[Downloaded free from http://www.ijrphr.com]

International Journal of Reverse Pharmacology and Health Research

Research article

The Spectroscopic Analysis of Siddha Drug Kadukkai Chooranam

Ajanthan. R*[1], Manoharan.A[2]

[1]PG Scholar, Department of Maruthuvam, GSMC, Palayamkottai, Tamilnadu, India,

[2]Professor, Head of the Department, Department of PothuMaruthuvam, GSMC, Palayamkottai,Tamilnadu, India

Abstract

Background: The Kadukkai is a one of the main ingredient in triphala chooranam ,for the long period kadukkai is used separately and compound preparation was used in siddha system. The various collections of siddha literatures found kaddukkai is a good antioxidant, antimicrobial and Hypoglycemic activities. Kaddukkai choornam (kc) is separately used in siddha system, for treated anemia and diabetic dyslipidemic state. So, standardization of herbal drug kc is very essential to proved the efficacy and avoid toxicity for long term use. In this study attempt is to revalidate the pharmacological process of preparation of kc, which have been discussed about modern spectroscopic characterization and elemental quantification of Kadukkai chooranam(kc).

Objective: To found the morphology and chemical characterization of the herbal plant formulation of Kadukkai Chooranam.

Methods: The KC is determined by qualitative and quantitative modern analytical methods such as phytochemistry, SEM,XDR and FTIR. The analytical study of kc by using SEM, and found the trace elements by applied Energy dispersive X-ray analysis instrumented successfully detect Functional Group of kc through FTIR study .The above study is compared WHO guidance and correlation with the results.

Results: The above results found the minimum and maximum average Particle Sizes between 101 µm to 1115µm in 10 µm view and 107 µm to 1244µm in 100 µm respectively. The further kc is mostly presence of Nitro compounds, alkenes, alcoholic compounds and trace elements like Zinc, Selenium, Calcium, Potassium and Magnesium.

Conclusion: The Kadukkai chooranam is scientifically proved to prolonged usage. All the scientific data showed permissible limitations, which it is correlated by who guidelines. The phytochemical analysis also performed, the results showed kc is contain phenols, flavonoids and tannic acid.s o,kc is safer and for using longer period.

Keywords

Kadukkai, Kadukkaichooranam, Siddha Medicine, Instrument, phytochemistry

Address for correspondence:

Ajanthan R

[1]Post Graduate Scholar, Department of Maruthuvam, GSMC, Palayamkottai, Tamilnadu, India

CODENJ : IJRPHR

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit s given and the new creations are licensed under the identical terms.

For reprints contact: publisher@ijrphr.com

To access this article online

Website : http://www.ijrphr.com/

DOI : 10.121/ijrphr/02.0203.305

Quick response code

Introduction

Siddha (Gunapadam) Materia medica is classified into three main categories, the preparatory source is received from herbal, mineral and animal origin's. The form of Siddha medicine is divided into 32 internal and32 external types medicine, most of them herbal-mineral combination drugs. The Kadukkaichooranam[1] is an Internal medicine comes under the Chooranam types of Medicines.

How to cite this article:

Ajanthan R, Manoharan A, The spectroscopic Analysis of Siddha Drug Kadukkai Chooranam, International Journal of Reverse Pharmacology and Health Research, 2019, 2(1), 13-15

Received: January, 2018.

Accepted: March, 2019.

[Downloaded free from http://www.ijrphr.com]

Kadukkai is a Combretaceae family, which is used in Siddha and Traditional medicine for constipation, chronic diarrhoea, gastric ulcer, gastroenteritis, asthma, cough, dyspnoea, dyspepsia, haemorrhoids, Candidiasis, parasites, malabsorption syndrome, Hepatomegaly, renal calculi, urinary discharge, tumours, skin disease, memory loss, epilepsy, diabetes, cardiovascular disease, anorexia and wounds(Nadkarni, K.M., 1976)[2].

