ORIGINAL ARTICLE

FUTURE JOURNAL OF PHARMACEUTICALS AND HEALTH SCIENCES

Published by Pharma Springs Publication Journal Home Page: https://pharmasprings.com/fjphs

Kaalamega Narayana Chendhooram (KMNC): Standardization, Characterization, and Instrumental Analysis of a Potential Anti- Oral, Anti-Lung, and Anti-Prostate Cancer of Herbal Mineral Formulation (A Siddha Medicine for Oral, Lung, and Prostate Cancer)

Satheesh C[*1], Balasubramanian S[2], Kalaiselvi D[3], Abinaya R[2]

[1]Agash Siddha Wellness Centre and Lab, Chennai- 610044, Tamil Nadu- India
[2]Shanmuga Siddha Clinic and Laboratories, Thanjavur- 613006, Tamil Nadu- India
[3]Rasi Clinic, Thottiyam-621215,Trichy-Dist, Tamil Nadu- India

Article History:

Received on: 20 Jun 2023
Revised on: 05 Jul 2023
Accepted on: 06 Jul 2023

Keywords:

KMNC,
Prostate Cancer,
Siddha pharmaceuticals

ABSTRACT

Lack of drug standardization is the main obstacle preventing Siddha pharmaceuticals from being recognized more frequently in poorer nations. The current study also standardized a Siddha herbal-mineral creation of KMNC that indicated cervical cancer by investigating its physio-chemical. Fourier transforms infrared radiation properties. It was performed to produce evidence-based statistics about this new formulation and to give researchers helpful information. The drug particle size was determined by SEM examination. XRF analysis was used to determine the medication's component percentage. Onto-be nanometers indicate that the experimental drug may have effective drug delivery. The physicochemical characteristics also instrumental investigations of KMNC are discussed in this work as part of standardization by AYUSH Guidelines. This Indian medical system describes KMNC as a white powder containing herbs, metal, also mineral ingredients. The physio-chemical assessment's findings show that KMNC has a specific gravity of 0.927, a pH assessment of 7.8, also percentage of losses after 105 ° C 0.3±0.05568 %, and a total ash rate of 1.2%.

*Corresponding Author

Name: Satheesh C
Phone: +91 63830 01842
Email: agashsiddhawellness@gmail.com

eISSN: 2583-116X pISSN:

DOI: https://doi.org/10.26452/fjphs.v3i3.487

Production and Hosted by

Pharmasprings.com

INTRODUCTION

Most traditional healthcare systems are based on the Siddha philosophy, providing the best care for various illnesses. Indians use the Siddha medication system, which has also attracted attention internationally due to its long-term advantages for general health and lack of adverse effects [1]. Chendhooramand Parpamare is like "lifesaving" and also "miracle" drugs. One of the more potent medications in the Siddha pharmaceutical method is called Chendhooram. The Siddhars produced them using the principles of nanomedicine. Recent scientific developments have investigated the possibility of using nanoparticles in the biomedical sector, particularly in treating cancer and several degenerative disorders [2]. Cancer is just one of the conditions for which Chendhooram has been utilized as a treatment.

In Tamil Nadu, the Siddha methodology for medicine is utilized extensively, and it adheres to the idea that medication ingredients should come from plants, metals, minerals, and animals. A few leading causes of death that worsen daily are Oral, Lung, and Prostate cancer. Therapeutics with little side effects are required for the treatment of cancer. Numerous

different formulas are provided in Siddha literature for the treatment of cancer. The quality and therapeutic benefits of Siddha medications must now be established through standardization.

The Siddha system is a repository of secret scientific knowledge with various medications for treating all illnesses. Due to the Siddha system's sophisticated chemistry and the Siddhars' guidelines, several hundred minerals and metal preparations have been created, making it well-suited to treat every kind of sickness.

Medicine for the internal body and external body are the two categories under which medicine is categorized in the Siddha philosophy. The Siddha School of Medicine specifically cites Chendhooramas as one of the 32 categories of internal medicine. Chendhoorams are small, usually calcified particles made by a specialized procedure using refined metals, minerals, and animal-derived substances. They are oxidized with cow dung cakes in enclosed crucibles in pits for the dam process. Various techniques are used in this procedure to change metals or minerals into sulfides or oxides [3].Chendhooram is a type of acquired nanoparticle that can be consumed with carriers like milk, ghee, honey, etc., according to the condition. It improves their biocompatibility and makes them more readily available, eliminating unwanted negative consequences.

According to ancient Siddha literature, it has a mean lifespan of 100 years [4]. Drug standardization entails confirming their identity, the steadfastness of their purity, and conformity. The efficacy and safety of pharmaceuticals can be impacted by an absence of strict quality management, which could negatively affect consumers [5].

Also, for the treatment of Yoniputru (cervical cancer), Lingaputru (Scrotal Cancer), Pavuthiram (fistula), Megapulligal, Megapadai, Venkuttam, Kandamalai, Meganoigal (venereal disease), the present research was conducted to examine the physicochemical also biochemical belongings of KMNC that are cited in Anuboga Vaithiya Navaneedham Part-6 of the Siddha literature.

According to estimates, there will be 342 000 cervical cancer deaths and 604 000 fresh instances of cancer among women in the year 2020, with deaths from Oral, Lung, and Prostate carcinoma accounting for around 90% of all deaths worldwide [6].

Therefore, people seek alternative medical practices to treat Oral, Lung, and Prostate cancer. The early Siddha literature contains a long list of medications prescribed by Siddhars for the treatment of cancer. We must investigate these drugs' efficacy and safety for human use using evidence-based methods. Because of this, standardization is crucial for ongoing preclinical and clinical research.

The World Health Organization recognizes the importance of employing minerals to improve public health. Standardization is used to evaluate the potency and purity of herbal and mineral medications using multiple criteria, such as physical, chemical, and biological observation. Siddhars described numerous standardization techniques and testing protocols for various types of drugs.

Standardization

Standardization by Classical Siddha Literature

The medication KMNC was investigated using the fundamental methods described in Classical Siddha Literature as follows [7]:

Color:

Chendhooram often has a white color. Everyone observed the Color in broad daylight when the RP was taken.

Swimming in water:

Using this method, it is possible to ascertain whether the KMNC has a higher or lower density than water. KMNC didn't instantly sink to the bottom when it was delicately dusted on the still water's surface into a container. The observation that KMNC particles floated on the water's surface suggested the trial drug's lightness.

Patterns on the fingers:

Chendhooram should have the look of freshly made ultra-fine powder. Fine powder can fill in the lines on fingerprints by placing it between the thumb and the index finger. KMNC was massaged and squeezed between the thumbs with the index finger. The fact that the KMNC got into the finger's lines and was challenging to get out of them proved how fine it was.

Unchangeable reaction:

When simmered by a blend of sugarcane jaggery, hemp-based fine particles, melted butter, and honey; the nicely-organized Chendhooram cannot be restored to its metallic condition.

Lack of flavor:

A properly prepared param should have no flavor at all. Whether sweet or bitter, any flavor indicates that the preparation was insufficient and needed more calcination.

There was no noticeable flavor when a minimal amount of KMNC was maintained on the surface of the tongues.

Lusterless:

If there are any shimmering particles in the theChendhooram, this suggests that the product was manufactured improperly and still contains dangerous elements such as metals, minerals, and other unmodified substances. A properly built Chendhooramshouldn't have any shiny materials. The KMNC was put into the Petri dish. Also, any of the clusters was assessed outside using a magnifier. In theChendhooram, there was no luster. Table 1 presents the results.

