

## A Pharmacognostical and Physicochemical Evaluation of *Mukhakantivardhaka Lepa*

Madhumita Panigrahi<sup>1\*</sup>, Mahesh Vyas<sup>2</sup>, Harisha C.R.<sup>3</sup>, V. J. Shukla<sup>4</sup> and Kabi P. Mohanty<sup>5</sup>

<sup>1,2</sup>Dept. of Basic Principle, IPGT & RA, Gujarat Ayurved University, Jamnagar, India

<sup>3</sup>Dept. of Pharmacognosy, IPGT & RA, Gujarat Ayurved University, Jamnagar, India

<sup>4</sup>Dept. Pharmaceutical Chemistry Laboratory, IPGT & RA, Gujarat Ayurved University, Jamnagar, India

<sup>5</sup>Dept. of Shareera Rachana, Major S.D. Singh Ayurveda Medical College & Hospital, Uttar Pradesh, India

### Abstract

According to the World Health Organization (WHO), some 3.4 billion people in the developing world depend on plant based traditional medicines. This represents about 88% of the world's inhabitants, who rely mainly on traditional medicine for their primary health care <sup>1</sup>. *Ayurveda* aims at the preservation of good health apart from mitigation of disease. The symbiosis between Cosmetology and *Ayurveda* is the most ancient one. *Mukhakantivardhaka lepa* is a poly herbal formulation in the form of *Churna* extensively used to skin complexion hence *Mukhakantivardhaka lepa* was selected in the present study to assess the efficacy of the drug in *Twakvaivarnya*. The present study was aimed at setting up a standard profile of *Mukhakantivardhaka lepa* which was prepared using pharmacognostical authenticated drug like *Rakta Chandana*, *Manjishtha*, *Lodhra*, *Kushtha*, *Priyangu*, *Batankura*, *Masoor dal* followed by subjecting it to detailed physico-chemical analysis as per standard protocol. The observations were systematically recorded.

### Keywords

*Mukhakantivardhaka lepa*, *Pharmacognosy*, *Physico-chemical analysis*, *Twakvaivarnya*



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## INTRODUCTION

The awareness about the ways to improve the beauty is increasing day by day. The increased demand of beautification is evident by number of beauty contests, beauty centers, various cosmetic items like creams, lotions, powder etc. available in the society. Random use of cosmetic products may produce adverse effect, spoiling the natural beauty. A person's complexion is a biological trait. In the recent era, it is also seen that the younger generation gives priority to the fairer one in the selection of their life partner.

The increased demand of various cosmetics items such like creams, lotions, powders, soaps, hair gels etc. and the increased numbers of the beauty centers and beauty parlors itself suggests the significance of this subject. For the implementation of the concept, the disease *Twakvaivarnya* has been selected for the study. It is seen abundantly in the patients. Though modern medical treatments are cheaper and easily available, they are not useful for complete cure of the disease. While surgical treatment requires costly instrument, good infrastructure as well as high skill. A need was felt for exploring the *Ayurvedic* line of

management for the disease. Hence, in the present study an attempt has been made to find out some potent and perfect remedy for the disease *Twakvaivarnya*, which is useful to regain the original beauty of face and to add an aesthetic value to the personality. *Ayurveda* has many drugs which are useful in *Varnaprasadana*. The *Varnaprasadana*<sup>2</sup>, which has been described as bringing out the clarity of *Varna*, is thus applicable in *Twakvaivarnya*. *Mukhakantivardhaka lepa* is the formulation mentioned in on *Sharangadhara Samhita* of *Sharangadhara, Uttara Khanda*, chapter 11. It acts as *vyangaghna* and *mukhakantida*<sup>3</sup>.

## MATERIALS AND METHODS

### Collection of Raw Drugs:

All the raw drugs of *Mukhakantivardhaka lepa* were collected from the Pharmacy of Gujarat Ayurved University, Jamnagar.

### Selection of drug:

Trial drug *Mukhakantivardhaka lepa* is a poly herbal formulation in the form of *Churna* useful for skin complexion. Seven drugs described in *Mukhakantivardhaka lepa* of *Sharangdhar Samhita* were combined in equal quantity.

### Preparation of *Mukhakantivardhaka lepa*:

*Mukhakantivardhaka lepa* was prepared in Pharmacy of Gujarat Ayurved University,

Jamnagar. Ingredients, part used and ratio of the drug are given in Table 1.

