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A COMPARATIVE PHARMACOGNOSTICAL AND PHYTOCHEMICAL STUDY OF SHANKHPUSHPI (*CONVOLVULUS PLURICAULIS* LINN) TABLET WITH BHAVANA AND WITHOUT BHAVANA

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ABSTRACT
Shankhpushpi is considered as "medhya rasayana" in ayurvedic texts. Shankhpushpi is a word of Sanskrit which means "the plant with flowers shaped like a conch." The present study deals with the comparative study of Shankhpushpi tablets made with three bhavana of Shankhpushpi swarasa and without any bhavana. The present paper highlights the pharmacognostical study of the different characters in both tablets. These observations would be of immense value in the botanical identification and standardization of the drug in the crude form and help to distinguish the drug from its other species. Phytochemical parameters such as total ash, water soluble extractives, methanol soluble extractives and pH values have also changed.
Keywords: Shankhpushpi, tablet, bhavana, pharmacognostical, phytochemical.

INTRODUCTION

Dhi, Dhrti and Smriti are recognized as Intrinsic Dimension of Manas. The word Manas when used in general sense, refers to the Totality of knowing and indicate Dhee, Dhriti and Smriti as well. Manas as a specific term refer only to its initial contact with the Visayas (Objects), in the other words "Perception" is the process of doing or knowing. In a given Kriya (Act process), Manas (general) is called Smriti at the level of Recall, Dhee at the level of Control, and Dhriti in the moderation of the act throughout.

In this competitive era, every human beings wants to achieve highest goal. It is being increasing necessity at the student level in schools and colleges, as the exam pattern of present system is fully depended on memorizing the subjects only. Furthermore, in routine life and in the social interactions too good memory is always appreciated.

Now days there are many products available in market claiming to increase memory power. According to the scientific researches there are no or very less scopes of increase in memory after certain age. Earlier many drugs are indicated for all mental disorders as well as to increase memory in Ayurvedic classics. Medhya Rasayana drugs enhance the function of Smriti, decreases the Rajas and Tamas Dosas and provides better functions to Manasa. For this study a single drug Sankhapuspi was selected.

To augment its potency between two tablets, one is Sankhapuspi tablet was prepared by giving 3 Bhavana of Sankhapuspi swaras to its Churna and the other is the Shankhpushpi tablet without any bhavana. The Pharmaceutical and Pharmacognostical study is carried out to compare the potency of both the samples.

Drugs acting in the central nervous system (CNS) were among the first to be discovered by primitive human and are still the most widely used group of pharmacological agents. The CNS acting drugs are invaluable therapeutically as they can produce specific physiological and psychological effects. From the vast array of material medica of the indigenous system, many plants have been reported to have activity against CNS disorders and act as very useful remedies for the alleviation of human suffering[1]. All critical analyses on commercial and other information available on traditionally known CNS active herbal remedies indicate that the most popular amongst such remedies are those which are clinically and preclinically the most well studied and which are also recommended for therapeutic purposes by the health authorities of many Western and other countries outside the USA[2].

Shankhpushpi is considered as "medhya rasayana" in ayurvedic texts. Shankhpushpi is a word of Sanskrit which means "the plant with flowers shaped like a conch." The conch or Shankha is one of Lord Shiva's sacred instruments often used in ritual worship.

The Ayurvedic Pharmacopeia of India consists of the whole plant of *Convulvulus pluricaulis* Choisy (Convulvulaceae) syn *Convulvulus microphyllus* Sieb[i]. Plants other than *Convuluvulus pluricaulis* use the name Shankhpushpi in different parts of the country. These include *Evolvulus alsinoides* Linn, *Clitorea ternatea* Linn and *Canscora decussata* Schult. The Indian Council of Medical Research has given quality standards for *C. pluricaulis* drug in its publication[2].

Effect of Shankhpushpi on learning and memory

In Bhavprakash Nighantu the description of Shankhpushpi is given in Guduchyadi Varga and and in Madanpal Nighantu it is placed in Abhayadi Varga. Both Nighantu has described the Smriti vardhak property of Shankhpushpi.

Nootropic activity using Cook and Weidley's Pole Climbing Apparatus, passive avoidance paradigms and active avoidance tests were used to test learning and memory. The ethanolic extract of CP and its ethyl acetate and aqueous fractions were evaluated for their memory enhancing properties. Two doses (100 and 200 mg/kg/p.o.) of ethyl acetate and aqueous fractions of the ethanolic extract were administered in separate groups of animals. Both the doses of all the extracts of *Convolvulus pluricaulis* significantly improved learning and memory in rats[3].

