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1. Overview

1.1. Objectives of the Council

The Central Council for Research in Siddha (CCRS), an autonomous body under the Ministry of AYUSH, Government of India is an apex body in India for undertaking, coordinating, formulating, developing and promoting research on scientific lines in Siddha. The activities are being carried out through 5 peripheral Institutes / Units located in Tamil Nadu, Kerala and Union Territory of Puducherry. The research activities of the Council include Preclinical Research, Clinical Research, Drug Research and Literary Research in Siddha.

The objectives for which the Central Council for Research in Siddha has been established are:

1. The formulation of aims and patterns of research on scientific lines in Siddha.
2. To undertake any research or other programmes in Siddha.
3. The prosecution of and assistance in research, propagation of knowledge and experimental measures generally in connection with the causation, mode of spread and prevention of diseases.
4. To initiate, aid, develop and coordinate scientific research on various aspects.
5. Especially fundamental and applied aspects of Siddha and to promote and assist research institutions for the study of diseases their causes, prevention and remedy.
6. To finance enquiries and researches for the furtherance of objectives of the Central Council.
7. To exchange information with other institutions, associations and societies interested in the objects similar to those of the Central Council especially in observation and study of diseases in India.
8. To prepare, print, publish and exhibit papers, posters, pamphlets, periodicals and books for furtherance of the objectives of the Central Council.
9. To issue appeals and make applications for money and funds in furtherance of the objectives of the Central Council and to accept for the aforesaid purpose of gifts, donations and subscriptions of cash and securities and of any property whether movable or immovable.

10. To borrow or raise funds with or without security or on security mortgage charge, hypothecation or pledge of all or any of the immovable or movable properties belonging to the Central Council or in any other manner whatsoever.
11. To invest and deal with the funds and monies of the Central Council or entrusted to the Central Council not immediately required in such a manner as may from time to time be determined by the General Body of the Central Council.
12. To permit the funds of the Central Council to be held by the Government of India.
13. To acquire and hold, whether temporarily or permanently any movable or immovable property necessary or convenient for the furtherance of the objects of the Central Council.
14. To sell, lease, mortgage and exchange and otherwise transfer any of the properties movable or immovable of the Central Council provided prior approval of the Central Government is obtained for the transfer of immovable property.
15. To purchase, construct, maintain and alter any buildings or works necessary or convenient for the purpose of the Central Council.
16. To undertake and accept the management of any endowment or trust fund for donation, undertaking or acceptance whereof may seem desirable.
17. To offer prizes and grant of scholarships, including travelling scholarships in furtherance of the objects of the Central Council.
18. To create administrative, technical and ministerial and other posts under the Society and to make appointments thereto in accordance with the rules and regulations of the Society.
19. To establish a provident fund and/or pension fund for the benefit of the Council's employees and / or their family members.
20. To do all such lawful things either alone or in conjunction with others as the Central Council may consider necessary or as being incidental or conducive to the attainment of the above objects.
21. To undertake R & D Consultancy projects and transfer of patents on drugs and processes to industries.
22. To undertake R & D projects sponsored by industries in public / private sector.
23. To undertake international and inter-agency collaboration.

24. Utilization of results of research conducted and payment of share of royalties / consultancy fees to those who have contributed towards pursuit of such research.
25. To enter into arrangements with scientific agencies of other countries for exchange of scientists, study tours, training in specialized areas, conducting joint projects etc.
26. To provide technical assistance to Govt. / Private Agencies in matters consistent with the activities of the Council.
27. To assist Medicinal Plants Board, Government of India in achieving its objectives.
28. To constitute small Management Committees consisting of eminent scientists / Physicians of local areas to monitor the R & D activities and suggest remedial measures for the improvement of activities of all Central as well as Research Institutes of the Council.

1.2. Scheme-wise targets and achievements

Clinical Research:

Validation of Neerkkovai Mathirai in the management of Neerkkovai Noi (Sinusitis) has been initiated. Efficacy of assessment of external application of Siddha medicine – Moosambara patru on Moottu Veekkam (swelling of knee joint) – short term clinical assessment has been completed. The Principal Investigators of the above mentioned project have obtained due approval from their respective IEC. 2 Survey projects duly approved by IEC of SCRI have been completed and data analysis is under progress. Multicentric clinical trial of OA1 chooranam in osteoarthritis and multicentric clinical trial of a classical Siddha formulation Rasagandhi Mezhugu in Karuppai Sathai Kattigal (Fibroid Uterus) were taken up as Intra Mural Research Projects and presented before Scientific Advisory Board. A collaborative IMR project to test the effectiveness of Kadukkai Mathirai in treating anaemia among the school going children has been approved by SAB and in this project scientists from SCRI are collaborating.

Drug Research:

Pharmacognostical studies on six single drugs have been completed. Standardization of 32 single drugs and 8 compound formulations has been completed. Efficacy studies for two drugs and 4 activities have been completed.

Literary Research:

Publication works on 5 books have been completed. 2 CD-ROMs of Siddha pharmacopoeia and Siddha formulary have been completed. E-book of CCRS has been published. Preparation of e-library and collection of portraits of legends in Siddha for development of Museum are in process. Monographs on preclinical studies on Diabetes and Fibroid uterus are under compilation.

Medicinal Plant Research:

79 specimens were collected and stored in the museum of Medicinal Plants Garden. 4 Survey tours have been completed. 87 species have been added / introduced to the Garden. 5 folklore claims have been documented. 7 new species have been cultivated and 5 new species have been demonstrated as trial cultivation in SMPG, Mettur.

Siddha Pharmacopoeia:

The Siddha Pharmacopoeia Committee with the mandate of establishing quality parameters for Siddha drugs and their formulations is working under the auspices of Ministry of AYUSH. It is currently functioning at CCRS, Chennai. “The Siddha Pharmacopoeia of India, Part I, Vol. III” has been modified as per the new format and is ready for printing. Preparation of the Siddha Pharmacopoeia of India, Part I, Vol. IV has also been initiated during the reporting period. The Siddha Formulary of India, Part I, 1st revised Edition (Tamil) has been approved by the SPC.

2. Management

2.1. Constitution of several bodies

CCRS was bifurcated from CCRAS on 1st September 2010 and the General Body, Executive Committee and Scientific Advisory Board of the newly established Council were constituted. The details are as follows:

Table-1: General Body

| S.No | Designation /Name | Position |
|------|----------------------------------------------------------------|------------------|
| 1 | Union Minister of State i/c Ministry of AYUSH | President |
| 2 | Secretary, Ministry of AYUSH | Vice-President |
| 3 | Secretary / D.G Health Research | Member |
| 4 | Director General, CSIR | Member |
| 5 | Additional Secretary & FA, Ministry of Health & Family Welfare | Member |
| 6 | Joint Secretary, Ministry of AYUSH | Member |
| 7 | Director, National Institute of Siddha, Chennai | Member |
| 8 | Advisor (Siddha)/ Jt. Advisor(Siddha)/ Dy. Advisor (Siddha) | Member |
| 9 | Director, PLIM, Ghaziabad | Member |
| 10 | Prof. Dr. P. Jayaprakash Narayanan, Siddha Expert | Member |
| 11 | Prof. Dr. A. Kumaravel, Siddha Expert | Member |
| 12 | Dr. Vasantha Muthuswamy, Expert in Modern Medicine | Member |
| 13 | Director General, Central Council for Research in Siddha | Member Secretary |

Table-2: Executive Committee

| S.No | Name | Designation | Position |
|------|------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------|
| 1 | Secretary, Ministry of AYUSH, Government of India, New Delhi | Ex-officio member | Chairperson |
| 2 | Additional Secretary & FA Ministry of Health & Family Welfare, Government of India | Ex-officio member | Member |
| 3 | Joint Secretary, I/C Siddha, Ministry of AYUSH, Government of India, New Delhi | Ex-officio member | Member |
| 4 | Prof. Dr. P. Jayaprakash Narayanan | Expert in Siddha Medicine (Nominated member from the General Body) | Non-official Member |
| 5 | Advisor / Jt. Advisor/ Dy. Advisor (Siddha) | Ex-officio member | Member |

| | | | |
|---|-------------------------------------------------------------|--------------------------------------------------------------------------|------------------------|
| 6 | Dr. Vasantha Muthuswamy | Expert in Modern Medicine (Nominated member from the General Body) | Non-official Member |
| 7 | Director General, Central Council for Research in Siddha | Ex-officio member | Member Secretary |

Table 3: Scientific Advisory Board

| S.No | Name | Designation | Position |
|------|-------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------|
| 1 | Prof. Dr. A. Kumaravel | Nominated Member of GB, CCRS, Chennai | Chairperson |
| 2 | Prof. Dr. S. Mohan, Director i/c | Director, National Institute of Siddha, Chennai | Member |
| 3 | Dr. Vasantha Muthuswamy | Nominated Member of GB, CCRS, Coimbatore | Member |
| 4 | Dr. Sanjay Mehendale | Director, National Institute of Epidemiology (NIE), Chennai | Member |
| 5 | Dr. N.Murugesan | Director, Central Drug Testing Laboratory, Chennai | Member |
| 6 | Dr. P. Gunasekaran | Director, King Institute, Chennai | Member |
| 7 | Prof. Dr. V. Gopal | Principal, Mother Theresa PG and Research Institute of Health Sciences, Govt. of Puducherry | Member |
| 8 | Dr. C. Balachandran | Professor and Head, Dept. of Pathology, Tamil Nadu Veterinary and Animal Science University, Chennai | Non-official Member |
| 9 | Prof. Dr. R.S. Ramaswamy | Director General, CCRS, Chennai | Member Secretary |

Muppu Sub-committee under SAB:

1. Prof. Dr.A.Kumaravel, Chairman, SAB, CCRS, Chennai
2. Dr. G.Victor Rajamanickam, Director, CDM, PRIST University,
3. Dr. N. Chandrasekar, Professor & Head, Centre for Geo-Technology,
Manonmaniam Sundaranar University, Tirunelveli.
4. Dr. C. Eliza, Medical Officer (Siddha), Kanyakumari.
5. Dr.G.Manimaran, HOD, School of Tectonics, Dept. of Geology, V.O.C. College,
Tuticorin.
6. Dr. R. Sudha, Asst. Medical Officer (Siddha), Denkanikottai, Krishnagiri.