**Table 1: Contents of Mukhakantivardhaka lepa (Sharangadhara/uttara khanda/11)**

Sr.No.	Content	Latin Name	Parts Used	Quantity
1	<i>Rakta Chandana</i>	<i>Pterocarpus santalinus</i> Linn.f.	<i>Kandasara</i>	1part
2	<i>Manjishtha</i>	<i>Rubia cordifolia</i> Linn.	<i>Mula</i>	1part
3	<i>Kushtha</i>	<i>Saussurea lappa</i> C.B.Clerke	<i>Mula</i>	1part
4	<i>Lodhra</i>	<i>Symplocos racemosa</i> Roxb.	<i>Tvak</i>	1part
5	<i>Priyangu</i>	<i>Callicarpa macrophylla</i> Vahl.	<i>Pushpa</i>	1part
6	<i>Bata</i>	<i>Ficus bengalensis</i> Linn.	<i>Ankura</i>	1part
7	<i>Masur</i>	<i>Lens culinaris</i>	<i>Bija</i>	1part

**Method of preparation of Lepa:**

Ingredients of study drug *Mukhakantivardhaka lepa* namely *Rakta Chandana* (*Pterocarpus santalinus*), *Manjishtha* (*Rubia cordifolia*), *Lodhra* (*Symplocos racemosa*), *Kushtha* (*Saussurea lappa*), *Priyangu* (*Callicarpa macrophylla*), *Batankura* (*Ficus bengalensis*), *Masoor dal* (*Lens esculenta*). All these drugs were taken in equal quantity in the form of *Churna* and mixed thoroughly.

**Pharmacognostical Evaluation:**

As per API raw drugs which were used in *Mukhakantivardhaka lepa* were identified and authenticated by the Pharmacognosy department. The identification was carried out based on the morphological features, organoleptic characters and powder microscopy of the drug *Mukhakantivardhaka lepa* (*Churna* form). (Incomplete sentence) The drug was studied

first with distilled water and then observed under the microscope attached with camera with stain. Microphotographs were taken by using Carl-Zeiss Trinocular microscope <sup>4</sup>.

**Pharmaceutical Evaluation:**

The drug was analyzed by using qualitative and quantitative parameters at Pharmaceutical Chemistry Laboratory of I.P.G.T. &R.A., Gujarat Ayurved University, Jamnagar.

**Physico-chemical Parameters <sup>5</sup>:**

physico-chemical parameters ie. Loss on Drying at 110 c, Total Ash value, Water Soluble Extract, Methanol Soluble Extract and pH 5% v/w aqua solution carried out as per standered procedures.

**RESULTS AND DISCUSSION**

**Organoleptic findings:**

Organoleptic findings of *Mukhakantivardhaka lepa* is given in Table 2.

**Table 2** Organoleptic Examination

Properties	<i>Lepa</i>
colour	Pinkish brown
odour	Fragrant
texture	Fine powder
taste	Bitter astringent
touch	Fine

**Table 3** Results of the Drug Analysis on Physico-chemical Parameters

Sr No.	Parameters	Results
1	Loss on Drying at 110 °C	1% w/w
2	Total Ash value	8% w/w
3	Water Soluble Extract	19.4% w/w
4	Methanol Soluble Extract	9.2% w/w
5	pH 5% v/w aqua solution	6

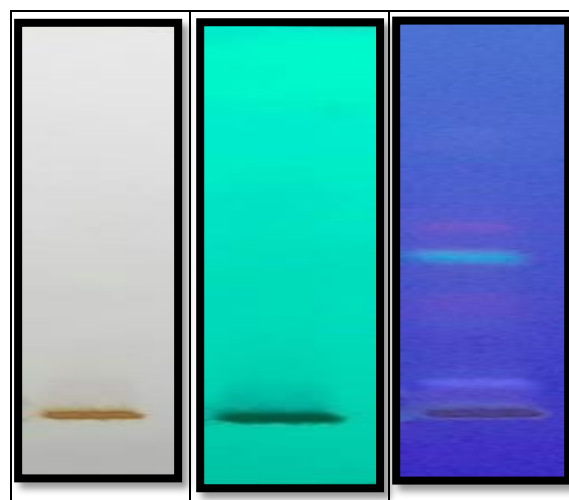
### Pharmacognostical study:

