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CHARACTERIZATION OF SHATAVARYADI CHURNA: AN AYURVEDIC POLYHERBAL FORMULATION FOR TIMIRA

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ABSTRACT: In recent days, the Ayurvedic system of medicine acquiring a big proportion of medical and health care services in India. Standardization and purity of herbal formulation are essential in order to assess the quality, safety and efficacy of the drug. But global acceptance of any medicine needs follows the protocol testing of pharmacopeias. Shatvaryadi Churna, a compound herbal formulation, is recommended for treating various diseases of eyes stated in Ayurvedic classics. The formulation was described in Ayurvedic classic Yoga Ratnakarfor the treatment of Timira Vyadhi. Churna was prepared by following the general method of preparation of Churna Kalpana (Powder preparation) mention in Ayurvedic Pharmacopeia.The prepared drug has been standardized by following the official pharmacopeial procedure for quality control procedures, like organoleptic parameters, physiochemical evaluation, microbial load test and TLC profile.These analytical parameters were carried out on fine powder made from the crude drugs were within the standard range.

KEYWORDS: Churna, Pharmacopia,Timira, Chakshushya**,** Rasayana.

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1.INTRODUCTION

According to the World Health Organization (WHO); traditional, complementary, alternative or non-conventional medicines are used by 70–95% of the global population particularly in developing countries for their healthcare. Moreover, the use of herbal medicines has increased remarkably in line with the global trend of people returning to natural therapies. The growing use of botanicals

(drug and other products derived from plants) by the public is forcing moves to assess the health claims of these agents and to develop standards of quality and manufacture. Drug analysis of herbal medicines is the process of prescribing a set of standards or inherent characteristics, constant parameters, definitive qualitative and quantitative values that carry an assurance of quality, efficacy, and safety. An herbal product cannot be considered scientifically valid if the drug tested has not been authenticated and characterized in order to ensure reproducibility in the processing of the formulation. In this background, drug analysis is an essential step for the establishment of consistent biological activity, a consistent chemical profile, or simply a quality assurance program for the production and manufacturing of an herbal drug. Shatavaryadi Churna has six contents viz Shatavari (Asparagus), Ela (Cardamom), Amalaki (Emblicmyrobalan), Vidang (False black pepper), Maricha (Black pepper), Pippali (Indian long pepper). Collectively, it has got predominance of Madhura (50%)[1], Katu (33%) [2] Rasa(Taste), Ruksha (29%)[3], Laghu (22%) Gunas [4] (Ayurvedic pharmacological parameters), SheetaVirya (67%) [5] and MadhuraVipaka (67%) [6]. All six ingredients have got Balya (strength improver) [7] [8] [9] [10] [11] [12] [13]and Rasayan (Rejuvenator) properties. Out of six drugs Shatavari [14]and Amlaki[15] have got Chakshushya (Vision improver) property. Except for Shatavari rest of all five drugs (Ela[16], Amlaki[17],Pippali[18], Marich[19], Vidang[20]) have got Deepana- Pachana property.

2. MATERIALS AND METHODS

Process of Drug Preparation:

Identification and Collection of drug

All the drugs were procured from the Hans Pharmacy, Sidicul, Haridwar in crude form and were identified by the PG Department of Dravyaguna, Uttarakhand Ayurvedic University, Rishikul campus, Haridwar**.** Pharmacognostical authentication of all the raw drugs was done based on the morphological features, organoleptic characters.

Process of Formulation [21]

All the raw drugs were dried separately in try dryer except for Ela. Ela was kept under shaded portion for air-drying at 32^{o}C to 35^{o}C. The ingredients with the botanical source and parts used are mentioned in Table 1. Then dried drugs were disintegrated by the disintegrator separately in aseptic conditions. After that all the disintegrated drugs were then ground by the pulverizer. Then all the ground drugs were made to pass through the sieve separately. All the drugs were then thoroughly mixed together in the prescribed ratio to form a powder. This powder was made to pass through the 85 number sieves to get a fine powder, and the Churna was ready for use.

Table 1: Contents of ShatavaryadiChurna[22]

Dravya	**Latin name**	**Family**	**Proportion**	**Used part**
Shatavari	*Asparagus racemosus*	Liliaceae	12part	Root
Elabeej	*Elettaria cardamomum*	Zingiberaceae	10Part	Seeds
Vidang	*Embelia ribes*	Myrisinaceae	8Part	Seeds
Amlaki	*Emblica offcinalis*	Euphorbiaceae	6Part	Fruit pulp
Marich	*Piper nigrum*	Piperaceae	4Part	Seeds
Pipali	*Piper longum*	Piperaceae	3Part	Fruit

Analytical Study

Prepared final formulation i.e.Shtavaryadi Churna was analyzed by employing various analytical parameters.

