

## STANDARIZATION OF SIDDHA DRUG FORMULATION *ELATHI CHOORANAM* FOR THE MANAGEMENT OF *VADHA PEENISAM*

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### ABSTRACT:

Siddha system of medicine is the most popular traditional system of medicine followed by the people of Tamil Nadu. Nowadays, the system is spreading its benefits to the people of surrounding states also. Siddha system of medicine is founded by eighteen siddhars who had achieved eight siddhis. In siddha system, Kuzhanthai Maruthuvam has a significant role in the treatment and management of diseases in peadiatric age group. In siddha text, *Peenisam* is one of the diseases in peadiatric age group. *Vadha Peenisam* is one among the type of *peenisam*. *Elathi chooranam* is mentioned in Book of *Sarabenthira Vaithiya Muraigal (Siraroga sikitchai)* for *Peenisam*. Therefore is a need to analyze the drug as per the latest technique. Data were collected regarding ingredients of *Elathi chooranam* and it was sent to the Noble Research Solution for evaluate the biochemical, physiochemical analysis and determination of particle size as per PLIM guidelines from January 2021 to June 2021. Finally this revealed, biochemical and physiochemical of *Elathi chooranam* is better to Management of *Vadha Peenisam*, particle size also evaluated. Further studies for *Elathi chooranam* should be done in future.

Keywords: *Vadha peenisam*, *Elathi chooranam*, PLIM guidelines.

## INTRODUCTION:

Siddha system of medicine is one of the most ancient medical systems of India. The Siddha system based on a combination of ancient medical practices and spiritual disciplines. According to our Siddha medicine diseases are classified as 4448 in numbers and in that 100 of them comes under pediatric diseases. There are 32 types of internal and 32 types of external medicines to treat these type of disease. Among this *Chooranam* is also a well-known type of medicine. *Elathi Chooranam* is a polyherbal formulation used for the management of *Vadha Peenisam* (Rhinitis). *Elathi Chooranam* is defined as a Powdered drug.

*Vadha Peenisam* is defined as nasal congestion, sneezing, running nose, headache, watery eyes, fatigue & throat irritation. The major causes for *peenisam* are as follows drinking cold water, intake of cold food, wandering in cold air, on smelling dust and smoke inducing substances which causes sneezing and so on. *Elathi Chooranam* is used for treating these symptoms and this *chooranam* has been prepared under the strict standards and parameters given by PLIM Guidelines.

This article can also be used as an initiative for research areas for identifying organoleptic, particle size determination, biochemical and physiochemical properties respectively.

## 2.MATERIALS AND METHODS:

### 2.1 Drug Selection:

The siddha formulation drug *Elathi chooranam* selected from the *Sarabenthira Vaithiya Muraigal (Siraroga sikitchai)* and this medication is indicated for treating rhinitis called *Vadha peenisam*.<sup>(1)</sup>

### 2.2 Ingredients of *Elathi Chooranam*:

ஏலஞ் சித்திரமூல மாங்கொட்டை

யிலவங்கப்பத்திரி யிவசங்கப்பட்டையுங்

கோலத் திப்பிலி கிராம்புடனே நல்ல

கொத்தமல்லிக் கடுகு மிளகுடன்

சீல தாளிசபத்திரி யோமமுந்

திப்பிலிமூலமுஞ் சேரம் லவணமுஞ்

சால மாதளம்பிஞ்சுடனே சுக்கு

தன்னுடன் புளியங்கொட்டைத்தோலதே

சரக்கெல்லாஞ் சரியாகவுந் தூக்கியே

தானரைத்து தூளாக்கி வடிக்கட்டி

வெருகடித்தூ ளெடுத் தெருமைத்தயிரில்

மேன்மையே மிகுந் தேனிலுங் கொண்டிடச்

சிரப்பயித்தியம் பீனசங் குஷ்டமுஞ்

சேர்ந்த சங்கிராணியு ஞ்சுலையுஞ்

பரக்குமே யிதுகைகண்ட ஞ்ரணம்

பாரிலோ ரிதைச்செய்து பரிந்துண்ணே.

