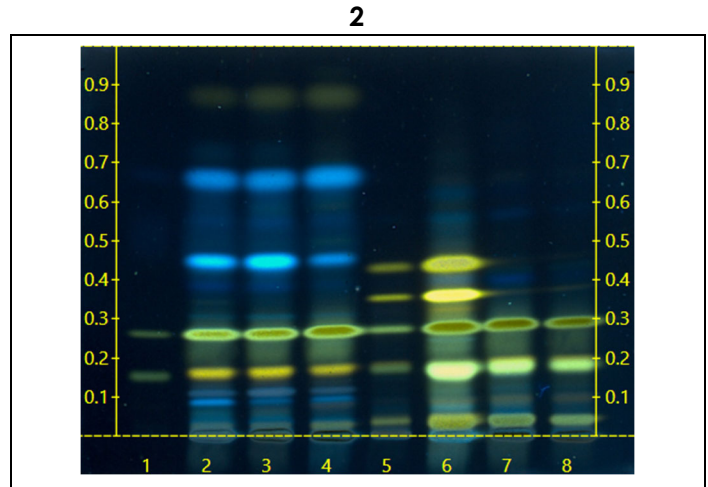
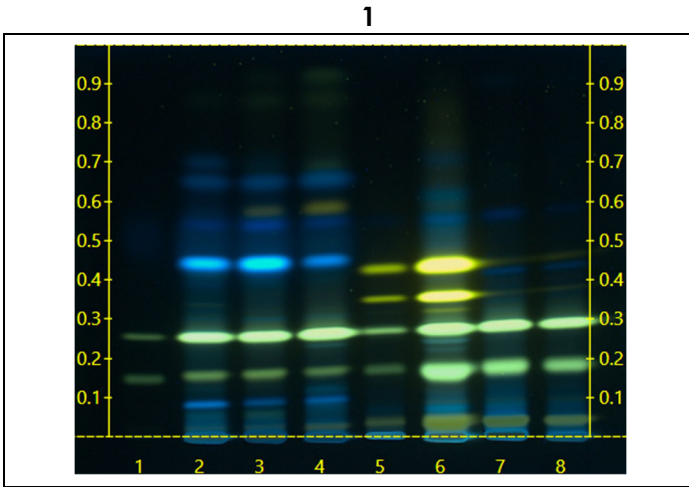




**Certificate of Analysis: Goldenseal Root (25522-C)**  
High Performance Thin-Layer Chromatography with Photo-Documentation



Company Name: Mountain Rose Herbs  
Title: Goldenseal Root  
Plant Part: root  
Sample Received: 04/28/21  
Sample Packaging: Clear Reclosable Plastic Bag  
Form of Botanical: cut and sifted  
Appearance: Yellow/green/brown cut and sifted root pieces  
Source Location: Mountain Rose Herbs  
Lot Number: (25522-C) → Lane 4 (10µl)  
Sample: 21118RZV\_2  
Latin Name: *Hydrastis canadensis* L. [Ranunculaceae]  
Reference Sample: Lane 2 (10µl) (M35301AHP), Lane 3 (10µl) (M25718HH1) *Hydrastis canadensis* (root); Lane 6 (10µl) (R33401PB) *Coptis chinensis* / Huang Lian (root); Lane 7 (10µl) (P32613BH1) *Berberis vulgaris* (root); Lane 8 (10µl) (HK00914HVDA1) *Berberis aristata* (root bark); held at Alkemist Labs, Garden Grove, CA.  
Analyst: A. Davis, N. Afendikova, M. Edwards, S. Kabbaj, N. Hoang, K. Tran, J. Lopez, J. Mares 154823  
Sample Preparation: 0.03g+3mL 50% Methanol, sonicate/heat at 50°C for 30 min.  
Stationary Phase: Silica gel 60, HPTLC plates  
Mobile Phase: Toluene: Ethyl Acetate: Methanol: Isopropanol: Water: Ammonia (rear) [6/3/1.5/1.5/0.3/10]  
Detection: (1) UV 366 nm  
(2) 10% Potassium hydroxide, 366nm (Reich, E., 2007)  
Reference Standard: Lane 1 (1µl) Hydrastine (85963619, Phyto), Berberine Chloride (01(0319/0), XSYN), Methanol (0000245307, BDH), Palmitate Chloride (MKCJ2826, SigAl)  
Reference Source: AHPA  
IDT-SOP-72-01

**Comments & Conclusions:** Lane 4 is the test sample Goldenseal Root (25522-C). Lanes 2, 3, 6, 7, 8, are the reference samples used for comparison. This test sample, Goldenseal Root (25522-C) is consistent with the chromatographic profile of the reference samples of *Hydrastis canadensis*, used above. **This test sample Goldenseal Root (25522-C) has characteristics of *Hydrastis canadensis* root.**

**NOTE:** The above conclusion may be a function of the natural variance found in botanicals &/or the extraction process used to create specific extracts. The growing and drying conditions, age, seasonal variations, geographic location, extraction solvents, etc. all play a role in the phytochemical fingerprint of botanicals as well as their extracts; hence, chromatographic variations are expected.

Examined, Reviewed & Authorized by: Khanh N Tran, HPTLC, R&D Supervisor, Alkemist Labs

Report Date: 05/04/21

ISO/IEC 17025



Note: Any unidentified lanes in the above chromatograms are confidential and may represent internal studies or other test samples not related to 25522-C. This report applies to the sample investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. This report is for the exclusive use of the party who requested the report and not for public dissemination or use by third parties, including for promotional purposes, without the prior written permission of Alkemist Labs, Inc. This report provides technical results for a specific sample and the report shall not be altered, modified, supplemented or abstracted in any manner. Any violation of these conditions renders the report and its results void. © 2021 Alkemist Labs, Inc. All Rights Reserved