Table 2: Physical Characterization Description or Organoleptic study

Organoleptic characteristics for various sensory characters like appearance, color, taste, odor etc and were carefully noted down.

S.No.	**Parameters**	**Result**
01	Texture	Fine powder
02	Color	Greenish brown
03	Taste	Sweet astringent
04	Odor	Sweetest pungent

Table 3: Physico-Chemical Parameters Of Shatavaryadi Churna

S.No.	**Test parameters**	**Results**	**Method reference**
01	PH	5.86	Visual
02	Total ash(%w/w)	4.25	API
03	Acid insoluble ash(%w/w)	0.57	API
04	Alcohol soluble extractive(%w/w)	34.52	API
05	Water soluble extractive(%w/w)	41.21	API
06	Identification (by TLC)	Picture attached	API
07	Microbial limit test		
	(i) Total bacterial count(cfu/g)	800	API
	(ii) Yeast and Mould count(cfu/g)	40	API
	(iii) E.coli	Absent	API
	(iv) S.aureus	Absent	API
	(v) P.aeruginosa	Absent	API
	(vi) *Salmonella* sp.	Absent	API

pH value:[23] The pH value of an aqueous medium may be defined as the common logarithm of the reciprocal of the hydrogen ion concentration expressed in gram per liter. It was done by digital pH meter. The pH meter was stabilized for 15-30 min. Now the electrode has been immersed in a standard buffer solution of pH 4.0 and stabilized for 1 min. and reading was adjusted at pH 4.0. The electrode was rinsed and immersed in the sample. The reading displayed on the monitor was noted. The measurement of pH was 5.86 which is weakly acidic.

Determination of total ash:[24] 2gms of accurately weighed ground drug was incinerated in a tarred platinum or silica dish at a temperature not exceeding 450^0 C until free from carbon. It was then cooled and weighed. By adding the filtrate, it was evaporated to dryness, and ignited at a temperature not exceeding 450^0 C. The value of total ash is determined by calculating the percentage of ash with reference to the air-dried drug. The total ash content for the present formulation was 4.25.

Acid insoluble ash:[25] To the crucible containing total ash, 25ml of dil. HCl was added. The insoluble matter on an ashless filter paper was collected and washed with hot water. Filter paper containing the insoluble matter transferred to the original crucible dry on a hot plate and ignites to constant weight. The residue was allowed to cool in suitable desiccators for 30 minutes and weigh without delay. The content of acid insoluble ash was calculated with reference to the air-dried drug. The value of acid insoluble ash for the present formulation is 0.57.

Determination of Alcohol Soluble Extractive:[26] 5 gms of the air-dried drug coarsely powdered was macerate with 100 ml of alcohol of the specified strength in a closed flask for twenty-four hours, shaking frequently during six hours and allow it to stand for eighteen hours. After that it was filtered rapidly, taking precautions against loss of solvent. Now 25 ml of the filtrate was evaporated to dryness in a tarred flat bottomed shallow dish, and allow drying at
105 ^{0}C to constant weight and weigh. The percentage of alcohol soluble extractive was calculated with reference to the air-dried drug. The alcohol soluble extractive for the present Churna was 34.52.

Water soluble extractive:[27] 5 gms of the air-dried coarsely powdered air dried drug was macerate with 100 ml of distilled water in a closed flask for twenty-four hours, shaking frequently during six hours and allowing it to stand for eighteen hours. After that, it was filtered, taking precautions against loss of water. Then 25 ml of the filtrate was evaporated to dryness in a tarred flat bottomed shallow dish and dry at 105^0 C, to constant weight and weigh. The percentage of water soluble extractive was calculated with reference to the air-dried drug. Water soluble extractive for the present formulation is 41.21.

Sterility Test:[28] Sterility test was done by the method mentioned under I.P. 2007, Vol-2, which shows that the drug was tested, was sterile.

TLC Profile:[29] Instrument used was a silica plate. The stationary phase used was silica gel G60F254 and the mobile phase was tolune, ethyle acetate, formic acid (6:3:1). The plate was

visualized under iodine vapours, Rf value were recorded Rf1-0.120, Rf2- 0.30, Rf3- 0.661, Rf4-0.901.