- சரபேந்திரர் வைத்திய

முறைகள்(சிரரோக சிகிச்சை) ப.எண்

:49,50

This poly herbal formulation contains raw drugs and the ingredients of the drug and its quantity are listed below Table 1<sup>(2,3)</sup>

Table 1

S.NO	NAME	BOTANICAL NAME	FAMILY	PART USED	QUANTITY
1.	<i>Elam</i>	<i>Elettaria cardamomum</i>	Zingiberaceae	Fruit	25 g
2.	<i>Maangkottai</i>	<i>Mangifera indica</i>	Anacardiaceae	Seed	25 g
3.	<i>Kirambu</i>	<i>syzygium aromaticum</i>	Myrtaceae	Flower bud	25 g
4.	<i>Kadugu</i>	<i>Brassica nigra</i>	Brassicaceae	Seed	25 g
5.	<i>Thaalisabathri</i>	<i>Abies spectabilis</i>	Pinaceae	Aril	25 g
6.	<i>Thippili</i>	<i>Piper longum</i>	Piperaceae	Dried Fruit	25 g
7.	<i>Thippilimoolam</i>	<i>Piper longum</i>	Piperaceae	Root	25 g

8.	<i>Maadhulampinju</i>	<i>Punica granatum</i>	Punicaceae	Unripe Fruit	25 g
9.	<i>Puliyangottaithol</i>	<i>Tamarindus indica</i>	Fabaceae	Endosperm	25 g
10.	<i>Sithiramoolam</i>	<i>Plumbago indica</i>	Plumbaginaceae	Root	25 g
11.	<i>Lavangapathiri</i>	<i>Cinnamomum tamala</i>	Lauraceae	Dried leaf	25 g
12.	<i>Lavangapattai</i>	<i>Cinnamomum verum</i>	Lauraceae	Bark	25 g
13.	<i>Milagu</i>	<i>Piper nigrum</i>	Piperaceae	Dried fruit	25 g
14.	<i>Omam</i>	<i>Carum copticum</i>	Apiaceae	Dried fruit	25 g
15.	<i>Chukku</i>	<i>Zingiber officinale</i>	Zingiberaceae	Rhizome	25 g
16.	<i>Mallividhai</i>	<i>Coriandrum sativum</i>	Apiaceae	Dried fruit	25 g
17.	<i>Indhuppu</i>	<i>Sodium chloride</i>			25 g

### 2.3 COLLECTION OF RAW DRUG:

The raw drugs were brought from a well reputed raw drug store in Tirunelveli town.

### 2.4 IDENTIFICATION AND AUTHENTICATION OF THE DRUG:

The raw drugs were identified and authenticated by the Head of the Department of Post graduate department of Gunapadam, Government Siddha Medical College, Palayamkottai. The sample of each raw drug is stored in the PG Department of Gunapadam for the future reference.

### 2.5 PURIFICATION OF THE RAW DRUG:

Purification of raw drugs were done as per classical siddha literature.

## 2.6 PREPARATION OF THE TRIAL COMPOUND DRUG *ELATHI CHOORANAM*:

The above-mentioned drugs are grinded into fine powder and sieved (*Vasthrakaayam*). Then the finely powdered drugs are mixed well and kept separately in a neat dry air tight container.

Picture 1 – Sample Description



## 2.7 ADMINISTRATION OF THE DRUG:

**Form of the Medicine:** *Chooranam*

**Route of Administration:** Oral

**Dose:** 500 mg-1gram (based on the age and weight of the child) Twice a day after food

**Indication:** *Peenisangal*

## 2.8 ORGANOLEPTIC CHARACTERS:

State, nature, odor, consistency, flow property, appearance of the drug and solubility of the drug were noted. The organoleptic character analysis was done by Noble Research Solutions Pvt. Ltd., Chennai, India<sup>(4,5)</sup>

## 2.9 PHYSIOCHEMICAL ANALYSIS OF *ELATHI CHOORANAM*:

Physiochemical analysis studies of the powdered trial drug have been done according to PLIM Guidelines for standardization and evaluation of Indian Medicine. The analysis such as loss on drying, determination of total ash, water soluble ash, acid soluble ash, water and alcohol soluble extract. The analysis was done at Noble Research Solutions Pvt. Ltd., Chennai, India. Each analysis is done three times and the mean value is calculated.

### **Percentage Loss on Drying**

Test drug was accurately weighed in evaporating dish. The sample was dried at 105°C for 5 hours and then weighed.

### **Determination of Total Ash**

Test drug was accurately weighed in silica dish and incinerated at the furnace a temperature 400 °C until it turns white in color which indicates absence of carbon. Percentage of total ash will be calculated with reference to the weight of air-dried drug.

### **Determination of Acid Insoluble Ash**

The ash obtained by total ash test will be boiled with 25 ml of dilute hydrochloric acid for 6mins. Then the insoluble matter is collected in crucible and will be washed with hot water and ignited to constant weight. Percentage of acid insoluble ash will be calculated with reference to the weight of air-dried ash.

