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Analytical Characterization and Anti-Microbial Activity of Pancha Pashana Chendooram

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Abstract: ***The siddha medicine is 5, 000-year-old medicinal system practiced by the siddhars. The siddha system of medicine is the oldest traditional system generated from Tamil culture. The Siddha system of medicine not only focuses on prevention and cure but also emphasize in kaya kalpa i.e., making one's body immortal[1]They developed a type of medicine which could cure all type of diseases. There are about 4448 types of diseases associated with human body. So, they tried to prepare a medicine which could cure all these diseases and they prepared the medicine using" Pashanam". The medicine prepared from pashanam is known as "Elixir" to mankind. The prepared drug pancha Pashana chendooram underwent several analytical, bio-chemical and anti- microbial activity and the drug also characterized according to AYUSH guidelines. All the test reveals that the PPC is highly effective against the Various instrumental analysis such as FT-IR Spectroscopy, heavy metal analysis, Anti-microbial activity and scanning electron microscope demonstrated its chemical constituents, functional groups and particle size and it is also highly effective on treating breast cancer.[2] These indicates the usage of PPC as a perfect drug.***

Keywords: Siddha, pancha Pashana chendooram, biochemical, anti-microbial activity

1. Introduction

In our daily human life, we come across several diseases. Our human body is made up of 5 elements (pancha bhootam). They associated with the overall health of human being. Any change in this could cause the imbalance. The pashanam acts as a broad-spectrum drug as it targets various diseases. It comes under the category of heavy metals. Our human body is made up of chemical compounds so, treating it should require the same composition. The drugs prepared from pashanam have this property. To turn them to be a lifesaving medicine the pashanam should be properly purified. The following work describes the preparation of pancha pashanam chendooram which is made with pashanam such as cinnabar (lingam*)*, *Arsenium ruberum (*manoseelai), and then to it load stone (gantham*)*, Arsenic *(*Aritharam*)*, Sulphur (Kanthagam*)*, Mercury *(*rasam), *Hydragyrumperchloride (*Veeram*), Hydragyrumsub chloride (*Pooram*) and* White arsenic (Vellaipashanam). The Chendooram is defined as Metallic substances or toxic salts are made into red coloured powders, by the process of either burning them or frying them or exposing to the sunlight or keeping them in specialized pudas by adding decoctions, cheyaneers, dravagams, etc. The pancha Pashana chendooram is prepared by this method by following works done in the gunapadam (*Materia medica*), ugimuni vatha kaandam-1000, and Anuboga Vaithiya Navaneetham. The medicine prepared does not contain the expiry date but, the increase life span increases the efficiency of the medicine but it has Life period is 75 years. According to 18 siddhars vadha kovi -it has high capacity to cure arthritis, alopecia, diabetes, cancer, peptic ulcer, all types of fever, all types of glandular swelling, gonorrhoea, leucorrhoea, rhagdus, sinus, bronchial asthma, vitiligo, scabies, 8 types of skin diseases, 8 types of ulcers, dysentery, incurable inflammation, liver cirrhosis, indigestion problem, vomiting, rheumatic fever, etc, [3]

Aim: To validate the safety and efficacy of the test drug pancha Pashana chendooram and to detect its Analytical and Anti- microbial activity.

Objective:

1) Collection of relevant literature from Siddha and modern text.
2) Standardization of the preparation of drug according to classical Siddha text.
3) Evaluation of physicochemical analysis
4) Biochemical analysis for determining acidic and basic radicals.
5) Estimation of elements through instrumental analysis.

2. Materials and Methodology

Sample collection:
The pashanam used for the preparation of pancha Pashanachendooram is bought from the siddha medical shop in karur and from Madurai.