7. Dr. B. Michael Jeyaraj, Siddha Physician, Papanasam, Tirunelveli District.
8. Mr. A. Asokan, M.A, M.Sc.(Yoga)
9. Prof. Dr. R. S. Ramaswamy, Member Secretary, DG, CCRS, Chennai.

The action plan finalized in the meeting:

1. Standardization of Karun kuruvai arisi kaadi.
2. Standardization of vaalai amuri.
3. Field trip to Sithamalli on April 4th 2015.
4. Field trip to Kovanoor for pooneeru collection.
5. Publication of hand written manuscript of Kandhar Naadi Vaakkiyam.
6. Preparation of Thurusu chunnam according to Kandhar Naadi Vaakkiyam method.
7. Preparation of sivakaranthai muppu, kaattu vetrilai uppu and siru sinni uppu.
To collect the above 3 samples from Vaithyar Asokan.
8. Publication of Ph.D thesis of Dr.C. Elisa and Dr.R. Sudha by CCRS.
9. Meeting with traditional practioners who have knowledge about muppu and preparation by getting details from traditional practitioners' association.
10. To contact Vaidhyar Vasudevan (Kanyakumari), Annai Mathesu (Villupuram), Stephan chandrasekar (Thiruthuraipoondi) (for Kattu preparation)
11. Analytical studies for vediuppu (Brahma uppu), kalluppu (Vishnu uppu) and pooneeru Sivauppu).
12. Standardization projects to be included under EMR scheme with a Research Officer (Siddha) of SCRI as Principal Investigator and committee members as Co-investigators.
13. Projects which may be submitted to Scientific Advisory Board for scrutiny and approval - Andakkal chunnam, Pooneeru chunnam and Kalluppu chunnam.

Details about the subcommittees under SAB

As per the recommendation of Prof. Dr. A. Kumaravel, Chairman of SAB, CCRS 3 subcommittees were constituted under Scientific Advisory Board namely, Kattu, Kalangu Committee, Muppu Committee, Varmam and Bone setting committee. 3 meetings were conducted under the chairmanship of Dr. A. Kumaravel, Chairman, SAB and valuable discussion was made to explore the ways and means of proving scientifically the traditional Siddha medicine and medical procedures.

Varmam and Bone setting Sub-committee under SAB:

1. Prof. A. Kumaravel, Chairman, SAB, CCRS, Chennai
2. Dr.K.Gopakumar, Research Officer, I/c, Scientist – II, SCRI, Arumbakkam, Chennai.
3. Prof.Dr.N.Shunmugom, Associate Professor, Dept. of Tamil, SRMV College of Arts & Science, Coimbatore.
4. Dr.T. Kannan Rajaram, Siddha Physician, Nagercoil.
5. Dr.R. Ramesh Babu, Siddha Physician, Kallakurichi
6. Dr.S.Natarajan, Medical Officer (Varmam), SCRI , Chennai
7. Shri.K.P.Arjunan, Traditional Siddha Practitioner, Vellore.
8. Thiru. Arjunan Asan, Traditional Siddha Practitioner, Nagercoil.
9. Mr. Karuna, Traditional Siddha Practioner, Chennai.
10. Prof. Dr. R. S. Ramaswamy, Member Secretary, DG, CCRS, Chennai.

Action plan

1. Anatomical location of 108 vamam points
2. Collection of simple medicines for varmam and bone setting
3. Individual monograph for Colles' fracture and shoulder dislocation
4. Organise Siddha varmam medical camps
5. Focussed intensive training camps and workshops
6. Varmam points in selective diseases
 - a. Cervical Spondylosis
 - b. Lumbar Spondylosis
 - c. Osteo-arthritis.
 - d. Hemiplegia
 - e. Facial palsy
 - f. Sinusitis

- g. Migraine
- h. Diabetes mellitus
- i. Constipation
- j. Hypertention

- * Visit to hospital of Moolachel Dr. Rajendran
- * Visit to Kallakuruchi to Dr. R. Ramesh Babu's hospital
- * Visit to Vellore to meet Vaidyar K.P.Arjunan
- * To publish a book on description of terms related to Varmam
- * The next meeting of Varmam sub committee should have video coverage.
- * To document the traditional practioners' experience.

Kattu and Kalangu sub-committee under SAB

1. Prof. Dr.A.Kumaravel, Chairman, Scientific Advisory Board, CCRS, Chennai
2. Prof. Dr. I. Sornamaraiammal, Former JD, Dept. of Indian Medicine and Homeopathy, Chennai.
3. Dr. Ravichandran, HOD, Dept. of Gunapadam, Government Siddha Medical College, Palayamkottai.
4. Dr. T. Thirunarayanan, Secretary, CTMR, Chennai.
5. Dr. S. Natarajan, Medical Officer (Varmam), SCRI, Chennai
6. Shri. K. P. Arjunan, Traditional Siddha Practitioner,Vellore
7. Shri. Ravindranathan, Traditional Siddha Physician, Mathuranthagam
8. Prof. Dr. R. S. Ramaswamy, Member Secretary, DG, CCRS, Chennai.

Activities

- Literary documentation and collection of resources
- Demonstration of Kattu Kalangu
- Scientific validation of kattu (XRD/XRF/ICP OES/ICPCCMS)
- Inclusion of standardization in Pharmacopoeia

Work Plan

Collection of Literary Resources (Dr. T.Thirunarayanan, Dr.Ravindranathan, Dr. S. Natarajan)



Identification of traditional practitioners



Collecting of existing samples (Kattu and Kalangu)



Source identification of samples



Identification of traditional practitioners



Meeting of identified traditional practitioners



Demonstration and video documentation



Sorting of feasibility and quality



Purchase of instruments, Identification and location of analysis

2.2. Representation of Scheduled Caste / Scheduled Tribe in the Council services and Welfare measures for SC/ST

The Council has been following the orders and guidelines issued from time to time by the Government of India in respect of representation of SC/ST in the services of the Council. The recruitments/promotions are done according to the reservation roster maintained for SC/ST. The number of SC/ST employees in CCRS belonging to various categories has been indicated below:

Table-4: Number of employees in each category

| Group | Number of Employees | SC Employees | % of SC Employees | ST Employees | % of ST Employees | Total No. of SC/ST Employees | % of SC/ST Employees |
|--------------|---------------------|--------------|-------------------|--------------|-------------------|------------------------------|----------------------|
| A | 22 | 1 | 4.55 | 0 | 0 | 1 | 4.55 |
| B | 11 | 3 | 27.27 | 0 | 0 | 3 | 27.27 |
| C | 47 | 21 | 44.68 | 0 | 0 | 21 | 44.68 |
| D | 28 | 3 | 10.71 | 1 | 3.57 | 4 | 14.28 |
| Total | 108 | 28 | 87.21 | 1 | 3.57 | 29 | 90.78 |

Besides this, some of the research Institutes / Units are providing medical relief through OPD / IPD services and health benefits have been extended to a large number of SC/ST population. The budget of the Council stipulates specific allocations for welfare of SC/ST under its plans.

2.3. Organizational set-up

The implementation of recommendations of Nityanand Committee was reviewed by Joint Secretary (AYUSH) in a meeting held on 16-11-2009 under his Chairmanship for development of the erstwhile CCRAS and notified on 15th December 2009, which include the presently functioning CCRS Institutes/Units also. After re-organization the Institutes/Units have been classified into 4 categories, of which the CCRS Institutes/Units fall under 'C' and 'D' categories mentioned as under:

1

Table-5: Acronyms of Peripheral Institutes / Units

| S. No. | Institutes / Units | Abbreviations |
|---------------------|---------------------------------------------------------|---------------|
| Category 'C' | | |
| 1. | Siddha Central Research Institute, Chennai. | SCRIC |
| Category 'D' | | |
| 2. | Siddha Regional Research Institute, Puducherry. | SRRIP |
| 3. | Siddha Regional Research Institute, Thiruvananthapuram. | SRRIT |
| 4. | Siddha Clinical Research Unit, Palayamkottai. | SCRUP |
| 5. | Siddha Medicinal Plants Garden, Mettur. | SMPGM |

Table-6: State-wise distribution of Peripheral Institutes / Units

| S. No. | Name of the State | Name of the Institutes / Units |
|--------|-------------------|------------------------------------------------------------|
| 1. | Tamil Nadu | 1. Siddha Central Research Institute, Chennai. |
| | | 2. Siddha Clinical Research Unit, Palayamkottai. |
| | | 3. Siddha Medicinal Plants Garden, Mettur. |
| 2. | Kerala | 1. Siddha Regional Research Institute, Thiruvananthapuram. |
| 3. | Puducherry (U.T.) | 1. Siddha Regional Research Institute, Puducherry. |

