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Physicochemical Analysis Of Siddha Medicine Padikara Chunnam

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Abstract

Urolithiasis, also termed renal calculi or nephrolithiasis, are commonly called kidney stones. These are hard deposits of salts and minerals which are formed in the kidneys. These symptoms can be correlated with Kalladaippu in the Siddha system of Medicine. Siddha Medicine has numerous medicines to treat Kalladaippu. One such formulation is Padikara Chunnam.

Place of study

The study was performed at Noble Research Solutions, Kolathur, Chennai-99.

Methodology

The sample Padikara Chunnam (PC) was prepared as per the text. The organoleptic characters were perceived by the senses, and the physicochemical parameters were analysed. The results were observed and tabulated. The study was performed under the PLIM guidelines for standardization of Indian Medicine.

Result

The result of sample PC shows white-coloured, very fine powder Chunnam with very mild odour. The physicochemical parameters of PC show that the total ash value is 94.63%, loss on drying at 105^0C is 0.39%, acid insoluble ash is 8.4%, and the pH is 8.5.

Conclusion

The study shows that the sample has the characteristics of Chunnam, as explained in the texts. The drug has alkaline pH as well. Balance of pH is important in treating and protecting against illness. Thus, the study medicine Padikara Chunnam will be beneficial in treating diseases and supports further research.

Keywords

Kalladaippu, Siddha, Padikaram, Chunnam, Urolithiasis

1. Introduction

Siddha system of medicine is a traditional system of medicine with both internal and external treatment procedures and medicines. It has medicine preparations from plants, metals, minerals and animal origin. Among 32 types of internal medicines, Chunnam is a calcined nano particle powder form of medicine with a shelf life of over five hundred years[1,2]. One such Chunnam type of medicine in the Siddha system of Medicine is Padikara Chunnam (PC), from the literature Anubhoga vaidhya Navaneetham, Part III. It is said to be given in the dosage of 3 to 5 Kundri edai (which is equivalent to 390 mg to 650 mg) as BD, with the adjuvant Neeragaram. It is indicated for Kalladaippu, Sadhaiyaddaippu, Neeradaippu, Neerchurukku[3]. Among Kalladaippu, especially Vadha Kalladaippu can be correlated to Urolithiasis, according to its signs and symptoms. Urolithiasis is nothing but the development of hard, crystalline formations in the urinary system known as uroliths or kidney stones, which is the hallmark of the disease. These stones can develop in the kidneys, ureters, bladder, or ureters and vary in size and composition. The most common type include calcium stone, uric acid stone, struvite stone and cystine stone[4]. This study deals with the Physico chemical analysis of Siddha Medicine Padikara Chunnam to analyse its Physical and Chemical characteristics and purity which support the standardization and therapeutic efficacy of the chunnam type of medicine in the scientific world.

2. Materials and Methods

2.1 Padikara Chunnam (PC) Ingredients

Padikaram (Alum) - 1 palam (35 gram)

Pungam Paal (*Pongamia pinnata*) - Q.S

2.2 Drug authentication

The necessary raw drugs were purchased from a reputable local raw drug seller. Pungam Paal was collected from Pungam tree root bark. The drugs were authenticated by Botanist and Department of Gunapadam, Government Siddha Medical College, Arumbakkam.

2.3 Sample preparation

Raw drugs was purified as per the literature mentioned in Sikitcha Rathna Deepam Ennum Vaidhiya Nool[5] and Gunapaadam Thaathu Seeve Vagupu[1]. Purified Padikaram of one palam (35 gram) was taken, rubbed in kalvam (stone mortar) with pungam paal, and made into Villai. After villai's were made, place it in a pair of agals and cover it with clay-smeared cloth in three layers provided to the marigin, dried, and subjected to

the pudam process with cow dung cakes. The cow dung cake ratio is four times the weight of dried agals. After the pudam process, it was carefully opened out of the clay cloth, and the Chunnam was powdered, secured, and bottled up.