The drug's uniformity

When medicine is standardized, its superiority, cleanliness, and uniqueness are all established using different standards, such as morphological, microscopy, chemical, physical, also microbiological evaluations.

Standardized Dosage of Medications KMNC:

Medication standardization helps determine their identity and allows for evaluating their potency and quality. Standardizations of herbal-mineral formulations depend on a qualitative and quantitative study that uses physicochemical investigations also experimental research. The Central Research Institute in Arumbakkam, Chennai, and the Indian Institute of Technology in Chennai undertook physicochemical Analysis and elemental studies on synthetic herbal-mineral medication, respectively. (As well as FTIR, SEM, and ICP-OES)

Techniques used to standardize complicated preparations

1. The macroscopic-based techniques
2. The microscopically based processes
3. Physically based techniques
4. Chemical based ways
5. Biologically based schemes

The KMNC's organoleptic characteristics:

These were assessed, which involved judging the formulation based on its Color, odor, taste, texture, and other attributes.

Physical-chemical estimation

The testing medicine has undergone physical-chemical Analysis as per WHO norms. Physical-chemical tests such as pH readings, losses during drying at 105 $\pm$2 °C, and solubility tests According to the recommendations of the WHO [8, 9], measurements of totality ash, acid-insolvable ash, water-solvable ash, water-solvable extracts as well as alcohol-solvable extracts have all been made in our laboratory.

Measurement of pH:

A glass electrode and an appropriate pH meter are potentially used to ascertain the pH value. Five grams of the test specimen will be utilized for dissolving in 25 millilitres of distillate water and filtered; the resulting liquid will be tested for pH after standing for 30 minutes. [10, 11]

% of Loss after Drying

In a tarred glass container, 2 grams of the KMNCformulation were measured precisely. Using an oven, the crude medication was cooked to 105 $\pm$2 °C for six hours to maintain a steady weight. Concerning the shade-dried material, the sample's percentage moisture content was estimated.

The formula for percentage drying loss = (loss of sample weight/sample weight) x100

Heat therapy

A tiny amount containing KMNC had been added to dehydrate testing tubing, also slowly warmed. Carbonate is an option if substantial white vapors start to appear.

Flame examination:

A watch glass blended a small amount of KMNC with strong HCl to create a paste before being introduced to the Bunsen flame's non-luminous region. A bluish-green blaze that appears denotes the existence of copper.

Ash analysis:

A mixture of KMNC with cobalt nitrate is stuck in ash-free filter paper before being placed in the Bunsen flame and fired for the ash test. The yellow flame's appearance denotes the existence of sodium.

Estimation of Total Ash

In a silica bowl, the KMNC utilized for the overall ash assay was analyzed and heated to 400 ºC in a furnace until the Color turned white, signifying no carbon was present. The proportion of general ash will be determined by utilizing the drug's mass after air dehydration. The group of air-dried medications will be used to compute the percentage of total ashes.

Overall residue = (Debris obtained/ Crude medication consumed) x 100

Analysis of acid-insoluble ash

The entire KMNC sample's ash will be heated for six minutes in 25 ml of dilute hydrochloric acid using an ash-free paper filter before being filtered. Any insoluble material retained on the filter paper

before it was burned in a muffle furnace to a consistent weight was washed with hot water. The air-drying drug was used as a reference to determine the amount of acid-insoluble ash.

Acid-insoluble debris = (Ash collected / Raw medicine consumed) / 100

Estimation of the amount of water-soluble ash

Five minutes were spent simmering one gram of total ash in 25 ml of water; moreover, the ash-free filter paper on which the insoluble material had been gathered was then wetted with water and then rinsed with water before being burned over 15 minutes with a maximum temperature of 1500 °C in a muffle furnace. A filtrate is dried to assess the amount of soluble ash.

Solubility test:

A small amount of the KMNC sample was added to a dry tube for testing, and 2 ml of the solvent was poured together. To get the results, the experiment tube was firmly shaken for approximately one minute. Separate analyses of the testing data were done for solvents such as distillate water, C_2H_5OH, C_6H_{14}, $C_3H_8O_2$, $C_6H_5CH_3$, C_6H_6, $CHCl_3$, C_8H_{10}, also CCl_4

Estimation of alcohol-soluble Extracts:

In a sealed flask, the trail material had been macerated using 100 ml of ethyl alcohol for twenty-four hours; it was permitted to remain standing for eighteen hours after six hours of vigorous shaking to determine how much of the extract was soluble in alcohol.

Filter immediately while taking steps to prevent solvent loss; 25 ml from the filtrate must be evaporated to dryness and then dried at 105 degrees Celsius to a consistent weight. Determine the proportion of extracts dissolved in alcohol in contrast to drugs that the air-dried. Extract from an alcohol solution. = (The importance of quotes/The weight of the sample obtained) x 100

Estimation of water-soluble extracts:

The recommended dosage is five grams of the air-dried medicine. A closed container containing 100 ml of distilled water was macerated with coarsely powdered KMNC for twenty-four hours while being continuously shaken, and it was then permitted to chill for 18 hours. 25 ml from the filtrate after the screening, a solution was subsequently evaporated in a small dish with a flat bottom and tar covering it.

Then, this piece was dried at 105 °C to an even weight and weighed. The fraction of water-soluble extracts was calculated about the medicines that had been air-dried.

Preliminary Studies on Both Basic as Well as Acid Radicals

Extract preparation

50 ml of purified water, 5 grams of properly weighed KMNC, and a clean 250 ml beaker was added. The mixture was completely boiled for 20 minutes, then chilled and filtered before being blended with a one-liter volumetric bottle filled with 100 ml of distillate water. A biochemical investigation was carried out to determine the acidic and alkaline radicals within the KMNC [12]. The findings are summarized in Table 1. The analytical processes were only carried out by licensed and authorized laboratories. As a result, the results of KMNC employing various analytical approaches show how precise KMNC is to medically validate and assess the safety of the Siddha herbal-mineral formulation KMNC; numerous studies were conducted. Literature collections, pharmacological studies, and physicochemical investigations with elemental Analysis are all utilized to show its effectiveness.

Standardization of Siddha Preparation "KMNC" by Using New Techniques

Evaluation, Phytochemical Constituents

Given the makeup of the chemical components found in the raw medicament, this is utilized to test the medication.

Identifying alkaloids

Mayer's investigation

After adding with the specimen, 2 ml containing Mayer's solutions to the test sample, a drab, white residue that contained alkaloids was visible.

Checking for Coumarins

One milliliter of 10% sodium hydroxide was applied to the test sample. The development of yellow Color is a sign that coumarin is present.

A saponin test

Test for Foam: The tube was forcefully shaken after adding 5 ml of water to the test sample. The presence of saponin is indicated by abundant lather development.

Checking for Tannins

$FeCl_3$ Checking

After adding ferric chloride to the test sample, tannins were detected by neither a dark blue nor greenish-black color developing.

Glycoside screening

Bontrager testing

After being hydrolyzed for two hours using a bath of water containing potent hydrochloric acid, the

test drug is filtered, and the hydrolysate is examined. Then, 3ml of chloroform is added to 2ml of filtered hydrolysate, which is stirred. Then the layer of chloroform is separated. Also, the mixture is subsequently added to a 10% ammonia solution. The pink hue denotes the existence of glycosides.

Flavonoids test

Ammonia examination

After adding around 5 ml of diluted ammonia solution to the trail sample, a few highly concentrated sulfuric acid droplets were added. The existence of a flavonoid is shown with the emergence of yellow Color.