Purification:
The process of purification is done via following- Materia medica (pathartha guna vilakam, Materia *medica*). [4]

Pashanam	purification
Arsenium sulphidium (Manoseelai)	This is naturally accruing one. It looks in red colour, powdery consistency and has more weight. Required amount of it is taken in kalvam and to that *zinger officinale* (ginger) extract, lemon juice and sour cured is added little by little and mixed well for about 3 hours and place it in shallow place. By this way *Arsenium sulphidium* (Manoseelai) is purified.
Cinnabar (lingam)	It is formed between the reaction of mercury and sulphur and found under the hill stations. It looks very shinny and rarely found so, the pashanam with the same character called as "jathilingam" is taken. It is purified with the *Acalypha indica* (kuppaimeni) extract, lemon juice and cow`s milk is added to open mouthed mud part and a drop by drop of each extract added and heated for about 3 hours

Load stone (gantham)	This is purified by the process in which they are immersed in *Macrogyloma unifforum* (kollu) water by heating them. Then they are immersed in out for about 7 times. Then, the stone is washed and dried
Mercury (rasam)	It is the liquid pashanam among the above mentioned. It looks like a silver and insoluble in water but when they are heated it gets evaporated. It has several medicinal properties. so, in many medicinal preparation's mercury is used. They are purified by treating it with turmeric powder (manjal), salt, cobweb (ottadai), and brick powder (sengal). they are added to the kalvam and mercury is poured in it. They were mixed for about hours. then to that *Acalypha indica* (kuppaimeni)extract, then to it *Cissusquadrangularries* (pirandai) extract are added and mixed well. Then honey, ginger (*Zinger officinale*), *Senna auriculata* (aavarampattai) decoction of all this is made and again mixed it in kalvam containing mercury. After mixing *Plumbago indica* (kodiveeli) extract tripala water which contains- *Emblica officinalis (*amla), *Terminalla chebula (*kadukai), and *Terminalla belerica (*thandrikai) and to that Amuri is also added and mixed well. Then taken and washed with water. Mercury gets purified.
Sulphur (Kanthagam)	There are different types of sulphur used among them nelikaiKanthagam is highly used. It is in yellowish green colour and tastes like astringent and bittery. In a metal vessel the sulphur is taken and pure cow`s ghee is added drop by drop. After it gets melted it is poured in cow's milk. Likewise, the process is continued for 10 times. By this ay sulphur gets purified
Hydragyrum per chloride (Veeram)	It is white in colour without any odour or smell. It has a spicy taste. Soluble in water and gets melted while heating. They are taken in a kalvam and they are made into fine powder. To that coconut water is added and mixed well for 3 hours. By this way it's get purified
Hydragyrum sub chloride (Pooram)	It is white in colour. It has salty and spicy taste. *Piper nigrum* (pepper) water is made and heated by placing the it in cloth and tied above some distance from pepper water. In siddha system this process is called as "kilikattuthal". Heated for about 3 hrs. it gets purified.
White Arsenic (velai pashanam)	It looks like China calcium. it is crushed and added with water to apply in place were poisonous insect bites. It is made into powder and taken. Then, in a litter of water 35g of *pipper nigrum (*pepper) is powdered well and added in a vessel. On top of it pashanam is placed in cloth and hanged on it also called as kilikattuthal. Then they are washed with water.
Arsenium (aritharum)	In a mud pot 1/4 kg of calcium is added and it is placed in centre of the calcium stones in pot. Then, on the top of its calcium is filled with *Acalypha indica* (kuppaimeni) extract 1/2 l and lemon juice 1/2 l added to it. Then they're heated. After, boiling Amuri is added to it. Again, heated it until it is evaporated.

Total Purification (yega suthi):
All the pashanam were taken in separate cloth and in a vessel. Calcium powder, sea water-2l, rain water-1l, Amuri-1l, and *Acalypha indica*-1l are added and top of it all pashanam are tied few distance above it without touching the liquid. When all liquid is evaporated, they are taken out. By this way all Pashanam gets fully purified and ready to use in any medicinal preparations. This is done to ensure that all the Pashanam are thoroughly purified.