Diagram. 1

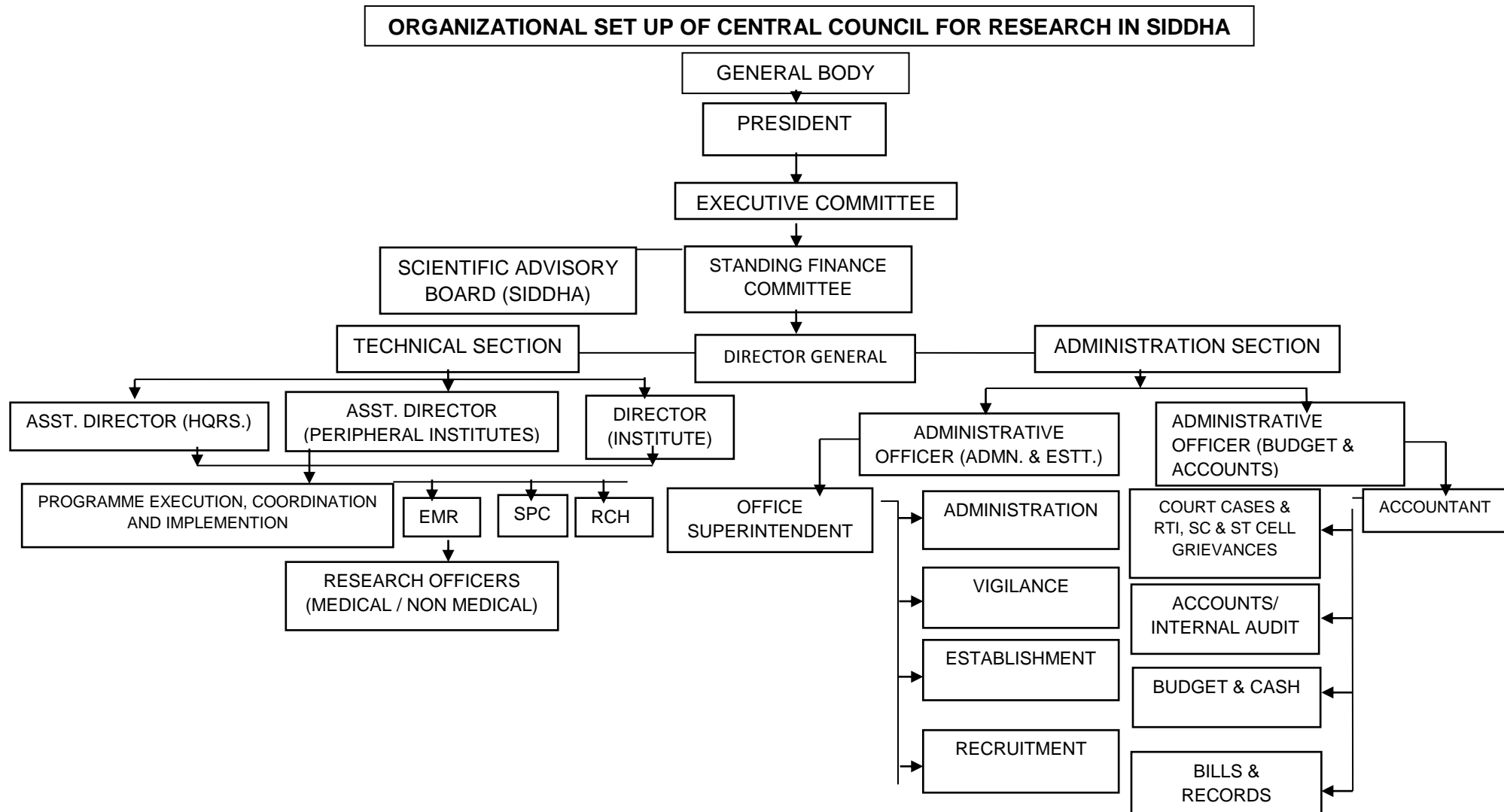
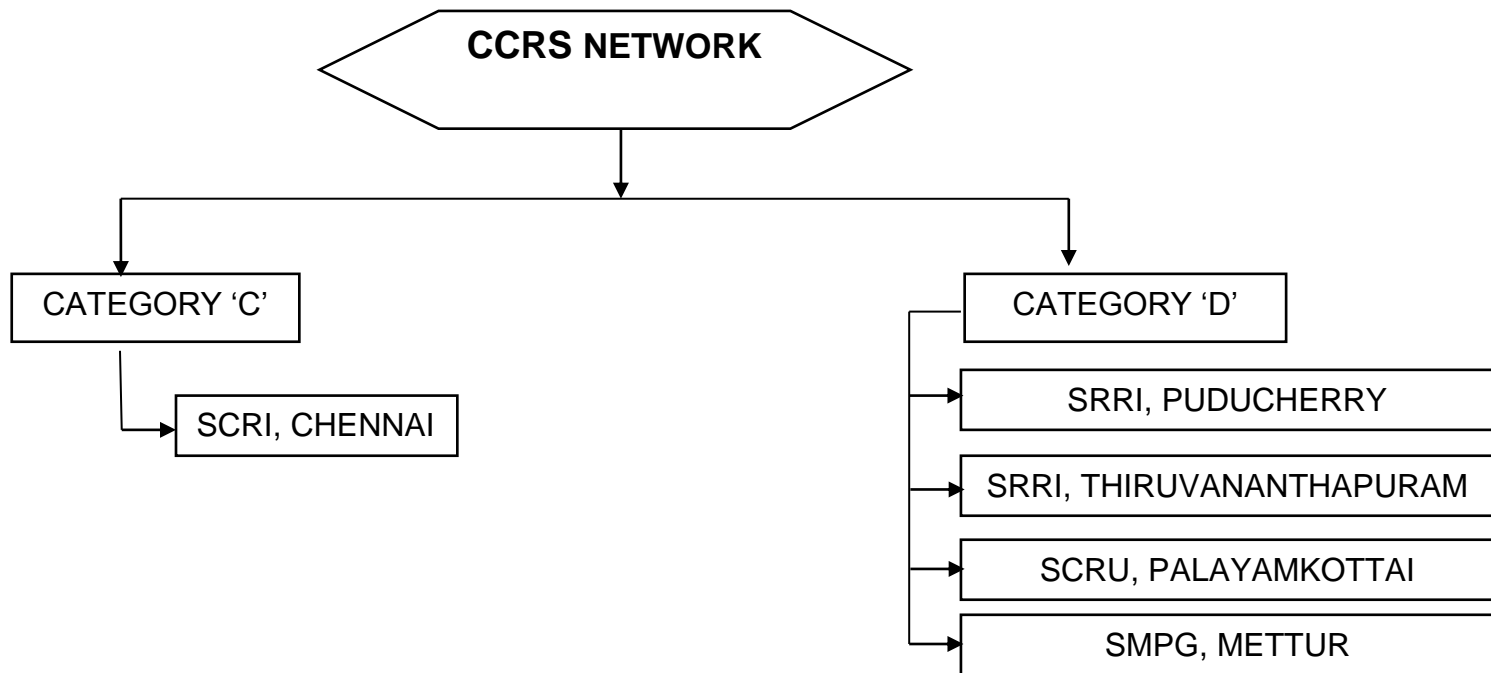


Diagram.2



2.4. SIRO recognition

Central Council for Research in Siddha is recognised as scientific and research organization by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India from 21.08.2014. The recognition is subject to terms and conditions mentioned below:

1. The recognition will entitle the SIRO to receive such administrative support from the DSIR, Ministry of Science & Technology as may be required on issues to promote or encourage Scientific research activities
2. SIROs recognised by DSIR are also deemed to be registered. A separate certificate of registration is issued along with the recognition letter. The recognition would be valid for the period specified in the recognition letter and application for renewal of recognition shall be submitted in the prescribed proforma at least 3 months before the expiry of the valid recognition. Failure to submit application in time may lead to automatic lapsing of the registration and recognition.
3. The recognition of DSIR does not amount to approval u/s 35(1)(ii)(iii) of Income Tax Act 1961.
4. The registration will entitle the SIROs to avail custom/excise duty exemption on purchase of equipments/instruments, spares thereof, consumables etc. used for research and development subject to relevant Government policies in force from time to time. Such exemptions will have to be separately applied for in the prescribed formats. The SIROs should also abide by the terms and conditions of the customs and central excise notifications issued/amended from time to time.
5. Separate books of accounts shall be maintained by the SIRO for research & development activities and the R&D expenditure, both capital and recurring should be reflected in the Annual Report and Statement of Accounts of the organisation in separate schedules.
6. Disposal/sale of equipments and products/prototypes/intermediates, if any, emanating from the R&D/pilot plant, should be intimated to DSIR immediately. The realisation if any, from above or any services rendered etc. shall be shown in the R&D accounts of the organisation as income of the SIRO in the audited accounts as

well as annual report and should be used or reinvested for research activities only. In case of disposal/sale of R&D equipments from customs/excise authorities will also be required in view of the applicable notifications under which the equipment was imported/purchased in India.

7. Accelerated depreciation allowance as per Rule 5(2) of Income Tax Rules 1962 will be available on investments on plant and machinery in any industrial unit which has made these investments for the purpose of commercialisation of technology/know-how acquired from a SIRO recognised by DSIR.
8. Brief summary of the achievements of the organisation shall be submitted to the DSIR every year. This should include details related to papers published, patents obtained processes developed, new products introduced and awards and prizes received. Copy of the Annual Report and Statement of Accounts of the Organisation etc. list of equipments, instruments, parts and consumables imported/purchased using the duty exemption should also be submitted to DSIR along with the annual report.
9. Any violation of the terms and conditions mentioned above and/or provisions of taxation in force will make the organization liable to de-recognition.
10. The organisation will also conform to such other conditions for recognition stipulated in the Guidelines or as may be specifically provided in the recognition letter.