Detection of tri-terpenoids also steroids

A Lieberman-Burchard test

A few drops of acetic anhydride were added to a chloroform liquid, which was well mixed. One ml of highly concentrated sulfuric acid was introduced from the testing tube's faces. The testing tube's top layer turned red, as the sulphuric acid layer fluorescence yellow as well as green. The presence of steroids was evident. A crimson ring that appears denotes the presence of tri-terpenoids.

Trial for phenols

Lead acetate examination

A lead acetate test was performed on the test material to determine the presence of phenols. A large, white precipitate indicates phenolic chemicals.

Checking for cyanins

Anthocyanin testing

1ml of 2N sodium hydroxide was added to the test sample and heated for 5min at 100°C. Anthocyanin is present when a bluish-green color develops.

Trial for Betacyanin

Testing for betacyanin involved adding 2 ml of HCl to the test sample and heating it for 5 minutes at 100 °C. Pink color development implies betacyanin is present.

Investigation for carbohydrates

Benedict's examination

Benedict's reagent is applied to the experiment's sample in about 0.5 ml. The mixture is boiled in a bath of boiling water for two minutes. Precipitate with a distinctive color shows the presence of sugar.

Testing for Proteins

Biuret method

After adding a 5% solution of sodium hydroxide and a 1% solution of copper sulfate to the extract, the development of a violet-purple tint is a sign that proteins are present [13].

Biochemical Investigation for Basic as Well as Acidic Radicals

The Analytical Research on Acidic Radicals Investigation

Investigation of carbonates

Add approximately 1 ml of concentrated hydrogen chloride acetate after adding 1 ml to the test liquid. An indication that carbonates are present is rapid frothing.

Assess chlorides

2 ml containing the testing solution was combined with approximately 1 ml containing silver nitrate solution. A white precipitate's appearance denotes the presence of chloride.

Perform a sulfate test

After one ml containing the testing specimen was obtained, effervescence was stopped by adding one ml of diluted H_2SO_4. A white precipitate's appearance suggests the presence of sulfates.

Perform a sulfide test

With a little warming of the mixture, two ccs of liquid hydrogen chloride were combined with 1 ml from the pure test sample. Sulfides are present when colorless gas that smells like rotten eggs start to develop.

Perform a phosphate test

Take 2 ml of pure test liquid, treat the specimen sample with 2 ml of ammonium molybdate liquid, and add 2 ml of strong nitric acid. Phosphates are present when a residue of a dark yellow substance occurs.

Fluoride as well as oxalate testing

Add 2 ml of dilute acetic acid into the two ccs pure testing liquid as well as 2 ml of calcium chloride solution were added. A white precipitate arises when oxalate also fluoride are together.

Examine for borates

Sulphuric acid and 95% alcohol were added to 2 ml of the sterile test solution and then exposed to flames. The green flame's appearance indicates the existence of Borates.

Nitrate testing

Add sulfuric acid after heating 0.5 ml containing the test solution using copper turning. Nitrates are present as reddish-brown gas that emerges.

Lead testing

Table 1: Description of KMNC's Appearance

S. No	Constraint	Outcome
1.	Organoleptic uniqueness Shade Smell Contact Flavor Look Flow characteristics	Whitish grey nothing Fine SpongyBitter Ultra-fine Powder Flowing freely
2.	pH	7.8
3.	Percentage of losses after105°C drying	0.3±0.05568
4.	Percentage of overall ashes	96.43±1.901
5.	Percentage of acid-insolvable debris	0.4167±0.07024
6.	Percentage of water-solvable extracts	4.167±0.5132
7.	Percentage of alcohol-soluble extracts	0.18±0.03
8.	Solubility	Optimistic withC2H5OH, H2O,andDMSO.
9.	Uniformity	Excellent one
10.	Solubility Distillate water C2H5OH CH3OH C3H8O2 C6H14 C6H5CH3 CCl4 CHCl3 C8H10	 Minimally solvable Minimally solvable Minimally solvable Not solvable Not solvable Not solvable Solvable Solvable Not solvable
11.	Sensation of feel	Okay
12.	Specific gravity	0.929
13.	Sensitivity to hotness up	Optimistic
14.	Flareanalysis	Pessimistic
15.	Ashesinvestigation	Pessimistic
16.	element dimension	Perfectly clears 120 no screen

Table 2: Chendoorum Confirmatory Specifications

Constraint	Monitoring for KMNC
Fineness	Confirms the fineness criterion in light of the particle dimension study, also the flow characteristics of the sample confirms
Water float	Validates the assessment
Smokeless	Validates the assessment
Tasteless	Verifies the assessment
Lusterless	Verifies the assessment

Table 3: Effects of basic radicals

S. No	Constraints	Outcome
1	Detection of Sulfate	Optimistic
2	Detection on Chloride	Optimistic
3	Detection for Phosphate	Pessimistic
4	Detection of Carbonate	Pessimistic
5	Detection of Fluoride and Oxalate	Pessimistic
6	Detection for Nitrate	Pessimistic

Table 4: Acidity Radicals' Effects

S. No	Constraints	Outcome
1	Screening of K	Pessimistic
2	Checking for Ca	Optimistic
3	Screening of Mg	Optimistic
4	Detection of Ammonium	Pessimistic
5	Detection of Na	Pessimistic
6	Screening of Iron (ferrous)	Pessimistic
7	Screening on Zn	Optimistic
8	Detection of Al	Optimistic
9	Screening of Pb	Pessimistic
10	Detection for Copper	Pessimistic
11	Detection of Hg	Optimistic
12	Detection on As	Pessimistic

Table 5: Outcomes of Biochemical Investigation on KMNC

S. No	Constraints	Observation	Outcome
1.	Examine forSulphates	Whitish precipitation is present.	Optimistic
2.	ExamineforNitrates	Existence of a hue of reddish-brown	Optimistic
3.	ExamineforCarbonates	Rapid effervescence's presence	Optimistic
4.	Examine for mercury	Yellow precipitation is present	Optimistic

Table 6: An extensive heavy metal ions assessment

Heavy metallic element	Maximal Absorption in nm	Outcomeassay	The maximum value in ppm
Pb	217.0	BDL	10.0
As	193.7	BDL	3.0
Cd	228.8	BDL	0.3
Hg	253.7	0.52 ppm	1.0

Table 7: Raman Spectroscope – results of KMNC

Frequency, cm^{-1}	Operational cluster	Raman Bond
3616.09	O-H	Feeble
3097.39	=C-H	Powerful
2200.71	C=C	Powerful
940.01	C-O-C	Moderate
814.89	C-O-C	Moderate
371.57	(CC)Aliphaticseries	Powerful

Table 8: ICP-MS analysis of KMNC

S.No	Constituents	Identified abilities
1.	As	BDL2.467(under 3ppm)
2.	Hg	BDL0.995(under 1ppm)
3.	Pb	BDL(under 10 ppm)
4.	Cd	BDL(under 1ppm)

Table 9: XRD analysis of KMNC X-ray scattering (Powerful 3 Tips of investigation)

