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Standardisation of peenisa chooranam used for Slethuma Peenisam (Sinusitis)

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Abstract

The Tamil Siddha System of medicine mimics the nature and also it is the art of living, it is the peculiar science compromising of Panchabootha theory, Mukkutram, Naadi, Varmam, Alchemy, Philosophy, Yoga, Astrology, Panjapatchi etc. Standardization is an essential factor in order to access the quality, purity, safety and efficacy of drugs based on the concentration of their phytochemical constituents. This study reports on standardization parameters of Peenisa chooranam a formulation used for Slethuma peenisam (Sinusitis). The Peenisa chooranam was subjected to standardization on the basis of oraganoleptic properties, physic chemical evaluation, Aflatoxin assay, Phytochemical analysis.

Keywords: Siddha system, Standardization, Physicochemical, Phytochemical.

Introduction

Standardization is an essential factor in order to access the quality, purity, safety and efficacy of drugs based on the concentration of their phytochemical constituents. It is important to establish a system of standardization for every medicine in the market, since the scope for variation in different batches of medicine is enormous.

Whatever is in the microcosom is in the macrocosm,

- **Siddhar Sattaimuni**

This ancient song of Siddhar Sattaimuni speaks of the human form being an exact reflection of the larger cosmos. Siddha Sattaimuni had explained that five basic elements (Earth, Water, Fire, Air and Space) constituting the macrocosm also constitute the microcosm. So the changes that occur in the macrosom will simultaneously affect the microsom. It leads to ailments. Everything in the world is the reflection of macrosom.

The Tamil Siddha System of medicine mimics the nature and also it is the art of living, it is the peculiar science compromising of Panchabootha

theory, Mukkutram, Naadi, Varmam, Alchemy, Philosophy, Yoga, Astrology, Panjapatchi etc.

Health is vital to the satisfaction of human needs and to improve quality of life. One of the common diseases that affect the children health is sinusitis commonly reffered as 'Peenisam' in Siddha literatures.

The use of plants and animals as source of medicine and food is as old as humanity. In our Siddha medicine herbs, minerals and metals are used for the medicine preparations. This study reports on standardization parameters of Peenisa chooranam a formulation used for Slethuma peenisam (Sinusitis).The Peenisa chooranam was subjected to standardization on the basis of oraganoleptic properties, physicochemical evaluation, Afla toxin assay, Phytochemical analysis.

Materials and Methods

Herbal drugs were purchased from Gopal Aasan shop in Kanyakumari district. The ingredients of peenisa chooranam was identified and Authenticated by the Head of the department of Gunapadam in Government Siddha Medical College, Palayamkottai. The drug Peenisa chooranam was prepared in the Gunapadam laboratory of Government siddha medical college and hospital, Palayamkottai, after proper purification. The required quantity of the purified drugs was taken and grinded into fine powder and filtered by Vasthrakayam procedure. The prepared medicine was also be authenticated by the Head of the department of Kuzhanthai maruthuvam for its completeness. The analysis was conducted at Noble research solution Pvt.Ltd, Chennai, India. The ingredients of the drug Peenisa chooranam are given in the **Table 1.**

Table 1: Ingredients of Peenisa Chooranam.

S.No	Ingredients	Botanical Name
1.	Chukku	*Zingiber officinale*
2.	Milaghu	*Piper nigrum*
3.	Thippili	*Piper longum*
4.	Sengathari	*Capparia seipaaria*
5.	Kodiveli	*Plumbago zeylanica*
6.	Kandangathiri	*Solanum surrattense*
7.	Sangamver	*Azima tetracantha*
8.	Karunjeeragam	*Nigella sativa*
9.	Narjeeragam	*Cuminum cyminum*

Organoleptic characters:

Colour, odour, Taste and consistency of the drug were noted.

Physico – chemical parameters:

All the physic chemical parameters were carried out as per the methods mentioned in PLIM guidelines. The parameters are as follows:

1. Percentage loss on drying:

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

2. Determination of Total ash:

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

3. Determination of Acid insoluble Ash:

The ash obtained by total ash test will be boiled with 25 ml of dilute hydrochloric acid for 6 mins. 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.

4. 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 allow 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 degree C, to constant weight and weigh. Calculate the percentage of alcohol – soluble extractive with reference to the air- dried drug.

5. Determination of Water soluble Extractive:

Test sample was macerated with 100 ml of chloroform in a closed flask for twenty-four hours, shaking frequently during six hours and allow 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 degree C, to constant weight and weigh. Calculate the percentage of water – soluble extractive with reference to the air- dried drug.

Phytochemical analysis of Adathodai nei:

The Phytochemical screening test was carried out for the extract of Peenisa Chooranam as per the standard procedure was done by the experts of Biochemistry department, Government siddha medical college and hospital, Palayamkottai.

Preparation of the extract:

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

1. Test for calcium

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

2. Test for sulphate

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

3. Test for chloride

The extract is treated with silver nitrate solution. Formation of white coloured precipitate indicates presence of chloride.