The initial purpose of the study was to confirm the authenticity of the raw drugs used in the preparation of *Mukhakantivardhaka lepa*. For the same microscopy of the raw drugs were studied i.e.; border pitted vessels, oil globules, lignified fibers, stone cells of *Rakta chandana*; coloring matter, acicular crystals, fibers of *manjishtha*; stone cells, border pitted vessels, rhomboidal crystals of

*lodhra*; epicarp cells of *priyangu*; fibers of *kushtha*; starch grains with hilum of *masura*; epidermal cells, wavy parenchymal cells, granular vessels, stomata of *batankura* etc. (Plate 1-15). Results matched with the API and thus confirmed the genuineness of all the drugs used in the finished product.

### Pharmaceutical Evaluation:

Physico-Chemical parameters of *Mukhakantivardhaka lepa* like Total ash value, Water soluble extract, Methanol soluble extract, pH 5% v/w aqua solution, Loss on drying all were found to be within the normal range. Details are given in Table 3. HPTLC was carried out after organizing appropriate solvent system in which maximum 10 spots were distinguished at



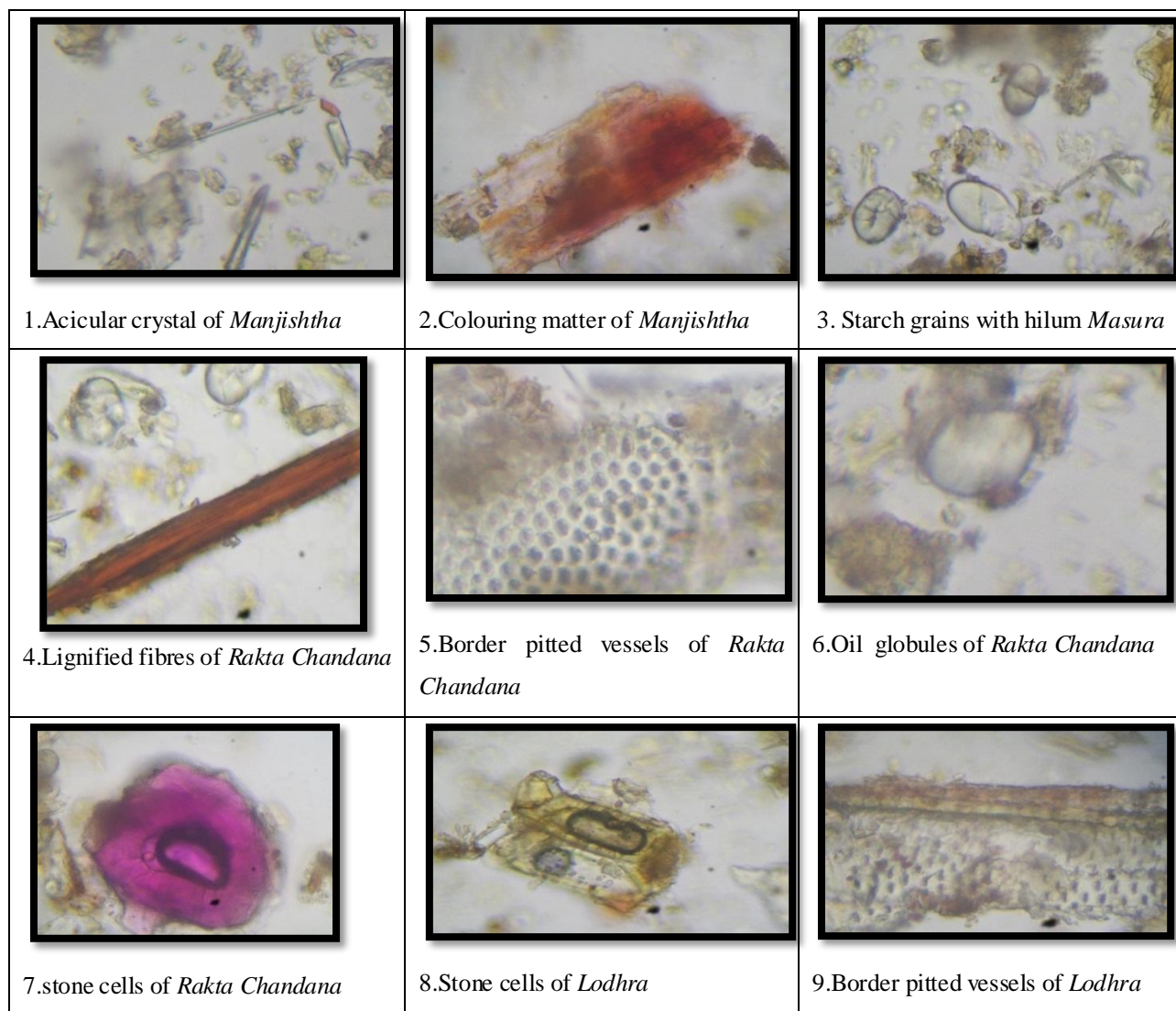
**Fig. 1, 2, 3** Chromatographic separation at day light, at 254 nm and at 366 nm