Preparation of pancha Pashana chendooram: (Vaithiyam-700, Bogar)

Pashanam:
Mercury (rasam)- 17.5g Arsenic (aritharum)-17.5g White arsenic (Vellai pashanam*)* -17.5g *Arsenic ruberum (*manoseelai)-17.5g Sulphur (ganthagam*)* -17.5g Magnetic oxide (kantham*)* -17.5g Cinnabar (lingam*)* -17.5g *Hydragyrum sub chloride* -17.5g *Hydragyrum per chloride* -17.5g

Extracts:
*Ocimum basillicum (*basil) *Hibiscus rosasinensis (*hibiscus) *Acalypha indica (*Copperleaf) *Enicostema axillare (*Indian whitehead), *Solanum surattense (*yellow-fruit nightshade**)***Piper betle (*betle leaf).

After, the process of total purification, in a kalvam first-Mercury (rasam) and sulphur (ganthagam) is added and mixed until it turns to black in colour. Next, to it the following Pashanam are added Cinnabar (lingam), Arsenium ruberum (manoseelai), Load stone (gantham), Arsenic (aritharum), *Hydragyrum sub chloride*, *Hydragyrum per chloride.* After, ensuring all the pashanam`s got completely powdered. Then, to it the above-mentioned extracts are added and, in each extract, they are mixed about 6hrs. So, this process should be repeated for the 6 extracts.

Then, they are made into small pieces (villai) and dried under sunlight. After, drying they are placed in a mud pot. In which the lid portion is covered with the Acalypha indica (Indian copperleaf) leaf extract and the don side Pipe r betle leaves are placed. In the middle the *PPC* pieces are placed. They are heated in the deepakini which means flame to turn it into the chendooram.

This process is repeated until they get turned into the proper chendooram form. After their proper conversion to the *PPC* vaithiya muppu is added to the appropriate amount in it and mixed completely into fine powder using the kalvam. (Vaithiyam-700, Bogar)[5]

Shelf life: 75 years

Dosage: 1-arusi yedai (1gram) with honey, legiyams, etc., dosage differs for different diseases

3. Results and Discussion

One of the Siddha Herbo-mineral formulations, pancha Pashana Chendooram had been exposed to several modern scientific studies to establish its efficacy to scientific people and public. Literary collection, Physicochemical and elemental analysis, antimicrobial susceptibility and photochemical activity are done to justify the ppc against severe bacterial diseases and properties of ppc as a drug from review of literature.

- The poem for general properties of processed quicksilver directly
- Indicates its antibacterial and properties of ppcas a drug
- Pooram by its formulation directly used as an anti-cancer drug.

- General property of Veeram used to kill certain cancer growth.
- As per Siddha classical text, Kantham by its Herbo-mineral formulation indicates anti-cancer property.
- The Muppu a traditional siddha medicine preparation increases the efficiency of the drug, its longevity and its quality in treating the hereditary diseases.

Discussion on modern drug review

The presence of mercury indicates the drug ppc has the anti-cancer activity.[6] (G.R. Chatwal, Pharmaceutical Chemistry Inorganic, 1997). The presence of arsenic indicates useful in treating syphilis and psoriasis and also useful in treating the uncommon blood cancer acute promyelocytic leukaemia. Swindell Ep, Hankins PL et al., 2013).

Discussion on pharmaceutical review Chendooram:

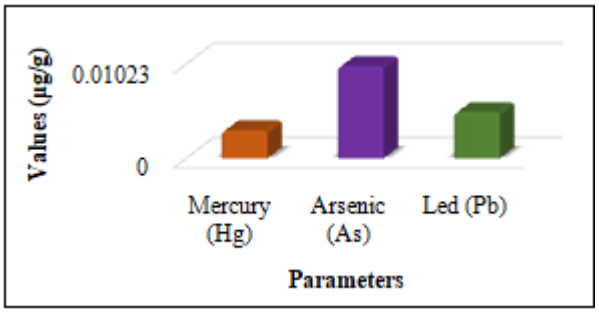
- 75 years of shelf life denotes its long-time efficacy.[7]
- Being very fine particles, it increases the therapeutic effect.