No	Tip	2 Ø
1.	7	31.2944
2.	3	26.5828
3.	5	28.2632

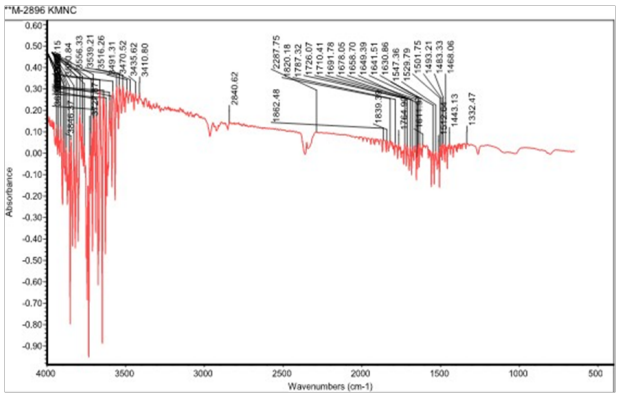

Figure 1: FT-IR spectra of KMNC

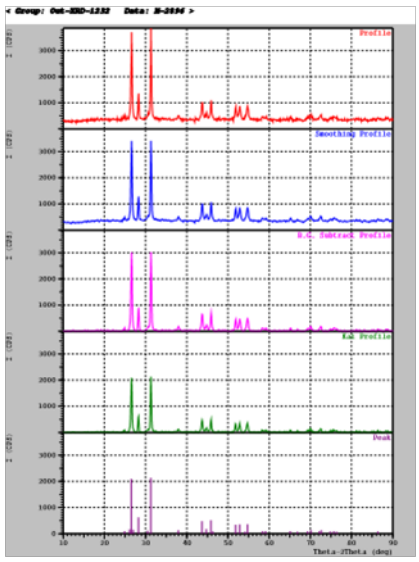

Figure 2: XRF image of KMNC

The specimen solution of 1 ml and 2 ml containing a potassium chromate liquid was mixed. Lead is present when a yellow precipitate forms, which is a symptom.

A Research Analysis on a Test For Basic Radicals

Arsenic testing

Two milliliters of a 10% (2N) sodium hydroxide (NaOH) solution were added to five milliliters of the test solution. Arsenic is present when a residue that is brownish-red forms.

Mercury testing

Two milliliters of a 10% (2N) sodium hydroxide (NaOH) solution were added to one milliliter of the test solution. Mercury can be detected by the yellow precipitate that forms when it does.

Assess Copper

One ml containing the test's solution was mixed with an ammonium hydroxide (NH4OH) resolution.

Check for Ferrous

1 ml pure, the testing liquids with approximately 2

Table 10: Outcomes of FT-IR study

S. No	Absorption tip (cm^{-1})	Stretch	Functional cluster
1	3853	H, O-H	Phenols, alcohols
2	3733	H, O-H	Phenols, alcohols
3	3696	H, O-H	Phenols, alcohols
4	3585	H, O-H	Phenols, alcohols
5	3561	H, O-H	Phenols, alcohols
6	3543	H, O-H	Phenols, alcohols
7	3521	H, O-H linked	Phenols, alcohols
8	3497	H, O-H linked	Phenols, alcohols
9	3476	N-H	Amides, 1º, 2ºamines,
10	3441	H, O-H	Phenols, alcohols
11	3417	H, O-H	Phenols, alcohols
12	2292	C-H, H-C=O	Aldehydes
13	1826	C=O	Ketones, α–βunsaturatedaldehydes
14	1868	-C=C	Alkenes
15	1826	C=O	Carbonyl(Common)
16	1792	C=O	Carbonyl(Common)
17	1769	C=O	Carbonyl(Common)
18	1715	C-O	Ketones, α–βunsaturatedaldehydes
19	1697	C-O	Ketones, α–βunsaturatedaldehydes
20	1683	-C=C	Alkene
21	1662	-C=C	Alkene
22	1636	N-H	1ºamine
23	1617	N-H	1ºamine
24	1552	N-OAsymmetricstretch	Nitro-complexes
25	1535	N-OAsymmetricstretch	Nitro- complexes
26	1517	N-OAsymmetricstretch	Nitro- complexes
27	1508	N-OAsymmetricstretch	Nitro- complexes
28	1472	C-H	Alkanes
29	1336	C-N	Aromatic amines

ml pure potassium ferrocyanide were mixed. The precipitate turning blue shows the presence of ferric.

Check for Ferric

1 ml pure, the testing liquids with approximately 2 ml pure potassium ferric cyanide were mixed. Iron is present when a blue precipitate forms, which is an indication of it.

Check for zinc

Until an indication is visible, add dropwise, add 2 ml of sodium hydroxide (NaOH) to 1 ml of the test solution. Zinc is present when a residue that is white forms.

Detect silver

One ml containing the practical solution and one containing concentrated HCL were added. Silver can be detected when a curdy white precipitate forms.

Magnesium test

Until an indication is visible, dropwise, add 2 ml of sodium hydroxide (NaOH) and 1 ml of the test liquid.

Table 11: The component in the oxide type

A formula	Constitute (%)
Sulfur	99.10
Chlorine	0.43
Sodium	0.27
Potassium	0.10
Magnesium	0.04
Silica	0.04
Ferrous	0.04
Calcium	0.03
Phosphorus	0.02
Aluminum	0.02
Copper	92 ppm
Lead	60 ppm
Molybdenum	23 ppm

Table 12: The component type

A formula	Constitute (%)
SO3	98.73
Cl	0.43
Na2O	0.36
K2O	0.12
SiO2	0.09
MgO	0.07
P2O5	0.06
Fe2O3	0.05
Al2O3	0.03
CaO	0.05
CuO	0.01
Pd	50 ppm
MoO3	34 ppm

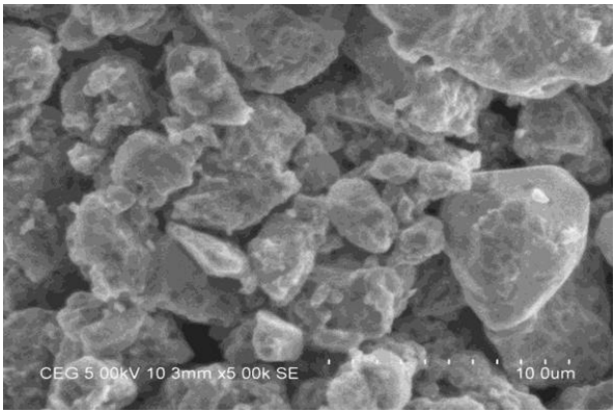

Figure 3: SEM image of KMNC

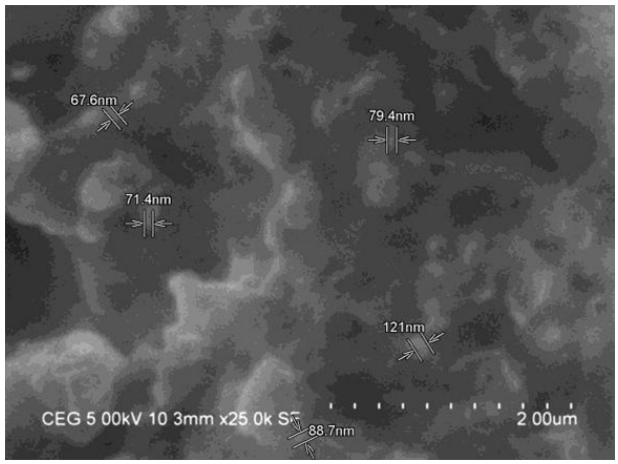

Figure 4: KMNC nanoparticles are visible in an SEM image

Magnesium is present when a residue of white color forms [14].

Instrumental Research on the Complexity

Fourier Transform in the field of Infrared (FT-IR)

FTIR is a responsive practice, especially for characterizing some inorganic materials and detecting organic molecules in various functions. Functional cluster detection can be accomplished with FTIR, a powerful analytical tool [15].