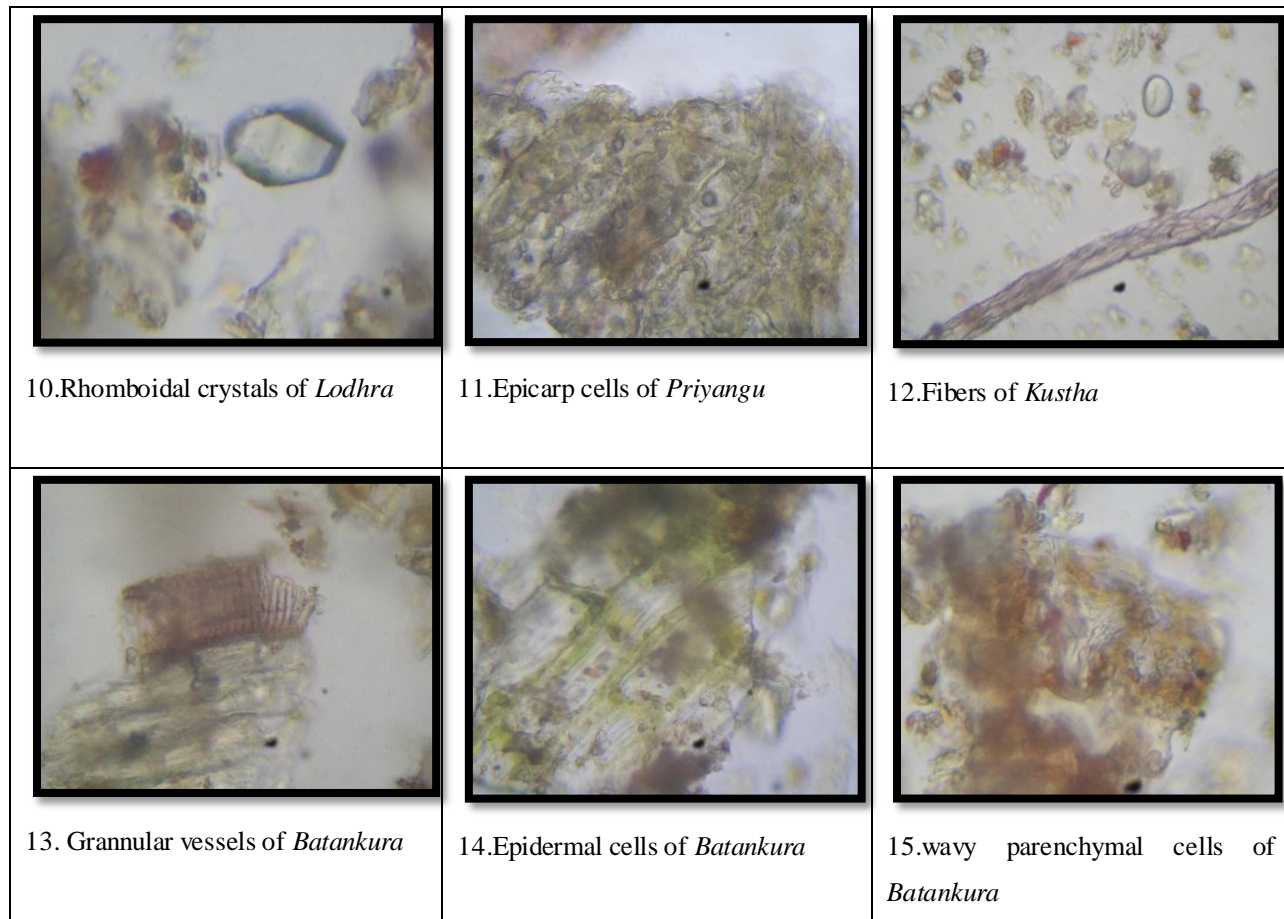
254 nm and 12 spots at 366 nm. Results are depicted in the Table 4, Plate 2, Fig. 1, Fig. 2, Fig. 3.