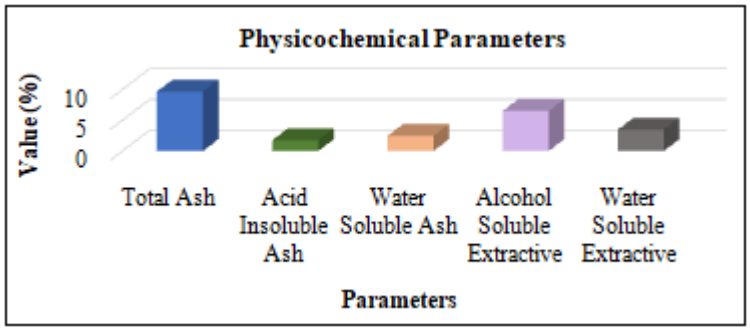
Table 1: Heavy metal analysis

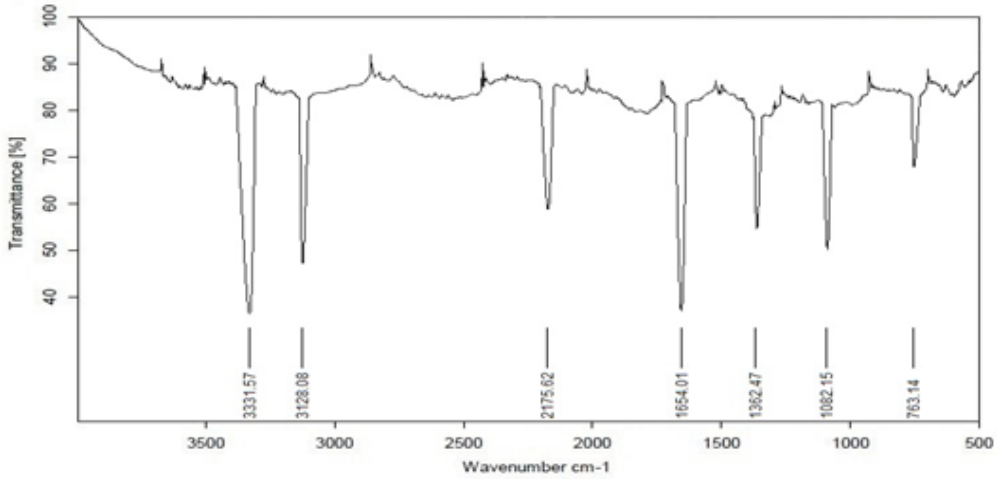
S. No.	Parameters	Values
1	Mercury (Hg)	0.003
2	Arsenic (AS)	0.01
3	Led (PB)	0.005

Table 2: Physicochemical Parameters

S. No	Parameters	Triplicate Values		
		A	B	C
1	Total Ash	10.13	9.64	9.25
2	Acid Insoluble Ash	1.56	1.89	1.77
3	Water Soluble Ash	2.75	2.62	1.99
4	Alcohol Soluble Extractive	6.17	6.82	6.53
5	Water Soluble Extractive	3.24	3.27	3.93







FT-IR analysis of ppc

Table 3: Characterization of PPC according to AYUSH guidelines[8]

S.No	Parameter	Results of Ideal Chendooram	Results of SC	Interpretation
1	colour	reddish	Brownish black	Chendooram colour.
2	Floating on water	Floats on water	Floats on water	Lightness of drug.
3	Finger print test	Impinged in the furrow of fingers	Impinged in the furrow of fingers	Indicates fine particles of powder.
4	Lustre	Lustreless	Lustreless	Change of specific metallic character of raw material after incineration
5	Taste	No taste	No taste	Change of specific metallic character of raw material after incineration

Table 4: FT-IR analysis[9]

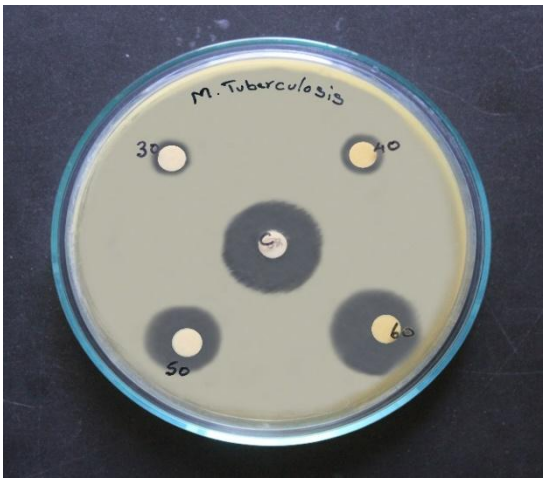
Absorption peak cm-1	stretch	Functional group
3331.57	0-H strong	Alcohols
3128.08	C-N medium	Amine
2175.62	C=C variable	Alkenes
1654.01	C=C medium	Alkenes
1362.47	C-F strong	Alkyl halide
1082.15	C-N medium-week	Amine
763.14	C-Cl strong	Alkyl halide

