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Physico-Chemical Analysis Of Herbo Mineral Preparation Pacchai Karpoora Mathirai

Saraswathi R [1], Elavarasi A [2], Selvakumar S [3*]

[1] Agasthiyar Siddha Clinic, Jayangkondam, Tamil Nadu, Mobile: 9626063589

E-mail: drsaraswathimohansiddha@gmail.com

[2] Associate Professor, Department of Udalkoorugal, Sir Issac Newton Siddha Medical College & Hospital, Nagapattinam, Tamil Nadu, Mobile: 9715925561

E-mail: elavarasidr@gmail.com

[3] Assistant Professor, Department of Physiology, Dhanalakshmi Srinivasan Medical College & Hospital, Perambalur, Tamil Nadu, Mobile: 8110953023

E-mail: drselvaphysiology@gmail.com

Running Title: Physico-chemical analysis of Herbo mineral preparation Pacchai Karpoora Mathirai

ABSTRACT

Pacchai Karpoora Mathirai is a herbo-mineral siddha formulation for the treatment of kabasuram (Bronchitis). **Aim and objective:** To estimate the phytochemical analysis of pacchai karpoora mathirai. **Materials and Methods:** The drug was prepared as mentioned in the classic siddha literature (Bala vagadam). The physico-chemical analysis such as loss-on-drying method or LOD, total ash, insoluble ash, water soluble ash, water soluble extractive and alcohol soluble extractive were carried out. **Results:** The physico-chemical analysis revealed that the loss on drying was 13.98, total ash was 4.15, acid insoluble ash was 0.7, water soluble ash was 2.60, water soluble extraction was 7.81 and alcohol soluble extraction was 25.33 and pH value was 5.17. The physicochemical analysis of the test drug Pacchai Karpoora Mathirai was carried out as per WHO guidelines (Quality control methods for medicinal plant materials -1998). The test procedures were done at Central Research Institute, Arumbakkam, Chennai.

KEY WORDS

Physico-chemical, Siddha system, Kabasuram, Pacchai Karpoora Mathirai,

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INTRODUCTION

Siddha system of medicine is a spiritually enriched traditional system of medicine.

Siddha system is an integrated part of Indian system of Medicine, which is very potent and unique. Lord Shiva conveyed the knowledge of medicine to his wife Parvati and the knowledge was passed from her to Nandi and finally it was given to the Siddhars. The word Siddha denotes one who has achieved some extraordinary powers (*siddhi*).
Siddha medicine works by revitalizing and rejuvenating the organs which helps to correct the common ailments responsible for causing the diseases. It restores the normal functioning of the organs and maintains the ratio of the three doshas – Vatha, Pitta and kapha, thereby providing a healthy state of equilibrium of the body.

The basic concept on siddha medicine proposes that the universe consists of two entities.

1. Matter
2. Energy.

Siddhars call these energies as, Siva (male) and Shakti (female) creations. The conceptual states that matter cannot exist without the energy inherent in it and vice versa. Thus the two co-exist and are inseparable.

The drugs used in Siddha medicine were classified on the basis of five properties: Suvai (taste), Gunam (character), Veeryam (potency), Pirivu (class) and Mahimai (action).

According to the Siddha medicine system, diet and life style plays a major role not only in curing diseases but also prevention from diseases and in maintaining the health. Siddha. This is achieved by the concept of *pathya* which is essentially a list of do's and dont's especially during the diseased condition. Concept lies on **Salutogenesis**. As salutogensis is termed as **"the origins of health.** Pacchai karpoora mathirai is one of the siddha drug choosen from the text "Bala vagadam". The use of the scientific tool is essential to validate the traditional claim. Though siddha drug is considered to be safe and effective it is almost duty of the physician to standardize the siddha medicine before trying out in human being. This herbo-mineral drug contain only one mineral pacchai karpooram, and the other ingredients are herbal in nature.

AIM AND OBJECTIVE:

This study aims on physico-chemical and preliminary qualitative phytochemical analysis of the drug pacchai karpoora mathirai

MATERIALS AND METHODS

PREPARATION OF THE TRIAL DRUG PACCHAI KARPOORA MATHIRAI INGREDIENTS:

P -	Pacchai karpooram(Borneo camphor)	2 Kazhanchu (10gm)
E	Elavanga pattai (Cinnamomum verum) -	2 Kazhanchu (10gm)

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S - Jaathikkai (Myristica fragrans) 2 Kazhanchu (10gm)

Nervalam (Croton tiglium) - 6 Kazhanchu (30gm)

Katrazhai saaru (Aloe vera juice) - Rrequired amount

METHOD OF PURIFICATION:

Purification of Pacchai Karpooram:

It is to be soaked in the juice extracted from sengazhuneer (Sangam flora) flower for 1 nazhigai (24 mins) and then dried.