**Table 4** Results of HPTLC of *Mukhakantivardhaka lepa*

Track	Solvent system	Observation under UV radiation			
		254 nm		366 nm	
		No. of spots	Rf value	No. of spots	Rf value
<i>Mukhakantivardhaka lepa</i>	Toluene (7ml) : Ethyl acetate (2ml): Acetic acid (1ml)	10	0.5, 0.17, 0.27, 0.40, 0.46, 0.52, 0.68, 0.77, 0.89, 0.95	12	0.05, 0.10, 0.17, 0.25, 0.39, 0.46, 0.53, 0.60, 0.71, 0.83, 0.89, 0.95

**Plate -1** Microphotographs of *Mukhakantivardhaka lepa*





In the present study a pharmaceutical preparation of *Mukhakantivardhaka lepa* was tried. Its pharmaceutical properties had to be studied; hence the formulation was subjected to minimum Pharmacognostical and Pharmaceutical analysis. Pharmacognostical evaluation of raw drugs used in *Mukhakantivardhaka lepa* showed specific characteristic features, found in microscopy, which confirmed the same and showed that the genuinity of the drugs.

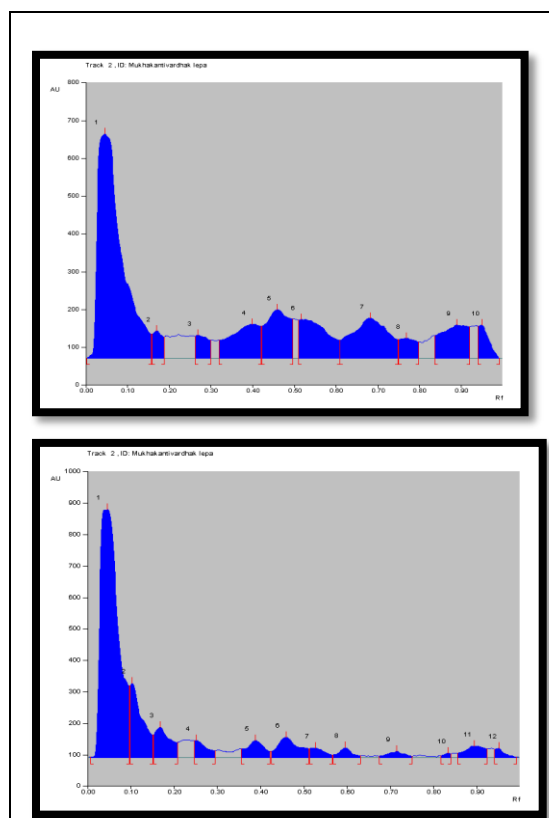
The ingredients of *Mukhakantivardhaka lepa* are *Tikta* (bitter), *Madhura*, *Kashaya*

*rasa* predominant *Sheeta veerya*, *Katu vipaka*, *Guru* and *Ruksha* in nature with obvious alleviating action on all *Doshas*<sup>6-7</sup>. Specific *Raktaprasadaka*, *Twakprasadaka*<sup>8</sup> and *Kushthagna* plays important role in improving fair complexion and luster of the skin. The contents of *lepa* makes the skin healthy, glorious and beautiful. *Twakvaivrnya* is a *Raktaj vicar*<sup>9</sup> in which there is vitiation of *Vata*, *Pitta* dosha and *Dushti* of *Rakta dhatu* occur. Generally *Mukhakantivardhaka lepa* contents *Raktaprasadaka*, *Vata-Pitta shamak*,

