

CERTIFICATE OF ANALYSIS

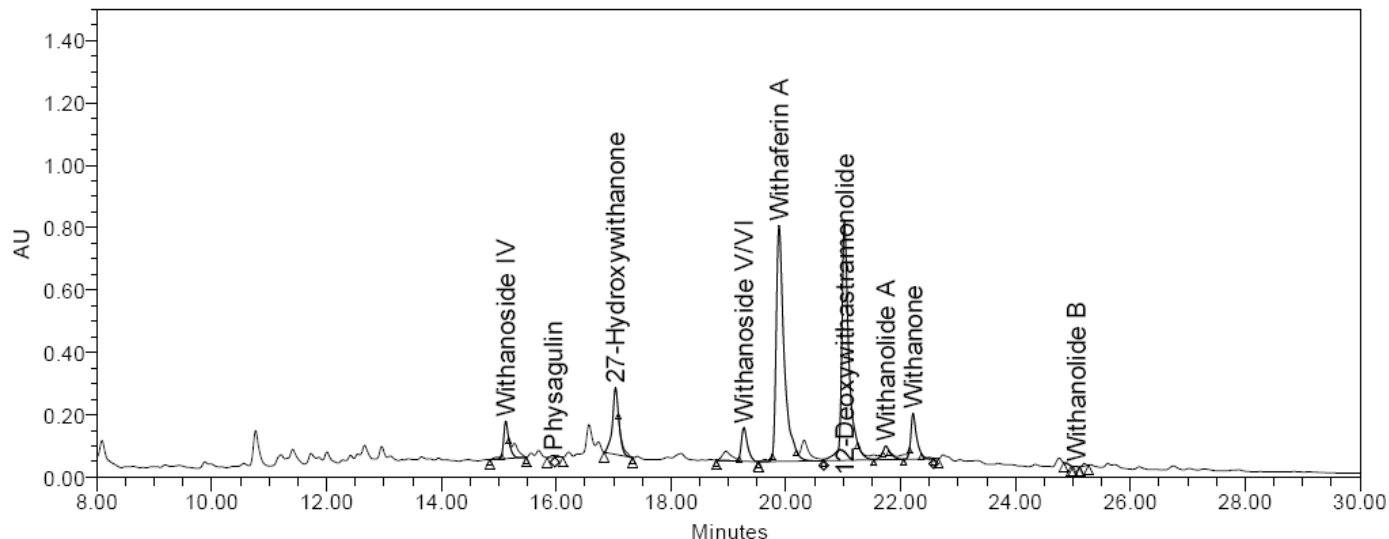


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Report Issued To: Yaju
Merwedeweg 5c1
Breukelen 3621 LP
Netherlands

Sample Name: Ashwagandha Extract
Description: Powdered extract; Fine powder
Lot #: ASH20230320
AL #: 23150TDH_1
Analysis ID: 202275
Received: 05/30/23

Determination of Withanolides Content in Ashwagandha Root Extract by HPLC



Ret. Time (min)	Compound Name	Prep 1 (%)	Prep 2 (%)	Average (%)	Average Dried (%)	Specification	Result
15.1	Withanoside IV	1.025	1.021	1.023	1.066	N/A	N/A
19.3	Withanoside V & VI	1.047	1.053	1.050	1.094	N/A	N/A
19.9	Withaferin A	2.886	2.915	2.901	3.023	N/A	N/A
21.0	Withastramonolide	2.593	2.618	2.605	2.715	N/A	N/A
21.7	Withanolide A	0.171	0.170	0.170	0.177	N/A	N/A
22.2	Withanone	0.420	0.421	0.421	0.438	N/A	N/A
25.0	Withanolide B	0.002	0.002	0.002	0.002	N/A	N/A
	Total	8.143	8.199	8.171	8.515	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.

Analysis Date : 06/09/23 **Analyzed By:** Z Herrera
Rev 1: 06/20/23 GL

Authorized By: Celine Decasiano,
Analytical Chemistry Supervisor

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Report Summary:

Conclusion: This "Ashwagandha Extract" test sample contains an average of 9% total withanolides on the dried basis.

OOS Reference: N/A

Loss on Drying: 4.04%

Notebook Reference: 15823 Withanolides

Rev 1: Updated client address

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