Shankhpushpi is a common plant in southern India where the whole plant is used in various formulae as a nervine tonic for improvement of memory and intellect[3]. It is recommended as a brain tonic to promote intellect and memory, eliminate nervous disorders and to treat hypertension[4].

Traditional indications

The leaves of Shankhpushpi were used to treat chronic bronchitis and asthma. The root was used for childhood fever, and the oil stimulates the growth of hair. The whole herb was used medicinally in the form of a decoction with cumin and milk in fever, nervous debility, and loss of memory, syphilis and scrofula.

MATERIALS AND METHODS

Shankhpushpi sample was collected from the pharmacy I.P.G.T. and R.A; Jamnagar. All the pharmacognostic and phytochemical studies are carried out in the concerned laboratory of I.P.G.T. and R.A; Jamnagar, as per the standard procedures. The pharmacognosy was

done after making the fine powder of both the tablets and then powder microscopy was done with and without stain[2,9]. Micro photographs were also taken under Corl Zeiss Microscope attached with Camera. The Ash Value, Water soluble extractive, Methanol soluble extractive, pH value etc were done [10-17].

Ayurvedic Pharmacodynamic Properties:		
Rasa	:	Katu (pungent), and Kashya (astringent)
Guna	:	Guru (heavy), Sara (unstable), Snigdha (oily), Pichchila (stiky)
Virya	:	Ushna (hot)
Vipaka	:	Madhura (sweet)
Doshakarma	:	Tridoshahara (alleviate all the three Dosha)
Useful parts	:	Panchanga

Properties of Shankhpushpi

- Medhakrita, Svarakara, Grahabhutadi Dosaghna, Vasikaranasiddhida (Rajnighantu-Guduchyadi Varga).
- Rasayana, Varna – Medha – Agni – Bala – Ayu – Kantikruta, Apasmara –Unmada – Anidrahara, Bharmahara (Kaidevnighantu-Aushadhi Varga).
- Medhya, Vrsya, Manasarogahara, Rasayana, Smrti – Kanti – Bala – Agnikrta, Apasmara, Bhuta – Krimi – Kusta – Visahara (Bhavprakasanighantu-Guduchyadi Varga)
- Medhya, Rasayana (Ca. Ci. 1/3 – 31).
- Unmadahara (Cakradatta)

Drugs are rarely administered in their pure forms & more often than not, they have to be necessarily admixed with various kinds of adjuncts resulting in their transformation into the so called dosage forms & this comes under pharmaceutical study.

Preparation of Tablets

Name of the practical: Shankhpushpi Churna Nirmana

Equipments: Hammer mill, Cone mill, Tray, weight balance etc.

Ingredients: Dry Shankhpushpi Panchang

Procedure

Shankhpushpi Panchang was taken in Hammer mill and make Yavkut powder.

Then it was transferred into Cone mill and make fine powder.

Observation

Coarse powder was obtained after processing of Shankhpushpi Panchang.

After preparation of churna the light brown colour dry Shankhpushpi convert into grey brown

Colour.

The smell of Shankhpushpi Panchang was decreased in powder from.

Extraction of Shankhpushpi Swarasa – In the classics three methods are available regarding swarasa preparation where fresh drugs are used these area.

- Yantra nishpidita method
- Puta paka method
- Swinna method

Inference – As it is cleared that every time total solid content is more in Yantra nishpidita method so this method was selected for the study.

Name of practical – Extraction of Shankhpushpi Swarasa from green Shankhpushpi.

Procedure - Yantra nishpidita method

Ingredients - Green Shankhpushpi

Concept of Bhavana

Bhavana, the levigation, i.e mixing the solid matter with a liquid media for the particular time with sufficient pressure.

Significance of Bhavana

- To bring minute particles of the material in contact with the liquid media.
- Impregnation of properties of the media to the material.
- Transformation of the coarse powder to finer state.
- To facilitate the material for further processing.
- Leads to unique and suitable physico-chemical changes.
- Provide the trace elements for preparation of Bhasma.

Name of the practical: Preparation of Shankhpushpi tablet

Reference: The theory and Practice of industrial Pharmacy, Leon-Lachman, chapter-12

Organoleptic Characters

The various organoleptic characters give the general idea regarding the genuinely of the sample. These characters correspond to the Panchajnanedriya Pariksha of Ayurveda.

Here, colour, odour, taste, touch and smell of the samples were noted.(Table 1)

Observations and Results

Shankhpushpi tablet with 3 bhavana of Sahankhpushpi Swarasa-Sample A

Shankhpushpi tablet without any bhavana - Sample B

Microscopy

Microscopic characters are deplited in table No. 2 and the microphotographs are in Plate No. 1 and 2.

Phytochemistry

The physicochemical characters of samples like Ash value, Acid insoluble extractives, pH value etc studied and depleted under table3.

