



Original Article

Pharmacognostical and Phytochemical Evaluation of *Panchendriya vivardhna Taila* - Polyherbal Formulation

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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 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. *Panchendriyavivardhna Taila* is an ayurvedic poly herbal formulation used for *Nasya* described by *Acharya Kashyapa* to improving power of all *Panchendriya*. The present work was carried out to standardize the finished product "*Panchendriyavivardhna Taila*" to confirm its identity, quality and purity. Pharmacognostical and phytochemical observations revealed the specific characters of all active constituents used in the preparation. The pharmacognostical study reveals the presence of Lignified parenchymal cells, Epicarp cells, Epidermal cells, Prismatic crystals, Border pitted vessels, Prismatic crystal, Scleroids, Stone cells etc. Pharmaceutical analysis showed that the Specific gravity was 0.9182, Refractive index was 1.4810, Iodine value was 118, Saponification value was 188.001 and Acid value was 4.114. HPTLC finger printing profile of *Panchendriyavivardhna Taila* revealed 13 spots at 254nm, 9 spots on 366nm.

Keywords: *Panchendriyavivardhna Taila*, Cerebral Palsy, Pharmacognocny, Pharmaceutics, HPTLC.

1. 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

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affecting the child's ability to explore, speak, learn, and become independent¹. 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*.

In this context Acharya Kashyapa described *Panchendriyavivardhna Taila* in *Shatkpladhaya*. It is also known as *Panchbhoutika Taila* having the properties of improving power of all *Panchendriyas*⁴. As in Cerebral Palsy motor functions were hampered that's why this *Taila* was used for *Pratimarsha Nasya*. For the first time the research work carried out for its authentication the *Panchendriyavivardhna Taila* as per pharmacopeial (Ayurvedic Formulary of India and Ayurvedic Pharmacopeia of India) method and to evaluate the quality of drug.

2. MATERIALS AND METHODS

Drug material:

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

Table 1: Ingredients of *Panchendriyavivardhna Taila*⁵

Content	Botanical name	Part used	Ratio
<i>Jivaka</i>	<i>Leptidinia reticulata</i> W&R	Root	1 part
<i>Rishabhaka</i>	<i>Melaxis mucifera</i>	Root	1 part
<i>Draksha</i>	<i>Vitis vinifera</i> Linn.	Fruit	1 part
<i>Madhuka</i>	<i>Glycrrhiza glabra</i> Linn.	Root	1 part
<i>Pippali</i>	<i>Piper longum</i> Linn.	Fruit	1 part
<i>Bala</i>	<i>Sida cordifolia</i> Linn.	Root	1 part
<i>Prapaundarika</i>	<i>Nelumbo nucifera</i> Gaeris.	Whole part	1 part
<i>Brihati</i>	<i>Solanum indicum</i> Linn.	Root	1 part
<i>Manjishtha</i>	<i>Rubia cordifolia</i> Linn.	Root	1 part
<i>Twaka</i>	<i>Cinnamomum zeylanicum</i> Breyn.	Bark	1 part
<i>Punarnava</i>	<i>Boerhavia diffusa</i> Linn.	Whole part	1 part
<i>Anshumati</i>	<i>Desmodium gengeticum</i> DC	Whole part	1 part
<i>Meda</i>	<i>Poligonatum multiflorus</i>		1 part
<i>Vidanga</i>	<i>Embelica ribes</i> Burm.f.	Fruit	1 part
<i>Sendhava</i>	Rock salt		1 part
<i>Neel kamal</i>	<i>Nymphaea stellate</i>	Whole part	1 part
<i>Swadanshatra</i>	<i>Tribulus terrastris</i> Linn.	Fruit	1 part
<i>Rasna</i>	<i>Pluchea lanceolata</i> C.B.clarke	Bark	1 part
<i>Nidigdhika</i>	<i>Solanum surratensa</i> Burm.f.	Whole part	1 part
<i>Til oil</i>	<i>Sesamum indicum</i> Linn.		4 part
<i>Godugdha</i>			16 part
<i>Sharkara</i>	Sugar		1 part