According to the World Health organization the herbal medicines have been defined as those containing plant parts or plant materials in raw state or processed form (Krishnan, K.S., 1998) [3] containing active principles, are to be considered a important form and ensured to follow the Protocol for drug research in traditional system of medicine(Cha S. Potential anticancer medicinal plants) [4]. The Siddha system of medicine encompasses around 600 medicinal plants is described in siddha materiamedica (GunapadamMooligaivaguppu)[1]. From the abundant source of herbal preparations in different formulations are practiced in ten decades. So, it must be ensured that the quality of the drugs should not be compromised, the efficacy of the drugs should be maximized, the adverse effects should be minimized when prepared it in a absolute protocol as mentioned by the literatures[5].

The structural characterization of the herbal drugs is need of the hour and the objective is to establish the elemental and structural characteristics of Kadukkai chooranam. Although, many research works has done in the herbal drugs as well as in Terminalia chebula (Sarita.M.Kapgate et al. 2016), so far haven't performed any standardization, structural standardization parameters in traditionally purified form of Kadukkaichooranam[1]. The Spectroscopic analysis of the KC was performed various analytical experiment like SEM, EDAX, FTIR,(WHO/EDM/TRM/2000)[6].should be established for the herbal drug for standardization process. The major advantage of this study is ensure the standardization of KC and clinical potential of indigenous drugs.

Materials and Methods

The "Kadukkaichooranam" is mentioned in several Siddha literature "GunapadamMooligaivaguppu Part -1"is indicated for Mega disorder (Diabetes), Burning sensation of upper and lower limbs(Poly neuropathy), liver diseases and anaemia[1]. In various journal reviwed Terminalia chebula is an Antioxidant (Sarmistha Saha etal,2014), Anti-Hyperglycemic(Naiamolu Kotesswara Rao, 2006) Antimicrobial (Golam MOSTAFA.M et al. 2011) actvities.

Geographical distribution of kadukkai

It was distributed in chiefly in deciduous forests and areas of light rainfall, but occasionally in moist forests, up to about 1500 meter throughout India(Gamble JS,1935). Abundant in northern India; also in Bihar, West Bengal, Assam.

Collection and identification of drug

The sample is bought in traditional raw herbal drugs shop in Madurai,Tamilnadu. It was authenticated by faculties of Department of Medicinal Botany and Department of Gunapadam, Government Siddha Medical College and Hospital Palayamkottai. APurified kadukkai was used in this study .The following experiment was carried out and recorded for discussion.

Scanning electron microscopic study (SEM)

Scanning electron microscopy is a complementary technique and shows the nature of kadukkaichooranam and its particle size(Bruneton,J., 1995. Pharmacognosy, Phytochemistry, Medicinal Plants) [7].Sample for SEM analysis were mounted on the specimen using carbon adhesive sheet. Small sample were mounted with 1sq. cm glass slide And kept in carbon adhesive sheet. Samples were coated with gold to a thickness of 100 AO using Hitachi vacuum evaporator. Coated sample were analysed in a Hitachi Scanning electron Microscope 3000 H model.

Elemental analysis by EDAX

EDAX is a used for multiple sampling in various parts of the plant and can also provide information from an area of fewer manometers. This is very useful to characterize the crystals and other inclusions like trace elements present in the given sample KadukkaiChooranam(World Health Organization, Geneva, 2007) [8].

Fourier Transform – Infra Red Spectroscopy Study (FTIR)

The FT-IR Spectrometer was carried out inKBr Pellet methods (Sathyanarayana B,2011) About 1/8th of the solid powder of Kadukkaichooranam was taken on a microspatula and about 0.25-0.50 teaspoons of KBr was added and thoroughly ground in an agate mortar with the pestle until Kadukkaichooranam became very fine. It was placed in a pellet die. The sample was pressed at 5000-10,000 psi and the sample was removed carefully from the die and placed in the FTIR sample holder(Chattopadhyay, R.R. and S.K. Bhattacharyya, 2007) [10]. The computer was turned on and the software was launched and certain fine details of the working method were done. The sample was placed on Zn, Se crystal with a spatula until the pressure marker showed. The values are recorded.

