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INGREDIENT IDENTIFICATION AND ANALYTICAL EVALUATION OF *MEDHYA CHURNA*: AN *AYURVEDIC* COMPOUND FORMULATION

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ABSTARCT

Cerebral palsy (CP), a static, non-progressive disorder caused by brain insult or injury in the prenatal, perinatal, and postnatal time period, is the major developmental disability affecting normally control motor functions and it has the potential to have an effect on the overall development of a child. *Medhya Churna* (MC) is an *anubhoot* yoga which is used in many deseases especially in Cerebral Palsy (CP) for many years in OPD of Kaumarbhritya department of IPGT & RA, Jamnagar. *Medhya Churna* contais *Brahmmi*, *Shankhpushpi*, *Yeshtimadhu*, *Guduchi*, *Pippali* and *Vacha*. The present study was carried out to standardize the finished product MC to confirm its identity, purity and quality. The presence of Epidermal cells, Colonchyma cells, Starch grains, Covering trichoma, Crystal fibers, Pitted vessels, Rhomboidal crystals, Olio resin etc were the characteristic features of observed in microscopy of drug. Physico chemical analysis shows water soluble extract is 14.2% w/w, methanol soluble extract is 9.32% w/w, ash value is 7.43% w/w and PH is 6.5. High Performance Thin Layer Chromatography (HPTLC) at 254 nm and 366 nm resulted into 4 & 3 spots respectively.

KEYWORDS: Medhya churna, Cerebral Palsy, Pharmacognocy, Pharmaceutics, HPTLC.

INTRODUCTION

Cerebral palsy (C.P.) is the second commonest cause for the disability in children, making them physically, mentally and socially handicapped. It is a term used to describe a problem with movement and posture that makes certain activities difficult. It is characterized

by the inability to normally control motor functions and it has the potential to have an effect on the overall development of a child by affecting the child's ability to explore, speak, learn, and become independent.[1] In Ayurveda classics there is no exact description of the disease entity which exactly matches the feature of CP. Few conditions and diseases that have some similarity in etiopathogenesis and clinical presentation. These include *Vyadhija fakka*[2], *Vatvyadhi*[3], *Nanatmaja vata vikara. "MEDHYA CHURNA"* is an *Anubhoot Yoga* used in the department of Kaumarbhritya since long in the management of Neuropsychiatric disorders. In the present work was carried out to standardize and evaluate the pharmacognostical as well as to analyze the physico-chemical properties of *Medhya Churna*.

AIM

To authenticate the *Medhya Churna* as per pharmacopeial (Ayurvedic Formulatory of India and Ayurvedic Pharmacopeia of India) method. To evaluate the quality of drug.

MATERIALS AND METHODS

Drug material

All the raw drugs except were obtained from Pharmacy of Gujarat Ayurved University, Jamnagar. The ingredients and the part used are given in **(Table 1)**.

Table 1: Ingredients of *Medhya Churna*

Ingredients	*Botanical Name*	Part Used	Ratio
Bramhi	*Bacopa moneri* Linn	*Shuska Panchanga*	1 part
Vacha	*Acorus calamus* Linn	*Mula*	1/4 part
Shankhpushpi	*Convolvus pluricaulis* Chois	*Shuska Panchanga*	1 part
Yashtimadhu	*Glycirhiza glabra* Linn	*Shuska Kanda*	1 part
Guduchi	*Tinospora cordifolia* Willd.	*Shuska Kanda*	1 part
Pippali	*Piper longum* Linn	*Shuska Phala*	1/4 part

Organoleptic Evaluation

Various parameters of the material such as colour, odour, touch and taste of the *Medhya Churna* were observed and recorded.[4] **[Table 2].**

Table 2: Organoleptic characters of *Medhya Churna*

No.	Organoleptic Characters	Results
1	Colour	Greenish ash
2	Taste	Sweet bitter
3	Odour	Slightly aromatic
4	Touch	Smooth
5	Appearance	Powder

Microscopic Evaluation

Microscopic examination of material powder was carried out with and without staining, by powder microscopy to determine the chemical nature and microphotographs were taken using Carl Zeiss binocular microscope.[5]

Physico-chemical Analysis

Physico-chemical analyses were carried out by following the parameters. Physico‑chemical analysis like loss on drying at 110°C[6], pH value[7], ash value[8], water soluble extractive[9], methanol soluble extractive[10] were recorded.