Spectrophotometric assays are frequently used to determine the number of polymorphic forms and identify chemical compounds. The test methods are appropriate for materials that absorb infrared emission. The IR absorption spectra of a material can be used as definitive proof of its identity when compared to the spectrum acquired concurrently for the equivalent reference standard or reference substance.

Tamil Nadu Test House Vanakaram in Chennai, India, registered the FT-IR spectrum. The Perkin Elmer spectra One Fourier Transforms Infrared (FTIR) Spectrometer was used to acquire the FT-IR spectra for KMNC within the potassium bromide (KBr) matrices at a scan speed of 5 scans every minute with an accuracy of $4cm^{-1}$ within a wave number section 450-$4000cm^{-1}$.

FT-IR investigation is employed to scan solids, liquids, and gases qualitatively to combine organic and inorganic specimens, identify unknown substances, and screen impurities, formulations, and pharmaceuticals.

The scanning electron microscope (SEM)

SEM is a particularly efficient tool for failure analysis and microanalysis of solid inorganic substances. High-magnification scanning electron microscopy creates high-resolution images and accurately assesses incredibly minute features, objects, and spatial differences in attributes such as chemical categorization, texture, and substance position [16]. The SEM can also examine specific point locations on the specimen. This technique works particularly well for figuring out chemical compositions and structures of crystals with crystalline positions in a manner that is neither qualitative nor semi-quantitative (Figures 1 and 2) [17].

A two-dimensional icon is created by the signals produced by the SEM analysis, which also provides information about the sample, such as morphology (texture) of the skin, chemical makeup (when combined with EDS), and rotation of the sample's constituent materials.

Regarding qualitative information, estimate the components within or beneath the specimen's topmost layer. Members must be evaluated for semi-quantitative outcomes. Find coatings on metal and foreign compounds that are not organic in origin.

Qualitative also semi-quantitative outcomes of SEM evaluation with EDS at a range of 5 x to 300,000, the largest sample sizes are magnified to a maximum of 200 mm (7.87 in) in diameter 80 mm (3.14 in) in altitude. Solid inorganic substances, including metals also minerals, were the focus of the Analysis.

The following specifications of SEM instrument are employed:Make: Model S4 PIONEER, Bruke, Model of the instrument: SEM-Hitachi Range of Scan: S-3400n, magnification: at least 12 times larger and up to one million times larger.

ICP-MS (Inductively-Coupled Plasma Mass Spectrometry)

Evaluation of Inorganic with Trace Metal Substances

The ICP-MS method is frequently employed to assess minute quantities of various inorganic components. The ICP-MS allows for the detection and quantification of the constituents' atomic mass arrays, which range from 7 to 250 and include lithium and uranium. The typical detection limits can vary depending on the situation, from parts per billion (ppb) to parts per trillion (ppt). Several elements can be detected, identified, also quantified utilizing the Perkin Elmer ELAN 6000 ICP-MS and the ICP-MS analytical procedures provided by LPD Lab Services [18].

Applications for the XRD (X-ray powder scattering) technique

The quick analytical technique is X-ray powder scattering and determines the crystalline state or solids in most cases. Additionally, it can provide information regarding the unit cell measurements. The mean bulk composition of the substance under Analysis is established after it has been finely processed and homogenized. Recognition using unidentified crystals is a common use of powdered X-ray scattering. The recognition of unidentified solids is helpful for investigation in geology, ecological science, material science, and natural science. Applications include categorizing crystalline substances, recognizing fine-granule minerals like clays, visually difficult-to-distinguish blended layered ceramics, and determining single-cell measurements. XRD may be employed to analyze the modal quantities of materials quantitatively and to determine crystalline structures using Rietveld purification. Rigaku Smart Laboratory x-ray diffractometer is used in this work. (Surface and Optical Analysis – The University of Akron) [19].

Atomic Absorption Spectrometry (Aas) Analysis of Heavy Metals

Methodology

A popular and trustworthy method for finding metals also metalloids in ecological materials is atomic absorption spectrometry (AAS). The sample's heavy metallic elements were counted using AAS version AA 240. To determine how much heavy metal—such as Cd, Pb, As, also Hg— has been included in the examination material. ZEEnit series (novAA 800 Series) with Zeeman background AAS is employed in this work.

Specimen Digestive process

One mole/liter of HCl was used to digest the experimental specimen to ascertain the levels of arsenic with mercury. The material was digested using one mol/L of lead with cadmium measurement-grade HNO_3. As and Hg (Specimen containing 100 ppm with one mol/L contains HCl, Cd, also Pb) and HNO_3 (100 ppm sample in 1 mol/lit HNO_3) are the ingredients for the standard preparation [20].

Outcomes

Physical-Chemical Assessment

Biochemical Investigation on KMNC

Atomic absorption spectrometry (AAS) for heavy metal investigation

The current study demonstrates that experimental medicine contains considerable amounts of metals like Pb, As, Hg, also Cd. Table 6 is a summary of the outcome.

BDL–Below Detection Limit

Physical and Organoleptic characteristics

The sample drug's organoleptic characteristics were assessed following the protocol. The Color, texture, particle size, and other attributes of 3.5gm of the KMNC were examined under bright sunlight using the naked eye. The outcome was then noted.

Physic-Chemical Investigation Discussion

Comments on soluble capacity

The primary determinant affecting a medicinal substance's bioavailability is its solubility.

It was useful to recognize the drug's form and how it was processed to create its dose form.

Poor solubility and inadequate permeability are the greatest common reasons for poor oral bioavailability [21].

KMNC is somewhat soluble in the little solvents and soluble in most solvents. It indirectly demonstrates the effectiveness of its stomach solubility and raises its bioavailability.

Loss on drying/Gain from drying

The drug's total volatile substance and moisture (water) content are determined by loss on drying.

The amount of moisture affects a drug's stability and shelf life. Increased humidity can harm the active component.

Low moisture substance allows for better the medicine's durability as well as shelf lifespan.

The drug's low drying loss results in a lower humidity level, making it acceptable for making medicines.

Values of Ash (Total Ash Value)

The experimental drug's low total ashes value suggests that it comprises plant-based organic derivatives. It doesn't go through the calcination process.

Acid-insoluble ash

If the acid-insolvable number is lower, the medicine's quality will be higher (100). The medication guarantees a tiny amount of acid-insoluble ashes means that no sand, dust, or stones were present in the preparation.

Water-soluble ash

Reduced water-solvable debris values (5.40%) suggest simple diffusion and osmosis mechanism facilitation.

Biochemical Evaluation

According to the biochemical Analysis, the biochemical Analysis, Ca, Al, Zn, and Hg are found in the basic radicals of KMNC. Sulfate also chloride is present, according to the biochemical study of the acid radical of KMNC.

Interpretation

These radicals are present, which aids KMNC's therapeutic action.

Zinc is necessary for blood coagulation, wound healing, and immunological function.

Mercury has cytotoxic properties that inhibit the growth of tumors and aid in the destruction of cancer cells.

Standardization as literature before the Buddha

Share

KMNC signifies fine and white. KMNC is primarily white and ivory. KMNC was ivory or a pale yellowish white. It exhibits KMNC's ideal Color. If there is no gleaming, then there are no metals present.

Floating on Water

The KMNC floats on the water's surface rather than sinking. It shows how lightweight KMNC is. KMNC can do so because it has a lower specific gravity than water, allowing it to move more freely. It signifies

how light the medication is; hence, it has a property similar to Chendhooram.