[Downloaded free from http://www.ijrphr.com]

Results and Discussion

The results of Scanning electron microscope in two different view and EDAX Trace elements profile & FT-IR data has compiled as follows,

Scanning Electron Microscope Analysis

The SEM picture (Fig.No.1) is under 1.00 KX resolution and the examining area of 800x800µm2 surface were taken for the samples (Saraf ASamant A 2013) . The surface of the sample is marked with cluster arrangement and in agglomerates form (Bruneton, J., 1995)[11]. The above SEM images showed average Particle Size ranges from 101 µm to 1115µm. In 100mu view, the surface of the sample grains is uniformly arranged in agglomerates. Particle Size ranges from 107 µm to 1244µm (Figure No.2) and overall particles shape and angles are represented in Ferrets graph.

Figure 1. SEM image of Kadukkai Chooranam of 10 µm view

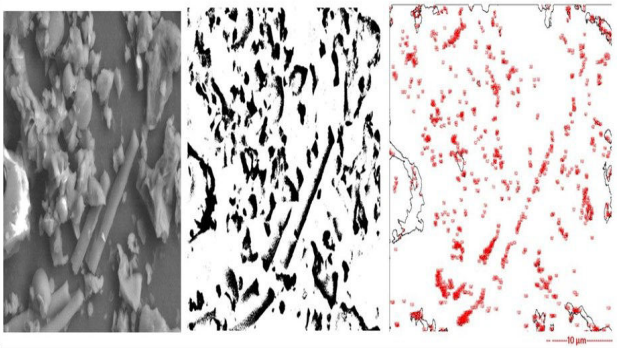
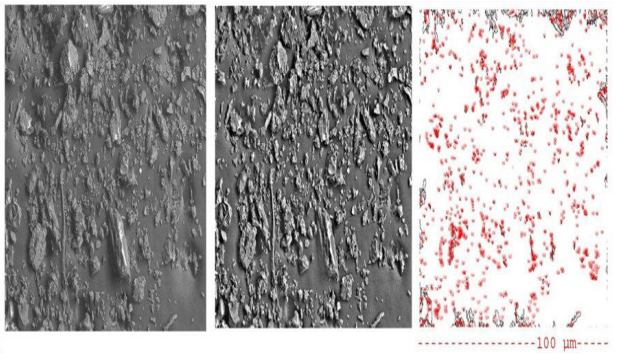


Figure 2. SEM image of Kadukkai Chooranam of 100 µm view



Elemental Quantification of Kandukkaichooranam by EDAX

The elemental quantification of Kaddukaichooranam was done by EDAX method (Kesarla Mohan kumar et al,).The overall trace elements like Calcium, potassium has almost 4.3%, 2.5% of Oxygen and Potassium, 2.5% Magnesium & Hydrogen as the major compounds were found the results.