Preliminary Phytochemical Investigation

Preliminary phytochemical investigations are carried out by following standard procedure of API.[11]

High Performance Thin Layer Chromatography

HPTLC was performed as per the guidelines provided by API.[12] A CAMAG (Switzerland) HPTLC system equipped with a sample applicator Linomat V was used for application of samples. Methanol extract of *Medhya Churna* was used for spotting. Toluene: Ethyl acetate: Acetic acid (7:2:1 v/v) was selected as solvent system. CAMAG TLC Scanner 3, Reprostar and Wincats 1.3.4 were used for scanning the plates. CAMAG twin trough glass chamber was used for developing the plates. The developed plate was visualized under visible day light, short UV (254 nm), long UV (366 nm) and after spraying with vanillin‑sulphuric acid reagent and again observed in daylight. The Reference values were recorded.

Instrumental Conditions

Application mode: Camag Linomat V, development chamber: Camag twin trough chamber, plate: Pre coated Silica Gel GF 254 plate, chamber saturation: 30 min, development time: 30 min, development distance: 10 cm, scanner: Camag scanner III**,** detection: Deuterium lamp and mercury lamp, data System: Win CATS software.

OBSERVATIONS AND RESULTS

Pharmacognostic Study: The powder microscopy of ***Medhya Churna*** confirmed the features of border pitted vessels of *Guduchi*, collenchyma of *Guduchi*, Lignified collenchyma cells of *Guduchi*, cork cell in surface view of *Guduchi*, simple and compound starch grain of *Guduchi*, pitted vessels of *Yashtimadhu*, Lignified fibres of *Yashtimadhu*, fragment of crystal

fibre of *Yashtimadhu*, prismatic crystal of *Yashtimadhu*, Cork in surface view of *Pippali*, fragment of border pitted vessel of *Pippali*, silica deposition *of pipplli*, compound starch grains of *pippali*, epidermal cells of *Shankhapushpi*, trichoma of *Shankhapushpi*, bloched trichoms of *Shankhapushpi*, fragments of epidermis of *Bramhi*, fibers of *Bramhi*, parenchymal cells with olieoresin of *Vacha*, starch grains of *Vacha*, and scalary form vessels of *Vacha* which are depicted in **[Table 3] [Fig 1].**

Table 3: Microscopic characters of *Medhya Churna*

NO.	Name of Drug	Characters found
1	*Guduchi*	Boarer pitted vessels, *boarder pitted vessels*, colonchyma cells, cork cells, lignified colonchyma cells, starch grains
2	*Pippali*	compund starch grains, pitted vessels, rhomboidal crystal, silica deposition
3	*Yashtimadhu*	crystal fiber, fibers, pitted vessels
4	*Shankhapushpi*	covering trichoma, trichoma
5	*Bramhi*	epidermal cells, fibers
6	*Vacha*	olio resin, starch grains, secalari form vessels

