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Pharmacognostical and Phytochemical Evaluation of *Arka Taila* gel- External dermal application

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ABSTRACT

Arka Taila is an important Ayurvedic formulation containing *Arka* (*Calotropis procera* (Ait)R. Br), *Haridra* (*Curcuma longa* Linn.), *Sarsapa* (*Brassica nigra*). 15% aerosol was added in *Arka Taila* for obtaining *Arka Taila* gel. *Arka Taila* gel was used externally in *Vicharchika* (Eczema). All the constituents are available and prepared according to the reference described in *Sharangadhara Samhita*. No research work has been done to standardize the drug so this study was done to standardize the compound Ayurvedic formulation through Pharmacognostical and pharmaceutical evaluation. The sample was subjected for different phytochemical parameters like Acid value (7.055), Iodine value (12.08), Saponification value (231.88), refractive value (1.482), specific gravity (0.91), pH (6.5%), HPTLC. The HPTLC, solvent system was Toluene: ethyl acetate (9:1), showed the presence of 11 spots at 254nm and 6 spots at 366nm. So the physiochemical and microscopic findings obtained that gives directions for standardization of drug, *Arka Taila* gel.

Keywords: HPTLC, Pharmacognostical, Physiochemical Evaluation.

INTRODUCTION

Arka Taila refers to a combination of *Arka Patra Swarasa*, *Haridra Kalka* and *Sarsapa Taila* ^[1]. It is an Ayurvedic herbal preparation as mentioned in the *Sharangadhara Samhita* and *Yogaratanmakara* ^[2]. It is mentioned as ideal formulation for different types of skin diseases. Some specific indications are mentioned in *Sharangadhara Samhita* like *Pama*, *Vicharchika*, *Kacchu* ^[3]. The formulation is having action of *Kandughna* (removes the itching), *Kusthaghna* (helps in skin problems), *Vrana Shodhaka* (cleans the wound). In the classical text external application in the form of the *Arka taila* is mentioned but here for easy use taila was converted into gel. The ingredients of the *Arka Taila* gel with their proportions are described in table 1. The quality of a drug and looking at the effectiveness of the formulation of *Arka Taila* gel there is a high need in the light of scientific evaluation. This will provide a scientific basis and credibility to Ayurvedic drugs and pharmaceuticals. It also helps in globalization of Ayurveda. In the present study the powder formulation of *Arka Taila* gel was taken for Pharmacognostical (microscopic), HPTLC, and pharmaceutical (evaluation of different physiochemical parameters) evaluation for making a preliminary data of the formulation.

MATERIALS AND METHOD

Drug Material

All the raw drugs were obtained from Pharmacy of Gujarat Ayurved University, Jamnagar. All the raw drugs were recognized and their purity were established in the Pharmacognosy department of Gujarat Ayurved University. The ingredients and the part used are mentioned in (Table 1).

Table 1: Ingredients: *Arka Taila* gel

Sr. No.	Drug	Botanical name	Part used	Part
1	<i>Arka</i>	<i>Calotropis procera</i> (Ait)R. Br.	<i>Patra Swarasa</i>	16
2	<i>Haridra</i>	<i>Curcuma longa</i> Linn.	<i>Kanda(Kalka)</i>	1
3	<i>Sarsapa</i>	<i>Brassica nigra</i>	<i>Bija Taila</i>	4

Method of preparation of Arka Taila gel

Arka Taila was prepared as per told by Aacharya Sharangadhara.

Sarsapa Taila:- 12 liter

Haridra Kalka:-3 kg

Arka Patra Swarasa: 48 liter

Aerosil: 15%

Preparation of Taila

Sarsapa Taila in amount of 12 litre, 3 kg Kalka Dravya and 48 l Arka Patra Swarasa were used in the preparation of Taila Paka. Kalka, Taila and Swarasa were mixed together for Snehapaka. All examinations for Snehapaka were done. 15% aerosil was added in Arka Taila and triturated continuously upto proper consistency was obtained.

