



## Research Article

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### PROCESS STANDARDIZATION OF SIDDHA HERBOMINERAL DRUG NARPAVALA CHUNNAM

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#### ABSTRACT

Standardization is mandatory to prove the quality and reliability of traditional medicines, as the use of traditional medicines rapidly increases all over the world. Narpavalam is a widely used mineral drug in Siddha system of medicine. Parpam, chendooram and chunnam are prepared by using Narpavalam. This paper deals with the process standardization of Narpavala chunnam i.e. a chunnam prepared from Narpavalam. Starting from authentication of raw material and herbs, purification process, method of preparation, weight loss of the raw material during purification and processing were noted. Two batches of medicine was prepared and compared for documentation. In authentication it was found that the raw material was adulterated with bamboo coral. The analytical specification mentioned for chunnam were also documented and it showed that the drug contains Ca, Mg, K, Fe, S and it is alkaline in nature. Authentication and documentation of correct manufacturing and marketing process may reduce the inferior quality products and pave way to standardize the Siddha medicines for large scale production.

**Keywords:** Narpavalam, Chunnam, Siddha medicine, Standardization, authentication

#### INTRODUCTION

India is bestowed with a number of traditional medical systems like Siddha, Ayurveda and Unani. The Siddha system of medicine is confined to the southern part of India especially Tamil Nadu, India. It is also considered as Tamil medicine.<sup>1</sup> Siddha science is more concerned about healthy living of human being. Siddha drugs are natural products obtained from herbs, metals, secondary minerals and animal kingdom. In Siddha system, the medicine is divided in to two major classifications. They are 32 Agamarunthu (Internal medicines) and 32 Puramarunthu (External medicine).<sup>2</sup> Chunnam is one among the agamarunthu, which is considered as a medicament higher in order than parpam (calcified oxide) and chendooram.<sup>3</sup> The word chunnam means an alkaline product like lime and it is an irritant to mucous membrane. But it is harmless when it is given with suitable vehicle. The word chunnam denotes white colour (chun), fine particle and calcined paste.<sup>4,5</sup> Standardization is mandatory to prove the quality and reliability of traditional medicines, as the use of traditional medicines rapidly increases all over the world. The geographical variation of collecting raw materials, seasons and procedure of collection may result in same medicine with different quality. According to the basic information given in Siddha classical text book, the selection of raw drugs, purification of raw drugs, completion of the medicine by using the correct process, testing the finished product by using the traditional way and right method of preservation of the final product is very much important. Authentication and correct processing of raw material generally ensure the good quality drugs.<sup>6</sup> Pavalam is one of the mineral drug which is frequently used for upper respiratory diseases and nervous disorders by Siddha physicians. Medicines from narpavalam and kodipavalam are mentioned in Siddha classical texts.<sup>7</sup> But the clear

descriptions of the two raw materials were not available in the literature. In Siddha Materia Medica separate description of kodipavalam and narpavalam was not given. As per Pattinatthar puranam, the blood of Valan was converted to kodipavalam and the flush of Valan was converted to narpavalam during the war of Valan with lord Indiran.<sup>8</sup> Narpavalam is superior in potency than the Kodipavalam. Usually, Vaidhyas prefer narpavalam but kodipavalam can also be used instead of narpavalam if it is not available.<sup>7,9</sup> So far no scientific data is available for Narpavala chunnam i.e. a chunnam prepared from Narpavalam, this paper is dealt with the process standardization and its physicochemical analysis to put a step forward to its scientific validation.

#### MATERIALS AND METHODS

##### Ingredients

Narpavalam (*Corallium rubrum*)

Kattalai (*Aloe vera*)

Keezhanelli (*Phyllanthus amarus*)

Route of administration: Oral

Dose: 2 to 4 grains (260 mg to 520 mg) twice a day

Anupanam: Ghee

Duration: 45 days (oru mandalam)

Indication: Kasam (cough), Swasam (wheezing), Kshayam (Tuberculosis), Ushnathickam (Excessive heat), Manjal noi (Jaundice) and Enbu noikal (Bone diseases).<sup>9</sup>

##### Procurement of raw material

The different market sample of Narpavalam was procured from Chennai, Nagarkovil and Fulvio di gennaro, Italy. The herbs were collected from the Botanical garden, National Institute of Siddha, Chennai, Tamil Nadu, India

**Authentication of marine product**

The samples were authenticated by The Officer in charge, Marine biology regional centre, Zoological Survey of India, Santhom, Chennai, Tamil Nadu, India. The samples were analyzed by using Stereo zoom microscope Model Leica M205A.

**Authentication of herbs**

The herbs which were used for processing were authenticated by Dr. Aravindan, Asst. Professor of Botany, Department of Botany, National Institute of Siddha, Chennai, Tamil Nadu, India. (Voucher no NISMB372012)

**Purification Process**

The purification process of Narpavalam was carried out in 3 batches as per the Siddha Materia Medica. Narpavalam was soaked in freshly prepared lemon juice in a mud pot. After 24 h the raw material was taken out and washed thoroughly with hot water. Then it was air dried and weighed.