Fingerprint Test

It infringed on the fingertip lines. It attested to the KMNC's high quality. KMNC impacted the finger's lines during the fingerprint examination. It implies that the small particles are microscopic and fine.

Luster

The absence of sparkling particles in the medicine indicates that it does not include unaltered materials such as metals or other dangerous compounds. The medication was, therefore, appropriately made. The KMNC lacked sheen. It happens due to the specific metallic characteristics of the raw materials altering during cremation. It suggests that it was expertly built.

Taste

Due to the sulfur content, it had no flavor and caused only moderate irritation. KMNC lacks a recognizable flavor. It happens due to the specific metallic characteristics of the raw materials altering during cremation. [22]

Solubility

One of the key factors in achieving the desired KMNC drug concentration in systemic circulation and the necessary pharmacological response is solubility. However, KMNC indirectly demonstrates its effectiveness of solubility in the stomach by increasing bioavailability. It is barely dissolved in a few other chemical solvents and completely dissolved in the main solvent.

It was useful to recognize the drug's form and how it was processed to create its dose form. Poor solubility and inadequate permeability are the greatest common reasons for poor oral bioavailability [20]. KMNC is somewhat soluble in the little solvents and soluble in most solvents. It indirectly demonstrates the effectiveness of its stomach solubility and raises its bioavailability.

pH

The pH value of KMNC is acidic. The resulting pH affects the activity of enzymes by preserving their internal condition and controlling equilibrium. It is a crucial component in drug absorption as well.

Specific gravity:

The experimental medicine KMNC exhibits a specific gravity lower than water. It demonstrates how Absorption works.

Gain from drying

RP drug's total volatile substance and moisture (water) content are determined by loss on drying. The amount of moisture affects a KMNC drug's stability and shelf life. Increased humidity in KMNC can harm the active component in KMNC. Low moisture substance allows for better the RP medicine's durability as well as shelf lifespan. KMNC drug's low drying loss results in lower humidity and the highest level of microbiological stability, making it acceptable for making medicines.

The overall value of the ashes

Cinder is absent in KMNC, indicating a high proportion of plant-based organic derivatives, including Na, Ca, and K. These chemical molecules cause the therapeutic effects of KMNC and mineral supplementations.

Acid-insoluble ash

KMNC drug quality will be better if the acid-insoluble ash value is reduced. Because the amount of acid-insoluble ash in this medication is minimal (less than 1%), it may be assumed that no sand, dust, or stones were included in its production.

Water soluble ash

Reduced water-solvable debris values (less than 1%) suggest promoting diffusion and facilitating the osmosis mechanism. This nature could facilitate greater Absorption.

KMNC has a lower specific gravity than water. It shows how lightweight the medication is. The trial drug's mild irritation was caused by its pH. The drug's adjuvants, jaggery, decrease the discomfort and foul smell. This adjuvant reduces the acidity of KMNC as a result. Mildly acidic drugs are absorbed in the stomach's acidity surroundings per pharmaco-kinetics.KMNC has incredibly small particles, according to a particle size examination. For the sieve dimension no. 120, the diameter of the mesh is 125 nm.

Analysis

Table 1 demonstrates that high organic materials led to a very high overall ash value. KMNC's physicochemical examination revealed Losses after a drying value of $0.3 \pm 0.05568\%$, indicating that the medicine had low humidity content. Increasing humidity level is the cause of a drug's instability also shorter shelf life. Due to its careful preparation, KMNC achieved optimum stability and longer shelf life. This previous finding justifies the theChendhooram's100-year shelf life referenced in Siddha literature.

Initial studies on both basic as well as acidity radicals

According to the preliminary chemical Analysis, the experimental medicine KMNC contains sulfate, chlo-

ride, phosphate, Ca, K, Mg, and Fe.

FTIR

The outcome indicates in Table 3 also Fig 9 that KMNC contains functional groups and inorganic chemicals. For clarifying their structures and proving the existence of the active molecules that underlie the curative efficacy in Siddha medications, biomolecules' available categories can be recognized using FT-IR [23].

Through their stretch and bend, which are responsible for their functional activity, sophisticated instrumental Analysis, like FTIR, reveals the existence of functional groups. The Siddha herbal remedy KMNC was put through several experiments to validate its efficacy and safety through a proper standardization approach, and the findings showed its potency and effectiveness. The conclusion was drawn after carefully examining all the previous investigations. The chemical fingerprint is demonstrated by a wavenumber between 1500 cm^{-1} and 400 cm^{-1}.

According to the earlier finding, "KMNC" contains functional groups, including primary and secondary alcohol, phenols, alkanes, and alkyl halides. They might be in charge of KMNC's anticancer properties in cancer.

Phenols

Phenols and flavonoids possess several biological activities, including antiulcer, antioxidant, cytotoxic, antitumor, anti-inflammatory, antispasmodic, and antidepressant properties.

Phenols are currently gaining attention for their potential anti-oxidative and anti-carcinoma properties. [24]

Alcohol

The CMC's OH group has a better capability for inhibiting the growth of microbes.

Alkyl halide

The abundance of Low-molecular-mass alkyl halides, which have the potential to cause minor cancer, serves as proof for the electrophilic theory of carcinogenesis [25].

Alkanes

An alkanes derivative has anticancer properties. Siddha's literature suggests that this medicine is appropriate for disorders like cervical cancer and other conditions because of the reported frequencies [26]. Therefore, the author expects that the results of this investigation will be beneficial in future research on "KMNC."

Acid carboxylic

The novel anticancer compound benzene-polycarboxylic acid complex (BP-CI) targets human cellular carcinoma. One such example is the omega-3 fatty acid docosahexaenoic acid (DHA). Having six (hexa-) cis double bonds also 22-carbon linkage (docos is Greek for 22), it has the structure of a carboxylic acid (-oic acid). DHA was discovered to slow the development of human colon cancer cells in mice. The reduction in the cell growth regulator ultimately gave rise to DHA's cytotoxic effects [27].

Discussion in FT-IR

The instrument analysis was finished using Fourier Transforms Infra-Red Spectroscopy (FT-IR). The test substance contained twelve tips. These were the groups of functional identified within the KMNC drug being studied. Alcohol, alkanes, alkenes, phenols, alkyl halides, aromatics, carboxyl, and nitrile groups are present and reflect the maximum amount, as demonstrated in Table 3. The FTIR investigation of KMNC yielded spectra that show molecular Absorption and transmission. This produces molecular fingerprints of a substance. A functional group controls how many compounds are in the specimen by determining how many are present. These functional groups might be responsible for the drug's therapeutic effects. [28]

Analysis of XRF (X-RAY Fluorescence spectroscopy)

XRF outcome of KMNC

According to the XRF results, sulphur trioxide is present in 98.7%. The majority of the elements in KMNC are in oxide form. The calcined process is to blame

SEM (Energy Dispersive X-ray Investigation Scanning Electron Microscope)

The sample's nanoparticle and microparticle sizes are seen in the SEM image. A particle dimension ranges from 60 nm - 172 nm. Because of their relatively tiny dimensions, nanoparticles may reach tissues and interact with biological substances. The main characteristics that nanoparticles can benefit KMNC is that it spontaneously grows and has nanoparticles to hasten medicine activity at the desired spot. The image below, which was created using a 10 K X magnification and a 1 m aperture, displays maximum depth focus. Figures 3 and 4 displays nanoparticles in a 1μm SEM picture.