Microbial Examination:[30] The development of microbiology as a scientific discipline dates from Lewis Pasteur (1822-55). The microbial test is designed to perform the qualitative estimation of specific viable microorganism present in the samples. This test is used for the estimation of the number of the viable aerobic microorganisms present and for detecting the presence of designated microbial species in the sample. The test provides a determination of whether the drug harbour designated microbial species that are pathogenic in nature.

3. RESULTS AND DISCUSSION

Basic physicochemical parameters were observed to be within the prescribed limit as per Churna kalpana provided by Ayurvedic Pharmacopia of India(API).

pH: pH shows that 5% (w/v) aqueous solution of both the samples were slightly acidic in nature (pH= 5.86). Acidic pH of the final product may be due to acidic phytochemical in the formulation. The metabolism and absorption of Churna is likely to get starts from the oral cavity and a significant quantity may get metabolized, and absorbed from upper GIT. Acidic media of this oral cavity favours the preservation of constituents of Churna in their native form. The mildly acidic nature of Churna favours digestion.

Total Ash value: Ash value depends upon the total inorganic substance present in a particular drug; this parameter has importance in quality control and standardization of the drugs. Total Ash value was 4.25, this indicates that the samples of Churna are about 95% organic in nature and only 4-5 % part is inorganic in nature. More organic nature makes the formulation more bio-absorbable to human biological systems.

Acid insoluble ash: The acid insoluble ash of formulation was 0.57%(w/v) suggests that less amount of Churna was absorbed by the oral cavity. Most of the components of drugs are acid soluble which is better absorbed in the acidic media that i.e., by gastric juices. Thus, the bioavailability of formulation was very high.

Water soluble extractive:Water soluble extractive plays an important role in the evaluation of crude drugs. The less extractive value indicates the addition of harmful material, adulteration, incorrect processing during drying or storage or formulating. In the present formulation water soluble extractive was 41.21%(w/v), which is a little higher than the value of alcohol soluble extractive 34.5%(w/v). Comparatively more value infers that the crude drugs are not adulterated, and more likely to dissolve in the upper GIT, which is an ideal condition for further action.

Microbial study: Formulation was free from bacteria, yeast, mould and fungi. Total bacterial count (40 cfu/g) was comparatively much lower than the limit specified for Churna Kalpana peroral intake. Thus, controlled microbial growth may be favourable in terms of known microbial allergens, the allergic response of metabolites these microorganisms.

4. CONCLUSION

Pharmacognostical evaluation of Shatvaryadi Churna illustrated the specific characters of this preparation. In this investigation, various standardization parameters such as organoleptic study, Physiochemical study, Physical characters & Chromatographic evaluation were carried out. The pH value was 5.86, Total Ash value 4.25 % (w/w), Acid insoluble ash 0.57% (w/v) and water soluble extract 41.21 (%w/v), TLC were carried out after organizing the appropriate solvent system in which maximum 4 spots were distinguished and most of the Rf values were identical. Also, the formulation was free from pathogenic microbial contaminations. The results of this study may be used as the reference monograph in further research on Shatvaryadi Churna.

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CONFLICT OF INTEREST

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REFERENCES

1. Sharma Priyavat, DravyaGunaVijgyana, VrishabhadiVarga, DahaPrashmanaVarga, RasayanVarga, KasaharVarga, DipaniyadiVarga, KrimighanaVarga, Chakhamba Bharti Academy Press, Varanasi 2011; 119-798
2. Sharma Priyavat, DravyaGunaVijgyana, VrishabhadiVarga, DahaPrashmanaVarga, RasayanVarga, KasaharVarga, DipaniyadiVarga, KrimighanaVarga, Chakhamba Bharti Academy Press, 2011; 119-798
3. Sharma Priyavat, DravyaGunaVijgyana, VrishabhadiVarga, DahaPrashmanaVarga, RasayanVarga, KasaharVarga, DipaniyadiVarga, KrimighanaVarga,Chakhamba Bharti Academy Press, 2011; 119-798
4. Sharma Priyavat, DravyaGunaVijgyana, VrishabhadiVarga, DahaPrashmanaVarga, RasayanVarga, KasaharVarga, DipaniyadiVarga, KrimighanaVarga,Chakhamba Bharti Academy Press, 2011; 119-798
5. Sharma Priyavat, DravyaGunaVijgyana, VrishabhadiVarga, DahaPrashmanaVarga, RasayanVarga, KasaharVarga, DipaniyadiVarga, KrimighanaVarga,Chakhamba Bharti Academy Press, 2011; 119-798
6. Sharma Priyavat, DravyaGunaVijgyana, VrishabhadiVarga, DahaPrashmanaVarga, RasayanVarga, KasaharVarga, DipaniyadiVarga, KrimighanaVarga,Chakhamba Bharti Academy Press, 2011; 119-798