**Preparation of Narpavala chunnam**

The drug Narpavala chunnam (NPC) was prepared as per the literature Siddha Research Pharmacopoeia. The plants kattralai (*Aloe vera*) and keezhanelli (*Phyllanthus amarus*) were collected from the botanical garden, NIS, Chennai, Tamil Nadu, India. The purified narpavalam was made into a coarse powder and put in a mechanical mortar. It was grinded well for 24 h with kattralai juice (*Aloe vera* gel). Then it was made in to pellets and air dried in sunlight. The pellets were put into earthen vessel closed with another vessel and 7 clay cloth made to the margin of earthen vessels. Then it was air dried in sunlight for one day. After that, it was put in a deep pit and putam process (calcination process) was done with 300 cow dung cakes (each cow dung cake weighs 175 ±

20 g). Once it cools the putam was opened and the pellets were taken out and weighed. They were again grinded in a mortar with sufficient quantity of keezhanelli (*Phyllanthus amarus*) juice for 48 hours. After that, it was made into pellets and putam process was repeated again with 300 cow dung cakes. After cooling, the pellets were collected, weighed, finely powdered and stored in a clean, dry glass container.<sup>9,10</sup>

**RESULTS****Authentication of marine product**

Three different market samples were procured and given for authentication. The market samples which were collected from Chennai and Nagarkovil were adulterated with bamboo coral. The sample which was procured from Italy was free from adulteration.

**Purification of raw drug Narpavalam**

The raw drug Narpavalam lost its color after purification. The classical pink color became white in color. Around 6 % of weight loss was seen in all the three batches of raw material after purification.

**Siddha specification for chunnam**

The finished product should not have odour, luster, smoke, and the particles are micro fine and weightless. The taste of the chunnam would be similar to lime i.e. alkaline in nature and turns red when a small pinch of drug is added with turmeric and few drops of water.<sup>10</sup>

**Analytical specification of chunnam**

The analytical specification of NPC (both batches) was done in duplicate as per the analytical specification given by the standard Siddha text. It was done at Siddha Central Research Institute, Arumbakkam, Chennai, Tamil Nadu, India<sup>11</sup>.

**Table 1: Purification of Narpavalam with Lemon Juice**

No	Quantity of lemon juice	Before purification	After purification	% of weight loss
1.	230 ml	200 g	188.53 g	5.73 %
2.	235 ml	200 g	189.02 g	5.49 %
3.	230 ml	200 g	188.25 g	5.87 %

**Table 2: Preparation of Narpavala Chunnam**

Batch No	Quantity of purified pavalam	Name of the juice	Quantity of juice	Before putam (pellet weight in g)	After putam (g)	Finished product (g)	% of finished drug
I	200 g	Kattralai Keezhanelli	860 ml 1680 ml	190.75 198.05	168.34 158.72	-- 156.68	78.34 %
II	200 g	Kattralai Keezhanelli	850 ml 1760 ml	195.19 203.83	173.45 148.56	-- 148.56	74.2 %

**Table 3: Siddha specifications of Narpavala Chunnam**

No	Test	Observation NPC I	Observation NPC II
1.	Colour	Slight ash in colour	White
2.	Odour	Odourless	Odourless
3.	Taste	Viruviruppu (similar to lime)	Viruviruppu (similar to lime)
3.	Luster	Nil	Nil
4.	Smoke ( heating)	Nil	Nil
5.	Weight (sprinkle test)	Floats in the water	Floats in the water
6.	Reaction with turmeric	Turned to red	Turned to red

Table 4: Analytical specifications of Narpavala Chunnam

No	Parameter	NPC I	NPC II
1	Loss on drying at 105°C	0.4 %	0.4 %
2.	Total ash	95.3 %	99.6 %
3.	Water soluble ash	5.3 %	10.4 %
4.	Alkalinity(ml 0.1N HCl/g)	15.8	30.2
5.	Acid insoluble ash	0 %	0 %
6.	P <sup>H</sup> (10% solution)	9.90	12.55
7.	Assay on elements (EDAX)	Ca, Mg, K, S, Si, O, Fe	Ca, Mg, K, S, Si, O, Fe

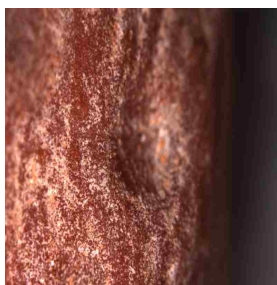


Figure 1: Stereo microscopical structure of Narpavalam



Before



After

Figure 2: Narpavalam (before and after purification)



Figure 3: *Aloe vera*



Figure 4: *Phyllanthus amarus*



Figure 5: 1<sup>st</sup> process of putam with *Aloe vera*



Figure 6: II<sup>nd</sup> process of putam with *Phyllanthus amarus*



Figure 7: Finished drug (NPC)



Figure 8: Reaction with turmeric

## DISCUSSION

There is an exponential growth in the field of traditional medicine all over the world due to its natural origin and lesser side effects.<sup>12</sup> In olden days the Vaidhyas used to treat patients on individual basis, and prepare medicine according to the requirement of the patient. But, now traditional medicines are being manufactured on a large scale in mechanical units. So, quality control plays a major role in the reproducibility of the finished product without deviation from the classical literature. Unlike modern medicine the Siddha medicines are prepared from natural origin. So, from procuring of raw material to marketing of the finished product each step has to be documented. In this study the quality raw material was identified through authentication. As narpavalam is a cost consuming drug the quality of the raw material is very much important. Loss on drying was only 0.4 % which shows the minimal moisture content which denotes that the chunnam may have longer shelf life which is indicated in Siddha literature.<sup>7,9</sup> The pH of chunnam shows that the drug is alkaline in nature and the turmeric test also

confirms it. The basic elements present in NPC are Ca, Mg, Fe, S which supports its usage in Siddha system.

## CONCLUSION

It is concluded that documentation of correct manufacturing and marketing process may reduce the inferior quality products and strengthen the Siddha medicines. So, this study is a step forward to scientific validation and bulk preparation of Narpavala chunnam.

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