The SEM investigation described above demonstrates microscopic resolution at 1, 20 μm array. The presence of diverse compounds in the sample is the cause of the change in morphology that is seen in the micrograph. A drug must be classified as a nanomedicine if it contains 100-nm-sized nanopar-

ticles.

Comments on Raman Spectroscope

The medication produced using the standard Siddha-SOP sublimation technique has carbon connections with aliphatic chains H_2, C, also O_2.

Ionic, covalent, also coordinated covalent links (C-O-C link chain and C=C link chain) are possible for these bonds.

The sublimation process transforms a heterogeneous substance into a homogenous material and produces fresh complicated substances with a wide range of linkages.

Electronegativity is a metric for how likely a single atom is to capture a pair of bonding electrons.

One atom's linking couple of electrons is drawn toward the other end of the atom's connection.

The link becomes more ionic as the electronegative difference between the dual atoms engaged increases.

KMNC's electronegativity and nucleophilicity cause unstable radicals to be drawn into these electron skies, and certain fresh bonding prevents metabolites from harming and detoxifying cells. These properties also support the electron transportation chain, which maintains proper cell metabolism and promises an antioxidant asset.

Important characteristics of antioxidants: Protein, lipids, also DNA damage brought on by oxidative stress has caused cell damage. It might also affect pathways of signaling that are redox-sensitive to apoptosis-related alterations. Since they may be helpful in both the prevention and management of diseases where cellular oxidative damage has been associated, antioxidants have become the focus of numerous studies and considerable interest in preserving comestibles.

ICP-MS analysis of KMNC

ICP-MS comments

Following the findings, hazardous metals arsenic and mercury concentrations are also within WHO-approved ranges. Both Pb also Cd is at or below the permitted values. This ensures the medication is safe during therapy, in addition to increasing its efficiency in treating disorders without endangering the body's cells. In addition to toxicological research, the WHO recommendations report uses heavy metal analysis using ICP-MS to verify the drug's safety.

XRD(X-ray scattering)

Comments

The structure of the crystal is greatly affected by the process of manufacturing. The particles' size, shape, and composition emphasize the medication's potency. The nanoparticles may improve the bio absorption of the medicine.

After being burned, the XRD model of KMNC exhibits a good crystalline structure. After XRD analysis, the principal diffraction peaks are determined. According to KMNC, an association with organic molecules presumably plays a significant function in the nanocrystalline range (26–31 nm), rendering it friendly and nontoxic at its therapeutic levels. Other ingredients in KMNC serve as extra supplements and may aid in increasing the formulation's effectiveness [29].

DISCUSSION

Ca, Hg, As, Na, Ammonium, also Znis are found in KMNC's fundamental, radical biochemical Analysis (Tables 2, 4 and 5).

Sulfates, as well as chloride, are present in the KMNC biochemical assay for acidity radicals (Tables 7, 8 and 9).

The existence of the above radicals enhances the therapeutic potential of KMNC (Tables 10, 11 and 12).

Calcium:1100 IU vitamin D3 and supplemented calcium doses of 1400–1500 mg were observed to minimize the relative threat of aggregated malignancies in a randomized regulated experiment.

Ammonium: Additionally, ammonia produced by the catabolism of amino acids during glucose deficiency can promote autophagy. This ammonia-stimulated autophagy also aids in the survival of cell lines, making it a potentially effective therapeutic objective in the fight against cancer. Sodium: Sodium kills cancer cells by cytotoxic means.

Zinc: The immune system, wound healing, and blood clotting depend on zinc. According to several research, zinc inhibits the development of carcinoma lines cell in culture.

Mercury: Mercury perchloride was first used as a surgical antiseptic solution around rectal operations. In reconstructive carcinoma operations, the methods of Goligher et al. established colon also rectum washing. During kidney-related operations, mercury perchloride liquid was used as a cancer-fighting medicine. This leads to the conclusion that mercury perchloride acts as an effective cancer-prevention medication when utilized during major bowel operations.

Arsenic: Numerous arsenic substances were used

for therapeutics in the eighteenth and nineteenth centuries. During the past five hundred years, trioxide of arsenic was employed in a wide range of therapeutic approaches, with cancer treatment being the most popular. This drug was given FDA approval in 2000 to treat severe promyelocytic leukemia, which was sensitive to ATRA.

Sulfate: A chemical substance called sulfate of hydrazine has been investigated as a cancer therapy. The substance sulfate has beneficial effects on cancer.

Chloride: Against cells with cancer, chloride exerts cytotoxic properties.

Nanoparticle benefits

Improve hydrophobic medication solubility, extend the time of circulation, limit uptake that is not specific, increase the drug's therapeutic impact, reduce toxicity and adverse effects, avoid negative side effects, Increase penetration inside cells, increase bioavailability and improve stability, target cancer specifically, nanoparticles are included in the test medication KMNC, drugs using nanoparticles have improved bioavailability and are easier to absorb, nanotechnology offers a promising path from cancer management to cancer eradication since it acts on the cellular level and has anticancer activity, the nanoparticles demonstrate that medicine can quickly and to cure diseases and increase the effectiveness of treatment, easily penetrate cells at the molecular level, and the presence of spherical particles with an aggregated morphology is seen in the SEM pictures of KMNC. The particles' measured sizes include 96nm, 120nm, and 134nm. The dimension of particles is roughly within the nanometer range. The experimental medication KMNC is nanomedicine. Therefore, the drug will have high bioavailability. The medicine will also be powerful, even at smaller doses. Today's research findings show that the most recent cancer treatments depend on immunotherapy, particularly monotherapy, in addition to chemotherapy and brachytherapy. In the present world, this nanomedicine will aid in creating miraculous cancer treatments. Numerous investigations were made, including physicochemical, biological, and instrumental ones.

CONCLUSION

Through the study above, we discovered the presence of the active elements in charge of its activity. The presence of sulfate, calcium, magnesium, potassium, and sodium was found through biochemical Analysis. These results allow us to conclude that the existence of specific constituents is connected to the drug's effectiveness and that these constituents cooperate to fight the disease. The methodological process FTIR revealed peak values that represent the functional groups in charge of its operation. The XRF results for KMNC indicate that it contains elements in oxide form. The cause is the calcined process. KMNC has standardized as part of the study as a result. To fully satisfy the standardization, more in-depth research will be needed. To fulfil their responsibilities in the field of global health, clinicians and researchers will benefit from this study. The purifying process must go through several stages to reach a nontoxic form. The higher-order Siddha formulation KMNC was purified in this work to obtain the KMNC. Evidence-based data will provide important information to the researchers working on this formulation shortly, and the preceding study may serve as a fingerprint for future "Rasa Parpam" standardization citations. The particles' measured sizes include 96nm, 120nm, and 134nm. The dimension of particles is roughly within the nanometer range. The experimental medication KMNC is nanomedicine. Therefore, the drug will have high bioavailability. The medicine will also be powerful, even at smaller doses. Today's research findings show that the most recent cancer treatments depend on immunotherapy, particularly monotherapy, in addition to chemotherapy and brachytherapy. In the present world, this nanomedicine will aid in creating miraculous cancer treatments.

Conflicts of Interest

There are certainly no conflicting activities.

Funding Support

No funding support for this study.

REFERENCES

[1] A Tabassum, Anjali K Khan, Rashmi Gohel, and Mallya. Standardization and HPTLC method development of marketed ayurvedic formulation-barista. *International Journal of Pharmacy and Pharmaceutical Sciences*, 8(3):201–209, 2016.