Figure 3. Identification of trance elements through EDAX

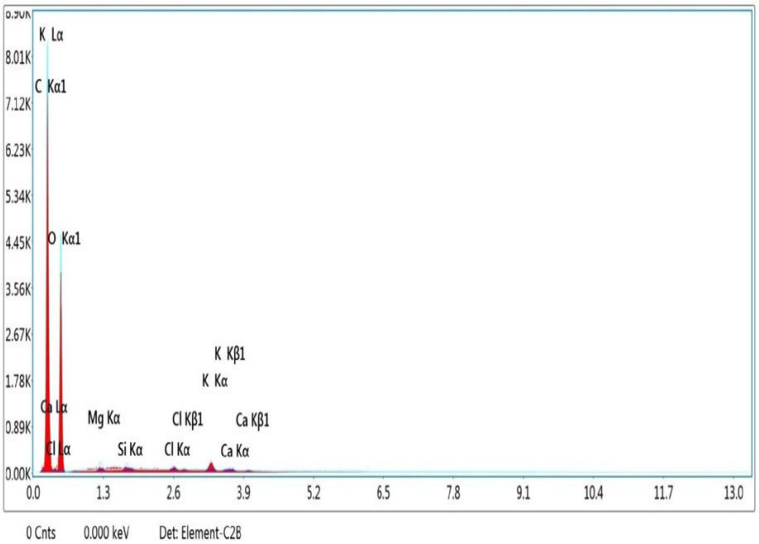


Figure 4. Graaphical representation of EDAX profile of Kadukkai chooranam (in percentage)

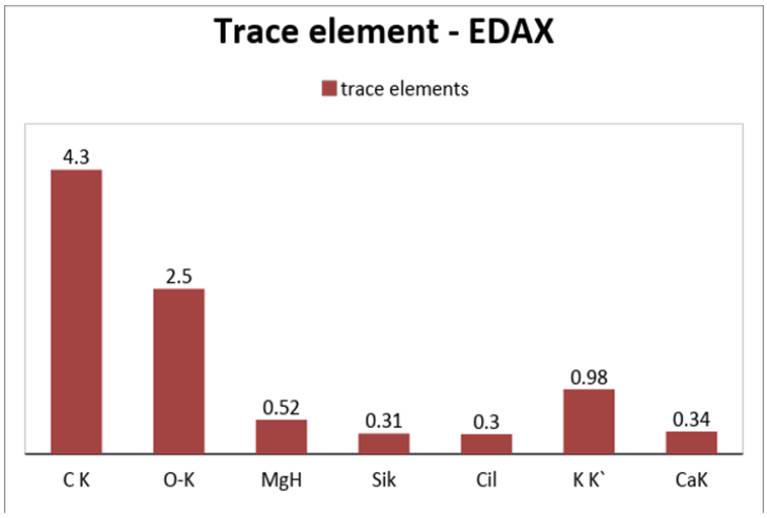
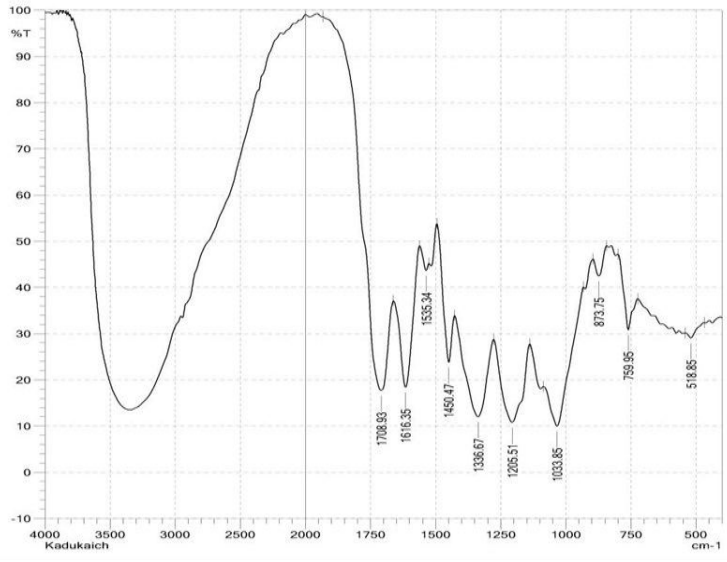


Figure 5. FTIR Spectra of Kadukkai Chooranam



ISSN 2589 3343

[Downloaded free from http://www.ijrphr.com]

