

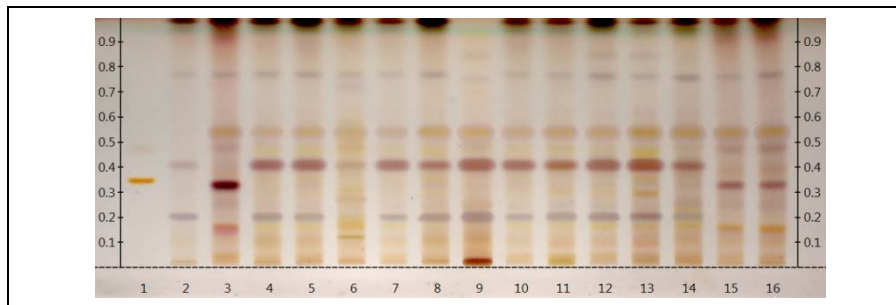
Certificate Issued To:
Lost Empire Herbs
2825 S. Rodeo Gulch Rd #12
Soquel, CA 95073



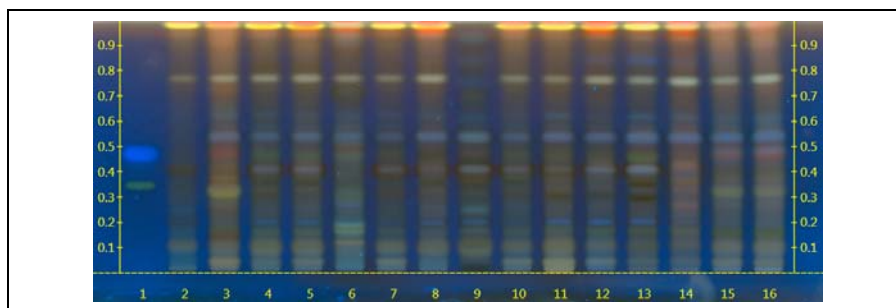
Work performed at:
Alkemist Labs
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Costa Mesa, CA 92626
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Certificate of Analysis: Blue Vervain (BVST2111517)
High Performance Thin-Layer Chromatography with Photo-Documentation

1



2



Company Name:	Lost Empire Herbs	Sample Received:	01/17/18
Title:	Blue Vervain	Form of Botanical:	finished product
Plant Part:	tops, flowers, leaves	Lot Number:	(BVST2111517) → Lane 9(3µl)
Appearance:	Liquid in Light Sensitive Glass Bottle	Sample:	NC01718SUP1_1
Sample Packaging:	Light Sensitive Glass Bottle or Jar		

Latin Name: *Verbena hastata* L. [Verbenaceae]
Reference Sample: Lane 2(3µl) (OT17604HEP), Lane 4(3µl) (OT32611FP1), Lane 5(3µl) (OT10409SW), Lane 6(3µl) (OT01907NTX), Lane 7(3µl) (OT36204HEC) *Verbena officinalis* (herb); Lane 3(3µl) (OT28606NTX) *Verbena officinalis* (herb (leaf, stem)); Lane 10(3µl) (NC20304CHR), Lane 11(3µl) (NC18804HC) *Verbena hastata* (herb); Lane 12(3µl) (NC11111FP1) *Verbena hastata* (Tops); Lane 13(3µl) (NC22306BSI2) *Verbena hastata* (entire); Lane 14(3µl) (ACB22306BSI2) *Verbena urticifolia* (herb (leaf, flower, stem, root)); Lane 15(3µl) (UP14703HC), Lane 16(3µl) (UP35009NAI) *Aloysia citrodora* (leaf); held at Alkemist Labs, Costa Mesa, CA.

Analyst: A. Davis, N. Hoang, P. Fast, N. Afendikova, K. Tran, S. Kabbaj, E. Garcia, M. Lababidi, J. Nguyen 97128
Sample Preparation: Spray directly onto plate
Stationary Phase: Silica gel 60, HPTLC plates
Mobile Phase: ethyl acetate: Acetic acid: Formic Acid: Water [10/1.1/1.1/2.6]
Detection: (1) Anisaldehyde/Sulfuric, 100°C, 2min, vis (Reich, E., 2007)
(2) Anisaldehyde/Sulfuric, 100°C, 2min, 366nm (Reich, E., 2007)
Reference Standard: Lane 1(2µl) Arbutin (27 (0411/1), XSYN), Methanol (032617B, BDH), Rutin (00018430-001, CHR), Methanol (100916B, VWR)
Reference Source: HPTLC Association
IDT-SOP-72-01

Comments & Conclusions: Lane 9 is the test sample Blue Vervain (BVST2111517). Lanes 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, are the reference samples used for comparison. This test sample, Blue Vervain (BVST2111517) is consistent with the chromatographic profile of the reference samples of *Verbena sp.*, used above. **This test sample Blue Vervain (BVST2111517) has characteristics of *Verbena sp.* herb (leaf, flower).**

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: Sandy S Sudberg, M.T., ASCP Senior Data Analyst, Alkemist Labs

Report Date: 01/25/18



Note: Any unidentified lanes in the above chromatograms are confidential and may represent internal studies or other test samples not related to BVST2111517.
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