❖ *Jivaka*, *Rishabhaka*, *Meda* are not available in present era, so their substitutes were used as given below:

Main Drug	Substitute	Botanical name of substitute drug
<i>Jivaka</i>	<i>Vidarikanda</i>	<i>Puararia tuberosa</i> DC
<i>Rishabhaka</i>	<i>Vidarikanda</i>	<i>Puararia tuberosa</i> DC
<i>Meda</i>	<i>Shatavari</i>	<i>Asparagus recemosus</i> Willd

Method of preparation of *Panchendriyavivardhna Taila*:

As per told by Acharya Kashyapa

Tila Taila:- 800ml

Go-dugdha:- 3200ml

Kalka:- 200gm 10 gm of each *Dravyas*.

Preparation of Taila

Tila Taila in amount of 800ml, 200gm *Drayas* for *Kalka* and 3.2 liters of *Godugdha* were used in the preparation of *Taila Paka*. *Kalka*, *Taila* and *Dugdha* will be mixed together for *Snehapaka*. All examinations for *Snehapaka* will be done.

Organoleptic Evaluation

The Organoleptic characters of Ayurvedic drugs are very important and give the general idea regarding the genuinity of the sample. It is done with the help of *Panchagyanendriya Pariksha*. Following characters of the sample are to be noted:

- Texture (*Sparsha*)
- Colour (*Rupa*)
- Taste (*Rasa*)
- Odour (*Gandha*)

Table 2: Organoleptic characters of *Panchendriyavivardhna Taila*

Properties	Observation
<i>Rupa</i> (Colour)	Yellow
<i>Gandha</i> (Odour)	Characteristic
<i>Rasa</i> (Taste)	Astringent
<i>Sparsha</i> (Touch)	Smooth

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.⁶

Physico-chemical Analysis

Physico-chemical analysis was carried out by following the parameters. Physico-chemical analysis like loss on drying at 110°C⁷, pH value⁸, ash value⁹, water soluble extractive¹⁰, methanol soluble extractive¹¹ were recorded.

Preliminary Phytochemical Investigation

Preliminary phytochemical investigations are carried out by following standard procedure of API¹².

High Performance Thin Layer Chromatography

HPTLC was performed as per the guidelines provided by API¹³. First of all take a drop of sample and diluted with hexane (as per require) then application of the sample at the one end of the precoated plate through linomat V (150µl/sec) then on the sample zone again applied 7% alcoholic KOH

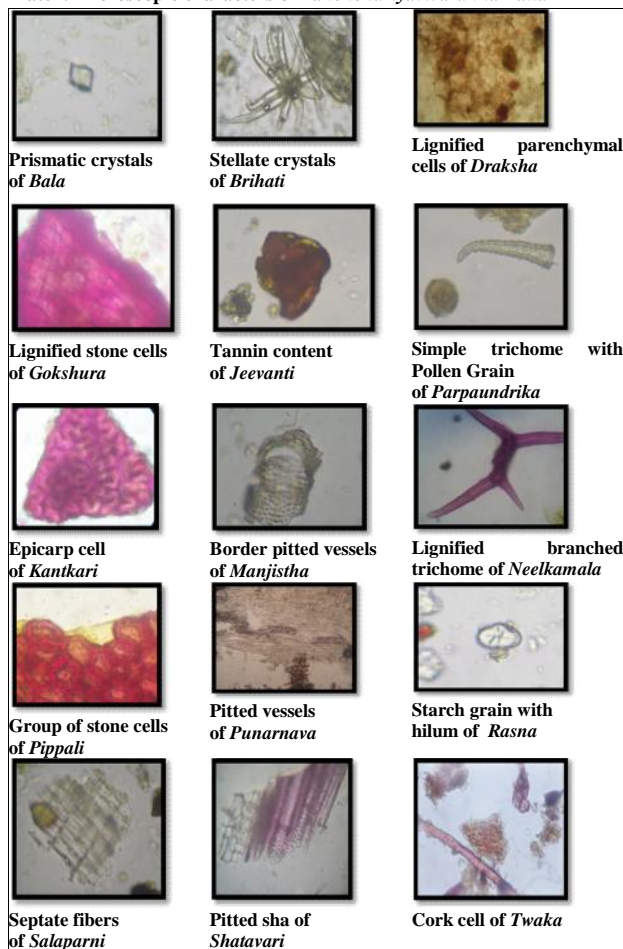
then leave for 10-15 minutes at 60-80°C in oven. The plate is then developed by the suitable mobile phase in a chromatographic chamber which was previously saturated with the mobile phase. Then after development it is visualized into day light, short UV (254nm) and/or by derivatiza reagent. The R_f value and the colors of resolved bands and finger printing profiles are recorded

