

A Pharmaceutical Analysis of Vidangadi Ointment

¹Vasava Nikita A, ²Dipeeka Surwase and ³Patel Kruti

¹⁻³Department of Kaumarabhritya, Parul Institute of Ayurved and Research, Parul University, Vadodara - 391760 (India)

¹Email id -nikita.vasava32511@paruluniversity.ac.in

²Email id - dipeeka.surwase21816@paruluniversity.ac.in

³Email id- krutipatel7508@gmail.com

Corresponding Author : Dr. Nikita Vasava

Email: nikita.vasava32511@paruluniversity.ac.in

Abstract

The objective of the study is to analyze an analytical and pharmaceutical parameter of the Vidangadi ointment, especially to standardise the SOP of Vidangadi ointment.

In this analytical study, Vidangadi ointment is often utilised in lepa form; however, in this study, lepa was transformed into ointment for easier administration. The manufacture and standardisation of Vidangadi ointment based on organoleptic properties, physicochemical parameters, and HPTLC fingerprint.

HPTLC fingerprinting is a commonly used technique in synthetic chemistry for identifying volatiles, and compounds, determining their purity and following the progress of a reaction. It also permits the optimization of the solvent system for a given separation problem. Preliminary Phytochemical analysis indicated the presence of alkaloids, tannins, essential oil and Phenolic compounds in Vidangadi ointment.

The current study was conducted to determine the quality and purity of Vidangadi ointment. The preliminary phytochemical data obtained will be useful in identifying genuine Vidangadi ointment. Qualitative research has suggested that the medicine contains alkaloids, tannins, palmitic acid, stearic acid, and essential oil. However, further research is needed to determine their exact composition.

Key words : Herbal drug; HPTLC fingerprinting, *Vidangadi Lepa*, *Vidangadi* ointment.

Nowadays the market for all goods is global. In the last two decades, herbal medicines have attracted much attention in Western countries due to their high medicinal activity with low toxicity and rare complications. Authentication of Herbal Medicines Certification

^{1,3}Assistant Professors, ²Associate Professor

of original medicine Procurement of high-quality raw materials Evaluation of intermediate and final products and detection of harmful and toxic substances^{2,3}. Based on the above reasoning the present study aims to examine the stability of *Vidangadi* ointment as described in the ancient texts of Ayurveda. *Sthana* in Yognatnakar *Kustha Chikitsa* chapter⁵.

Skin is the largest organ of the human body. there has been an increase in the incidence of skin problems in tropical and developing countries like India⁴. All the skin diseases in Ayurveda are classified under the broad heading of *Kustha* which are further classified in *Mahakushtha* and *Kshudra Kustha*. *Dadru*¹ is one of the *Kshudra Kustha* according to Acharya Charaka. Main symptoms of *Dadru* are *Kandu* (Itching) *Utsanna* (Elevated circular lesion), *Mandala* (Circular Patches) *Raga* (Redness).

From the paediatric point of view, the dose of medicine should be less and appropriate to the disease. Children are more vulnerable and delicate to any disease, so special care should be taken while administering medicine to children. *Vidangadi Lepa*¹¹ has few difficulties in administration as a powder form due to non-acceptability by children and bitter taste due to ingredients. For the convenience of paediatric patients, the composition was converted into an ointment Form.

The present study was carried out to standardize and evaluate the physico-chemical and phytochemical properties of *Vidangadi* ointment.

Collection, Identification and authentication of raw drugs :

All the raw materials used for this study were procured from the local market of

Vadodara, Gujarat then identification and authentication of the raw drug were done at Pharmacy of Parul Institute of Ayurved, Vadodara, Gujarat; GMP certified Ayurveda pharmacy following standard pharmacopoeia guidelines^{2,3}.

Table-1. Ingredients of *Vidangadi* ointment¹¹

Sr no.	Ingredient	Quantity
1.	<i>Vidangadi Taila</i>	600 ml
2.	Emulsifying wax	180 gm
3.	Liquid paraffin	125 ml
4.	Methyl paraben	1.5 gm
5.	Distilled water	700 ml
6.	Carbopol 934	3.3 gm
7.	Glycerine	180 ml
8.	TEA	3.3 ml
10	Final product	1.7 kg

Table-2. Ingredients of *Vidangadi Taila*¹¹

Sr.no	Ingredient	Quantity
1	<i>Vidanga</i>	30 gm
2	<i>Chakramarda</i>	30 gm
3	<i>Kustha</i>	30 gm
4	<i>Haridra</i>	30 gm
5	<i>Saindhava Lavana</i>	30 gm
6	<i>Sarshapa</i>	30 gm
7	<i>Kanji</i>	2800 ml
8	<i>Murchita Tila Taila</i>	700 ml
9	Loss	100 ml
10	Final product	600 ml

Preparation of Vidangadi ointment :

- All the drugs listed in (Table-2) were taken in equal quantities.