### **Determination of Alcohol Soluble Extractive**

Test sample was macerated with 100 ml of Alcohol in a closed flask for twenty-four hours, shaking frequently during six hours and allowing it to stand for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105°C, to constant weight and weigh. Calculate the percentage of alcohol-soluble extractive with reference to the air-dried drug.

### **Determination of Water-Soluble Extractive**

Test sample was macerated with 100 ml of chloroform water in a closed flask for twenty-four hours, shaking frequently during six hours and allowing it to stand and for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105°C, to constant weight and weigh. Calculate the percentage of water-soluble extractive with reference to the air-dried drug.<sup>(4,5)</sup>

### **3. PARTICLE SIZE DETERMINATION BY MICROSCOPIC METHOD**

#### **Methodology**

Particle size determination was carried out by optical microscopic method. In which the sample were dissolved in the sterile distilled water (app 1/100<sup>th</sup> dilution). Diluted sample were mounted on the slide and fixed with stage of appropriate location. Light microscopic image were drawn with scale micrometer to arrive at the average particle size. Minimum 30 observations were made to ascertain the mean average particle size of the sample.<sup>(6)</sup>

### **4. PHYTOCHEMICAL SCREENING ANALYSIS OF *ELATHI CHOORANAM***

The Phytochemical screening analysis was carried out for the extract of *Elathi Chooranam* as per the standard procedure by the experts of Biochemistry Department of Government Siddha Medical College, Palayamkottai.

#### **Preparation of the Extract**

5 grams of the drug was weighed accurately and placed in a 250 ml clean beaker. Then 50 ml of distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100 ml volumetric flask and then it is made to 100 ml with distilled water. This fluid is taken for analysis.

#### **Test for Calcium**

2ml of the above prepared extract is taken in a clean test tube. To this add 2 ml of 4% Ammonium oxalate solution. Formation of white colored precipitate indicates the presence of Calcium.

#### **Test for Sulphate**

2 ml of the extract is added to 5% Barium chloride solution. Formation of White colored precipitate indicates the presence of Sulphate.

#### **Test for chloride**

The extract is treated with Silver nitrate solution. Formation of White colored precipitate indicates the presence of chloride.

### **Test for Carbonate**

The substance is treated with concentrated HCL. Formation of brisk effervescence indicates the Presence of Carbonate.

### **Test for Starch**

The extract is added with weak iodine solution. formation of Blue color indicates the presence of Starch.

### **Test for Ferric Iron**

The extract is acidified with Glacial acidic acid and potassium ferrocyanide. Formation of Blue color indicates the ferric iron.

### **Test for Ferrous Iron**

The extract is treated with Concentrated Nitric acid and Ammonium thiocyanate solution. Formation of Blood red color indicates the presence of ferrous iron.

### **Test for Phosphate**

The extract is treated with Ammonium molybdate and concentrated nitric acid. Formation of Yellow color precipitate indicates the presence of Phosphate.

### **Test for Albumin**

The extract is treated with Eshbach's reagent. Formation of Yellow color precipitate indicates the presence of Albumin.

### **Test for Tannic Acid**

The extract is treated with Ferric Chloride. Formation of Blue- black colored indicates the presence of Tannic acid.

### **Test for Unsaturation**

Baeyer's test Potassium permanganate solution is added to the extract. If it gets decolorized, it indicates the presence of unsaturated compounds.



### Test for Reducing Sugar

5 ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and add 8-10 drops of the extract again boil it for 2 minutes. If it gets any color, it indicates the presence of reducing sugar.

### Test for Amino acid

One or two drops of the extract is placed on a filter paper and dried well. After drying, 1% Ninhydrin is sprayed over the filter paper and again dried. If it gets violet color, it indicates the presence of Amino acid.

### Test for Zinc

The extract is treated with Potassium Ferrocyanide. Formation of white colored precipitate indicates the Presence of Zinc.

## RESULTS AND DISCUSSION:

### 2.8 ORGANOLEPTIC CHARACTERS:

Table 2

State	Solid
Nature	Fine powder
Odor	Strong Characteristic
Touch	Soft
Flow Property	Free flowing
Appearance	Pale brownish

### SOLUBILITY PROFILE:

Table 3

S.No	Solvent Used	Solubility / Dispersibility
1	Chloroform	Insoluble
2	Ethanol	Soluble

3	Water	Soluble
4	Ethyl acetate	Insoluble
5	DMSO*	Soluble

DMSO\*-Dimethylsulfoxide

Solubility is one of the important parameters to achieve desired concentration of drug in systemic circulation for achieving required pharmacological response. But poorly water soluble drugs often required high doses in order to reach therapeutic plasma concentration of oral administration. But in researcher's medicine, 3 had soluble property. It is valuable finding to our study.<sup>(7)</sup>

