

SHORT COMMUNICATION

Pharmaceutical analysis of Balivellyadi ointment: An Ayurvedic formulation

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ABSTRACT

Ayurveda is the ancient system of medicine which describes a lot of herbal formulations. As the long-time passes, the procedure of the drug preparation has been changed, its need of many hours, to developed and assess the quality of parameters of the drugs prepared in the ayurvedic pharmacy. Considering this modern scenario of the ayurvedic drug preparation it becomes mandatory to perform the quality control study of all the drugs used in clinical trial to establish the efficacy and safety of Ayurvedic drugs. Hence in this study we have performed the different quality standardization study of our drug – “Balivellyadi Ointment”. It is one of the ayurvedic preparation used in Shwitra (Vitiligo). Various parameters are applied for the Balivellyadi Ointment in this study which includes: - loss on drying, specific gravity, refractive index, ash value, acid insoluble ash, viscosity, pH value, acid value, saponification value, iodine value, rancidity test. and HPTLC finger printing is also included. After analysis of study, it has been found that all parameters were in standard range of the Ointment, which established the standardized quality control of the Balivellyadi Ointment.

Keywords : Ayurveda, Balivellyadi Ointment, Quality control Parameters, HPTLC.

Received 28.10.2025

Revised 04.12.2025

Accepted 03.01.2026

How to cite this article:

Rupendra A, Swapnil C R, Kavya M. Pharmaceutical analysis of Balivellyadi ointment: An Ayurvedic formulation. Adv. Biores. Vol 17 [1] January 2026. 163-168

INTRODUCTION

Indian classical system of medicine is known as Ayurveda. Ayurveda is a part of Aatharvaveda. It is well known the oldest form of medicines for human. Ayurveda describes various preparation of medicine. The branch which deals with preparation of is known as BHAISHAJYA KALPANA. Among the various herbal formulations Balivellyadi Ointment is one of them. Which has various useful results as per our literature. In skin disorders especially in Shwitra (vitiligo) Balivellyadi Ointment have very good result. In this modern era for the preparation of Ayurvedic formulations various parameters and Standard operative procedure has to be followed for the preparation of medicine which is required to ensures the good quality of medicine (1). For that GMP certified ayurvedic pharmacies has full access to complete formulations of Ayurveda. Various parameters are applied for the Balivellyadi Ointment in this study which includes: - loss of drying, total Ash and acid insoluble ash value, pH value, total solid content and HPTLC finger printing is also included.

MATERIAL AND METHODS

Drug review-

The name of the drug, parts used and its quantity were mentioned in Table 1.

Table 1 : Composition of Ointment

Sr no	Ingredient	Botanical Name	Family	Part used	Quantity
1	GANDHAK				1 Part
2	VIDANGA	<i>Embelia ribes</i>	Primulaceae	Fruit	1 Part
3	CHITRAKA	<i>Plumbago zeylanica</i>	Plumbaginaceae	Root	1 Part
4	BILWA	<i>Semicarpus anacardium</i>	Anacardiaceae	Fruit	1 Part
5	DANTI	<i>Baliospermum montanum</i>	Euphorbiaceae	Root	1 Part
6	AMALTAS	<i>Cassia fistula</i>	Caesalpinaceae	Bark	1 Part
7	NIMBA	<i>Azadirachta indica</i>	Meliaceae	Bark	1 Part

Collection, Identification and Authentication of Raw Drugs-Herbal raw drugs were purchased from authenticated resources at Vadodara. Raw drugs identification and authentication was done by the Department of Dravyaguna and Rasasashtra, Parul Institute of Ayurved,Parul University, Vadodara.

Classical method of Balivellyadi Ointment preparation:

- First collect all the raw Material with adequate quality
- Identification and authentication of drugs (2)
- Separate waste material, weight, mix all and grind them in yavakoot form
- Make decoction of all drugs and separate when one eighth
- Sarsap oil added with decotion and boiled until tailpak
- After fenshanti melted bee wax is added to prepare ointment.
- Packaging after cooling.

Chromatography study:

HPTLC (high-performance thin layer chromatography) is advanced form of TLC, which provides superior separation efficiency. The HPTLC Concept helps us to validate methods regarding qualitative and quantitative analysis, and fulfils all quality required parameters for use in fully regulated environments. In this study HPTLC has been performed for quality analysis of drug. It is an enhanced and developed form of TLC. A number of enhancements can be made to the basic methods of TLC to automate the different steps, to increase the evolution achieved and to allow more accurate quantitative measurements. Method and other procedures followed for Balivellyadi Ointment HPTLC as shown in Image-1.

