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PHARMACOGNOSTICAL AND PHARMACEUTICAL STUDY OF MEDHYACHURNA–A POLY-HERBAL FORMULATION

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ABSTARCT

Cerebral palsy is the second commonest cause for the disability in children, making them physically, mentally and socially handicapped. 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. *Medhya Churna* (MC) is an *Anubhoot* yoga which is used in many diseases especially in Cerebral Palsy. Till date no information regarding scientific evaluation on *Medya churna*. So 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 trichome, Crystal fibers, Pitted vessels, Rhomboidal crystals etc were the characteristic features of observed in microscopy of drug. Physicochemical analysis shows loss on drying 13.05% w/w, water soluble extract is 16.8% w/w and PH is 6.5. High Performance Thin Layer Chromatography (HPTLC) showed 11 spots at 254 and 12 spots at 366 nm. This shows the presence of certain definite constituents in the Churna and is helpful for the easy separation of these constituents.

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

INTRODUCTION

Cerebral palsy is the second commonest cause for the disability in children, making them physically, mentally and socially handicapped. Cerebral palsy (CP) is not a specific disease but it is a symptom complex. It is an umbrella term encompassing a group of non progressive, non contagious condition that causes motor impairment syndrome characterized by

abnormalities of movement, posture and tone.[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 time in the management of Neuropsychiatric disorders. In the present,till date no information regarding scientific evaluation on *Medya churna*. So work was carried out to evaluate the pharmacognostical as well as to analyze the physico-chemical properties of *Medhya Churna*.

MATERIALS AND METHODS

Collection of the Drug

Raw drugs of *Medhya Churna* were procured from Jamnagar and were Identified and Authenticated at Pharmacognosy laboratory.

Preparation of *Medhya churna*

Medhya Churna was prepared as per classical method. All ingredients were taken in prescribed ratio (Table 1). Powdered and stored in airtight glass jars under hygienic conditions. 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 *MedhyaChurna* were observed and recorded.[4]

Pharmacognostical Evaluation

As per Ayurvedic Pharmacopeia of India, 6 raw drugs were identified and authenticated by the Pharmacognosy Lab. The identification was carried out based on the organoleptic features and powder microscopy of the individual drugs.

Later, pharmacognostical evaluation of *Medhya churna* was carried out. *Medhya Churna* dissolved in small quantity of distilled water, studied under the Carl zeiss trinocular microscope attached with camera, with stain and without stain. The microphotographs were also taken under the 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 *MedhyaChurna* was used for spotting. Toluene: Ethyl acetate (9:1 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

Organoleptic Evaluation

Various parameters of the material such as colour, odour, touch and taste of the *Medhya Churna* were observed and recorded**[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 study

The powder microscopy of ***Medhya Churna*** confirmed the features of border pitted vessels of *Guduchi*, collenchyma 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*, rhomboidal crystal of *Yashtimadhu*, oleioresin of *pippali*, covering trachoma of *Shankhapushpi*, fragments of epidermis of *Bramhi*, Pollen grains and wavy parenchyma cells of *Bramhi*, olieoresin of *Vacha*, parenchymal cells with starch grains of *Vacha* and scalary form vessels of *Vacha* which are depicted in **[Fig 1].**

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)	13.05 % w/w
2.	Ash Value	14.22 % w/w
3.	Water Soluble Extract	16.08% w/w
4.	Methanol Soluble Extract	10% w/w
5.	pH (5% Aqua solution)	6.5

High Performance Thin Layer Chromatography (HPTLC)

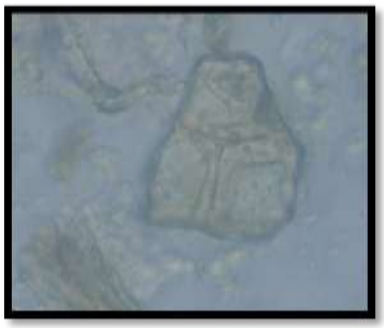
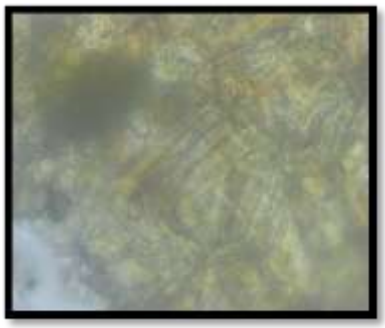
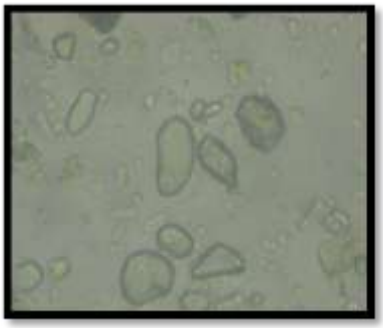
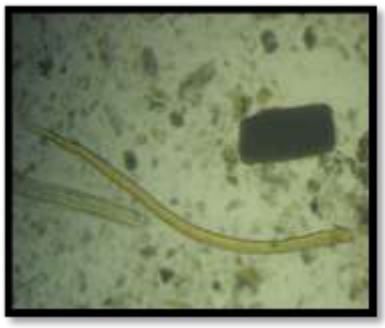
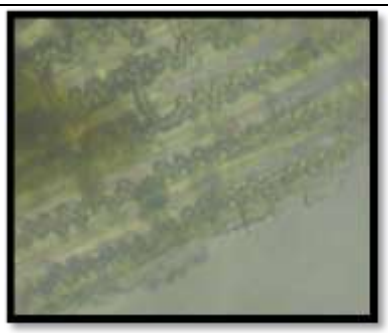
In HPTLC, in short UV-254 nm, maximum 11 spots were observed in *Medhya Churna*. Similarly in long UV-366nm, maximum 12 spots were observed also **[Table 5] [Fig 2].**