Pharmacognostical evaluation

Different features like colour, taste, odour, and touch are examined by sensory organs [4]. Powder microscopy of the final product was done without stain and after staining with Phloroglucinol+HCl micro photographs were taken under Carl- Zeiss Trinocular microscope attached with camera [5]. By Powder microscopy observed the characters, determined the chemical nature of the cell wall along with the form and chemical nature of the content of the cells.

Physico-chemical evaluation

Arka Taila gel was subjected to physicochemical study in order to develop analytical profiles. In this phase following parameter were carried out -Loss on drying at 1100C, pH value, acid value, Iodine value, Saponification value, refractive value, specific gravity [6].

High performance thin layer chromatography [7]

In HPTLC study of Arka Taila methanol extract of Arka Taila was spotted on pre-coated silica gel GF 60254 Aluminium plate by mean of Camag Linomate V sample applicator fitted with a 100µl Hamilton syringe. The mobile phase consisted of Toluene: Ethyl acetate a ratio of 9:1 v/v. After development, densitometric scan was performed with a Camag TLC scanner III in reflectance in absorbance mode at 254 and 366 nm under control of Win CATS Software (V1.2.1.Camag). after that the plate was sprayed with Vanillin Sulphuric acid followed by heating and then visualized in daylight.

OBSERVATION & RESULTS

Pharmacognostical study

Organoleptic Characters

Greenish yellow in colour, slightly aromatic odour, Slight astrigent in taste, spongy in touch and oily in texture. (Table 2)

Table 2: Organoleptic characters of Arka Taila gel

No.	Characteristics	Results
1	Colour	Greenish yellow
2	Odour	Slightly aromatic
3	Taste	Slight astringmt
4	Touch	Spongy

Microscopic Characters of Arka Taila gel

Diagnostic characters of Arka Taila ingredients were observed under the microscope were fibres, prismatic crystals, spongy parenchyma, stomata with epidermal cells of Arka and parenchymal cells and starch grains of Haridra.(Plate No.1)

Physicochemical analysis

Results of physicochemical analysis i.e. loss on drying, acid value, iodine value, saponification value, refractive value, specific gravity and pH are shown in Table 3.

Table 3: Physico-chemical parameters

Sr. No.	Analytical parameters	Arka Taila
01	Loss of drying	1.18%
02	Acid value	7.055
03	Iodine value	12.08
04	Saponification value	231.88
05	Refractive value	1.482
06	Specific gravity	0.91
07	pH	6.5%

High performance thin layer chromatography (HPTLC)

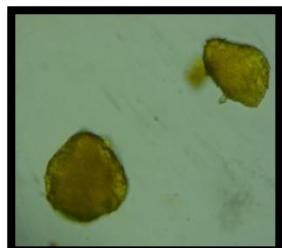
The colour and Rf values of resolved spots of HPTLC were noted. (Table 4) (Plate no. 2)

Table 4: Rf values obtained by HPTLC

Sample	Wavelength	No. of spots	Rf value
Arka Taila gel	254 nm	11	0.03,0.13,0.17,0.23,0.26,0.31,0.37,0.40,0.53,0.61,0.68
	366nm	6	0.04,0.23,0.37,0.43,0.53,0.94



