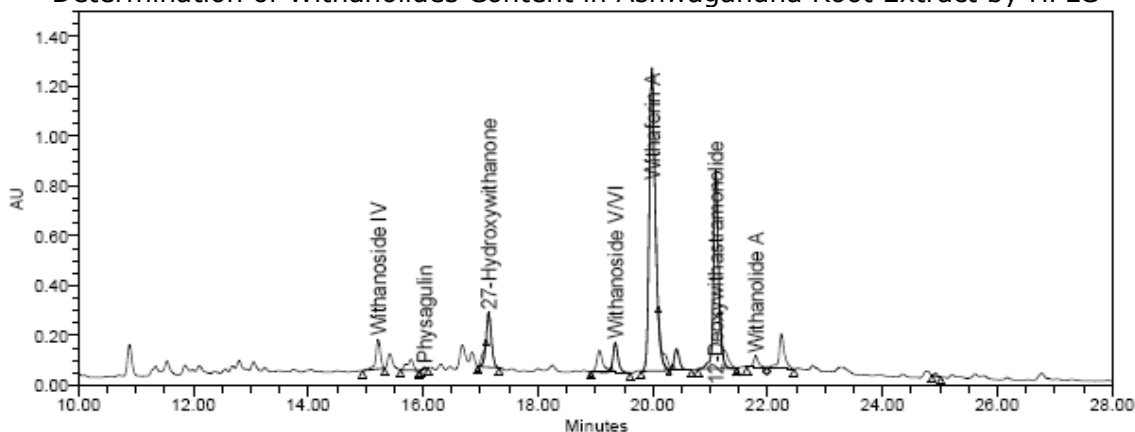


12661 HOOVER STREET GARDEN GROVE, CA 92841 | P. 714-754-4372 | F. 714-668-9972 | WWW.ALKEMIST.COM

Report Issued To: Yaju
Frans Halsstraat 62
Utrecht 3583BS
Netherlands

Sample Name: Ashwagandha Root Extract
Description: Powdered extract; Fine powder
Lot #: ASH220809
AL #: 22353PZM_2
Analysis ID: 192323
Received: 12/19/22

Determination of Withanolides Content in Ashwagandha Root Extract by HPLC



Ret. Time (min)	Compound Name	Prep 1 (%)	Prep 2 (%)	Average (%)	Average Dried Basis (%)	Specification	Result
15.2	Withanoside IV	0.807	0.830	0.819	0.863	N/A	N/A
19.3	Withanoside V & VI	0.911	0.894	0.902	0.952	N/A	N/A
20.0	Withaferin A	3.684	3.690	3.687	3.889	N/A	N/A
21.2	Withastramonolide	1.980	2.066	2.023	2.134	N/A	N/A
21.8	Withanolide A	0.108	0.170	0.139	0.146	N/A	N/A
22.2	Withanone	ND	ND	ND	ND	N/A	N/A
25.1	Withanolide B	ND	ND	ND	ND	N/A	N/A
	Total	7.490	7.650	7.570	7.985	5%	Pass

Chromatographic Conditions:

Method: USP 43 - Powdered Ashwagandha Root Extract
Column: AP224 Luna 5 µm C18(2) 100A (250 x 4.6 mm)
Temperature: 27°C
Flow Rate: 1.5 mL/min
Injection Volume: 20 µL
UV Detection: 227 nm
Mobile Phase: 1 mM Phosphate Buffer in 0.05% H3PO4
Acetonitrile
HPLC Instrument: Alliance_5

Sample Preparation:

Transferred approximately 100 mg sample into a 10 mL volumetric flask. Added 7 mL methanol, vortexed 30 seconds, and sonicated for 20 minutes at 45 °C. Let cool to room temperature and filled to volume with methanol. Mixed by inversion and filtered through a 0.45 µm PES syringe filter into an HPLC vial, discarding the first few mL's of filtrate.

Report Summary:

Conclusion: This " Ashwagandha Root Extract " test sample contains an average of 9% total withanolides on the dried basis.
Note: ND = Not Detected
OOS Reference: N/A
Loss on Drying: 7.56%
Empower Reference: 01723 Withanolides

Analysis Date : 01/18/23

Analyzed By: C Decasiano

Authorized By: Diana Jimenez,
Lead Analytical Chemist