2.4 Methodology

The study was performed at Noble Research Solutions, Kolathur, Chennai -99 under PLIM Guideline for standardization of Indian Medicine including drugs of Siddha system of Medicine. The Project Id of sample PC was NRS/AS/1251/11/2023. Organoleptic characters were perceived by the senses. The methodology of physico chemical analysis includes,

2.4.1 Percentage Loss on Drying

The study drug PC was accurately weighed in evaporating dish. The sample was dried at 105^{o}C for 5 hours and then weighed.

2.4.2 Determination of Total Ash

The study drug PC was accurately weighed in silica dish and incinerated at the furnace of temperature 400^{o}C until it turns white in color which indicates absence of carbon. Percentage of total ash was calculated with reference to the weight of air-dried drug.

2.4.3 Determination of Acid Insoluble Ash

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

2.4.4 Determination of Alcohol Soluble Extractive

Test sample PC 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 dried at 105^{o}C, to constant weight and weigh. The percentage of alcohol-soluble extractive with reference to the air-dried drug was calculated.

2.4.5 Determination of Water Soluble Extractive

Test sample PC 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 dried at 105°C, to constant weight and weigh. The percentage of water-soluble extractive with reference to the air-dried drug was calculated.

2.4.6 pH determination

Required quantity of test sample PC was admixed with distilled water and subjected to screening using pH meter[6,7].

3. Result

3.1 Organoleptic characters of PC

Figure 1 Padikara Chunnam (PC)

Table 1 Organoleptic characters of PC

State	Solid
Nature	Very fine
Odour	Very Mild
Touch	Soft
Flow Property	Free flowing
Appearance	Whitish

Table 2 Solubility Profile of PC

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

3.2 Physico chemical analysis of PC

Table 3 Physicochemical analysis of PC

S.No	Parameter	Mean (n=3) SD
1.	**Loss on Drying at 105 °C (%)**	0.39 ± 0.22
2.	**Total Ash (%)**	94.63 ± 2.15
3.	**Acid insoluble Ash (%)**	8.4 ± 1.8
4.	**Water soluble Extractive (%)**	13.17 ± 4.2
5.	**Alcohol Soluble Extractive (%)**	0.50 ± 0.30
6.	**pH**	8.50

4. Discussion

The study sample PC show the characteristics of whitish color appeared, soft touch, free flowing, solid state powder medicine with very mild odour and very fine in nature. The solubility profile of PC show that the medicine was soluble in Ethanol and Water whereas it is insoluble in Chloroform, Ethyl acetate and DMSO (Dimethyl Sulfoxide). The Physico chemical parameters show that the total ash value is 94.63%, acid insoluble ash is 8.4%. Sample PC's acid insoluble ash percentage is minimal, suggesting that no siliceous materials was present in the preparation. This show the quality of drug. Loss on drying is the weight loss, given as a percentage of weight, as a result of materials that can be determined under certain circumstances. Sample of PC show the loss on drying at 105^0C as 0.39%. The sample PC show the water soluble extractive as 13.17% and alcohol soluble extractive as 0.50%. The pH of sample PC is 8.50, which is around eight indicating that the drug is alkaline in nature. Alkaline drugs and therapy are generally used to treat

urolithiasis, which works with urine pH level there by eliminating and preventing the kidney stones [8]. Padikaram, one among ingredient of PC tend to report pharmacological activities like anti microbial activity, anti haemorrhagic activity, anti septic, anti spasmodic activity[9]. This also supports the present study of PC against the symptoms of Kidney stones.

5. Conclusion

From this study, it is concluded that the sample Padikara Chunnam (PC) is prepared and purified in hygienic conditions, revealing the quality. Also, it shows the alkalinity of the drug. Nano particle medicine is well established boon to the Siddha medicine, which is being prepared since ancient times. However, further elemental studies on Padikara Chunnam are required to strengthen the present study.

6. Acknowledgement

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7. Ethical approval and Informed consent

It is not applicable.

8. Author contribution

Dr.A.Kamaraj, performed the study and prepared the manuscript. Dr. Anbu N, guided the study and approved the manuscript.

9. Competing interests

The authors has no competing interests to declare.

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