Table 5: Anti-microbial activity of PPC[10]

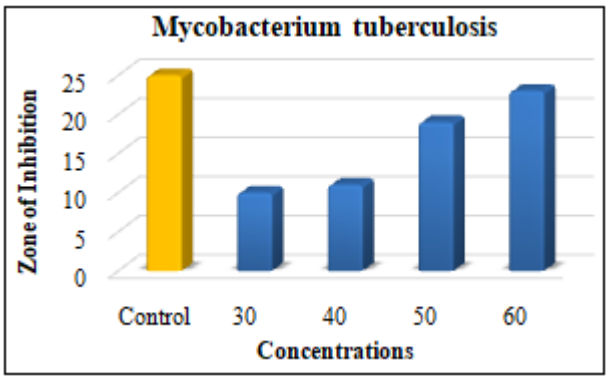
Organism	Control	Concentrations			
		30	40	50	60
Mycobacterium tuberculosis	25	10	11	19	23

Table 6: Biochemical activity

S. No	Parameters	Results
1	Test for Potassium	Negative
2	Test for Calcium	Positive
3	Test For Magnesium	Negative
4	Test For Ammonium	Negative
5	Test For Sodium	Negative
6	Test for Iron (Ferrous)	Positive
7	Test For Zinc	Negative
8	Test For Aluminium	Negative
9	Test For Lead	Positive
10	Test for Copper	Negative
11	Test For Mercury	Positive
12	Test for Arsenic	Positive
13	Test for Sulphate	Positive
14	Test for Chloride	Positive
15	Test for Phosphate	Negative
16	Test for Carbonate	Negative
17	Test for fluoride &oxalate	Positive
18	Test For Nitrate	Negative



Anti-microbial activity in *Mycobacterium tuberculosis*



Anti-microbial activity in *Escherichia coli, Staphylococcus aureus, Klebsiella pneumonia &Proteus mirabilis*