Image 1 HPTLC Fingerprinting Report

HPTLC FINGERPRINTING REPORT	
Sample	: BALIVELLYADI OINTMENT
Name of Scholar	: Dr.RUPENDRA ARYA, PG Scholar of Kaumarbhritya Department Parul Institute of Ayurved, Vadodara, Gujarat.
Sample ID	: 07
Date of Report	: 02/07/2024
Preparation of Test solution: Unsaponifiable matter of simple filter paper. Filtrate is used as a Test solution thus obtained for HPTLC fingerprinting.	
Chromatographic Conditions:	
Application Mode	CAMAG Linomat 5 (S/N: 280008) Applicator
Filtering System	Simple filter
Stationary Phase	MERCK - HPTLC Silica gel 60 F ₂₅₄ on Aluminium sheets
Application (Y axis) Start Position	15 mm
Development End Position	80 mm from the plate base
Sample Application Volume	15 µL
Distance Between Tracks	21.4 mm
Development Mode	CAMAG TLC Twin Trough Chamber
Chamber Saturation Time	30 minutes
Mobile Phase (MP)	Toluene: Ethyl acetate: Formic Acid (4:3:0.5 v/v/v)
Drying Mode, Temp. & Time	TLC Plate Heater Preheated at 100± 5°C for 3 minutes

Designations	Analyzed by	Checked by	Approved by
	PG Scholar PARUL UNIVERSITY	INCHARGE CENTRAL RESEARCH LABORATORY	PRINCIPAL PARUL INSTITUTE OF AYURVEDA
	<i>Rupendra Arya</i>	<i>[Signature]</i>	<i>[Signature]</i>

PRINCIPAL
PARUL INSTITUTE OF AYURVED
AT & PO: LIMDA, TAL. WAGHODIA,
VADODARA

RESULTS

Organoleptic evaluation

Organoleptic Characteristics of Powder drugs details are mentioned in the Table 2.

The results show brown colour characteristic odour with semisolid consistency smooth in touch which is specific in balivellyadi ointment.

Physico-Chemical Parameters

Details of physico-chemicals values are mentioned in Table 3.

Loss on drying: On drying the sample syndicate that the samples were devoid of excess water content and there was no microbial overgrowth or insect infestation present. In this sample loss on drying is 11.32%, it indicates the samples may have good shelf-life and may not decay on storage. Makes Ointment more efficient.

Total ash and Acid insoluble ash: It indicates of contamination, substitution, adulteration. The Low total ash and Acid insoluble ash signifying low levels of inorganic matter and silica content in the sample. In this Total Ash and Acid insoluble Ash: 0.65% and 0.02%. In this sample it is very less. due to presence high organic ingredients which are in normal limits and drug can be used externally.

pH: The pH was measured to note the acidity or alkalinity of the aqueous solution of the drug. This helps in understanding the pharmacological basis of drug absorption and metabolism. In this sample pH is 5.2% so it is alkaline in nature. (9)

Total Solid Content: The total solid value of Balivellyadi Ointments 52.6%. which makes ointment potent.

Qualitative study of Balivellyadi Ointment: - TABLE 4 On Qualitative Study: Alkaloid, Essential Oil, Vitamin C, Flavanoid, Saponin, Glycoside, Starch, Tannin. It indicates that drug which use ingenuine.

High-performance Thin Layer Chromatography study: (10,11,12)

Preparation of test solution (T): Unsaponifiable matter of simple filter paper. Filtrate is used as a test solution thus obtained for HPTLC fingerprinting. (Image 1)

Details of HPTLC profile of all tracks at 254nm. Under the 254 nm wavelength-Track -1of BALIVELLYADI OINTMENT 5µL) - 5 spots were detected and starts with respect to retardation factor 0.149,0.426,0.531,0.728,0.947. (Image 2)

Details of HPTLC profile of all tracks at 366nm. Under the 366 nm wavelength-Track -1of BALIVELLYADI OINTMENT 5µL) -6spots were detected and starts with respect to retardation factor 0.019,0.386,0.535,0.668,0.796,0.938. (Image 3)

TABLE 2: ORGANOLEPTIC CHARACTERISTICS

Sample	Balivellyadi ointment
Color	Brown
Odor	Characteristic
Consistency	Semi liquid
Touch	Smooth

Table 3: PHYSICO-CHEMICAL PARAMETERS OF BALIVELLYADI OINTMENT

Sr no	PARAMETER	VALUE
1	Loss of Drying at 105c (%w/w)	11.326
2	Specific Gravity	0.9155
3	Refractive index	1.4610
4	Total Ash Value (%w/w)	0.65
5	Acid Insoluble Ash (%w/w)	0.02
6	Viscosity	6.2263
7	pH Value	5.2
8	Acid Value	3.70
9	Saponification value	180
10	Iodine Value	92
11	Rancidity test	Negative