- All the material was converted into *Yavakuta* form and bolus form.
- Then *Tila Taila* was taken into a stainless-steel vessel.
- Then *Kalka* was added into *Tila Taila* and after that *Kanji* and *Kwatha* were added to the vessel.
- Then *Taila Paka* was done at medium fire and *Vidangadi Taila* was made. (Table-2).
- The oil phase *i.e.* *Vidangadi Taila*, Emulsifying wax, Liquid paraffin, Methylparaben, Distilled water, Carbopol 934, Glycerine, and TEA were added in a glass beaker.
- It was heated in a water bath at 65°C while continuously stirring.
- The water phase *i.e.* Glycerine, Carbopol 934 and distilled water were added in another glass beaker.
- It was also heated at 65°C on a water bath simultaneously.
- On complete liquefying of both phases, they were moved into the mortar while continued stirring.
- Tri ethanol amine (TEA) was added while stirring the mixture.
- On cooling to 30-40°C, methyl Paraben was added to the mixture and blended with the help of a mechanical stirrer to acquire uniform ointment.
- Rose essential oil was added for fragrance.

Organoleptic and Physico-chemical study:

Vidangadi ointment was analysed by using standard qualitative and quantitative parameters. Organoleptic characteristics like colour, odour, and consistency were carried out at the Pharmacy of Parul Institute of Ayurveda, Parul University, Vadodara, Gujarat,

India. Physicochemical parameters like Loss on Drying at 110°C, Total Ash Value, Acid Insoluble Ash, pH, specific gravity, Refractive index, and Total solids content were carried out at Pharmacy of Parul Institute of Ayurveda, Parul University, Vadodara, Gujarat, India. Phytochemical properties are essential for the primary evaluation of the final product to reveal the presence of the original drug in the final punished product, while the analytical study is essential for the validation of the exact proportion of the ingredients in the final product. Organoleptic characters, physicochemical parameters, and solubility test were done at Pharmacy of Parul Institute of Ayurveda and HPTLC study was done at Vasu Research Centre, GIDC, Makarpura, Vadodara, Gujarat. (Sample ID- AD/22/142 Dated: 17/06/2022). *Vidangadi* ointment was analysed by employing various analytical parameters. Organoleptic characteristics like colour, odour, and consistency were carried out. A physico-chemical study to analyse Loss on Drying at 110°C, Total Ash Value, Acid Insoluble Ash, pH, specific gravity, Refractive index, and Total solids content was done.

HPTLC Study :

Weigh 1 g of the sample in a beaker and add 10 mL of Methanol. Reflux for 10 minutes. Cool and filter with filter paper. Use the Test solution thus obtained for HPTLC fingerprinting.

Preparation of Spray reagent [Anisaldehyde – sulphuric acid reagent]: 0.5 mL Anisaldehyde is mixed with 10 mL Glacial acetic acid, followed by 85 mL Methanol and 5 mL Sulphuric acid (98 %). (table-4).

Table-4. Chromatographic Conditions

Chromatographic Conditions :	
Application Mode	CAMAG Linomat 5 - Applicator
Filtering System	Whatman filter paper No. 1
Stationary Phase	MERCK-TLC/HPTLC Silica gel 60 F ₂₅₄ on Aluminium sheets
Application (Y axis) Start Position	10 mm
Development End Position	80 mm from plate base
Sample Application Volume	2.0 µL
Development Mode	CAMAG TLC Twin Trough Chamber
Chamber Saturation Time	30 minutes
Mobile Phase (MP)	Toluene: Ethyl acetate: Glacial acetic acid (7: 3: 0.1 v/v)
Visualization	@ 254 nm, @ 366 nm and @ 540 nm (after deriointmentzation)
Spray reagent	Anisaldehyde- Sulphuric acid reagent
Deriointmentzation mode	CAMAG – Dip tank for about 1 minute
Drying Mode, Temp. & Time	TLC Plate Heater Preheated at 100±5°C for 3 minutes