4. Test for carbonate:

The substance is treated with concentrated HCL. Formation of brisk effervescence indicates presence of carbonate.

5. Test for starch:

The extract is added with weak iodine solution. Formation of blue colour indicates the presence of Starch.

6. Test for ferric iron:

The extract is acidified with glacial acetic and potassium Ferro cyanide. Formation of blue colour indicates the presence of Ferric iron.

7. Test for ferrous iron:

The extract is treated with concentrated nitric acid and ammonium thiocyanate solution. Formation of blood red colour indicates presence of ferrous iron.

8. Test for phosphate:

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

9. Test for albumin:

The extract is treated with esbach reagent. Formation of yellow precipitate indicates presence of Albumin.

10. Test for tannic acid:

The extract is treated with ferric chloride. Formation of blue black precipitate indicates presence of Tannic acid.

11. Test for unsaturation:

Bayer's test-potassium permanganate solution is added to the extract. If it gets decolourates, it indicates the presence of unsaturated compounds.

12. Test for the reducing sugar:

5 ml of the 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 and again boil it for 2 minutes. If it gets any colour change it indicates the presence of reducing sugar.

13. Test for amino acid:

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

14. Test for zinc:

The extract is treated with potassium Ferro cyanide. Formation of white coloured precipitate indicates presence of Zinc.

Aflatoxin assay by TLC:

Standard:

Aflatoxin B1, Aflatoxin B2, Aflatoxin G1, Aflatoxin G2

Solvent:

Standard samples was dissolved in a mixture of chloroform and acetonitrile (98 : 0.2) to obtain a solution having concentrations of 0.5 micro gram per ml each of aflatoxin B1 and aflatoxin G1 and 0.1 micro gram per ml each of aflatoxin B2 and aflatoxin G2.

Procedure:

Standard aflatoxin was applied on to the surface to pre coated TLC plate in the volume of 2.5 micro litre,5 micro litre,7.5 micro litre and 10 micro litre. Similarly the test sample was placed and allow the spots to dry and develop the chromatogram in an unsaturated chamber containing a solvent system consisting of a mixture of chloroform, acetone and isopropyl alcohol (85:10:5) until the solvent front has moved not less than 15 cm from the origin. Remove the plate from the developing chamber, mark the solvent from and allow the plate to air-dry. Locate the spots on the plate by examination under UV light at 365 nm.

Results and Discussion

Organoleptic characters:

The drug Peenisa chooranam seems to be solid, Fine, Aromatic, Soft, Non free flowing, Brownish given in **Table 2**

Table 2: Organoleptic characters:

State	Solid
Nature	Fine
Odor	Aromatic
Consistency/Touch	Soft
Flow property	Non – free flowing
Appearance	Brownish

Solubility profile

Solubility is the major factor that controls the bioavailability of a drug substance. It is useful to determine the form of drug and processing of its dosage form as given in **Table 2 A.**

Table 2 A Solubility profile

S.NO	Solvent used	Solubility /Dispersibility
1	Chloroform	Insoluble
2	Ethanol	Insoluble
3	Water	Soluble
4	Ethyl acetate	Insoluble
5	DMSO	Soluble

Table 3: Physicochemical evaluation

S.No	Parameter	Mean (n=3)SD
1	Loss on drying at 105 degree C	1.897 ± 0.75
2	Total Ash	17.43 ± 0.80
3	Acid insoluble Ash	0.97 ± 0.02
4	Alcohol soluble extract	0.31 ± 0.23
5	Water soluble Extract	2.03± 0.15

Phytochemical analysis:

The extract prepared from the given sample Peenisa chooranam contains **Sulphate, Chloride, Starch, Ferrous iron, Unsaturated compounds, Amino acids** as given in **table 4.**

Table 4 : Phytochemical analysis

S.No	Phytochemicals	Results
1	Calcium	Absent
2	**Sulphate**	**Present**
3	**Chloride**	**Present**
4	Carbonate	Absent
5	**Starch**	**Present**
6	Ferric Iron	Absent
7	**Ferrous Iron**	**Present**
8	Phosphate	Absent
9	Albumin	Absent
10	Tannic acid	Absent
11	**Unsaturation**	**Present**
12	Reducing sugar	Absent
13	Amino acid	**Present**
14	Zinc	Absent

Aflatoxin

The results shown that there were no spots were being identified in the test sample loaded on TLC plates when compare to the standard which indicates that the sample were free from Aflatoxin B1,Aflatoxin B 2, Aflatoxin G 1, Aflatoxin G 2 as given in **table 5.**

Table 5: Aflatoxin Assay

Aflatoxin	Sample Peenisa chooranam
B1	Absent
B2	Absent
G1	Absent
G2	Absent

Conclusion

In this study, we first report the Physicochemical and phytochemical standards of Peenisa chooranam which can be used to lay down pharmacopoeial standards for Peenisa chooranam, which will help the industries to increase the quality and to minimize the batch to batch variations of this Siddha drug.

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