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ANALYTICAL STUDY OF MANDUKPARNI (CENTELLA ASIATICA LINN.) LEAVES.

Dr. Dipal Patel*[1] and Dr. Rekha Parmar[2]

[1]Research Scholar of Dravyaguna Department Parul Institute of Ayurveda Vadodara Gujarat.
[2]HOD Dravyaguna Dravyaguna Department Parul Institute of Ayurveda Vadodara Gujarat.

***Corresponding Author: Dr. Dipal Patel**

Research Scholar of Dravyaguna Department Parul Institute of Ayurveda Vadodara Gujarat.

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ABSTRACT

Ayurveda Acharyas have managed and cured physical as well as mental health related disorders when there was no other stream of medicine evolved. Ayurveda scholars from ancient times have invented and documented various medicinal herbs and their preparation and formulations to be used for the treatment. All *Samhita Granths, Chikitsa Granths* and *Nighantus* have quoted many such drugs with their specific uses and indications in particular diseases. *Mandukparni* is one such drug which has been quoted many times in ancient texts as well as in various *Nighantus* and then more research work was done regarding the medicinal properties of the plants in different ailments. The herb is indicated as *Medhya* and *Rasayana* primarily by nearly all Ayurvedic texts including Nighantus.[1] *Mandukparni* is named *Centella asiatica* in binomial system of nomenclature. Modern researches have also signified the use of this herb as a potent cognitive drug and having anti-oxidant properties. Alongside, the herb is indicated in many other diseases in ancient and modern texts. *Mandukparni* (*Centella asiatica* Linn.) is one of the best and commonly available herbs and can cultivate with less efforts. Hence, this Article is an attempt to show a analytical study of Mandukaparni leaves sample and to compare it with A.P.I.

KEYWORDS: *Mandukparni, Centella asiatica, Analytical Study.*

INTRODUCTION

Mandukparni is known as one of the most significant *Medhya* herbs described in *ayurvedic* treatises**.** There were controversies regarding the authentic identification of the plant but API has put on rest all controversies by establishing its authenticity and described *Mandukparni* as *Centella asiatica*. *Mandukparni* is described among four specific *medhya rasayana* by *acharya Charak* and following him, nearly all *ayurvedic* treatise have described *Mandukparni* as *medhya*. The plant is said to be *Rasayana* by *Samhita* and *Chikitsa granths*. Considering the above facts, the plant has been used in many formulations as both curative and preventive medicine. *Unmaad, Apasmar, Chittodvega* and *Chitbhram sannipatajwara* are among the disorders where the plant is used for its *Medhya* and *Rasayana* property. The drug has been used in many other disorders including *Kaas, Atisara, Grahani, Prameha, Arsh, Kamla, Pandu* etc. and also can use as vegetables.[2]

AIMS AND OBJECTIVES

- **Aim**: -To evaluate the different potential of *Centella asiatica* Linn.
- **Objective**: - To assess the result obtained scientifically and to compare with the A.P.I.

MATERIAL AND METHOD

Materials: Leaves of Mandukparni (*Centella asiatica* Linn.) has been used for this study.

Collection of samples

Place-A genuine fresh sample of *Centella asiatica* Linn. was collected from Botanical Garden of Parul Ayurveda University, Vadodara.

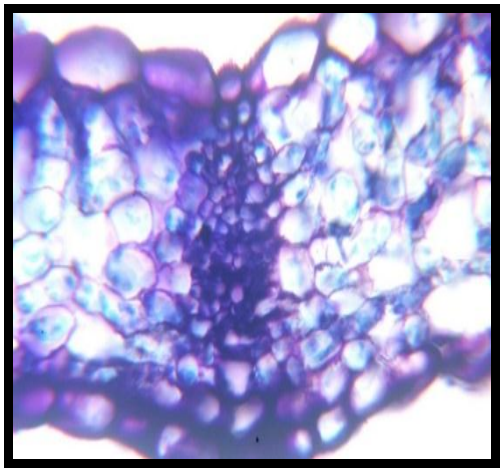
Plant life- As *Mandukparni* is a perineal herb, sample collection has been done when plantation attain the proper 6 months of growth.

Sample Size- Fresh leaves collected approximately 500 to 700 G.

Pharmacognostic study

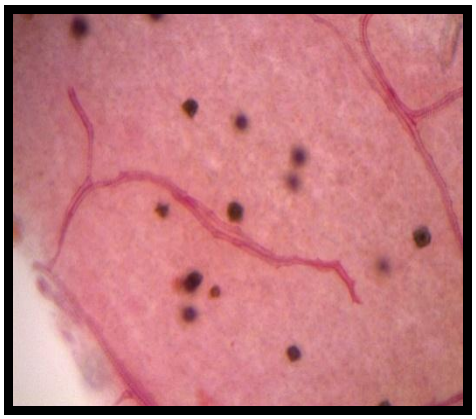
Macroscopic Study: Macroscopic characters of the leaves mean study of external morphology, its shape, size, colour, odour, taste eand texure were studied systematically as mentioned in the standards textbook of Botany and Pharmacognosy.