2.5. Budget

Table-7: Budget Provision at a glance

| Scheme | B.E. 2014-15 | Funds released in 2014-15 (in lacs) | Actual expenditure 2014-15 (in lacs) |
|---------------|---------------------|--------------------------------------------|---------------------------------------------|
| Plan | 1500.00 | 200.00 | 1134.84 |
| Non-Plan | 1191.00 | 1167.90 | 1266.22 |
| Total | 2691.00 | 1367.90 | 2401.06 |

Table-8: Head-wise Actual Expenditure

| S.No | Particulars | Total Expenditure for 2014-15 (in lacs) | | |
|------|--------------------------------|-----------------------------------------|----------------|----------------|
| | | Non-Plan | Plan | Total |
| 1. | Pay & Allowances | 816.79 | | 816.79 |
| 2. | Pension | 89.48 | 0.00 | 89.48 |
| 3. | Payment of Gratuity –DCRG | 134.46 | 0.00 | 134.46 |
| 4. | Payment of commutation | 80.34 | 0.00 | 80.34 |
| 5. | NPS (Employer) | 21.76 | 0.00 | 21.76 |
| 6. | Leave travel Concession (LTC) | 4.51 | 0.00 | 4.51 |
| 7. | Travelling allowances | 15.29 | 4.39 | 19.68 |
| 8. | Office expenses- Contingencies | 76.94 | 104.29 | 181.23 |
| 9. | Other Administrative exp. | 2.72 | 40.16 | 42.88 |
| 10. | Research Activities | 0.00 | 3.27 | 3.27 |
| 11. | Seminar, Workshop & AROGYA | 0.000 | 3.65 | 3.65 |
| 12. | Advertisement and Publicity | 0.00 | 0.00 | 0.00 |
| 13. | Machinery & Equipments | 0.00 | 8.49 | 8.49 |
| 14. | Capital works (Major Works) | 0.00 | 970.59 | 970.59 |
| 15. | Minor works | 23.93 | 0.00 | 23.93 |
| | Total | 1266.22 | 1134.84 | 2401.06 |

Table-9: Centre-wise Actual Expenditure

| Particulars | Total Expenditure for 2014-15 (in lakhs) | | |
|-------------------------------|------------------------------------------|--------|--------|
| | Non - Plan | Plan | Total |
| De – Centralized Units | | | |
| SCRI, Chennai | 473.43 | 420.02 | 893.45 |
| SRRI, Puducherry | 105.64 | 21.97 | 127.61 |

| | | | |
|-------------------------|---------|---------|---------|
| SRRI,Thiruvananthapuram | 55.19 | 542.66 | 597.85 |
| SMPG, Mettur Dam | 22.70 | 13.99 | 36.69 |
| SCRI, Palayamkottai | 15.32 | - | 15.32 |
| Centralized Unit | | | |
| CCRS, Headquarters | 593.94 | 136.20 | 730.14 |
| Grand Total | 1266.22 | 1134.84 | 2401.06 |

3. Technical Report

3.1. Centre-wise activities

The following table depicts the involvement of peripheral Institutes/Units of the Council in the research activities in broad areas viz. Clinical Research, Drug Research, Literary Research, etc.

Table-10: Centre-wise allocation of Research Projects / Activities

| S.No. | Name of Institute | Project / Activities |
|-------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Siddha Central Research Institute, Chennai. | 1. Clinical Research 2. Drug Standardization 3. Literary Research & Documentation Programme 4. Miscellaneous Activities <ol style="list-style-type: none"> National Pharmaco-vigilance Programme for Ayurveda, Siddha and Unani (ASU) Drugs Health care services through Out – Patient Department (OPD) and In-Patient Departments (IPDs) Specialty Clinics for Geriatric Health Care Specialty Clinics for Flu-like Illness Specialty Clinics for Varmam, Thokkanam and Bone setting Pharmacy |

| | | |
|-----------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. | Siddha Regional Research Institute, Puducherry. | 1. Clinical Research 2. Miscellaneous Activities <ol style="list-style-type: none"> National Pharmaco - vigilance Programme for Ayurveda, Siddha and Unani (ASU) Drugs Health care services through Out-Patient Department (OPD) and In-Patient Departments (IPDs) Specialty Clinics for Geriatric Health Care Specialty Clinics for Flu-like Illness Specialty Clinics for Varmam and Thokkanam |
| 3. | Siddha Regional Research Institute, Thiruvananthapuram. | 1. Clinical Research 2. Drug Standardization 3. Miscellaneous Activities <ol style="list-style-type: none"> National Pharmaco - vigilance Programme for Ayurveda, Siddha and Unani (ASU) Drugs Health care services through Out-Patient Department (OPD) Specialty Clinics for Geriatric Health Care |
| 4. | Siddha Clinical Research Unit, Palayamkottai. | 1. Clinical Research 2. Miscellaneous Activities <ol style="list-style-type: none"> National Pharmaco-vigilance Programme for Ayurveda, Siddha and Unani (ASU) Drugs Health care services through Out-Patient Department. Specialty Clinics for Geriatric Health Care |
| 5. | Siddha Medicinal Plants Garden, Mettur. | 1. Medico-Ethno Botanical Survey 2. Cultivation of Medicinal Plants 3. Maintenance and Development of medicinal plants garden. |

3.2. Medicinal Plants Research

3.2.1. Medico-ethno-botanical Survey

Survey and Collection

The Siddha Medicinal Plants Garden (SMPG), Mettur is engaged in the maintenance and development of Herbal Garden and cultivation of Medicinal Plants. In the reporting period 4 survey and collection tours were undertaken with recording of 256 plants covering 169 species representing 155 genera and 96 families. In addition to the collection of medicinal plants, 21 live plants/seedlings were collected, to be added in the Siddha Medicinal Plants Garden, Metturdam. Medicinal plants were supplied to SRRI, Trivandrum for standardization and clinical trial purposes.

A Polygreenhouse covering an area of 800Sq.ft houses 323 live potted plants covering 304 species which include 31 RET sp. An Arboretum is being maintained with 443 plants covering 172 species in 3.5 acres supported with drip irrigation. A Nursery with 100 medicinal plants with a sales section in a very nominal rate is maintained.

Trial cultivation of *Andrographis paniculata* Nees (Nilavempu), *Alpinia calcarata* Roscoe (Arathai), *Piper longum* L. (Thippili), *Ocimum tenuifolium* L. (Tulsi), *Ocimum basilicum* L. var. *purpurascens* Benth. (Karun Thulasi), *Vetiveria zizanioides* (L.) Nash. (Vettiver) and *Aloe vera* L. (Kumari) were carried out and the harvest were supplied to Siddha Central Research Institute, Chennai.

05 Folklore claims were recorded and documented. **140 photographs** which include plants and the development and maintenance works were documented. **79** plant specimens were collected and stored in the Museum.

Table-11: Survey of medicinal plants and areas covered

| S.No | Name of the programme | New programme | | Remarks |
|------|----------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Annual Target | Target achieved | |
| 1. | Survey & Collection | Six survey and collection tours | Four Survey and collection tours were undertaken in and around Mettur dam to meet the target and to maintain drug supply for standardization purposes, Pharmacy, SCRI and to collect seedlings/seed to be added/introduced in the Siddha Medicinal Plants Garden at Mettur dam. (Detailed report is herewith enclosed.) | Medico-ethno-botanical tour programme for the year 2014-15 submitted to the Hqs, was not carried out for want of Council's sanction and approval of funds. Medico ethno botanical study of Palamalai under IMR project is awaiting approval and sanction. Only Local survey and collection tours were undertaken to execute drug supply for drug standardization and Clinical trial. |
| 2. | Maintenance and Development of Siddha Medicinal Plants Garden | Management and development of medicinal plants garden is being carried out | Management and development of medicinal plants garden is being carried out continuously. (Detailed report is enclosed herewith) | Provision of fencing and manpower including Research Assistant – Botany, SRF – Hort./Res.Asst. -Hort. and enhancement of labourers are necessary for the maintenance and development of Siddha medicinal plants garden. |
| 3. | Cultivation | Seven medicinal plants | Cultivation of Seven medicinal plants was carried out along with five trial cultivation of medicinal plants to meet the requirement of pharmacy and clinical trials. (Detailed report is | Provision of fencing and enhancement of labour including R.A. /SRF (Hort.) are necessary to undertake large scale cultivation. |

| | | | | |
|----|---------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| | | | enclosed herewith) | |
| 4. | Project: National Medicinal Plants Board | Construction of Pond with fountain and Establishment of Model Herbal Garden Phase-II | <p>Construction of petaloid pond with fountain with Agasthiyar statue in the central median pedestal was carried out. The petaloid pond is grown with Nelumbo nucifera, Nymphaea lotus and other aquatic plants. An aesthetic bridge was constructed across the channel connecting the Petaloid pond with Model garden II.</p> <p>Establishment of Model Garden Phase - II is in progress with 131 medicinal plants in concrete rings. Sprinkler system of irrigation was installed during the current year. A detailed report is enclosed herewith.</p> | Awaiting II and III instalments of sanctioned funds to carry out further work. |

Table-12: Raw Drugs collected for supply

| S.No | Type of materials Supplied | Quantity supplied |
|-------------|-----------------------------------|--------------------------|
| 1. | Fresh | 1.179 Tons |
| 2. | Raw Drug | - |
| 3. | Dried | 152.8 kgs |

For plant saplings

The following plant saplings/ stem cuttings/ seeds were collected during the survey and collection tours, to be introduced / added in the Siddha Medicinal Plants garden at Mettur dam.

Table-13: Plant saplings / stem cuttings / seeds collected

| S.No | Types | Collected |
|------|-----------|-----------|
| 1. | Seedlings | 51 |
| 2. | Cuttings | 10 |
| 3. | Fruits | 4 |

For Museum

79 Specimens were collected during the survey and collection tours and preserved for Museum.

Folklore claims

During the reporting period 05 folklore claims have been recorded and documented.

i. Botanical name:*Santalum album*L.

Tamil name : Chandanam

Part used : Fruit

Name of the disease : Urinary calculi

Mode of administration: Ripe fruits are consumed. It makes patient to urinate frequently which made the calculi to spill out.
(Information from Sh.Neelavarnam, **Vedikaranpudur**)

ii. Bot. Name : *Solanum pubescens* Willd.(White flowered)

Local name: Vellai sundai

Part used: Root

Name of the disease: Antidote for cobra venom:

Mode of administration: Powdered root is introduced into the nostril to wake up a person who swoons due to cobra bite. The person will then be treated further with antidotal therapy. Used as a first aid medicine for the cobra bite.

- iii. Bot. Name: *Cucumis trigonus* Roxb.
Local name: Sirukummatti
Part used: Fruit
Name of the disease: Scorpion sting
Mode of administration: Fruit bulb is applied over the bitten area. It is said to give relief from the pain and the effect of poison.
- iv. Bot. Name: *Withania somnifera* Dunal.
Local name: Amukkara
Part used: Leaves
Name of the disease: Eczema
Name of the disease: Leaf paste is applied over the eczematous skin.
- v. Botanical Name: *Melochia corchorifolia* L.
Tamil Name: Vannan poondu
Part used: Whole plant
Disease: Jaundice
Dose: 10gms of the paste is given with goat's milk
Mode of administration: Whole plant is ground into a paste and is administered internally with goat's milk.