DISSCUSSION

Organoleptic Analysis shows that colour of Sample B is Brownish Ash and Sample A is Dark Brownish. The taste of Sample A is Astringent and Sample B is Astringent-bitter. Sound of Sample B is Crispy and Sample B is mild Crispy. Both the sample has Smooth Touch and Aromatic odour. Pharmacognostical Analysis that sample B contains Septet fibres and simple fibres seen in Sample A. Sample B contain Epidermal cells than Sample A. Sample B contain Wavy Parenchyma than Sample A. Both the Sample contains Stone cells, Prismatic crystals, Starch grain and Trichomes. Phytochemical Analysis Total ash value, acid insoluble ash, water soluble extractive, methanol soluble extractive and total hardness of the sample B is more than the sample A. pH value, average weight, highest weight, lowest weight and loss on drying of sample A is more than Sample B.

CONCLUSION

Shankhpushpi is one of the traditional ethnomedicines used in Ayurvedic medicine in India as a controversial source of Shankhpushpi for various brain related disorders. This plant has been shown to have scientific potential for CNS depression for its anxiolytic, tranquillising, antidepressant, antistress, neurodegenerative, antiamnesic, antioxidant, hypolipidemic, immunomodulatory, analgesic, antifungal, antibacterial, antidiabetic, antiulcer, anticatatonic and cardiovascular activity. It is reported to contain several types of alkaloids, flavanoids and coumarins as active chemicals that bring about its biological effects.

The result of the present study concluded that in comparison of both the sample there is a marked difference in pharmacognostical and Phytochemical study of both the samples. The three bhavana of Shankhpushpi Swarasa may affect on the potency of the sample and thus it may affect on the improving on the memory.

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Table 1: Organoleptic Characters of Both the Samples

Sr.No.	Physical appearance	Sample A	Sample B
1	Touch	Smooth	Smooth
2	Colour	Dark Brownish	Brownish ash colour
3	Odour	Aromatic	Aromatic
4	Taste	Astringent	Astringent- bitter
5	Sound	Mild crispy	Slight crispy

Table 2: Microscopic Characters of Both the Samples

Sr.No.	Characters	Sample A	Sample B
1	Septet fibres	-	+
2.	Stone cells	+	+
3.	Epidermal cells	+	-
4.	Prysmatic crystals	+	+
5.	Starch grain	+	+
6.	Single Trichoms	+	+
7.	Unicellular Trichoms	+	+
8.	Wavy Parenchyma	+	-

Table 3: Phytochemical Tests of Both the Samples

Sr.No.	Test Name	**Sample A- Results** (Shankhpushpi Tab.With 3 Bhavana of Swarasa)	**Sample B- Results** (Shankhpushpi Tab. Without Bhavana)
1.	Uniformity of Tablet[10]		
	(a) Average Weight	485 mg	412 mg
	(b) Highest Weight	526 mg	524 mg
	(c) Lowest Weight	419 mg	341 mg
2.	Total Hardness[11]	1.275 $kg.c^2$	1.4 $kg.c^2$
3.	Tablet Disintegration Time[12]	1 min.	1 min.
4.	Loss on Drying[13]	7.416 % w/w	7.38 % w/w
5.	Ash Value[14]	19.890 % w/w	24.40 % w/w
6.	Acid Insoluble Ash	10.14 % w/w	15.92% w/w
7.	Water Soluble Extract[15]	10.467 % w/w	16% w/w
8.	Methanol Soluble Extract[16]	7.205 % w/w	18.50% w/w
9.	PH Value[17]	6.56	5.60

Plate 1

Pharmacognocy of Shankhpushpi Tablet with Bhavana(A) and without Bhavana(B)

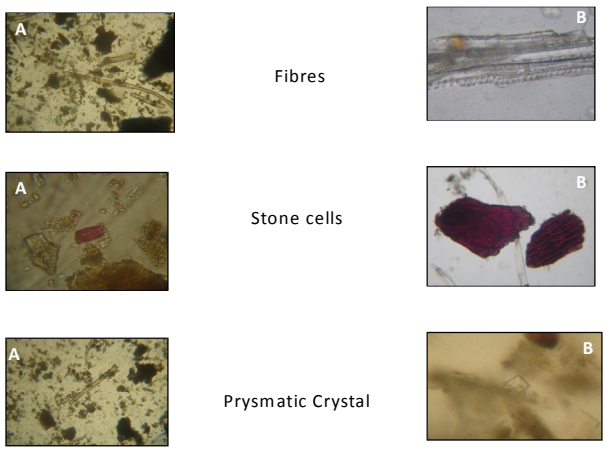

Plate 2