Purification of Elavangapattai:

Dried in moon light

Purification of Sathikkai :

The skin is of the sathikkai is peeled off and they were cut down into small pieces and then dried in sunlight.

Purification of Nervalam :

The seeds are cooked by using the extract of buffalo dung and then washed. Then it is cut down into two halves, after this the skin is peeled off. Then the sprout like inner part are removed. Then the ingredient is placed in a cloth and tied loosely and kept cooked in raw rice for cooking, remove it when the rice is completely cooked. Repeat the procedure once again. Then the seeds are boiled in milk, after boiling it is washed and dried. Finally the seeds are fried in the castor oil coated bowl and stored.

Purification of Katrazhai:

The skin is peeled off and washed with running water for 7times **Method of preparation:**

The above mentioned first 3 drugs each of 2 kazhanchu(10gms) is grinded along with the juice of aloevera for about 4 samam (12 hours) and then with nervalam. Now this is made into a ulunthalavu (65mg) tablet and is dried in the shade and collected.

physicochemical analysis of the test drug Pacchai Karpoora Mathirai [1][4]

The physicochemical analysis of the test drug Pacchai Karpoora Mathirai was carried out as per WHO guidelines (Quality control methods for medicinal plant materials -1998)._The test procedures were done at Central Research Institute, Arumbakkam, Chennai.

Determination of loss on drying

Place about 10mg of drug it in a tared evaporating dish (without preliminary drying) after accurately weighing (accurately weighed to within 0.01 g). After placing the above said amount of the drug in the tared evaporating dish, its dried at 105ºC for 5 hours, and weighed. Continue the drying and weighing at an interval of every one hour until difference between two successive

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weighings corresponds to not more than 0.25 per cent. Constant weight is reached when two consecutive weighings after drying for 30 minutes and cooling for 30 minutes in a desiccator, shown not more than 0.01 g difference.

Determination of Total Ash

Incinerate 2 g accurately weighed, of the drug in a tared silica dish at 450ºC until free from carbon, cool and then weighed. By the foresaid method if a carbon free ash cannot be obtained, then it shall be obtained by exhausting the charred mass with hot water, collect the residue on an ashless filter paper, incinerate the residue and filter paper, then add the filtrate, make them to evaporate for dryness, and ignite at a temperature not exceeding 450ºC. Calculate the percentage of ash with reference to the air dried drug.

Determination of Acid Insoluble Ash

Boil the ash obtained in the above test for 5 minutes with 25 ml of dilute hydrochloric acid repeatedly; collect the insoluble matter on an ashless filter paper, wash with hot water and ignite to constant weight. Calculate the percentage of acid-insoluble ash with reference to the air dried drug.

Determination of Alcohol Soluble Extractive

Macerate 5 g of the air dried drug, they are coarsely powdered, then it mixed with Alcohol (100 ml) of the specified strength in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand for eighteen hours. By taking precautions against loss of solvent, filter the content rapidly, Place 25 ml of the filtrate in a tared flat bottomed shallow dish, then allow to evaporate to dryness, and dry at 105º, to constant weight and weigh. Calculate the percentage of alcohol soluble extractive with reference to the air-dried drug.

Determination of Water Soluble Extractive

For the determination of Alcohol-soluble extractive, instead of ethanol distilled water is used.

Determination of pH

Add 100 ml of distilled water with 10g of sample, then stir well and filter. Use the filtrate for the experiment. Switch on the instrument. For a minimum of 30 minutes time given for warming pH meter. Introduce the pH 4 solution first and adjust the pH meter by using the knob to 4.00 for room temperature 20°C, 4.01 for room temperature 25°C, 4.02 for room temperature 30°C. Introduce the pH 7 solution and by using the knob, adjust the pH meter to 7. Introduce the pH 9.2 solution and without adjusting the knob, check the pH reading. Then introduce the sample solution and note the reading. Repeat the test four times and take the average reading as result.