**SIDDHA MEDICINAL PLANTS GARDEN
METTURDAM, TAMILNADU**

TOTAL AREA 21.63 ACRES



Diagram 3: Layout of the Siddha Medicinal Plants Garden, Mettur.

3.2.2. Cultivation, Maintenance & Development of Medicinal Plants

SIDDHA MEDICINAL PLANTS GARDEN:

1. Date of starting the project :1993
2. Details of land under cultivation :Siddha Central Research Institute
a) Ownership of the land, whether Arumbakkam, Chennai 600 106,
under control of CCRS/State or under **CCRS**, Chennai.
Central Govt. On lease from PWD, Mettur dam-1.
- b) Total area of the land allotted for
Cultivation project : **18.14 acres**
3. Layout of the Garden/Farm, giving details of the plants cultivated in different
Beds under experimental/ mass cultivation (Sketch plan to be provided)
: Lay out enclosed.Sketch plan enclosed.

| | | |
|----------------|-------------|--------------------------------------------|
| Block A | 1.73acres | 202 arborescent plants covering 101 pecies |
| Block B | 1.20 acres | 201 arborescent plants covering 45 species |
| Block C | 1150 Sq.Mt. | Model garden-Phase I - 236 species. |
| | 304 Sq.Mt. | Model garden-Phase II (A) 49 species |

532 Sq.MtPetaloid pond alongwith Agasthiyar statue with fountain.

Block D 500 Sq.Mt Polygreen house with 369 live potted plants covering 308 species.

Block E 497.5 Sq.Mt. 80 arborescent plants covering 30
 Species
Block F 583 Sq.Mt. Model garden-Phase II (B) 41 species
 Camp office 87 live potted plants with 87 species.

CULTIVATION

Major cultivation:

Block F &
 (Nilavembu)

Block G

Cultivation of *Piper longum* L. (Thippili).
 Cultivation of *Andrographis paniculata* Nees.
 Cultivation of *Ocimum tenuiflorum* (Thulasi)
 Cultivation of *Ocimum basilicum* L.
var.purpurascens Benth.(Karunthulasi)
 Cultivation of *Aloe vera* L. (Kumari)
 Cultivation of *Vetiveria zizanioides* (L.) Nash.
 (Vettiver)
 Cultivation of *Withania somnifera* Dunal
 (Amukkara)

Trial cultivation:

1. Trial cultivation *Adhatoda zeylanica* Medic
 (Adhatodai)
2. Trial cultivation *Wrightia tinctoria* R.Br. (Vetpalai)
3. Trial cultivation *Vitex negundo* L.
4. Trial cultivation *Cynodon dactylon* Pers (Arugan)
5. Trial cultivation of *Nelumbo nucifera* Gaertn.
 (Thamarai)

4.Brief description of the land under cultivation giving its geographical, ecological and edaphic status, type of soil, erosion etc.

Block A and B covering an area of 1.73 and 1.20 acres respectively are having black clayey soil. The block A and B terrain falls 3-5 feet low from the rest of the blocks for which reason these blocks often gets waterlogged and the plants become more susceptible for root rotting. Erosion of top soil is a common occurrence during rain. The water from upper reaches covering block C, D and E has to drain only through the blocks A and B. A three feet width permanent canal running at the left side of block B and one concrete canal for each block adjacent to the garden road supports drainage of rain water in Block A and B. Block C and D are having black clayey soil mixed with gravel. Exposed rocky exposures are also found common in this area. Block E, F and G show mixed sand black clayey soil. Block H is a raised

bed of 3 feet high from block E, F and G, having red gravel soil with rocky crests intermittently.

A three feet width canal arising from the Mettur east west bank channel runs through the garden and joins in the drainage canal. Of the 5 open existing wells two wells have been desilted and fitted with electric motor pumpsets. At present the well adjacent to the polygreen house provides required irrigation for the garden.

(i) Management and development of Arboretum:

An arboretum with 458 plants covering 176 species is being maintained covering an area of 3.5 acres. Drip irrigation is provided. Manuring and weeding is being done periodically. Basins clearing of trees were carried out. Stacking was provided to the required plants in the arboretum. Pruning of trees were also carried out wherever it was necessary. Clearing of plastic wastes drained from the adjacent drainage canal in Block A and B was carried out. Fencing with barbed wire was carried out in front of block 'B' to prevent trespassers. Fencing with Prosopis was carried out in the A and B blocks to protect the plants from cattles.

List of plants grown in BLOCKS A,B&E:

| | | |
|--------------------------|--------------|---------------------------------|
| Block A | 1.73acres | 202 plants covering 101 species |
| Block B | 1.20 acres | 201 plants covering 45 species |
| Block E | 497.5 Sq.Mt. | 55 plants covering 30 species |
| Total 176species. | | |

Table-14: Development activities

| S. No. | Blocks | Activities / Developments | Plants and Species |
|--------|--------------------------|---------------------------|---------------------------------------------|
| 1. | Block A (1.73 Acres) | Arboretum | 202 plants covering 101 species |
| 2. | Block B (1.20 Acres) | Arboretum | 201 plants covering 45 species |
| 3. | Block C (1150 Sq.mtrs.) | Model garden I | 236 species |
| | | Model garden II | 49 species |
| 4. | Block D (500 Sq.mtrs.) | --- | 369 live potted plants covering 308 species |
| 5. | Block E (497.5 Sq.mtrs.) | Arboretum | 80 plants covering 30 species |
| 6. | Block F (583 Sq.mtrs.) | Model garden II | 87 live potted plants with 87 species |

Table-15: Cultivation activities

| S. No. | Blocks | Botanical Name | Tamil Name |
|--------|---------|---------------------------------------------------------------------------|--------------|
| 1. | Block F | Cultivation of <i>Piper longum</i> L. | Thippili |
| | | Cultivation of <i>Alpinia calcarata</i> Rosc. | Araththai |
| | | Cultivation of <i>Andrographis paniculata</i> Nees. | Nilavembu |
| 2. | Block G | Cultivation of <i>Ocimum tenuiflorum</i> L. | Thulasi |
| | | Cultivation of <i>Ocimum basilicum</i> L. var. <i>purpurascens</i> Benth. | Karunthulasi |
| | | Cultivation of <i>Aloe vera</i> L. | Kumari |
| | | Cultivation of <i>Vetiveria zizanioides</i> (L.) Nash. | Vettiver |

3.2.3. Management and development of Model Herbal Garden:

Management and development of Model Herbal Garden–Phase I

A model herbal garden with 1150 sq. mt. is being maintained with 236 individual species. Each species is grown in 2x2 ft. pit margined with bricks and labelled with local and botanical names in a kadappa stone laid inside. The pathway is fitted with tiles. Removal of **annual** and replace them with another species is a continuous process. Adding of new species and replacement of young seedlings with the older ones in Model garden-I is carried out wherever necessary. Manuring and weeding is being done periodically. Sprinkler system of irrigation is provided. Pruning was carried out wherever required. In the periphery of the garden 42 climbers are also grown over the steel arches.

3.2.4. Management and Development of Polygreen House:

A polygreen house is being maintained in an area of about 800 sq. ft. The Polygreen house with 323 live potted plants covering 304 species are displayed in the concrete gallery. Plants grown at a height of 4 ft and above are transferred to arboretum or to the model garden. Sprinkler system of irrigation is provided. Weeding, staking, manuring and re-potting works are also carried out periodically.

Nursery

In the programme of implanting nursery of medicinal plants, 106 medicinal plants were available during the reporting period. During the year under report (2014-15) an amount of Rs. 50,200-00 (Rupees Fifty thousand and two hundred) only has been generated by the sale of nursery plants.

Seed collection

Seeds of the plants grown in the garden are collected and stored for future use. Collected seeds are utilized for the purpose of raising seedlings in the nursery and also for cultivation purpose. In addition, it will also serve the purpose of creating seed bank in future.

List of plants introduced / added

During the reporting period, 87 plant seedlings/cuttings were collected and added to the garden.

List of specimens collected for Museum

During the year, 79 plant materials including seeds/fruits/roots/stembark/resin/etc. were collected and stored in the museum as specimens for future reference and other purposes.

Total number of medicinal plants photographed

Coloured Photo print : 140 (stored in the system)

Project:

ESTABLISHMENT OF MODEL HERBAL GARDEN - (PHASE II) AND CONSTRUCTION OF A POND WITH A FOUNTAIN TO GROW AQUATIC PLANTS:

A project entitled “Establishment of Model Herbal Garden (Phase II) and construction of a pond with a fountain to grow aquatic plants” was submitted by Dr.M.Padma sorna subramanian, Research officer –Botany, Siddha Medicinal Plants Garden, Mettur dam to the National Medicinal Plants Board, Department of AYUSH, Ministry of Health and Family Welfare, Govt. of India. The project was approved by the Project Screening Committee (PSC) of NMPB. Department of AYUSH, Ministry of Health and Family Welfare, New Delhi. vide Project No.HG/TN-01/2013 with Lr.No. 017/187/CSS/HG/TN-01/2012-13-NMPB/1560 dt. 23rd October 2012 for Rs.16.06 lakhs. An amount of Rs.6,40,000/- (Rupees six lakhs and Forty Thousand) only in respect of 1st installment was received.

As per the project proposal, the Executive Engineer, Tamilnadu State Agricultural Engineering Dept., Salem was requested to undertake the civil work of construction of petaloid pond with fountain. After several rounds of discussion with the Principal investigator and inspection made in the Siddha Medicinal Plants Garden, the Asst. Executive Engineer, Tamilnadu State Agricultural Engineering, Kunjandiyoor, Mettur circle, Salem executed the civil work towards the construction of Petaloid Pond with fountain as per the approved estimate of Rs.4 lakhs.

As per the project proposal, the work of construction of Agasthiyar statue in the center pedestal was carried out by engaging the sthapathis after following codal formalities. Clearing of bushes and pruning of trees around the pond were also carried out for the clear view of the statue.

