



Alkemist Labs Verified Botanical Reference Material by HPTLC Fingerprint - Certificate of Authenticity

Botanical Nomenclature: *Hydrastis canadensis* L. [Ranunculaceae] **Analysis by:** N. Afendikova, K. Montoya, N. Alvarez, L. Tang, J. Mares, K. Tran

Common name: Goldenseal **Method:** Japanese Official Monographs Pt. III

Plant Part: Root

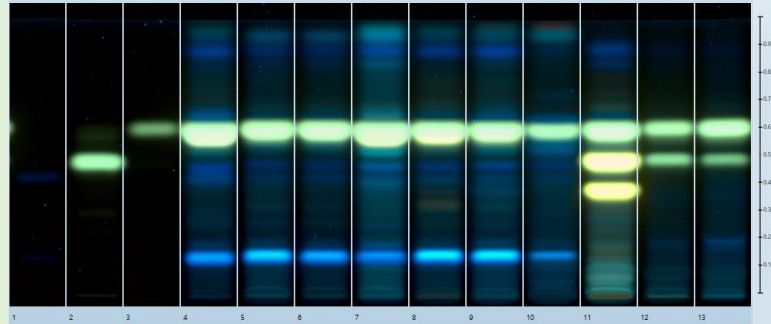


Plate Image 1: Developed, UV 366 nm

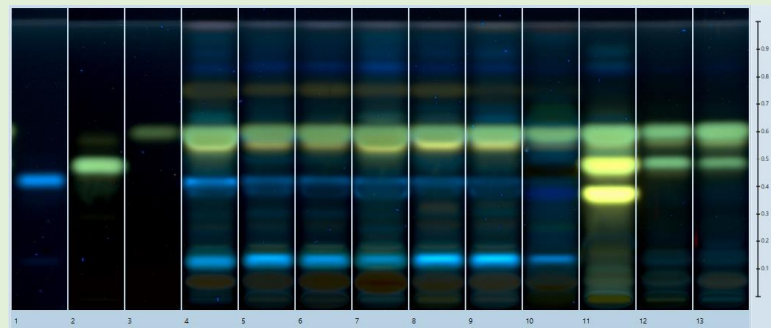


Plate Image 2: Derivatized with 10% Sulfuric Acid Reagent, UV 366 nm

Plate Images 1-2 Track Assignment				
Track	Sample	Part	Sample#	µL
1	Hydrastine	N/A	N/A	1
2	Palmatine Chloride	N/A	N/A	1
3	Berberine Chloride	N/A	N/A	1
4	<i>Hydrastis canadensis</i>	Root	Lot # RK-3-30-1-HC	5
5	<i>Hydrastis canadensis</i>	Root	M20109CRB	10
6	<i>Hydrastis canadensis</i>	Root	M24509MRH	10
7	<i>Hydrastis canadensis</i>	Root	M12505AHP1	10
8	<i>Hydrastis canadensis</i>	Root	M25718HH1	10
9	<i>Hydrastis canadensis</i>	Root & Leaf	M31406JD	10
10	<i>Hydrastis canadensis</i>	Herb (leaf, stem)	M25718HH2	10
11	<i>Coptis chinensis</i>	Root	R25605SWH	10
12	<i>Berberis vulgaris</i>	Root bark	P34713MBS1	10
13	<i>Berberis aristata</i>	Root bark	HK00914HVDA1	10

Method Testing Parameters

Sample Preparation:
 30mg+3mL 50% Methanol, sonicate/heat at 50°C for 30 min.

Mobile Phase:
 Ethyl Acetate/n-Butanol/Formic Acid/Water (5/3/1/1; v/v/v/v)

Derivatization Reagents:
 10% Sulfuric Acid:
 50 mL Sulfuric Acid in 450 mL Ethanol.

Comments and Conclusions: The extracted sample solution in track 4 shows a fingerprint similar to the extracted botanical reference material solutions of *Hydrastis canadensis* root (tracks 5, 6, 7, 8) with respect to number, position, color and intensity of bands and has the characteristic chemical marker Hydrastine (Rf~0.42). Zones of varying intensities are present. The above conclusion may be a function of the natural variance found in botanicals. The growing and drying conditions, age, seasonal variations, geographic location, etc. all play a role in the phytochemical fingerprint of botanicals as well as their extracts; hence, chromatographic variations are expected. **This test sample Lot # RK-3-30-1-HC (Lane 4) has characteristics of a customized extract derived from *Hydrastis canadensis* root.**

Analyzed by: Khanh Tran
 Examined, Reviewed & Authorized by: Sidney Sudberg, Chief Scientific Officer

Report Date: 08/01/23



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