*Organoleptic study :*Table-5. Composition of *Vidangadi* ointment:

Drugs	Botanical name	Family name	Part used	Measure-ment
<i>Vidanga</i>	<i>Embelia ribes</i> Burm F.	Myrsinaceae	Fruit	1 part
<i>Chakramarda</i>	<i>Cassia tora</i> LINN.	Fabaceae	Seed	1 part
<i>Kustha</i>	<i>Saussurea costus</i> (Falc.)	Asteraceae	Root	1 part
<i>Haridra</i>	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome	1 part
<i>Saindhava lavana</i>	Rock salt			1 part
<i>Sarshapa</i>	<i>Sinapis alba</i> L.	Brassicaceae	Seed	1 part
<i>Kanji</i>	<i>Pongamia pinnata</i> (L.) Pierre	—	—	6 parts

Organoleptic characters of Vidangadi ointment

The organoleptic characters of *Vidangadi* ointment, which was in ointment form, were observed to be orange in color, pleasant in odor, semisolid in consistency, and smooth in application.

Physico-chemical study :

Physicochemical parameters are illustrated in (Table-6) The pH of any liquid provides the quantitative indication of the acidity or alkalinity of a solution. pH of *Vidangadi* ointment is 5.8 *i.e.*, basic. Loss on drying at

110 C was 39.62 (%w/w), Total Ash value is 1.25% w/w, Acid insoluble ash 0.32 % w/w. water-soluble extractive was 26.1 (%w/w). Alcohol soluble extractive 39.2 (%w/w). A chromatographic study (HPTLC) of the final product *Vidangadi* ointment was carried out to establish a fingerprinting profile. R_f value and colour of the spots in the chromatogram developed in Toluene :

Phytochemical analysis of Vidangadi ointment:

Preliminary phyto chemical investigation show presence of Alkaloid, Tannin, and essential oil in *Vidangadi* ointment.

Table-6. Physico-chemical parameters of *Vidangadi* ointment

Sr. no.	Parameters	Value
1.	Loss on drying at 110c (%w/w)	39.62
2.	Total ash value (%w/w)	1.25
3.	Acid insoluble ash (%w/w)	0.32
4.	Water soluble extractive (%w/w)	26.1
5.	Alcohol soluble extractive (%w/w)	39.2
6.	P ^H value	5.8