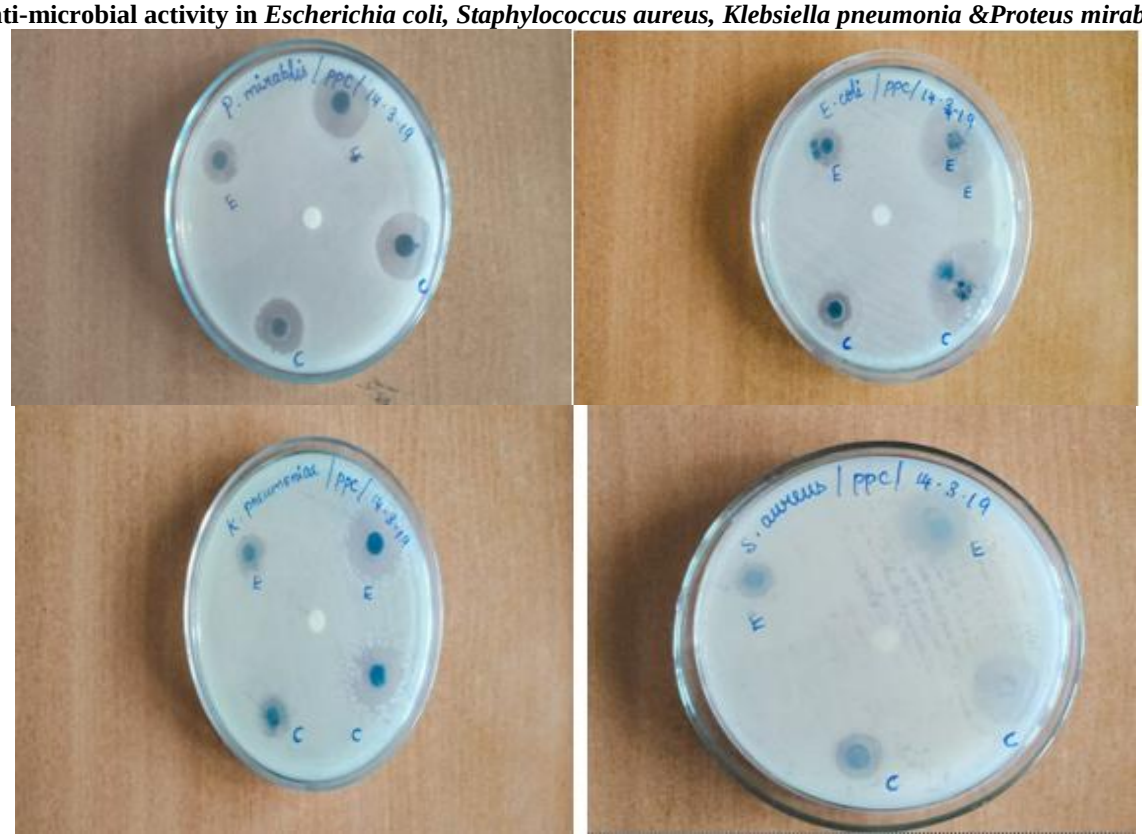
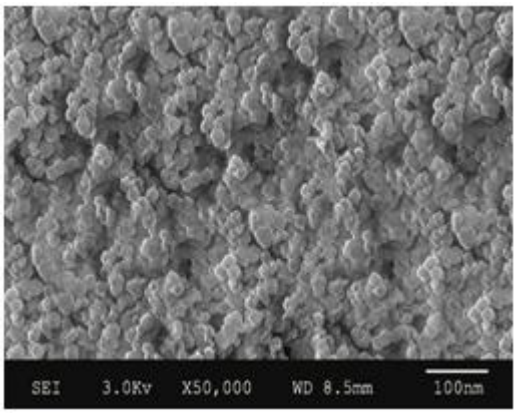


Table 7: Anti-microbial activity of *PPC*

S. No	Parameters	Mean ± SD
1	Total Ash	9.67 ± 0.44
2	Acid Insoluble Ash	1.74 ± 0.17
3	Water Soluble Ash	2.45 ± 0.41
4	Alcohol Soluble Extractive	6.51 ± 0.33
5	Water Soluble Extractive	3.48 ± 0.39

Table 8: Physicochemical Parameters[11]

Organism	Extract	Concentrations of Ethanol	
		50 µl	100 µl
Proteus mirabilis	Chloroform	1.6	2
Proteus mirabilis	Ethanol	1.2	2
Staphylococcus aureus	Ethanol	1	1.5
Staphylococcus aureus	Chloroform	1.1	1.8
Klebsiella pneumoniae	Ethanol	1.1	2
Klebsiella pneumoniae	Chloroform	1.1	1.5
Escherichia coli	Ethanol	1	1.5
Escherichia coli	Chloroform	1.1	3.8



SEM analysis of PPC

4. Conclusion

In this 21st century in the fastest life of the people and due to unhealthy food practices and several other conditions the microbes become more pathogenic and especially become more virulent and resistant to the antibiotics. The antibiotic resistance is the major threat to the human beings. The above studies paved the way for it. The intention of this study is to provide a solution for the above need. For a Non-violent drug for the hereditary and other pathogenic diseases. Pancha Pashana chendooram was chosen from the Siddha literature as a trial drug from ‖ **Materia medica (mineral-animal kingdom) by C. Kannusami pillai, Anuboga vaithiya Navaneethan by Abdulla sahib and Vaithiyam -700 by Maharishi Bogar**. The procedure for drug preparation and its techniques for standardization revealed GMP. The trial drug ppc has satisfied all parameters of testing protocol for Chendooram which was assigned by AYUSH. It showed the accurate production and potency of pancha Pashana chendooram. In, modern drug review-Arsenic exhibits anti -cancer activity.[12] Mercury helps to destroy the cancer cells and reduces the tumour growth. Physico-chemical analysis revealed better bio-availability and richness of its mineral content. Favouring this study were the presence of inorganic matters which were found through experiments for analysing acid and basic radicals. Various instrumental analysis of pancha Pashana chendooram such as FT-IR Spectroscopy, heavy metal analysis and scanning electron microscope demonstrated its chemical constituents, functional groups and particle size to support its indication to use ppc as a perfect drug. The anti-microbial activity of trial drug was also considered for its potential revealed that the pancha Pashana chendooram is highly effective for the following microbes *Mycobacterium tuberculosis, Staphylococcus aureus, Klebsiella pneumoniae*