Table 1. FTIR observed Peak value of Kadukkaichooranam

Wave number (cm-1)	Vibration modes of sample in IR region	Intensity of the bond	Functional groups
1708.93	C=O Stretching	strong	conjugated aldehyde
1616.35	C=C stretching	Strong	α,β-unsaturated ketone
1535.34	N-O stretching	Strong	nitro compound
1450.47	C-H bending	Medium	Alkane
1336.67	S=O stretching	Strong	Sulphonamide
1205.51	C-O stretching	strong	alkyl aryl ether
1033.85	S=O stretching	Strong	Sulfoxide
873.75	C-Cl stretching	Strong	Halogen compounds
759.95	C=C bending	Strong	Alkene
518.85	C-Br bending	week	Alkyl

In FT-IR Spectra analysis, the specified drug Kadukkai chooranam has exhibits the FTIR Spectra values and peak value at 1708.93 has C=O Stretching , 1616.35 has C=C stretching, 1535.34 has N-O stretching, 1450.47 has C-H bending, 1336.67, 1205.51 has C-H bending, 1033.85 has S=O stretching, 873.75 has C-Cl stretching, 759.95 has C=C bending, 518.85 has C-Br bending.So,KC is contains conjugated aldehyde, α,β-unsaturated ketone, nitro compound, alkane, sulphonamide, alkyl aryl ether, sulfoxide, Halogen compounds, Alkene and Alkyl compounds were observed respectively(Ahn, M.J., C.Y. Kim, J.S. Lee, T.G. Kim and S.H. Kim et al., 2002) [13].

Conclusion

The kadukkai chooranam is minimum particle size. so, the absorption and bioavailability is higher in the gut. KC is more qualitative in nature and used to help to overcome the lacunae in various Siddha preparatory medicine to be extended. KC is contained the presence of calcium, Potassium and magnesium .These above basic elements are need to maintain the human health. Minerals in high amount. KC is definitely help to assured safety, therapeutic efficacy and batch to batch uniformity.

Source of Support

Nil

Conflict of Interest

None declared

References

1. Murugesamudaliar, GunapadamMooligaivaguppu, 2st Edition, Published by Department of Indian Medicine and Homeopathy, 2016.
2. Nadkarni, K.M., 1976. Indian Material Medica. Popular PrakashanPvt. Ltd., Bombay, pp: 1202-1211.
3. Krishnan, K.S., 1998. The wealth of India. Raw Mater., 10: 171-171.
4. Cha S. Potential anticancer medicinal plants. A statistical evaluation of their frequencies appearance in oriental medicine formulation. Korean J Pharmacog1977; 8: 1.
5. Weniger B, Rouzier M, Daguilh R, Henrys D, Henrys JH, Anton R. Popular medicine of the central plateau of Haiti. Ethnopharmacological Inventory. J Ethno Pharmacol1986; 17(1): 13-30.
6. General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine, World Health Organization, Geneva, WHO/EDM/TRM/2000.1 Distr: General Original.
7. Bruneton, J., 1995. Pharmacognosy, Phytochemistry, Medicinal Plants. Laviosier Publishing, Paris, France, Pages: 333
8. WHO guidelines for assessing quality of herbal medicines with reference to contaminants and residues, World Health Organization, Geneva, 2007.
9. Bellisola G, Sorio C. Infrared spectroscopy and microscopy in cancer research and diagnosis. Am J Cancer Res 2012;2:1-21. 9.
10. Chattopadhyay, R.R. and S.K. Bhattacharyya, 2007. PHCOG REV.: Plant review Terminalia chebula: An update. Pharmacog. Rev., 1: 151-156.
11. Chatwal A, Anand SK. Instrumental Methods of Chemical Analysis. Bruneton, J., 1995. Pharmacognosy, Phytochemistry, Medicinal Plants Vol. 2. New Delhi: Himalaya Publishing House; 2002. p. 44-5
12. Lohar Dr, Protocol for testing: Ayurvedic, Siddha and Unani Medicines, Published by Govt. of India, Ministry of Health and Family Welfare, Pharmacopoeial Laboratory for Indian Medicine, Ghaziabad, 50.