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**PHYSICOCHEMICAL, PHARMACOGNOSTICAL AND PHYTOCHEMICAL
EVALUATION OF SARASWATA CHURNA FOR CHILDREN SUFFERING
FROM BALBUDDHIMANDYA TO MENTAL RETARDATION**

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ABSTRACT

Balbuddhimandya or mental retardation is one of them which cover a group of mental diseases. In other words, *Buddhimandya* is responsible to generate various mental disorders. In *Ayurvedic* classics, 'Mentally retarded children' have been described as '*Balbuddhimandya*' by *Acharya*. Saraswata churna is improved *Buddhi* (higher mental functions), *Medha* (intellect), *dhriti* (control over mind), *Smriti* (memory power) and *Kavita Shakti* (poetic talent). In the present study phytochemical analysis has been done. The study is an attempt to evaluate the organoleptic characters, powder drug analysis, physicochemical parameters, and phytochemical evaluation as per the *Ayurvedic Pharmacopoeia of India* and *WHO* guidelines for ensuring the identity, potency, purity, safety, and efficacy of the *Saraswata Churna*. *Saraswata churna* stands with the total ash content 13.3%, alcohol insoluble ash 13.25%, water-soluble extractives 16.5% which suggests it is easily soluble in water. The qualitative analysis revealed the occurrence of carbohydrate, glycoside, tannin, alkaloid, Protein, saponin, etc.

Keywords: - Balbuddhimandya, Saraswata churna, Physicochemical, evaluation

INTRODUCTION

Children are the pillars of the nation. A healthy child can make a healthy nation but inspire several scientific efforts the morbidity and mortality rate in children is gradually increasing.

Several pediatric diseases are there which are still incurable and some of them make children physically as well as mentally handicapped. *Balbuddhimandya* or mental retardation is one of them which cover a group of mental diseases. In other words, *Buddhimandya* is responsible to generate various mental disorders. In *Ayurvedic* classics, 'Mentally retarded children' have been described as '*Balbuddhimandya*' by *Acharya*.^[1] The references like *Jada* (inert), *Mudha* (dull), *Nirbuddhi*, *Abuddha*, etc. are found in a different context, meaning intellectually impaired persons.^[2] Mental Retardation (MR) refers to significantly subaverage general intellectual functioning resulting in or associated with concurrent impairment in adaptive behavior and manifested during the development period. Mental retardation (MR) is formally diagnosed by an assessment of intelligent quotient (IQ) below 70 and adaptive behavior.^[3]

A fundamental approach of Ayurveda to treat mental illness is to enhance *dhi*, *dhriti*, and *smriti* which ultimately enhance the mental co-ordination. *Balbuddhimandya* is a disease which belongs to '*Manovahastrotas*. Ayurvedic philosophy deals with Manna as a supreme of Indriyas coordinating its specific role with Indriyas from time to time as per various necessities^[4], e.g. physical, mental, psychological, physiological, emotional, spiritual, etc.

Saraswata churna is mentioned in the Bhaishajya Ratnavali text in 'Unmada Chikitsa. The churn helps manage psychotic disorders like Unmada. Regular consumption of Saraswata churna improves *Buddhi* (higher mental functions), *Medha* (intellect), *dhriti* (control over mind), *Smriti* (memory power) and *Kavita Shakti* (poetic talent)^[5]. Even though it is the most commonly used formulation in Ayurvedic practice, till date limited works have been conducted on Saraswata churna regarding its standardization.

According to Bhaishajaya Ratnavali, Saraswata Churna is composed of ten herbs, but there is not even a single standard mentioned for ensuring the identity, potency, purity, safety, and efficacy of the Saraswata Churna. The majority of Ayurvedic formulations use whole plants either alone or in combinations therefore the efficacy of the Ayurvedic formulation may vary with the use of the adulterants in the formulations. It is therefore important to establish

characteristics of the raw material and finished Ayurvedic products with the help of physical and chemical methods. Now a day, the majority of the world population is turning toward the alternative system of medicine because of complexity and associated adverse effects with the usage of allopathic medicines. The paper deals with the formulation and quality control evaluation of the important Ayurvedic formulation. The study is an attempt to evaluate the organoleptic characters, powder drug analysis, physicochemical parameters, and phytochemical evaluation as per the Ayurvedic Pharmacopoeia of India and WHO guidelines for ensuring the identity, potency, purity, safety, and efficacy of the Saraswata Churna. After an extensive literature search, it was found to the best of our knowledge that this is the first report revealing the formulation and evaluation of this important Ayurvedic preparation.