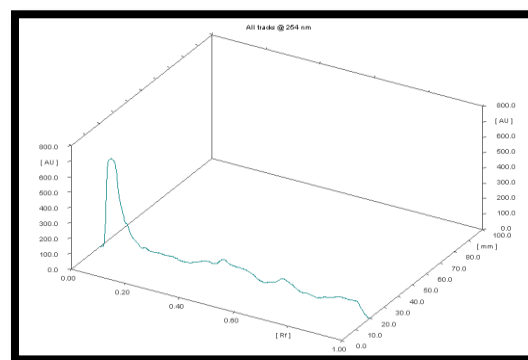
*Kapha-Pitta shamak*, *Kushthaghna*, *Varnya* drugs, acts according to their properties and act on skin, *Bhrajak pitta*<sup>10</sup> & *Rasavaha*, *Raktavaha Srotas*. Properties of drugs are opposite from *Samprapti ghataka* so it play an important role in *Samprapti bhanga* of *Twakvaivarnya*. The skin colour (complexion) mainly depends on *Bhrajak pitta* and *Avabhasini twacha*, *Mukhakantivardhaka lepa* bring back the balance of these factors and promote the fair complexion (*Varna*) of the skin. Pharmacologically drugs acts as astringent<sup>11</sup>, cooling<sup>12</sup>, disinfectant<sup>13</sup>, blood purifying agent<sup>14</sup>, antiseptic, analgesic, aromatic agent and also useful in burning sensation, skin disease and blood impurities. By virtue of *Rasa* it helps in removing *Agnimandya*, removes *Kleda*<sup>15</sup>. These may be attributed to free radical scavenging and antioxidant activity. *Kashaya* nature helps to equalize the vitiated *Doshas*, clear of unwanted metabolites (*Kledahara*) and *Sandhanakara*, *Madhura rasa* influences *Prasadana* (nourishing), improves strength and complexion. It also alleviates vitiated *Pitta* and *Vata*<sup>16</sup>. By virtue of *Sheeta veerya* alleviates *Daha* (burning sensation). By virtue of *Katu vipak* clear the unwanted metabolites (*Kledahara*), *Meda lekhan*<sup>17</sup>.

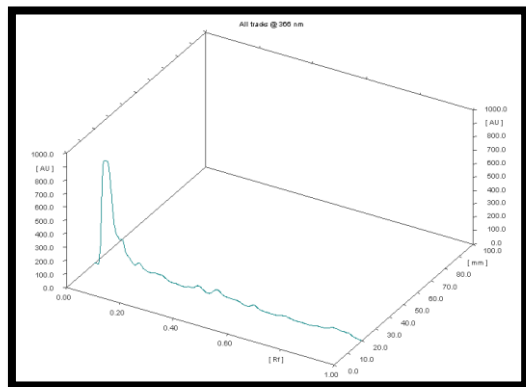
Thus the clinical manifestations of *Twakvaivarnya* which are mainly due to *Dosha* vitiation will be taken care by *Rasa* and *Dosha* alleviating properties of *Mukhakantivardhaka lepa*.

**Plate 2** HPTLC of *Mukhakantivardhaka lepa* at 254 and 366nm

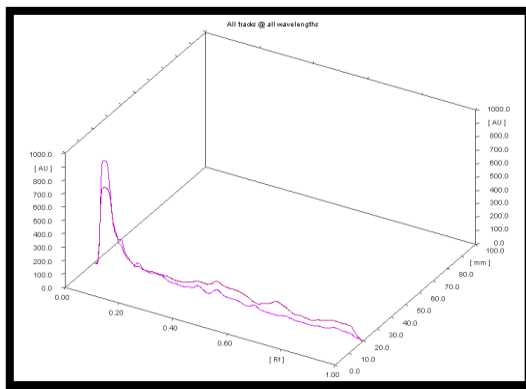


HPTLC 3-D graph of *Mukhakantivardhaka lepa* at 254 and 366nm





*Mukhakantivardhaka lepa* at 254 and 366nm



## CONCLUSION

Pharmacognostical findings confirmed that the ingredients of *Mukhakantivardhaka lepa* and that there is no major change in the microscopic structure of the drug during the pharmaceutical processes of preparation of *Lepa*. The drug assumed as effective on *Twakvaivarnya* and considered to have *Raktaprasadaka*, *Twakprasadaka*, *Kushthaghna* properties. Local administration of the drug containing *Tikta* (bitter), *Madhura*, *Kashaya rasa* predominant *Sheeta veerya*, *Katu vipaka*,

*Guru* and *Ruksha guna*. Specific *Vata-Pitta shamak*, *Kapha-Pitta shamak* can be assumed to have some effective role in *Varnaprasadana*.

The results of this study may be used as the reference standard in further research undertakings of its kind.



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