The Agasthiyar statue of 5ft height in a sitting posture on the lotus peedam was constructed in the center median pedestal of the pond as proposed in the proposal submitted to the NMPB, New Delhi. As proposed the statue of Agastiar is holding a Kamandalam in his left hand and a Rudraksha Mala in the right hand. The statue is designed in such a way that the water springs out from the Kamandalam and fills the pond and the Fountain spray is adjusted in such a way that the water sprinkles on the feet of the Agastiya statue and fills the pond and the overflowing water drains into the petaloid tubs.

As proposed the petaloid pond is grown with floating aquatics like Thamarai (White, Pink) (*Nelumbo nucifera* Gaertn), Alli (White, Red) (*Nymphaea pubescens* Willd), Chevambal (*Nymphaea nouchali* Burm.f.), Neythal (*Nymphoides hydrophylla* (Lour) Ktze.), Akaya thamarai (*Pistia stratiotes* Linn.), etc. The space in between the petaloid tubs was reclaimed with manure mixed red soil and was planted with wet plants like Neer Mel neruppu (*Ammania baccifera* L.) Karisalai (*Eclipta prostrata* L.) Sivakaranthai (*Sphaeranthus amaranthoides* L.) *Isoetes coromandelina* L. (fern) *Basilicum polystachyon* (L.) Moench, Vallarai (*Centella asiatica* Urban.), Nirbrahmi (*Bacopa monnieri* Penn.), Poduthalai (*Phylla nodiflora* Greene), Neer arai (*Marsilea minuta* L.) and Palvali poondur (*Spilanthes calva* DC.) etc.

As proposed the “**Establishment of Model Garden Phase – II**” a 0.5 cents of land was extended with another 0.5 cents and 111 pits were dug out and each pit was fixed with cement rings having 3 feet breadth. Each pit is bordered with cement rings, and the soil in the rings was reclaimed with red soil and manure and is planted with new plants. In between the space and the pathway is paved with river stones to provide lively appearance and to collect young seedlings. Altogether 132 plants including the existing trees are being grown around the petaloid pond with

fountain and the statue of Saint Agasthiyar. The existing trees along the canal were provided with basal clearing. Totally 132 plants were added in the proposed Model garden Phase –II. The list of plants is herewith enumerated. Sprinkler type of irrigation is installed for the model garden Phase-II

The Model garden Phase II is connected with the petaloid pond with natural stoned landscape bridge with steel made bamboo handles. The side of the bridge is laid with river stones to have a lively look. Along the channel wet plants like *Ammania baccifera* L. (Neermel neruppu), *Hygrophila auriculata* (schum.) Heine (Neermulli), *Ensete superbum* (Rorb.) cheesman (Kalvazhai), *Chrysopogon zizanioides* (L.) Roberty (Vettiver), *Pandanus odorifer* (Forssk.) Kuntze (Thazhai) etc. are planted.

3.2.5. Pharmacognosy

Table-16: Identification/Microscopical study of Siddha Formulations/Single drug

| S.No | Name of the Drug | Annual Target | |
|------|-----------------------|---------------|----------|
| | | Allotted | Achieved |
| 1 | Compound Formulations | Nil | Nil |
| 2 | Single drugs | 6 | 6 |

Pharmacognostical studies

The following plants have been studied for their Pharmacognostical details:

1. Piramathandu – *Argemone mexicana* L. (Leaf)
2. Malai vembu ilai - *Melia azedarach* L. (leaf)
3. Kodiveli ilai - *Plumbago zeylanica* L. (Leaf)
4. Nalvelai vaer - *Cleome gynandra* L. (Root)
5. Nilappanai kizhangu - *Curculigo orchioides* Gaertn. (Tuberous root)
6. Sundai vatral - *Solanum torvum* Sw. (Dried fruit)

Herbarium and Museum

During the year, 120 Herbarium specimens and 150 raw drugs are being maintained.

List of equipments purchased during the reporting year

- NIL

3.3. Drug Standardization Research

3.3.1. Drug Standardization at SCRI, Chennai and SRRI, Thiruvananthapuram.

- Standardization of clinical trial drugs
- Identity, purity, strength and TLC of Siddha Pharmacopoeial single drugs and compound formulations
- Studies on adulterants / substitutes through TLC
- Identification of drugs of metal / mineral origin

Standardization of Single Drugs under SPC

Physico-chemical parameters of below listed nine single drugs were completed and the results are tabulated. The TLC photo documentation and HPTLC finger print of these drugs are in progress.

| S.No | Tamil Name | Botanical Name |
|------|--------------------|-------------------------------------------|
| 1. | Kukainir | <i>Maranta arundinacea</i> L. |
| 2. | Mutthirukkan chevi | <i>Merimia emarginata</i> Burm. F |
| 3. | Adathodai | <i>Adhatoda vasica</i> Nees |
| 4. | Kuruvichi poondu | <i>Ehretia microphylla</i> Lamk. |
| 5. | Serupadai | <i>Coldenia procumbens</i> L. |
| 6. | Thamarai | <i>Nelumbo nucifera</i> Gaertn. |
| 7. | Dharbai | <i>Desmostachya bipinnata</i> (L.) Stapf. |
| 8. | Pungan ver | <i>Derris indica</i> L. |
| 9. | Isvaramuli | <i>Aristolochia indica</i> L. |

Physico-chemical parameters of single drugs such as Loss on drying at 105° C, Total Ash, Acid-insoluble ash, Water soluble extractive, Alcohol soluble extractive values for the following plants and compound formulations have been studied and listed below:

Table-17: Physico-chemical parameters studied

| Tamil Name | Botanical Name | No. of Single drugs formulations | Name of the Institute |
|--------------------|-------------------------------------------|-----------------------------------------|------------------------------|
| Kukainir | <i>Maranta arundinacea</i> L. | I | SCRI, Chennai |
| Mutthirukkan chevi | <i>Merimia emarginata</i> Burm. F | I | SCRI, Chennai |
| Adathodai | <i>Adhatoda vasica</i> Nees | I | SCRI, Chennai |
| Kuruvichi poondu | <i>Ehretia microphylla</i> Lamk. | I | SCRI, Chennai |
| Serupadai | <i>Coldenia procumbens</i> L. | I | SCRI, Chennai |
| Thamarai | <i>Nelumbo nucifera</i> Gaertn. | I | SCRI, Chennai |
| Dharbai | <i>Desmostachya bipinnata</i> (L.) Stapf. | I | SCRI, Chennai |
| Pungan ver | <i>Derris indica</i> L. | I | SCRI, Chennai |
| Isvaramuli | <i>Aristolochia indica</i> L. | I | SCRI, Chennai |
| Kachikkattai | <i>Acacia catechu</i> (L.f.) Willd. | II, III | SRRI, Thiruvananthapuram |
| Ciruvakai | <i>Albizia procera</i> Benth. | II | SRRI, Thiruvananthapuram |
| Kalarci | <i>Caesalpinia bonduc</i> (L) Roxb. | III | SRRI, Thiruvananthapuram |
| Kalarci | <i>Caesalpinia bonduc</i> (L) Roxb. | II, III | SRRI, Thiruvananthapuram |
| Erukku | <i>Calotropis gigantea</i> (L.) Ait.f. | IV | SRRI, Thiruvananthapuram |

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| | | | |
|---------------|--------------------------------------------------|------------|-----------------------------|
| Aavarai | <i>Cassia auriculata</i> L., | III | SRRI, Thiruvananthapuram |
| Nilayavarai | <i>Cassia italica</i> (Mill) Lam.ex Ander | III | SRRI, Thiruvananthapuram |
| Koththaan | <i>Cassytha filiformis</i> L. | I | SRRI, Thiruvananthapuram |
| Ilavampisin | <i>Ceiba pentandra</i> (L.) Gaertn. | II, III | SRRI, Thiruvananthapuram |
| Cirunakappu | <i>Cinnamomum wightii</i> Meissn. | I, II, III | SRRI, Thiruvananthapuram |
| Elumitchai | <i>Citrus aurantifolia</i> (Christm.) Swingle | II, III | SRRI, Thiruvananthapuram |
| Sirupulladi | <i>Desmodium trifolium</i> (L.) DC | III | SRRI, Thiruvananthapuram |
| Nilakkadambu | <i>Elytaria acaulis</i> (L.f) Lindan | II, III | SRRI, Thiruvananthapuram |
| Sirukumiz | <i>Gmelina asiatica</i> L. | II, III | SRRI, Thiruvananthapuram |
| Cemparuthippu | <i>Gossypium herbaceum</i> L. | III | SRRI, Thiruvananthapuram |
| Siruvizha | <i>Limonia crenulata</i> Roxb | II | SRRI, Thiruvananthapuram |
| Nuna | <i>Morinda pubescens</i> J.E.Sm, | III | SRRI, Thiruvananthapuram |
| Manjanatti | <i>Morinda tinctoria</i> Roxb. | I, II, III | SRRI, Thiruvananthapuram |
| Anai tippili | <i>Piper retrofractum</i> Vahl. | I, II, III | SRRI, Thiruvananthapuram |
| Pachilai | <i>Pogostemon heyneanus</i> Benth | I, II, III | SRRI, Thiruvananthapuram |

| | | | |
|-------------|-------------------------------------|------------|-----------------------------|
| Cirukancori | <i>Tragia involucrata</i> L. | I, II, III | SRRI, Thiruvananthapuram |
| Peypudal | <i>Trichosanthes cucumerina</i> L., | III | SRRI, Thiruvananthapuram |

TLC photo documentation and the profile of single drugs

TLC studies of the above single drugs were carried out and the results are given below. 1 gm of the coarsely powdered drug was extracted in 10 ml suitable solvent and concentrated to 1 ml. This solution was used for TLC. The extract was applied on aluminium plate precoated with silica gel 60 F₂₅₄ (0.2 mm thickness). The plate was developed in appropriate solvent systems. The developed TLC plate was air dried, viewed in UV 254, UV 366 and photograph was taken. Then it was dipped in vanillin-sulphuric acid reagent, heated in an oven at 105°C until the development of coloured spots and photograph was taken.