3. OBSERVATIONS AND RESULTS

Pharmacognostic Study:

The powder (*Kwatha churna*) microscopy of *Panchendriyavivardhna Taila* confirmed the features of Prismatic crystals of *Bala*, Stellate crystals of *Brihati*, Lignified parenchyma cells of *Draksha*, Lignified stone cells of *Gokshura*, Tannin content of *Jeevanti*, Simple trichome with Pollen Grain of *Parpaundrika*, Epicarp cell of *Kantkari*, Border pitted vessels of *Manjistha*, Lignified branched trichome of *Neelkamala*, Group of stone cells of *Pippali*, Pitted vessels of *Punarnava*, Starch grain with hilum of *Rasna*, Septate fibers of *Salaparni*, Pitted sha of *Shatavari*, Cork cell of *Twaka*, Spool cell of *Vidanga*, Starch grain of *Vidari*, Scleroids of *Yashtimadhu* which are depicted in [Plate 1].

Plate1: Microscopic characters of *Panchendriyavivardhna Taila*



Physicochemical Tests:

The results are depicted in [Table 3]

Table 3: Physico-chemical Constants of *Panchendriyavivardhna Taila*

Sr.no.	Test	Result
1.	Loss on Drying	0.000%
2.	Acid Value	4.114
3.	Saponification Value	188.001
4.	Iodine Value	118
5.	Specific Gravity	.9182
6.	Methanol Soluble Extract	9.32% w/w

High Performance Thin Layer Chromatography (HPTLC)

In HPTLC, in short UV-254 nm, maximum 13 spots were observed in *Panchendriyavivardhna Taila*. Similarly in long UV-366nm, maximum 9 spots were observed also [Table 4] [Fig 2].

Table 4: Chromatographic results of *Panchendriyavivardhna Taila*

Conditions	Rf values
Short ultra violet (254 nm)	0.03,0.01,0.11,0.08,0.14,0.21,0.39,0.52,0.59,0.72,0.84,0.86,0.91
Long ultra violet (366 nm)	0.01, 0.04,0.08,0.11,0.39,0.52,0.59,0.73,0.91

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.

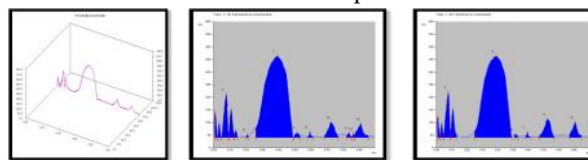


Fig 2: HPTLC evaluation of *Panchendriyavivardhna Taila*

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

4. DISCUSSION AND CONCLUSION

Results obtained in physicochemical parameters of *Panchendriyavivardhna Taila* are within limit mentioned by Ayurvedic Pharmacopoeia of India. HPTLC profile of *Panchendriyavivardhna Taila* showed similar in number of spots. This profile can be used for the identification of the medicinally important formulation of *Panchendriyavivardhna Taila*. Present work can be considered as the first step towards identifying the followed

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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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