All the study was done as per WHO guidelines and Ayurvedic Pharmacopoeia of India.^[6]

MATERIAL AND METHOD:

Saraswata Churna, a polyherbal Ayurvedic formulation, consists of parts of different species viz Kushta (*Saussurea lappa*), Ashwagandha (*Withania somnifera*), Saindhava lavana (Rock salt), Ajamoda (*Apium graveolens*), Sweta jeeraka (*Cuminum cyminum*), Krishna jeeraka (*Carum carvi*), Shunthi (*Zingiber officinale*), Maricha (*Piper nigrum*), Pippali (Piper longum), Patha (*Cissampelos pareira*), Shankhapushpi (*Convolvulus pluricaulis*), Vacha (*Acorus calamus*) and Brahmi (*Bacopa monnieri*) swarasa (juice) for Bhavana (trituration).

1. Organoleptic tests: Organoleptic tests of Sarasvat Churna are carried out with the parameters like –Colour, Odour, Surface, Size, Shape, Texture and Taste, etc.^[7]

2. Physico Chemical Study^[8]:

Physico-chemical studies like total ash, water-soluble ash, acid insoluble ash, water, and alcohol soluble extract, loss on drying at 105°C were carried out as per WHO guidelines.^[8]

a.Total ash: Place about 2-4 g of grounded material (as mentioned in the monograph of the drug) in the crucible and ignited it until it is white.

b. Determination of alcohol-soluble extractive: 5 g of the air-dried drug, coarsely powdered drug need to be macerated with 100 ml of ethanol of specified strength in a closed

flask for 24 hrs, shaking frequently during the first 6 hours and allowing standing for 18 hrs. Filter and evaporates 25 ml of the filtrate to dryness at 105⁰C and weighed.

c. Determination of water-soluble extractive: 5 g of the air-dried drug, coarsely powdered drug need to be macerated with 100 ml of water close flask for 24 hrs, shaking frequently during the first 6 hrs and allowing standing for 18 hrs. Filter and evaporates 25 ml of the filtrate to dryness at 105⁰C and weighed.

d. Loss on drying: Required quantity of sample taken as mentioned in the monograph of drug and dried in a hot air oven at 105⁰C to a constant weighed. The difference in weight indicates the moisture content of drug⁵.

3. Qualitative Analysis: Qualitative analysis reveals the constituents, functional groups of the substance of churna.

4. Powder Microscopic Evaluation. The sample was kept on a slide and studied under a microscope using distilled water. The samples were additionally examined after staining with different appropriate reagents, i.e., phloroglucinol (20 mg/ml of alcohol) together with hydrochloric acid (6 N), ferric chloride (5% w/v in 90% alcohol), and iodine solution (2 g iodine and 3 g potassium iodide in 100 ml water) under compound microscope.

5. Chromatography: Thin layer chromatography [TLC] of powder of combination i.e. *Saraswata Churna* is carried out.

RESULTS AND DISCUSSION

Table No. 1: Organoleptic study of *Saraswata Churna*

Sr. No	Test	Result
1.	Color	Green
2.	Odor	Specific
3.	Taste	Bitter
4.	pH	6.05

Table No. 2: Physicochemical Analysis of *Saraswata Churna*

Sr. No.	Test	Result
1.	Loss on Drying	4% w/w
2.	Total Ash Content	13.3% w/w
3.	Alcohol Soluble Extract	13.25%
4.	Water Soluble Extract	16.5%

Table No. 3: Qualitative analysis of *Saraswata Churna* [Water soluble extractive]

Sr. No.	Qualitative Test	Results
1.	Alkaloid	Positive
2.	Sterols	Negative
3.	Flavonoids	Negative
4.	Tannins	Positive
5.	Carbohydrates	Positive
6.	Amino acids	Positive
7.	Protein	Positive
8.	Saponin	Positive
9.	Cardiac glycoside	Positive

Table No. 4: Macroscopic characters of contents of *Saraswata Churna*

Character	Part of Plant	Ingredient
Parenchymatous cell	Root / Rhizome	Kushta, Marich, Shankapushpi, Vacha, Sunti
Tracheids and Vessels with medullary rays	Root/ Rhizome	Kushta, Marich, Shankapushpi, Vacha, Sunti
Xylem fibers	Root/ Rhizome	Kushta, Marich, Shankapushpi, Vacha, Sunti
Epidermis cells	Leaf	Shankapushpi, Brahmi
Xylem vessels	Leaf	Shankapushpi, Brahmi
Vascular bundle	Fruit	Jiraka, Ajamoda, pipali.
Chloride crystal	---	Saindhava (Rock Salt)