and Escherichia coli. Factors like safety, efficacy, long self like, bio-availability, presence of significant elements, anions and cations and minerals favouring the activity justifies the main perspective of this study. PPC 's Antimicrobial activity and the FT-IR analysis could be validated scientifically. Lower the acid insoluble value better will be the drug quality.[13]Due to its Nontoxic drug effect especially for Mycobacterium tuberculosis which now has become drug resistant and also it would benefit the health community and the world. The FT-IR analysis also revealed that pancha Pashana chendooram may contain the anti-cancer properties in it.

5. Future Scope

Trial drug for the study **PANCHA PASHANA CHENDOORAM** was taken from the classic Siddha Literature‖ **Materia medica (mineral-animal kingdom) by C. Kannusami pillai.** Its validation for its basic drug acceptance and its anti- microbial activity are at preliminary level. The result enhanced and assured its drug and antimicrobial activity. More specific trails are required to enhance this study and the drug activity. So, it could be used worldwide to treat all kind of diseases.

References

[1] R. Thiyagarajan, Siddha Maruthuvam Sirappu, Commisioarate of Indian Medicine and Homeopathy, Chennai, 3rd edition, 2008, Page no: 4
[2] Anti-cancer activity of pancha Pashana chendhuram on MCF-7 cells, international journal of nutrition, pharmacology, neurological diseases; DOI: 10.4103/ijnpnd.ijnpnd_52_18 ugimuni vatha kaandam-1000, etc.
[3] C. Kannusami Pillai, Pathartha Guna Vilakkam-Thathu Jeeva Varkam, B. Rathinanayagar & sons, Chennai, 1997
[4] Bogar Vaithiyam- 700
[5] G. R. Chatwal, Pharmaceutical Chemistry Inorganic vol1, Page No202, Varier P.S. Indian Medicinal Plants, A compendium of 500 species, Published by Orient Longman Ltd, vol-4, 1997, 290-303
[6] K.S Uthamarayan, H.I.B.M., the Department of Indian Medicine and Homeopathy, Chennai, 1936, Page no: 763.
[7] D.R Lohar M.Sc., Ph.D., Protocol for testing of Ayurveda, Siddha and Unani medicines, Government of India, Department of AYUSH, Ministry of Health and Family Welfare, Pharmacopoeia laboratory for Indian Medicines, Ghaziabad, Page no:31
[8] CT supran, Amide Derivatives of Benzene-Sulfonanilide, Method of Cancer Treatment using the same, Expert opin Ther Pat 2012 oct, 22 (10):1251-55. Epub 2012 Jul 31.
[9] The disc diffusion method (Bauer et al., 1966
[10] (Prashant Tiwari, Bimlesh Kumar, 2011) physiochemical analysis
[11] Swindell Ep, Hankins PL et al., Anti-cancer activity of small-molecule and nanoparticulate arsenic (III) complexes, Inor chem..2013 Nov 4; 52 (21):12292-304.Epub 2013, Oct 22
[12] Lower the acid insoluble value Langer's Handbook of chemistry, 8thedition, Handbook Publishers, 10c, 1952 flinn scientific Inc, manual 2004.better will be the drug quality.
[13] Hakim P. Mohammed Abdulla Sahib, Anuboga Vaithiya Navaneetham, part-7, Thamarai Noolagam, Chennai.

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