[2] Senthil Kumar, C Sivasakthi, R Moorthi, C Anudeepa, J Ramya, R, Benito Johnson, and Venkata Narayanan. Physio-Chemical Evaluation and Toxicological Studies of Herbomineral Preparation (Rasachendooram). *International journal of pharmaceutical and chemical sciences*, 1(1):455–458, 2012.

[3] Sabiha Sumbul, Aftab Ahmad, M Asif, Mohd Akhtar, and Ibne Saud. Physicochemical and phytochemicals standardization Of berries of Myrtus communis linn. *Journal of Pharmacy*

and Bioallied Sciences, 4(4):322–326, 2012.

[4] Hyuna Sung, Jacques Ferlay, Rebecca L Siegel, Mathieu Laversanne, and Isabelle Soerjomataram. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA: A Cancer Journal for Clinicians*, 71(3):209–249, 2021.

[5] Melina Arnold, Monica S Sierra, Mathieu Laversanne, and Isabelle Soerjomataram. Ahmedin Jemal, and Freddie Bray. Global patterns and trends in colorectal cancer incidence and mortality. *Gut*, 66(4):683–691, 2017.

[6] K Balagurusamy, S Semalatha, and S Balamurugan. Through Characterization by Physico-Chemical Analysis and Fourier Transform Infrared Radiation(FTIR) Analysis. *National Journal of Environment and Scientific Research*, 4(5):10–19, 2022.

[7] F S Williamson. Basic Copper Sulphate. *The journal of physical chemistry*, 27:789–797, 1923.

[8] L T De Lange, R M Shiue, D R Myers, S L Cox, A Naylor, H E Killery, and Varmus. Structure and variability of human chromosome ends. *Molecular and Cellular Biology*, 10(2):518–527, 1990.

[9] R Abinaya, R Vijaya Nirmala, R Karolin Daisy Rani, and M D Saravana Devi. Preliminary Bio-Chemical Evaluation Acidic, Basic Radicals of a Novel Siddha Metallo-Mineral Formulation Kaalamega Narayana Chendhooram as Mentioned in Athmaraksha Mirtham Ennum Vaithiya Saara Sangeraham. *International Journal of Pharmacy and Pharmaceutical Research*, 15(1):169–196, 2019.

[10] Behzad Mansoori, Ali Mohammadi, and Sadaf Davudian. Solmaz Shirjang, and Behzad Baradaran. The Different Mechanisms of Cancer Drug Resistance: A Brief Review. *Advanced Pharmaceutical Bulletin*, 7(3):339–348, 2017.

[11] Xiao-Qin Wang, Paul-D Terry, and Hong Yan. Review of salt consumption and stomach cancer risk: epidemiological and biological evidence. *World Journal of Gastroenterology*, 15(18):2204–2213, 2009.

[12] Amos Gelbard. Zinc in Cancer Therapy Revisited. *Israel Medical Association Journal*, 24(4):258–262, 2022.

[13] Y Hassona, Scully, Almangush, F Baqain, and Sawair. Oral potentially malignant disorders among dental patients: a pilot study in Jordan. *Asian Pacific Journal of Cancer Prevention: APJCP*, 15(23):10427–10431, 2014.

[14] Eva Csosz, Bernadett Markus, Zsuzsanna Darula, Katalin F Medzihradszky, Judit Nemes, Emese Szabo, and Jozsef Tozser. Csongor Kiss, and Ildiko Marton. Salivary proteome profiling of oral squamous cell carcinoma in a Hungarian population. *FEBS Open Bio*, 8(4):556–569, 2018.

[15] Janet R Karin A Rosenblatt, Chu Daling, Karen J Chen, Stephen M Sherman, and Schwartz. Marijuana use and risk of oral squamous cell carcinoma. *Cancer Research*, 64(11):4049–4054, 2004.

[16] Kana Wu, C Walter, Charles S Willett, Graham A Fuchs, Edward L Colditz, and Giovannucci. Calcium intake and colon cancer in women and men. *Journal of the national cancer institute*, 94(6):437–446, 2022.

[17] Martina Bonifazi, Matteo Malvezzi, Paola Bertuccio, Valeria Edefonti, Werner Garavello, Fabio Levi, Carlo La Vecchia, and Eva Negri. Age-Period-Cohort Analysis of Oral Cancer Mortality in Europe: The End of an Epidemic? *Oral Oncology*, 47(5):400–407, 2011.

[18] Atul Pulok K Mukherjee and Wahile. Integrated approach towards drug development from Ayurveda and other system of medicines. *Journal of Ethnopharmacology*, 103(1):25–35, 2006.

[19] K Pulok and Mukherjee. Exploring botanicals in Indian System of Medicine-Regulatory Perspectives. *Clinical Research and Regulatory Affairs*, 20(3):249–264, 2003.

[20] P Rajalakshmi, P Devanathan, and Brindha. Analytical Studies on Muthuchippi Parpam. *Journal of Pharmacy Research*, 3(10):2366–2370, 2010.

[21] B Peleteiro, C Lopes, C Figueiredo, and N Lunet. Salt intake and gastric cancer risk according to Helicobacter pylori infection, smoking, tumour site and histological type. *British Journal of Cancer*, 104(1):198–207, 2011.

[22] B S S Savrikar and Ravishankar. Introduction to 'Rasashaastra' the Iatrochemistry of Ayurveda. *African Journal of Traditional, Complementary, and Alternative Medicines*, 8(5):66–82, 2011.

[23] Shaik Kasmoor Kalesha Vali, Narendra Kumar Reddy Kolli, and P. Swetha. Study of antihypertensive agents in rural areas by the community pharmacists. *Indian Journal of Research in Pharmacy and Biotechnology*, 5(1):28–30, 2017.

[24] Rama Jayasundar. Ayurveda: a distinctive

approach to health and disease. *Current Science*, 98(7):908–914, 2010.

[25] Boris Vladimirovich Ragozin. The history of the development of Ayurvedic medicine in Russia. *Ancient Science of Life*, 35(3):143–149, 2016.

[26] Anand Chaudhary and Neetu Singh. Herbo Mineral Formulations (Rasaoushadhies) of Ayurveda An Amazing Inheritance of Ayurvedic Pharmaceutics. *Ancient Science of Life*, 30:18–26, 2010.

[27] Sanjeev Rastogi. Building bridges between Ayurveda and Modern Science. *International Journal of Ayurveda Research*, 1(1):41–46, 2010.

[28] Anas Shamala, Esam Halboub, Ali Sadeq, Hesham Al-Maweri, Mona Al-Sharani, Raheq Al-Hadi, Hajer Ali, Heba Laradhi, and Murshed. Oral cancer knowledge, attitudes, and practices among senior dental students in Yemen: a multi-institution study. *BMC Oral Health*, 23(1):435–435, 2023.

[29] A Kumar, A G C Nair, A V R Reddy, and A N Garg. Availability of essential elements in Bhasma: Analysis of Ayurvedic metallic preparations by INAA. *Journal of Radioanalytical and Nuclear Chemistry*, 270(1):173–180, 2006.

Cite this article: Satheesh C, Balasubramanian S, Kalaiselvi D, Abinaya R. *Kaalamega Narayana Chendhooram* (KMNC): Standardization, Characterization, and Instrumental Analysis of a Potential Anti- Oral, Anti-Lung, and Anti-Prostate Cancer of Herbal Mineral Formulation (A Siddha Medicine for Oral, Lung, and Prostate Cancer). Future J. Pharm. Health. Sci. 2024; 3(3): 314-331.