Uniformity of Weight

This test is applicable to tablets that contain less than 10 mg or less than 10% w/w of active ingredient. For tablets containing more than one active ingredient, then carry out the test for each active ingredient that corresponds to the aforementioned conditions. The test for Uniformity of

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content should be carried out only after the content of active ingredient (s) in pooled sample of the tablets has been shown to be within accepted limits of the stated content.

The test for Uniformity of content is not applicable to tablets containing trace elements. Determine the content of active ingredients (s) in each sample of 10 tablets taken by random method, using the method given in the monograph or by any other suitable analytical method. The tablets comply with the test if not more than one of the individual values thus obtained is outside the limits 85 to 115% of the average value and none is outside the limits 75 to 125% of the average value. If two or three of the individual values are outside the limits 85 to 115% of the average value and none is outside the limits 75 to 125%, repeat the determination using another 20 tablets. The tablets comply with the test, among the total sample of 30 tablets not more than three of the individual values are outside the limits 85 to 115% and none is outside the limits 75 to 125% of the average value.

RESULT AND DISCUSSION

The organoleptic character of pacchai karpoora mathirai was shown in Table 1

Table 1

SI.NO	ORGANOLEPTIC CHARACTER	RESULTS
1.	Colour	Brown
2.	Odour	Pleasant odour
3.	Sense of touch	Hard
4.	Appearence	Round

Physico-chemical analysis was done as preliminary evaluation on Pacchai Karpoora Mathirai is shown in table 2. The method of measuring the moisture content in solid or semi-solid materials is loss on drying (LOD). Low moisture content is always desirable for higher stability of drugs. In Pacchai Karpoora Mathirai, the loss on drying at 105^{o}C was found to be 13.98%, it falls in between the limit range (1-20%). So the determination of moisture content shows the good stability of the drug Pacchai Karpoora Mathirai.

Table 2:

No	**Name of the experiment**	**Values**
1.	Loss on drying at 105° C	13.98
2.	a.Total ash	4.15

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	b. Acid insoluble ash	0.7
	c.Water soluble ash	2.60
3.	a. Alcohol soluble extract	25.33
	b. Water soluble extract	7.81
4.	pH value(10%)	5.17
5.	Uniformity of weight tablet Average Weight of tablet	0.04
	Lowest Weight of tablet	47.37%
	Highest Weight of tablet	67.5%

The purity of the drugs are repesented by the ash values. The *total ash* includes both "physiological ash", which is derived from the organic matter, and "non-physiological" ash, which is the residue of the extraneous matters like sand/soil, inorganic materials. The non-physiological ash is represented by *acid insoluble ash.* The total ash in Pacchai Karpoora Mathirai found to be 4.15%, and the acid insoluble ash was found to be 0.7%. The both ash value were under the limits. The minimal level of *acid insoluble ash* shows the less inorganic residue and purity of the drug Pacchai Karpoora Mathirai.

The extractive values helps to indicate the nature of chemical constituents present in the drug. The water soluble substances are polar in nature and the alcohol has the ability to dissolve non-polar substance. The water soluble extract value of Pacchai Karpoora Mathirai is 7.81% and the Alcohol soluble extractive is 25.33%. This shows the possibility of water soluble constituents such as tannins, sugars, plant acids, mucilage, and alcohol soluble substance such as tannins, resins and alkaloids to be present in the drug. As the drug Pacchai Karpoora Mathirai having more alcohol soluble constituents than water soluble, it would be likely non-polar. So the drug will show good absorption & intracellular distribution without possible of accumulation inside the cells. The poor water solubility of the drug may prolong the duration of the drug action.

Strongly acidic nature of a drug can cause the harmful effects to the body, so the screening for the pH is important for drugs. It represents the chemical nature of the drug and the site of absorption of non-polar drug. The pH of Pacchai Karpoora Mathirai found to be 5.17 that is weekly acidic and safe in pH. The weekly acidic drugs are rapidly absorbed from stomach. So the drug Pacchai Karpoora Mathirai can act rapidly on oral administration.

CONCLUSION

The current study investigation is done to meet the standardization of WHO and other scientific committees. The analysis revealed that physico-chemical analysis such as loss of

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drying, total ash insoluble ash, water soluble ash, water soluble extractive, and alcohol soluble extractive, awere carried out. Based on the above result, it can be assumed that the drug pacchai karpoora mathirai has an validated the traditional claim. This research work is done to extend the further studies on Pachai Karpoora Mathirai in future with different analytical, qualitative and Docking studies.

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CONFLICT OF INTEREST

Nil

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