Microscopic Study: Drug sample have been carried out for three different analysis.

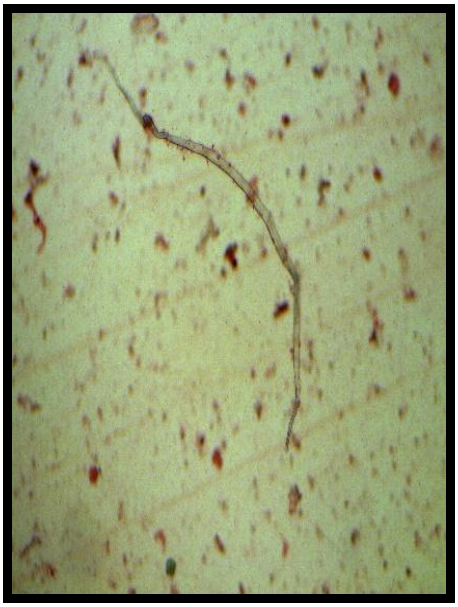


Leaf anatomy: Leaf samples, approximately measuring 1cm2 were cut and fixed in formalin (37 -40 %) glacial acetic acid. The fixed sample were dehydrated in paraffine wax-single staining with 5% Toluidine blue in 1% Borax were done for the serial sections obtained with the help of Rotary microtome. Section were microphotographed with the help of camera attached to Carl Zain's microscope at different magnification.

Leaf epidermal peel study: Fresh leaf samples were used to obtain epidermal peals. The leaf sample of 1 cm was cut from the middle portion of the lamina and boiled in 10 % KOH for few minutes. Both upper and lower epidermis were striped of gently from the mesophyll thrive with the help of pointed needles and forceps, the washed thoroughly in distilled water 2-3 times and stained in 5% aqueous safranin and mounted in 50% glycerin. photomicrography was taken using Carl Zain's microscope fitted with camera at different magnification.



Powder microscopy: Microscopic slides were prepared by soaking a pinch of powder of the samples in distilled water for half an hour and stained with .1% safranin for 2-3 minutes. Each slide was covered with cover slip, trapped slightly so that examined under microscope diagnostic features were photomicrograph with the help of camera fitted on Carl Zain's microscope. Above study was done under the observation In DR.Daniel's Laboratories at Manjalpur, Vadodara.



Analytical Study

Qualitative and Quantitative Test: Qualitative and quantitative test has been done for the sample as per standard method.

Hptlc Study

HPTLC study was done at Vasu Pharmaceuticals, Makarpura, Vadodara. -as per the standard procedure.

OBSERVATION AND RESULT

Table 1: Powder Microscopic evaluation.

Feature	Sample
Stomata	Present
Parenchyma	Present
Trichome	Present
Crystals	Present
vessel	Present

Table 2; Phyto Chemical analysis.

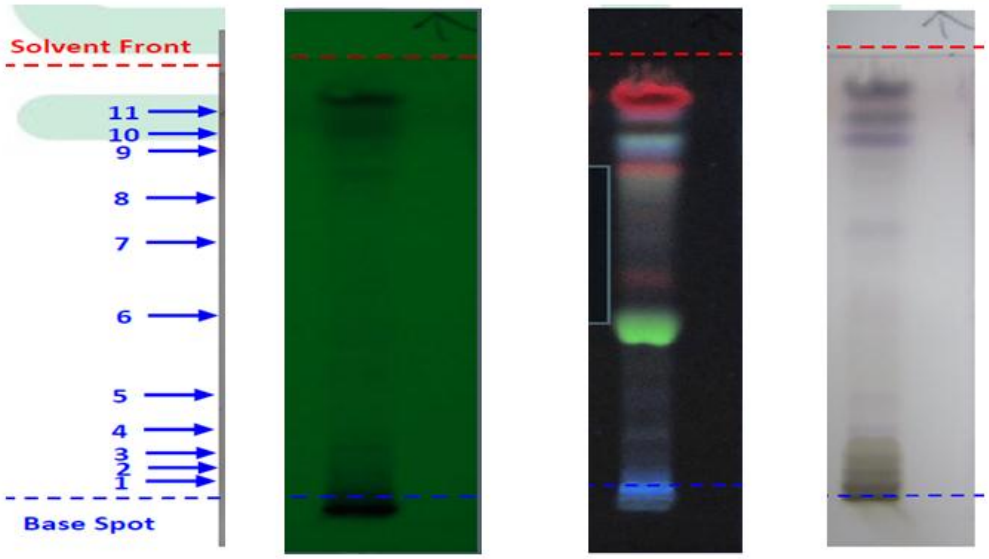
Sr. No.	Parameters	Reagents	Sample
1.	Alkaloid	Mayer's reagent	-
2.	Flavonoids	Shinoda's test	+
3.	Steroids	Salkowski reaction	-
4.	Triterpenoids		-
5.	Tannin	Ferric chloride reagent	++
6.	Saponin	Lead acetate test	_
7.	Carbohydrates	Molisch's test	+

Table 4; Qualitative test of Mandukparni leaves.