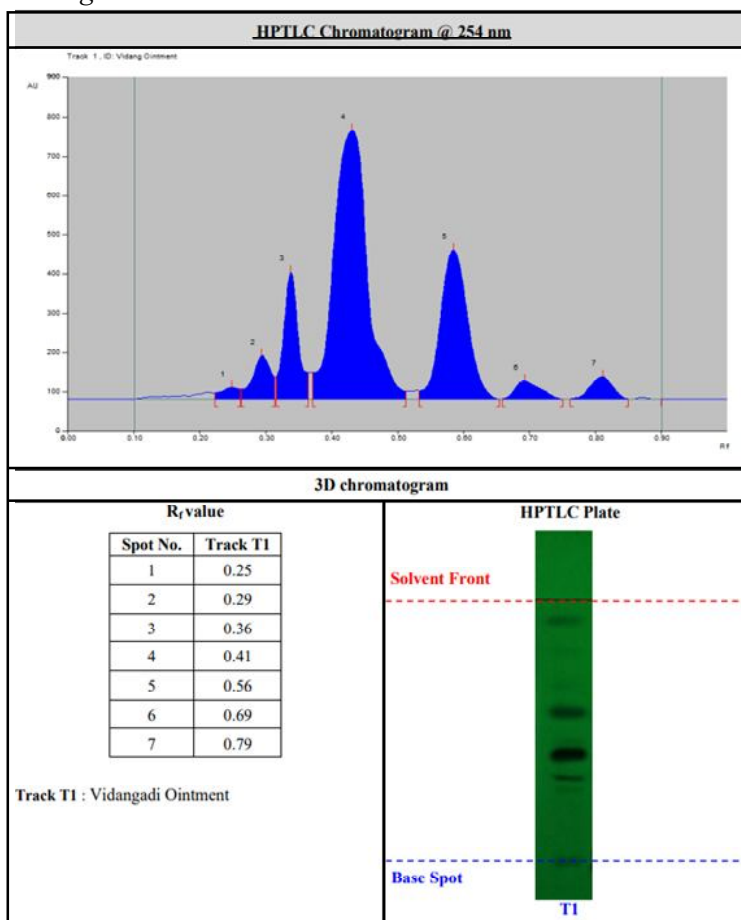


Fig. 1 HPTLC plate showing the banding pattern and R_f Values at 254 nm

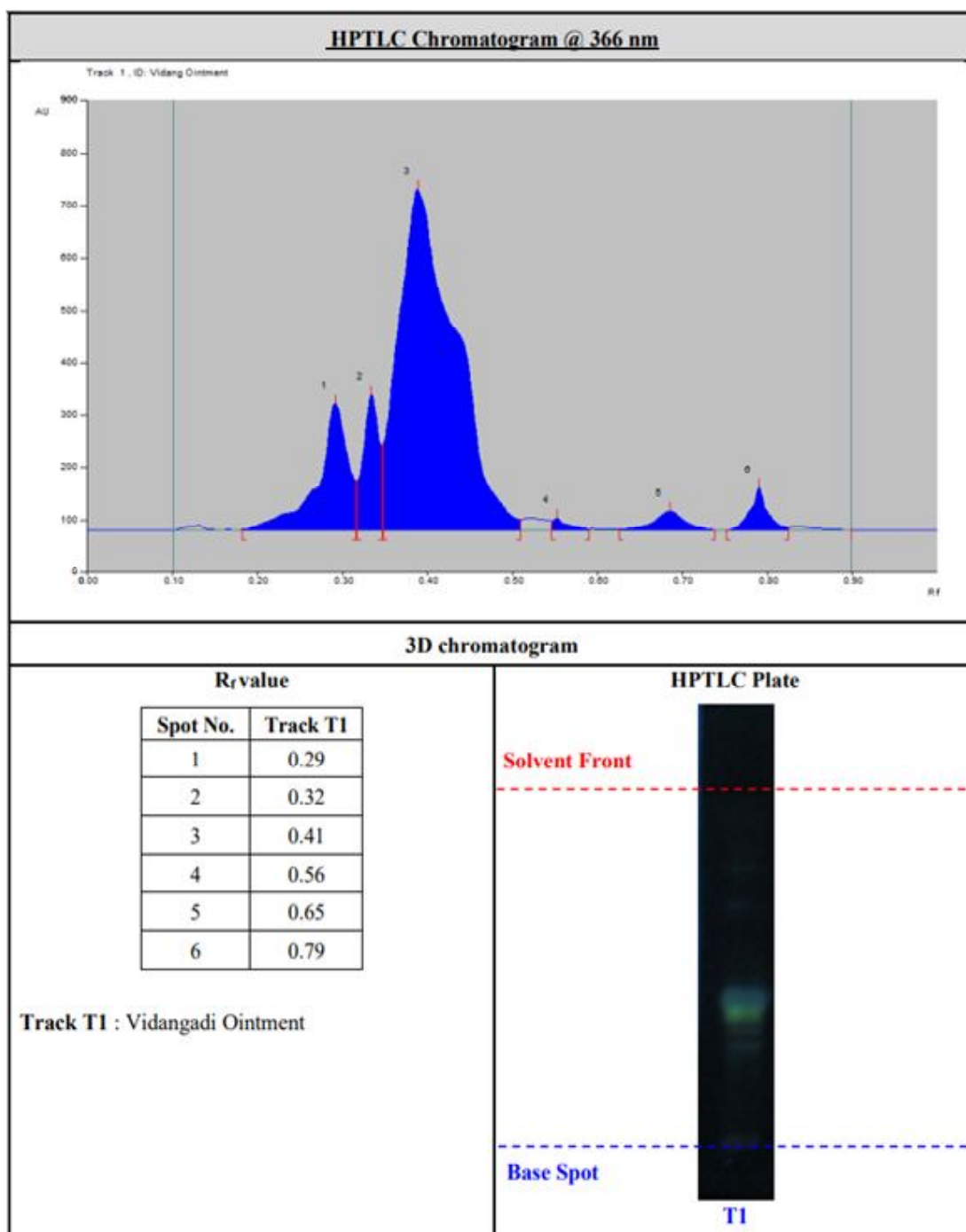


Fig. 2. HPTLC plate showing the banding pattern and R_f Values at 366 nm

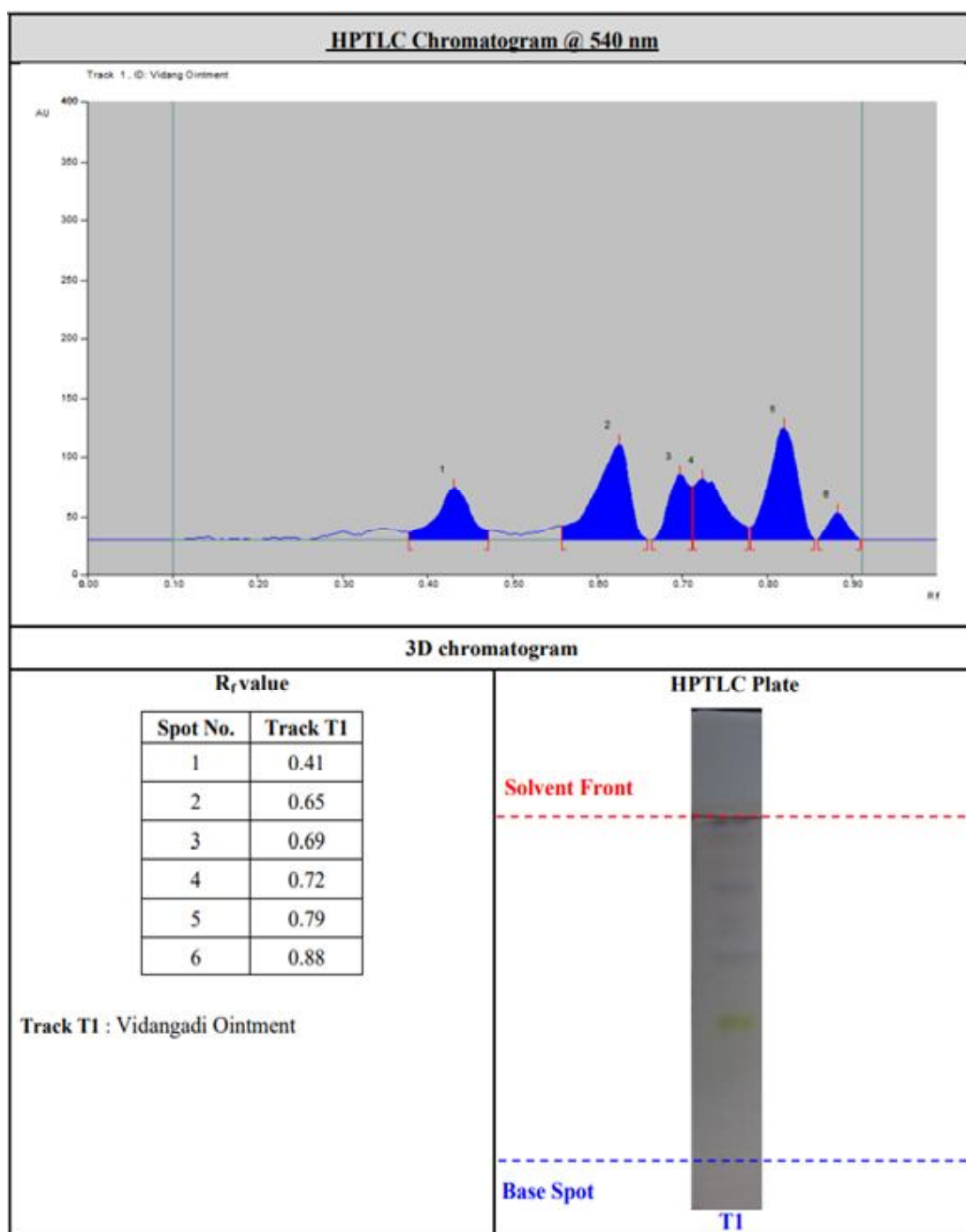


Fig. 3: HPTLC plate showing the banding pattern and R_f Values at 540 nm

In the recent cosmetic era, skin diseases have gained more importance and attention due to common manifestations and also as the skin diseases are more frequent. Dermatophytosis, also known as ringworm, is a fungal infection of the skin. Tinea corporis is a rash caused by a fungal infection⁴. It is usually an itchy, circular rash with clearer skin in the middle. Tinea corporis is spread by the shedding of fungal spores from infected skin. Transmission is facilitated by a warm, moist environment and the sharing of fomites including bedding, towels, and clothing. Dermatophyte infection elsewhere on the skin, such as Tinea Pedis, can also be transferred. In Ayurveda, skin diseases are mentioned under the name *Kushtha*, *Tridoshaja Vyadhi* which involves *Rasa*, *Rakta*, *Mamsa* and *Lasika* etc^{1,5}. *Dadru* is one of the most common but miserable varieties of *Kushta* affects the population of all age groups and stands as challenge to different medical systems. *Vidangadi* ointment is a combination of herbal drugs which have anti-inflammatory, antibacterial, antifungal, and antioxidant properties. *Vidangadi ointment* was evaluated as per WHO guidelines on quality controls and standardization of medicinal plant materials^{2,3}. No foreign matter was found due to the careful manual selection of ingredients. *Vidangadi* ointment is basic (P^H value 5.8) in nature as a result there are no harmful effects on the skin.