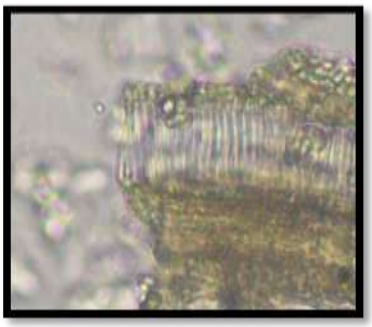
Table 5: Chromatographic results of *Medhya Churna*

Conditions	Rf values
Short ultra violet (254 nm)	0.03,0.13,0.21,0.25,0.37,0.45,0.56,0.68,0.73,0.87,0.94
Long ultra violet (366 nm)	0.03,0.09,0.15,0.21,0.25,0.38,0.50,0.56,0.76,0.84,0.87,0.94

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 1: Microscopic characters of *Medhya Churna*

 *Border pitted vessels of Guduchi*	 Coloenchyma cells of *Guduchi*	 Cork cells of *Guduchi*
 Starch grain of *Guduchi*	 Oleioresin of *Pippali*	 Crystal fibers of *Yashtimadhu*
 Cork cells of *Yashtimadhu*	 Pitted vessels of *Yashtimadhu*	 Covering trichome of *Shankhpushpi*
 wavy parenchyma cells of *Brahmi*	 epidermal cells of *Brahmi*	 Pollen grain of *Brahmi*

		
Oleoresin of *Vacha*	Parenchyma cells with starch grains of *Vacha*	Scaleryform vessels of *vacha*

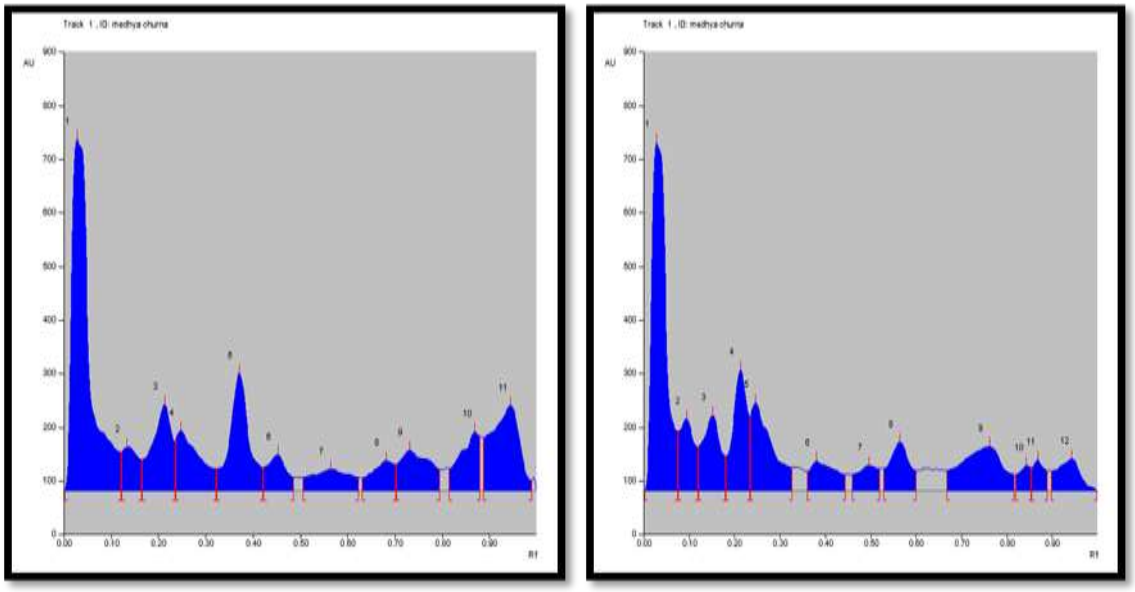


Figure 2: HPTLC evaluation of *Medhya Churna*

Medhya Churna, (a) Chromatographic results (Peak display) of *Medhya Churna* at Short ultra violet (254 nm), (b) Chromatographic results (Peak display) of *Medhya Churna* at 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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