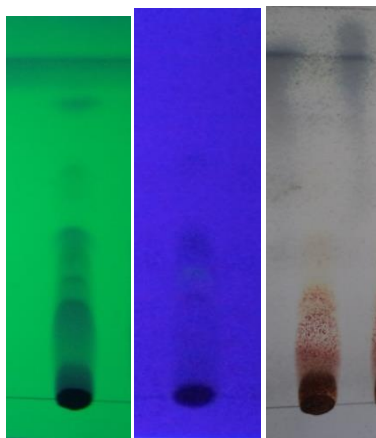


Fig (1a): TLC profile of Ethyl alcohol extract of *Acacia catechu* (L.f.) Willd. (Kachikkattai) Resin - Sample II
 Viewed in UV short; Viewed in UV long; After derivatisation using vanillin-sulphuric acid viewed in visible light; Solvent system – Toluene: Ethyl acetate (1:1)

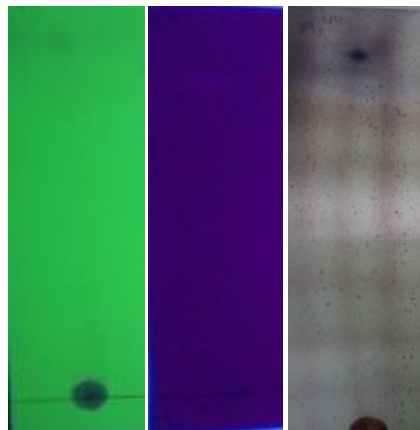


Fig (3a): TLC profile of Ethyl alcohol extract of *Albizia procera* Benth. (Ciruvakai), Root - Sample II
 Viewed in UV short; Viewed in UV long; After derivatisation using vanillin-sulphuric acid viewed in visible light Solvent system – Toluene: Ethyl acetate (1:1)

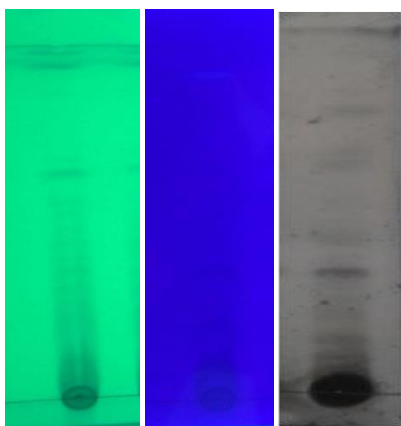


Fig (5a): TLC profile of Ethyl Alcohol extract of *Caesalpinia bonduc* (L) Roxb. (Kalarci), Root - Sample II
 Viewed in UV short; Viewed in UV long; After derivatisation using vanillin-sulphuric acid viewed in visible light Solvent system – Toluene: Ethyl acetate (6:1)

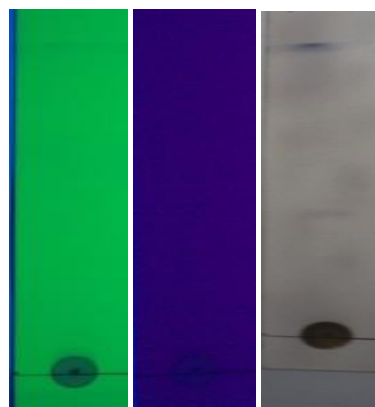


Fig (7a): TLC profile of Ethyl alcohol extract of *Calotropis gigantea* (L.) Ait.f. (Erruku), Flower - Sample IV
 Viewed in UV short; Viewed in UV long; After derivatisation using vanillin-sulphuric acid viewed in visible light Solvent system – Toluene: Ethyl acetate (6:1)

Standardisation of Compound Formulations

Standardisation of 1 compound formulation related to the clinical study (Validation of Neerkovai Mathirai in the management of Neerkovai Noi - Sinusitis) was carried out during the reporting period (April 2014 – March 2015). Determination of (i) physico-chemical parameters, (ii) elemental analysis, (iii) analysis of heavy metals, (iv) microbial contamination, (v) test for specific pathogens, (vi) pesticide residue, (vii) aflatoxins and (viii) TLC photo documentation were being carried out.

| Name of the compound formulations | No. of compound Formulations | Name of the Institute |
|------------------------------------------|-------------------------------------|------------------------------|
| Palakarai parpam | I, II | SCRI, Chennai |
| Nandi Mezhugu | I, II | SCRI, Chennai |
| Arathai kudineer chooranam | I | SCRI, Chennai |
| Kanthaga Rasayanam | I | SCRI, Chennai |
| Purna chandrodayam | I | SCRI, Chennai |
| Vajravalli chooranam | I | SCRI, Chennai |
| Chandrakanthi Chooranam | I | SCRI, Chennai |
| Neerkovai Mathirai | I | SRRI, Thiruvananthapuram |

The following studies / analyses are being carried out through outsourcing from CEPC Laboratory and Technical Division, Cashew Bhavan, Mundakkal, Kollam.

- i. Elemental analysis – Sn, Ag, Fe, Ca, K, Na, Mg, Au, Mn, Zn & Al
- ii. Test for Heavy/ Toxic metals: Mercury, Cadmium, Lead and Arsenic
- iii. Microbial contamination
- iv. Test for specific pathogens
- v. Pesticide residue and
- vi. Aflatoxins G1, G2, B1, B2

TLC photo documentation and the profile of compound Formulations

TLC studies of Neerkkovai mathirai was carried out and the results are given below. 1 gm of the coarsely powdered drug was extracted in 10 ml of suitable solvent and concentrated to 1 ml. This solution was used for TLC. The extract was applied on aluminium plate precoated with silica gel 60 F₂₅₄ (0.2 mm thickness). The plate was developed in appropriate solvent systems. The developed TLC plate was air dried, viewed in UV 254, UV 366 and photograph was taken. Then it was dipped in vanillin-sulphuric acid reagent, heated in an oven at 105°C until the development of coloured spots and photograph was taken. The R_f values of the spots were listed in the table.

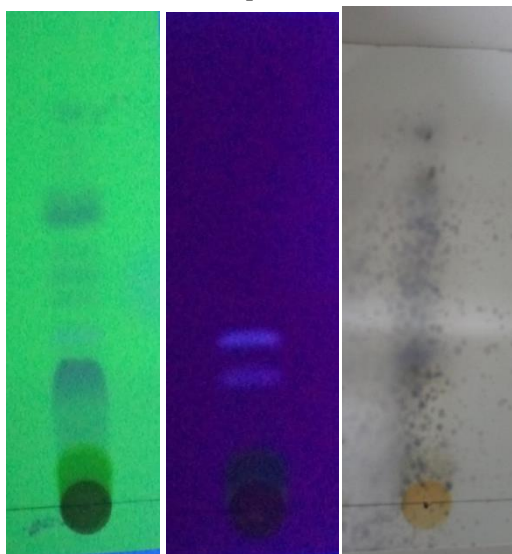


Fig (41a): TLC profile of Petroleum ether extract of Neerkkovai mathirai
Viewed in UV short; Viewed in UV long; After derivatisation using vanillin-sulphuric acid
viewed in visible light Solvent system – Toluene: Ethyl acetate (6:1)

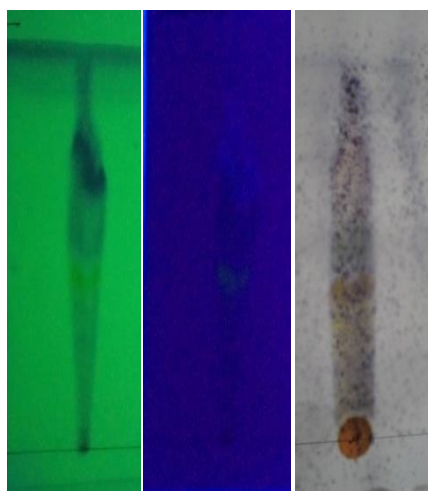


Fig (41b): TLC profile of Pe extract of Neerkkovai mathirai
Viewed in UV short; Viewed in UV long; After derivatisation using vanillin-sulphuric acid
viewed in visible light Solvent system – Toluene: Ethyl acetate (6:1)

OTHER ACTIVITIES

Phytochemical Training on payment basis – 3 Nos (2014-15)

1. Facilities and guidance for phytochemical training was given to Smt. Asha R, Dept. of Biochemistry, University of Kerala and Thiruvananthapuram (10 days).
2. Facilities and guidance for phytochemical training was given to Miss. Sreelakshmi. V, Dept. of Biochemistry, University of Kerala, Thiruvananthapuram (10 days).
3. Facilities and guidance for phytochemical training was given to Mr. Kapilraj. P. K., M. Pharm student, Sree Krishna College of Pharmacy and Research Centre, Parassala, Thiruvananthapuram (2 days).

On payment basis, 7.615 kg of Extraction of medicinal plant materials were supplied, in which the following extract methods have been carried out in the reporting period such as Petroleum ether extract, Alcohol extract, Methanol extract, Alcohol extract, Hexane extract, Acetone extract, Ethyl acetate extract, Water extract

Table-18: On payment basis Physico chemical standardization have been carried out for students for the following plant materials:

| S.No | Name of the plant |
|------|---------------------------------------|
| 1. | <i>Morinda umbellata</i> (Stem) |
| 2. | <i>Morinda umbellata</i> (Leaves) |
| 3. | <i>Morinda umbellata</i> (Root) |
| 4. | <i>Morinda umbellata</i> (Callus) |
| 5. | <i>Gynochthodes umbellata</i> (fruit) |
| 6. | <i>Barleria baxifolia</i> |
| 7. | <i>Morinda reticulata</i> (Leaves) |
| 8. | <i>Morinda reticulata</i> (Stem) |
| 9. | <i>Syzygium zeylanicum</i> (fruit) |
| 10. | <i>Morinda reticulata</i> (Fruit) |

3.4. Pharmacology & Toxicology

3.4.1. Pre-clinical Studies

The studies were conducted on the predetermined experimental models in the laboratory attached to the SCRI, Chennai. These studies were based on experimental models in different species of animals. This provides vital information for pursuing clinical studies. During the reporting period studies for single drugs, coded drugs and compound formulations were carried out which are tabulated below:

Table-19:Drugs allocated and studied during the current year

| S.No. | Drug allotted | Target fixed | Studies carried out | Remarks |
|-------|----------------------------------------------------------|--------------|------------------------------------------------|--------------|
| 1. | APNC | Toxicity | Sub-acute toxicity in rats | Yet to start |
| | | | Chronic toxicity in rats | Yet to start |
| 2. | Effect of <i>Carmona retusa</i> in mice. | Activity | Analgesic, Anti-inflammatory and wound healing | Completed |
| 3. | Anti hyperlipidemic activity of <i>Benincasa hispida</i> | Activity | Anti hyperlipidemic activity | Completed |

3.5. Clinical Studies

The research programme of the CCRS mainly focuses on Clinical Research including safety and efficacy studies of Siddha drugs and validation of the fundamental principles. CCRS is a global leader for research in Siddha system of Medicine.