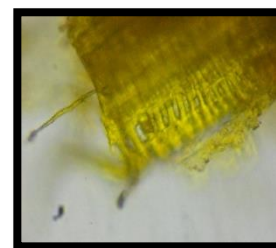
Fibres of Arka patra



Parenchymal cells of Haridra



Prismatic Crystal of Arka



Scalariform vessels of Haridra



Plate 1: Powder microscopic photographs of *Arka Taila* gel

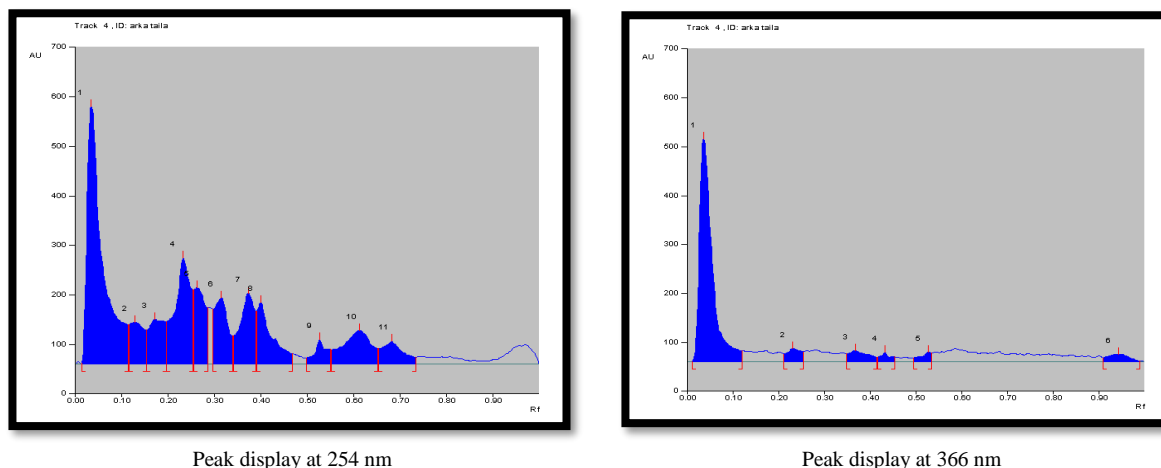


Plate 2: HPTLC of methanolic extract of *Arka Taila*

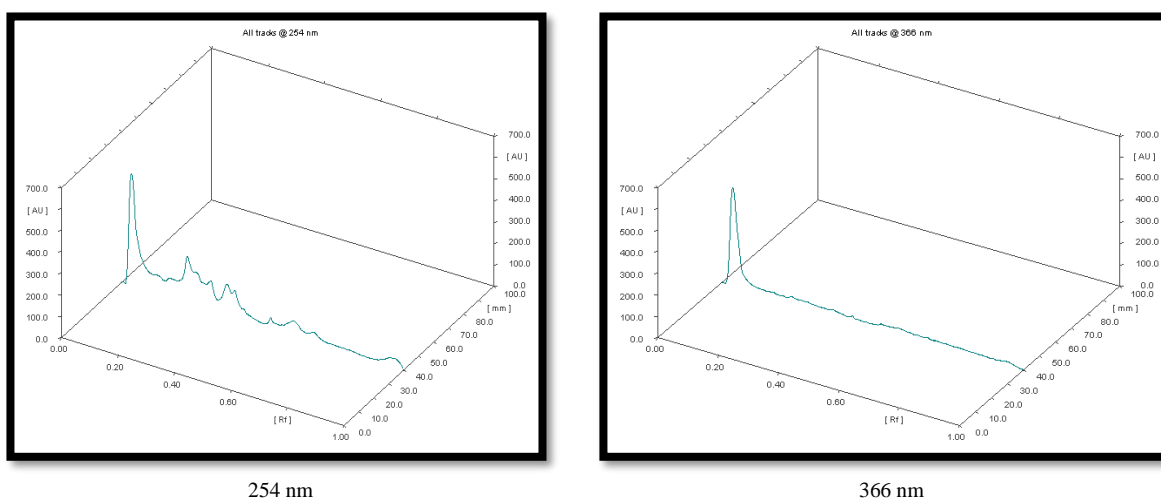


Plate 3: Three dimensional HPTLC(3D) Densigram

DISCUSSION

Pharmacognostical evaluation showed that all the ingredients were present in the finished product and also proven that the purity of the finished product. Pharmacognostical evaluation showed the organoleptic characters of the drug were greenish yellow in colour, slightly aromatic odour, Slight astringent in taste, spongy in touch and oily in texture. Fibres, prismatic crystals, spongy parenchyma, stomata with epidermal cells of *Arka* and parenchymal cells and starch grains of *Haridra* are found in microscopical study. Results obtained in physicochemical parameters of *Arka Taila* gel are within limit mentioned by Ayurvedic Pharmacopoeia of India. HPTLC profile of

Arka Taila gel showed 11 and 6 spots at 254nm and 366 nm respectively.

CONCLUSION

The pharmacognostical and physico chemical analysis of *Arka Taila* gel revealed genuinity of the drug. On the basis of these observation and outcomes of experimental studies further research work will be done on it. As pharmacognostical and physico-chemical profiles of *Arka Taila* gel are available in this work will be helpful for similar future research work.

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