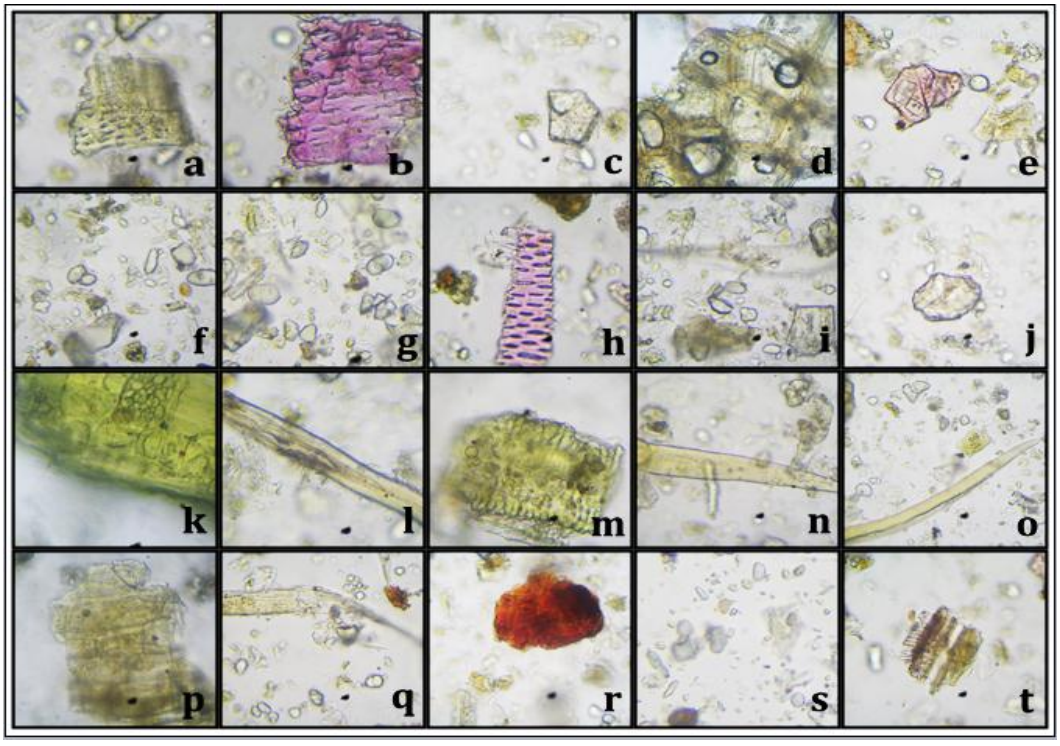

Figure 1: Microscopic characters of *Medhya Churna*

(a)Boarer pitted vessels of *Guduchi (b) boarder pitted vessels of Guduchi (c)* colonchyma cells of Guduchi (d) cork cells of Guduchi (e) lignified colonchyma cells of Guduchi (f) starch grains of Guduchi (g) compund starch grains of pippali (h) pitted vessels of pippali (i) rhomboidal crystal of pippali (j) silica deposition of pippali (k) crystal fiber of yeshtimadhu

(l) fibers of yeshtimadhu (m) pitted vessels of yeshtimadhu (n) covering trichoma of Shankhpushpi (o) trichoma of Shankhpushpi (p) epidermal cells of Brahmi (q) fibers of Brahmi (r) olio resin of vacha (s) starch grains of vacha (t) secalari form vessels of vacha

Analytical Study

Results of the analytical study of *Medhya Churna* are as follows.

Physico-chemical Constants

The results are depicted in **[Table 4].**

Table 4: Physico-chemical Constants of *Medhya Churna*

Sr.no.	Test	Result
1.	Loss on Drying(110 C)	5.05 % w/w
2.	Ash Value	7.43 % w/w
3.	Water Soluble Extract	14.2% w/w
4.	Methanol Soluble Extract	9.32% w/w
5.	pH (5% Aqua solution)	6.5

High Performance Thin Layer Chromatography (HPTLC)

In HPTLC, in short UV-254 nm, maximum 4 spots were observed in *Medhya Churna*. Similarly in long UV-366nm, maximum 3 spots were observed also **[Table 5] [Fig 2].**

Table 5: Chromatographic results of *Medhya Churna*

Conditions	Rf values
Short ultra violet (254 nm)	0.02, 0.30, 0.64, 0.86
Long ultra violet (366 nm)	0.02, 0.19, 0.91

Nature of adsorbed components, if with different polarity, formerly total number of components and respective Reference values also differs. In short, nature of different matrix modulates both the studied parameters.

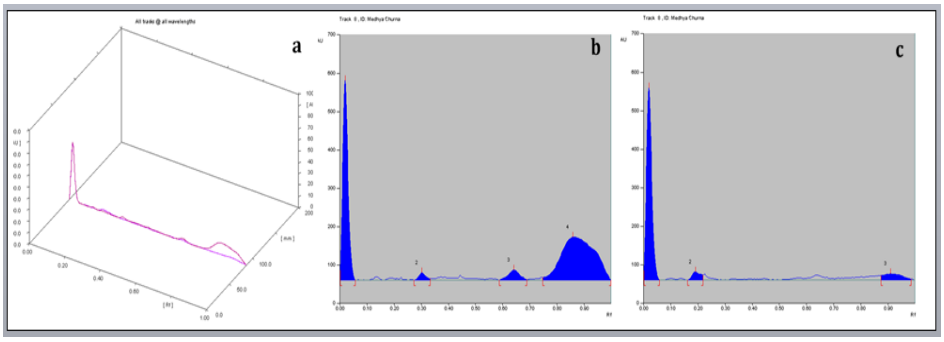

Figure 2: HPTLC evaluation of *Medhya Churna*

(a) 3D Graph: 254nm & 366nm of *Medhya Churna*, (b) Chromatographic results (Peak display) of *Medhya Churna* at Short ultra violet (254 nm), (c) Chromatographic results (Peak display) of *Medhya Churna* Long ultra violet (366 nm).

DISCUSSION AND CONCLUSION

Results obtained in physicochemical parameters of *Medhya Churna* are within limit mentioned by Ayurvedic Pharmacopoeia of India. HPTLC profile of *Medhya Churna* showed similar in number of spots. This profile can be used for the identification of the medicinally important formulation of *Medhya Churna*. Present work can be considered as the first step towards identifying the followed methods through HPTLC analysis. This is a preliminary analysis and meticulous nature along with the depiction is to be carried‑out.

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