Table 4: QUALITATIVE ANALYSIS OF BALIVELLYADI OINTMENT

Sample	Balivellyadi ointment
SOLVENT	PRESENT(+) / ABSENT(-)
Alkaloid	+
Vitamin C	+
Essential Oil	+
Limonoid	+
Saponin	+
Glycoside	+
Starch	+
Tannin	+
Nimbidin	+

Image 2 HPTLC Chromatograph @ 366nm

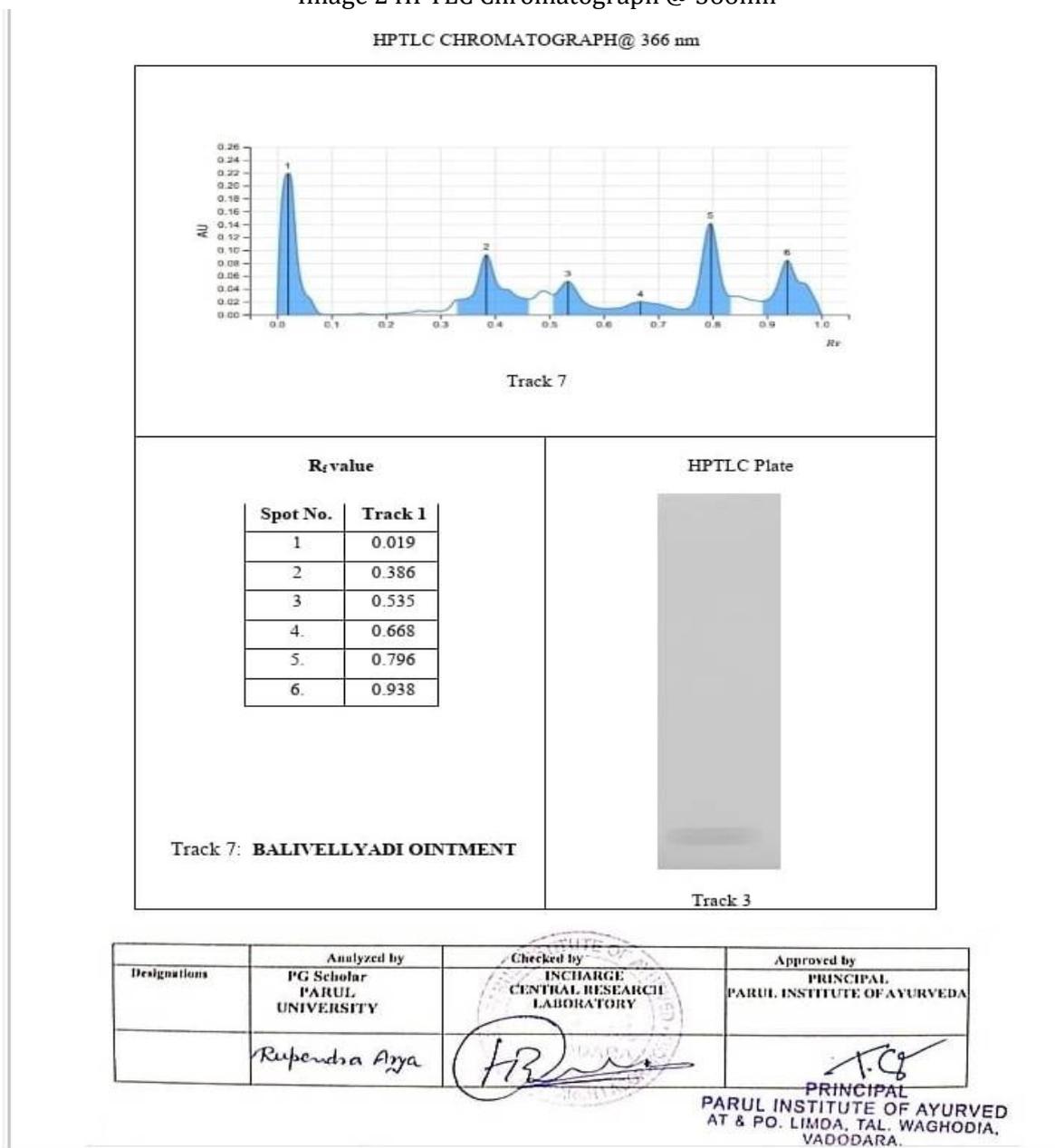
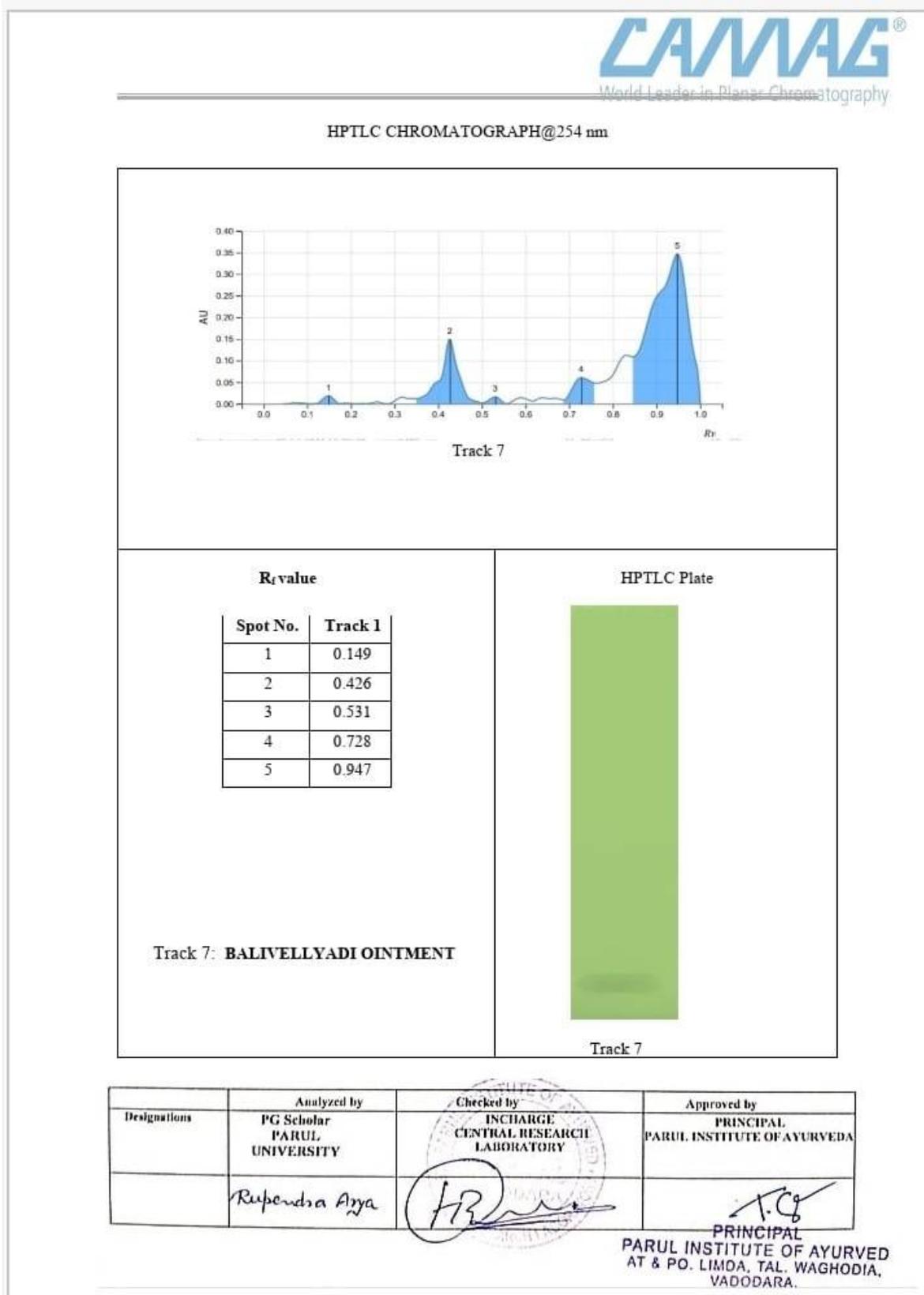


Image 3 HPTLC Chromatograph @254 nm



In previous trial drugs made by others authors like this drug or formulation which is used medicinally requires detail study prior to its use because the therapeutic efficacy is depends on the quality of ingredients used for the medicine preparation. In this study, Balivellyadi Ointment was prepared according to the procedure mentioned in classic. The raw drugs were identified and authenticated before using for preparation. The prepared drug, Balivellyadi Ointment was pharmacologically subjected for physicochemical analysis, HPTLC, and qualitative study of drug. The ground work requisites for the standardization of Balivellyadi Ointment were tried to cover in this study.

Conflict of Interest: None

ACKNOWLEDGEMENT

The authors are thankful to all the managing trustees of Parul University, Vadodara for availing the infrastructure required for the study. In addition we are thankful to staff of pharmacognosy laboratory, pharmacology laboratory and pharmacy of Parul Institute of Ayurved, Vadodara.

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