In the pharmaceutical preparation of *Vidangadi* ointment, 600 ml *Vidangadi Taila* and other ingredients were used and 1.7 kg *Vidangadi* ointment was obtained.

In *Vidangadi* ointment, a total 7 spots were seen at 254 nm wavelength. 1st spot was

seen at 0.25 R_f value. 2nd spot was seen at 0.29 R_f value 3rd spot was seen at 0.36 R_f value. 4th spot was seen at 0.41 R_f value. 5th spot was seen at 0.56 R_f value. 6th spot was seen at 0.69 R_f value. 7th spot was seen at 0.79 R_f value.

In *Vidangadi* ointment, total 6 spots were seen at 366 nm wavelength. 1st spot was seen at 0.29 R_f value. 2nd spot was seen at 0.32 R_f value 3rd spot was seen at 0.41 R_f value. 4th spot was seen at 0.56 R_f value. 5th spot was seen at 0.65 R_f value. 6th spot was seen at 0.79 R_f value.

In *Vidangadi* ointment, a total 6 spots were seen at 540 nm wavelength. 1st spot was seen at 0.41 R_f value. 2nd spot was seen at 0.65 R_f value 3rd spot was seen at 0.69 R_f value. 4th spot was seen at 0.72 R_f value. 5th spot was seen at 0.79 R_f value. 6th spot was seen at 0.88 R_f value.

HPTLC fingerprinting is a commonly used technique in synthetic chemistry for identifying volatiles, and compounds, determining their purity and following the progress of a reaction¹⁰. It also permits the optimization of the solvent system for a given separation problem. Preliminary Phyto chemical analysis indicated the presence of alkaloids, tannins, essential oil and Phenolic compounds in *Vidangadi ointment*.