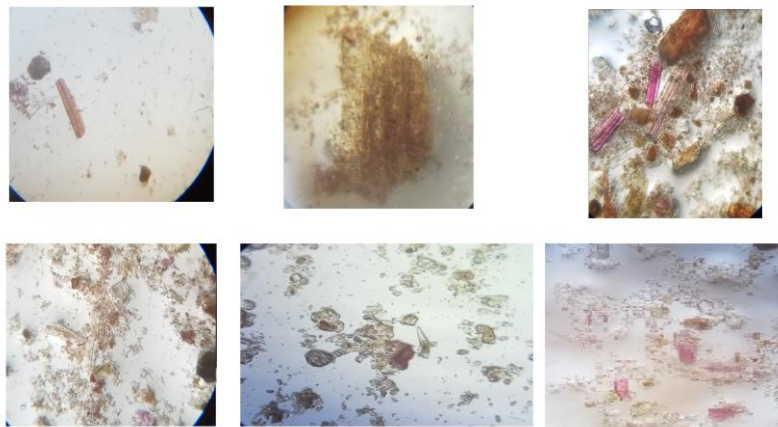


Figure No. 1: Macroscopic characters of contents of Saraswata Churna

Table No. 5: Thin Layer Chromatography of *Saraswata Churna* [Alcohol soluble extractive]

Spot	Rf value	Colour
Iodine Chamber		
1	0.56	Yellow
2	0.60	Yellow

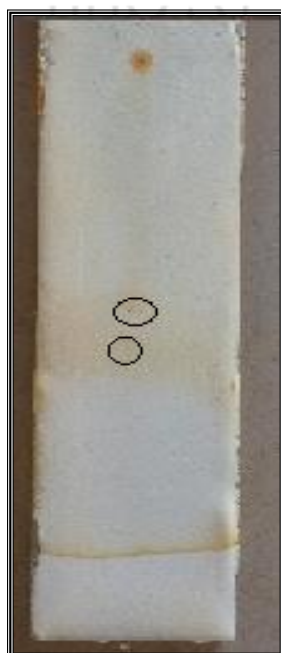


Figure No. 2: Thin Layer Chromatography

At present drug said to be standard based on Pharmacognostic and physicochemical parameters. Ash value reveals the purity of the drug. Total ash is the amount of material remains after the ignition of acid-insoluble ash is non-physiological ash. The sample of *Saraswata Churna* contained 13.3 %total ash and Loss on drying of the mixture is 4 % which is considered normal. chemical constituents. Water-soluble extractives suggest the water-soluble constituents of the drug such as carbohydrate, glycoside, tannin. Water-soluble extractive is 16.5%, which indicates that *Saraswata Churna* is easily soluble in water. While Alcohol soluble extractive is 13.25%. The qualitative analysis revealed the occurrence of carbohydrate, glycoside, tannin, alkaloid, Protein, saponin etc.

CONCLUSION

Based on results obtained it can be concluded that the *Saraswata churna* is pure and without adulterant.

REFERENCES

1. Prashant L. Patil, D.W. Raut, 'A clinical study on Samvardhana Ghrita and Saraswat Churna in children suffering from Balbuddhimandya w.s.r to mental Retardation. <http://ijapr.in> 2015;3[11]:39-46
2. Acharya Jadavaji Trikamji (1994). Trisothyam Adhyaya. In Charak Samhita of Agniseva elaborated by Charaka & Dridhabala with the Ayurveda Dipika Commentary by Chakrapani fourth edition. Chowkhambha Sanskrit Sansthan, Varanasi. P 108,313-314
3. Daily DK, Ardinger HH, Holmes GE (2000). Identification and evaluation of mental retardation. AM Fam Physician 61 (4): 1059-6, 1070. PMID 10706158.
4. www.iaimjournal.com, 'Mental/psychological disorder in children and their therapy as per Ayurveda. By R.P Tiwari, S.R. Dwivedi. IAIM, 2014; 1(4) I 96-99
5. Govinda Das, Bhaishajya Ratnavali. with 'Vidyotini' Hindi Vyakhya by Ambikadatta Shastri, edited by Rajeshvaradatta Shastri, 19th edition, Chaukhamba Sanskrit Sansthana, Varanasi, Unmada chikitsa, 2008; 24(26-29):513
6. Ayurvedic Pharmacopoeia of India: Part I; Vol. I, Department of AYUSH, Ministry of Health and Family Welfare, New Delhi, Appendix-pg142-143.
7. Iyengar MA. Pharmacognosy of powdered crude Drugs, 1st Edn. Manipal power press, Manipal. 1980; 11(27):42.
8. Borhade P, Khandelwal K. Review on standardization of churna, World Journal of Pharmacy and Pharmaceutical Sciences 2012;1(4): 1260-1274.