Sr. No.	Physico-chemical parameters	Sample	API
1.	Loss on Drying	8.58	---------
2.	Total Ash	9.91	Not more than 3%
3.	Acid insoluble Ash	0.64	Not more than 5%
4.	Water-soluble Extractive Value	35.58	Not more than 20%
5.	Alcohol-soluble extractive Value	29.36	Not more than 9 %
6.	Asssay of Titerpenoids	15.39	Saponin glycoside

Table 1: HPTLC Chromatogram @254nm, @366nm and @540 nm.

SR.NO.	@254 nm	@366nm	@540nm
1.	**-**	**0.04**	**0.03**
2.	**0.32**	**0.16**	**0.08**
3.	**0.38**	**0.26**	**-**
4.	**0.75**	**0.38**	**0.18**
5.	**0.85**	**0.51**	**0.24**
6	**0.91**	**-**	**0.42**
7.	**-**	**0.76**	**0.62**
8.	**-**	**0.79**	**-**
9.	**-**	**0.88**	**0.82**
10.	**-**	**0.92**	**0.87**
11.	**-**	**-**	**0.92**



@254nm **@366nm** **@540nm**

DISCUSSION ON OBSERVATION AND RESULT

Authentication

Authentication of the row drug was done by the Department of Botany, Faculty of Science, Maharaja Sayajirao University of Baroda, Vadodara, Gujarat.
The sample was compared with *Centella asiatica* Linn. Urb. (Compared with BARO 123450010899, 10902)

Organoleptic Parameters Leaves and powder were studied organoleptically, macroscopically and microscopically. Organoleptically, externally leave were smooth, green in color, Orbicular in shape. Leaves had an average of about 3.5cm and width of 1.5cm. While color of powder was light greenish yellow. Odor of leaves were faintly aromatic. Taste of sample and powder samples were *kashay*, *tikta*.

Microscopic study

Microscopic evaluation gives detailed of the drug and it can be used to identify by their known histological characters.

Physico-Chemical Parameters

The loss on drying indicates the water and moisture content in Samples. **Loss on drying**of sample is 8.58%

which value is not given inAPI. Ash value indicates the presence of inorganic constituents in the Sample. In the current study**, Total ash** of sample 9.91%w/w which values is lower than the API limit. **Acid insoluble ash** inorganic contain is 0.64%w/w, which is indicates that this sample was better and free from adulterated siliceous earth. **Water soluble and alcohol soluble extractives** Phyto chemicals were 35.58%w/w and 29.36%w/w respectively, which was proved by high values of water-soluble extractive and alcohol soluble extractives. The values were further supported by qualitative testing of active functions. In the present study, sample values match with the pharmacopeial limits which indicates that sample was better in quality. **Triterpenoids**- Amount of sapogenins were found to be 15.39%w/w.

Qualitative Tests

The qualitative test conducted by different reagent for flavonoids, Triterpenoids, Alkaloids, Saponin, Tannin and carbohydrates for sample. Flavonoids, Tannin and Carbohydrates were present in sample. Alkaloids, Steroids, Triterpenoids and saponin were negative with different reagents, in sample.

HPTLC fingerprint profile: for sample was compared by observing under Rf@254nm, Rf@366nm and under visible light after derivatization with anisaldehyde sulphuric acid reagent.Under Rf@ *254nm* sample showed bends at Rf 0.32,0.38,0.75,0.85,0.91 Uv@366nm sample showed bends at Rf- 0.04, 0.16,0.26,0.38,0.51,0.76,0.79,0.88,0.92. The bend at RF 0.88 showed very strong fluorescence which is even evident from the photograph of the plate.UV @ 540nm , bends at 0.03,0.08,0.18,0.24,0.42,0.62,0.82,0.87, 0.92. The Compounds which are not UV active such as steroids, saponins etc. are observed after derivatization. Based on observation of the plate, under @254 nm, and after derivatization it can be concluded that collection of *Centellaasiatica* Linn. leaves Sample is best based on number of phytochemicals observed on the plate.

CONCLUSION

So, It is concluded that *Mandukparni* (*Centella asiatica* Linn.) leaves taken out for the study and collected from the Boatnical Garden of Parul institute of Ayurveda, was more potent and found better and superior result due to presence of more active principle based on the Pharmacognostic and Phytochemical study. Based on the findings the study also proposes that better potency of drug.

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