## 2.9 PHYSIOCHEMICAL ANALYSIS:

**Table 4**

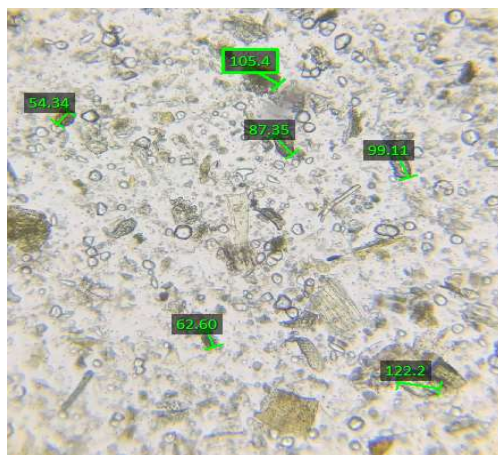
S.No	Parameter	Mean (n=3) SD
1.	<i>Loss on Drying at 105 °C (%)</i>	4 ± 0.2
2.	<i>Total Ash (%)</i>	7 ± 0.4583
3.	<i>Acid insoluble Ash (%)</i>	0.019 ± 0.011
4.	<i>Water soluble Extractive (%)</i>	14.23 ± 0.9292
5.	<i>Alcohol Soluble Extractive (%)</i>	11.5 ± 1.682

Ash value is useful in determining authenticity and purity of sample and also these values are important qualitative standards. The total ash value, acid insoluble ash, water soluble ash was found to be mean (n=3) SD is 7 ± 0.4583, 0.019 ± 0.011, 14.23 ± 0.9292. This percentage clearly indicates that the *Elathi chooranam* is best for drug action and effects. The Water-soluble extractive value plays an important role in evaluation of crude drugs. Less extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying or storage. The alcohol-soluble extractive value was also indicative for the same purpose as the water-soluble extractive value. The water soluble extractive value proved to be

higher than alcohol soluble extractive value. It was found to be  $14.23 \pm 0.9292$ . This shows that the constituents of the drug are more extracted and soluble in water as compared to alcohol. Moisture is one of the major factors responsible for the deterioration of the drugs and formulations. Low moisture content is always desirable for higher stability of drugs. In researcher's study had higher Water-soluble extractive value.<sup>(8)</sup>

### 3. PARTICLE SIZE DETERMINATION BY MICROSCOPIC METHOD

Picture – 2 Microscopic Observation of Particle Size for the sample *Elathi chooranam*



Microscopic observation of the particle size analysis reveals that the average particle size of the sample was found  $77.4 \pm 24.85 \mu\text{m}$  further the sample has particle with the size range of **lowest 54  $\mu\text{m}$  to highest 122  $\mu\text{m}$ .**<sup>(6)</sup> Ingredients of *Elathi chooranam*'s particle size is in lowest 54  $\mu\text{m}$  to highest 122  $\mu\text{m}$ .<sup>(6)</sup> Therefore, this finding is help to better absorption.

### 4. PHYTOCHEMICAL ANALYSIS:

The phytochemical analysis of *Elathi Chooranam* reveals the presence of **Sulphate, Chloride, Ferrous Iron, Tannic acid, Unsaturated Compound and Amino acid.**

Table 5

S.NO	PHYTOCHEMICALS	RESULT
1.	calcium	Absent
2.	<b>Sulphate</b>	<b>Present</b>
3.	<b>Chloride</b>	<b>Present</b>
4.	Carbonate	Absent
5.	Starch	Absent
6.	Ferric iron	Absent

7.	<b>Ferrous Iron</b>	<b>Present</b>
8.	Phosphate	Absent
9.	Albumin	Absent
10.	<b>Tannic Acid</b>	<b>Present</b>
11.	<b>Unsaturated compounds</b>	<b>Present</b>
12.	Reducing sugar	Absent
13.	<b>Amino acid</b>	<b>Present</b>
14.	Zinc	Absent

Tannin have a antioxidant activity, antimicrobial activity, anti-inflammatory activity, histamine release inhibition<sup>(9)</sup>. Chloride helps to moisture in the nasal cavity, so we have to provide nasal congestion also due to the property of mucus softness<sup>(10)</sup>. Ferrous iron had higher absorption rate than ferric iron.

## CONCLUSION

Organoleptic characters of *Elathi Chooranam* reveals that the drug is solid, soft, fine, free flowing, pale brownish color and strong characteristic. Particle Size Determination, Physiochemical and Phytochemical property of *Elathi chooranam* reveals that the drug is safety and effective. Further preclinical and clinical trials should be done in future to know the value of the drug.

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