7. SharmaPriyavat, DravyaGunaVijgyana, VrishabhadiVarga. Chakhamba Bharti Academy Press, 2011; 562
8. Sharma Priyavat, DravyaGunaVijgyana,DahaPrashmanaVarga.Chakhamba Bharti Academy Press. 2011; 119
9. Sharma Priyavat, DravyaGunaVijgyana,RasayanVarga.Chakhamba Bharti Academy Press, 2011; 758
10. Sharma Priyavat, DravyaGunaVijgyana, KasaharVarga.Chakhamba Bharti Academy Press, 2011; 275
11. Sharma Priyavat, DravyaGunaVijgyana,DipaniyadiVarga. Chakhamba Bharti Academy Press, 2011; 362
12. Sharma Priyavat, DravyaGunaVijgyana, KrimighanaVarga.Chakhamba Bharti Academy Press, 2011; 503
13. Sharma Priyavat, DravyaGunaVijgyana,RasayanVarga.Chakhamba Bharti Academy Press, 2011; 758
14. Sharma Priyavat, DravyaGunaVijgyana,VrishabhadiVarga.Chakhamba Bharti Academy Press, 2011; 562
15. Sharma Priyavat, DravyaGunaVijgyana,RasayanVarga.Chakhamba Bharti Academy Press, 2011; 758
16. Sharma Priyavat, DravyaGunaVijgyana,DahaPrashmanaVarga.Chakhamba Bharti Academy Press, 2011; 119
17. Sharma Priyavat, DravyaGunaVijgyana,RasayanVarga. Chakhamba Bharti Academy Press,2011; 758
18. Sharma Priyavat, DravyaGunaVijgyana, KasaharVarga.Chakhamba Bharti Academy Press, 2011; 275
19. Sharma Priyavat, DravyaGunaVijgyana, DipaniyadiVarga.Chakhamba Bharti Academy Press, 2011; 362
20. Sharma Priyavat, DravyaGunaVijgyana,KrimighanaVarga.Chakhamba Bharti Academy Press, 2011; 503
21. Ayurvedic Pharmacopeia of India, Part II vol. II, Appendix 2.2.10, published by GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy. 2008
22. SastriLaxmipatiVaidya, Yogratnakar, VidhyotiniHindi Tika, Chaukhamba Sanskrit Sansthan , Varanasi.2001; 374
23. Joshi VK, Joshi A, Dhiman KS, Ayurvedic Pharmacopeia of India, Part II, Appendix 3.3, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication. 2008, 213.

24. Joshi VK, Joshi A, Dhiman KS, Ayurvedic Pharmacopeia of India, Part II vol. II, Appendix 2.2.10, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication, 2008, 160.
25. Joshi VK, Joshi A, Dhiman KS, AyurvedicPharmacoepia of India, Part-II vol. II, Appendix 2.2.4, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication, 2008, 160.
26. Joshi VK, Joshi A, Dhiman KS, AyurvedicPharmacoepia of India, Part-II vol. II, Appendix 2.2.7, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication 2008, 160.
27. Joshi VK, Joshi A, Dhiman KS, AyurvedicPharmacoepia of India, Part-II vol. II, Appendix 2.2.8, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication. 2008, 161.
28. Joshi VK, Joshi A, Dhiman KS, AyurvedicPharmacoepia of India, Part-II vol. II, Appendix 2.2.7, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication. 2008, 184.
29. Joshi VK, Joshi A, Dhiman KS, AyurvedicPharmacoepia of India, Part-II vol. II, Appendix 2.2.7, GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy,1st Edition 2008. 164.
30. Joshi VK, Joshi A, Dhiman KS, AyurvedicPharmacoepia of India, Part-II vol. II, Appendix 2.2.7, published by GOI, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homeopathy publication. 2008,195.