In order to determine the quality and purity of *Vidangadi* ointment, the current study was conducted. These preliminary phytochemical data will be useful in identifying real *Vidangadi* ointment. Qualitative research has

suggested that the medicine contains alkaloids, tannins, Palmitic acid, Stearic acid and essential oil; additional research is needed to determine their exact composition.

The authors acknowledge the management of Parul University and Vasu Research Centre for their support and cooperation in the study.

References :

1. Acharya, Y.T. (2007). *Charaka Samhita of Agnivesha with Ayurveda Dipika Commentary*. Chaukhambha Publication, Varanasi.
2. Anonymous (1999). *The Ayurvedic Pharmacopoeia of India*, Part I, Vol. I, Ministry of Health & Family Welfare, Govt. of India, New Delhi.
3. Anonymous (2004). *The Ayurvedic Pharmacopoeia of India*, Part I, Vol. IV, Ministry of Health & Family Welfare, Govt. of India, New Delhi.
4. Mollanazar, N.K., S.D. Koch, and G. Yosipovitch, (2015). *Current Dermatology Reports*, 4: 20–29.
5. Shastri, V.L. and B.B. Shastri, (2017). *Yoga Ratnakara*, Uttarsthana, Kustha Chikitsa Adhyaya, p. 650. Chaukhamba Publications, Varanasi.
6. Sharangdhar Samhita (1920). Edited by Pt. Parshuram Shastri. Chaukhamba Surbharati Prakashan, Varanasi.
7. Troy, D.B. (2005). *Remington: The Science and Practice of Pharmacy*, Vol. 1, 21st ed., p. 917. Lippincott Williams & Wilkins, Baltimore.
8. Yoga Ratanakara Vidyotini (2017). Hindi Commentary -Vaidya Laksmipati Sastri, 'Bhisagratna Brahmasankar Sastri, Chaukhamba Publications, Uttarsthan kustha Chikitsa 80 pg no. 650.