The clinical research programme of the Council mainly aims at the validation of therapeutic efficacy of Siddha medicines and therapies, used for more than 10 decades. The council also concentrates on innovation of newer drugs for non-communicable diseases especially Diabetes Mellitus, Psoriasis, Vitiligo, Hypertension, Dyslipidemia, Urolithiasis, Fibroid Uterus, Osteoarthritis, Rheumatoid arthritis and in Benign Prostatic hypertrophy.

During the reporting period the following clinical studies were initiated at the Peripheral Institutes / Units of the Council.

**CLINICAL EVALUATION OF CODED DRUG OA-1 CHOORANAM AND VATHA KESARI
THYLAM IN THE MANAGEMENT OF AZHALKEELVAYU (OSTEOARTHRITIS)**

Title of the problem : Azhalkeelvayu (Osteoarthritis)

Title of the Study : CLINICAL EVALUATION OF CODED DRUG OA-1
CHOORANAM AND VATHA KESARI THYLAM IN THE
MANAGEMENT OF AZHALKEELVAYU (OSTEOARTHRITIS)

Investigators : Dr. Ponnaiahamsamy
Dr. P.Elankani

Year and month of starting the study : SEPTEMBER 2011

Year and month of closure of the study : -----

Principal Drug (s) therapies taken for clinical evaluation/trial and supporting therapy (s) : OA1-Chooranam & Vathakesari Thylam

Duration of treatment : 60 Days

Diagnosis and response of Therapy : Based on Siddha fundamentals and modern parameters and VAS

Results of the cases completed : ----
: ----
: ----

| | | |
|----------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Whether the study is continuing? | : | ---- |
| Specific observation if any | : | Clinical and biochemical investigations were done as per the protocol. The patients were regularly assessed as per Siddha and Bio-chemical parameters. The drug was administered for 42 days. The trial drug OA1-Chooranam was prescribed at the dose of 2 gm twice a day after food in the morning and night. Proper strategy and designing of clinical trials may produce a better scope for potential drug development. |
| Design of study | : | Open labeled clinical trial, at OPD & IPD Level. |
| No of group | : | One group |
| Number of Cases | : | 30 Subjects |
| Plan of study | : | The Subjects are being screened and selected according to the Siddha and modern parameters. The trial patients are also instructed to attend the outpatient as well as in-patient department every week for observations and to collect the medicine. Their X-Ray and blood parameters are estimated and recorded, before and after treatment. |
| Criteria for inclusion | : | <ol style="list-style-type: none">1. Age between 45 years and 60 years.2. Sex-Either sex3. Patients with Primary Osteoarthritis - knee joints (Single or both knees).4. X-ray findings5. Pain6. Joint swelling7. Joint tenderness8. Crepitus |

- Criteria for exclusion : 1. Age less than 45 years or more than 60 years.
2. Patients with Diabetes/Hepatic failure/Renal failure.
3. Patients using local Anti-inflammatory medicine other than the research drugs.
4. History of bony or soft tissue injury to knee joint
5. Patients having Rheumatoid arthritis, Gout and Psoriatic arthritis.
6. Patients who are on long term treatment with steroids or who had surgical interventions.
- Criteria for assessment : ***Stiffness***
1. How severe immediately after waking up in the morning?
2. How severe after sitting or lying down or resting later in the day?
- Swelling
- Crepitus
- Restricted movement
- Effectiveness assessments:
- Visual analogue score:
- 0 – no pain,
1 – mild pain,
2 – moderate pain,
3 – severe pain,
4 – acute pain

| S.No | Pain (How much the patient had/have) | | |
|------|-------------------------------------------------------------|-------------------------------------|---------------------------------------------|
| | | Before treatment | After treatment |
| 1. | When walking on a flat surface? | Mild / Moderate / Severe/Acute pain | Mild / Moderate / Severe/Acute pain/No pain |
| 2. | When going up or down the stairs? | Mild / Moderate / Severe/Acute pain | Mild / Moderate / Severe/Acute pain/No pain |
| 3. | While sitting or lying down? | Mild / Moderate / Severe/Acute pain | Mild / Moderate / Severe/Acute pain/No pain |
| 4. | While standing? | Mild / Moderate / Severe/Acute pain | Mild / Moderate / Severe/Acute pain/No pain |
| 5. | At night while in bed? (i.e. - pain that disturbs sleep) | Mild / Moderate / Severe/Acute pain | Mild / Moderate / Severe/Acute pain/No pain |

Criteria for

success of

treatment

: Treatment outcome as assessed by VAS and x-ray

Principal drug and the supporting therapy including diet prescribed:

Principal Drug : OA1-Chooranam & Vathakesari thylam

Diet Regimen : Prescribed diet schedule.

Dose schedule : OA1-Chooranam 2 gm twice a day with water after food

Duration of treatment : 60 days according to Siddha.

Source/supply of drugs: Pharmacy of SCRI, Chennai.

| | |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preclinical Study | Clearance for Trial Drug OA1 by IAEC IAEC Approval No: 104/Pharma/SCRI/2011, dated 08.07.2011 IEC Approval No: CCRS/SCRI-1/2011-12/01 Preclinical study completed |
| Clinical Study | The project proposal changed to Multicentric study and included in IMR projects. This has been approved by the SAB. The trial is to be initiated in the year 2015-16 |

CLINICAL TRIAL ON HERBAL DRUG IN VENPADAI (VITILIGO)

BY OPEN LABELED METHOD

Title of the : VENPULLI (VITILIGO)
 problem

Title of the Study : CLINICAL TRIAL ON HERBAL DRUG IN
 VENPADAI (VITILIGO) BY OPEN LABELED METHOD

Investigators : Dr. Yasodha
 Dr. J.Jeyakannan

Year and month
 of starting the
 study : SEPTEMBER 2011

Year and month
 of closure of the
 study : ----

Principal Drug (s)
 therapies taken
 for clinical
 evaluation/trial
 and supporting
 therapy (s) : Poovarasam Pattai Kudineer

Duration of
 treatment : Ninety days

Diagnosis and

response of

therapy : Based on Siddha fundamentals and modern parameters

Results of the

cases completed : Nil

Whether the

study is

continuing? : Still continuing

Literature of the study : Venpulli (Vitiligo) has been described under 18 types of Kutta Noi in almost all the Siddha literatures. But Yugi Muni, the great Siddhar, has described it as a separate entity in his Vaidhya Chinthamani 500. He has elaborated 3 types of Venpadai (Vitiligo) based on the humors involved, etiology, symptoms, parameters for assessing the good and bad prognosis and treatment. As per Yugi Muni, for the white patches in the lips, palm and genital, the prognosis is bad. Vitiligo is a common disorder in which symmetrical white or pale macules appear on the, otherwise normal skin. It affects all races but is more conspicuous in dark skinned races. It is a source of social embarrassment in dark skinned people. The hair in the affected area is usually but not always white. The depigmented macular eruptions are without any sensory loss and are neither contagious nor hereditary.

Design of study : Open trial

No. of group : One group

Number of cases : 30

| | |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Criteria for inclusion | : Age between 16 and 60 yrs Sex – either sex Duration of disease not more than 10 years Discoloured patches on any part of the body. Extension of lesion in the skin surface less than 60% of the total body area. |
| Criteria for exclusion | : Caused by burns, trauma Congenital Affecting palms, soles and genital organ Lesion extended more than 60% of the body Diabetes Mellitus Hypothyroidism |
| Criteria for assessment | : Clinical assessment (Photos) will be done before the drug administration and at the end of the 1 st , 2 nd and 3 rd month of the treatment and follow up for 3 months. |

Take standardised photos of body areas affected by Vitiligo

Prepare patient:

Ensure no makeup; jewellery off, gown on.

Camera settings:

Flash on

Red eye on

Remote on - usage

Automatic mode

No zoom, macro mode ON

Camera angle:

Camera should always be at right angles to the skin area being photographed. Ensure camera is horizontal, and NOT angled at the body but pointing straight ahead.

Distance:

Should always be 30cm unless otherwise recorded as different on grid (chest, abdomen, legs and feet)

Labeling: Right and left should be clearly labeled on patient

Centimetre scale:

Each image should have a cm scale

Background:

Blue background always

Body regions:

Front, back and side views of the area of the body with the patch of vitiligo must be taken for every patch, even if some views do not include the patch.

Patient photo details

All photographs must be recorded in the document and patient photo details as given below:

Patient Code:

| PictureNumber | Distance taken | Description of body region |
|---------------|----------------|-------------------------------------|
| | 30 cm | Face front |
| | 55cm | Lower leg (Knee to Ankle), Front |

VASI

Vitiligo Area Scoring Index

These are the parameters to assess the Vitiligo patches

Principal drug and the supporting therapy including diet prescribed:

Principal drug : Poovarasam Pattai Kudineer

Diet regimen : Prescribed diet schedule.

Dose schedule : 60ml of Kudineer B.i.d before food

Duration of treatment : Ninety days (i.e.) two mandalams (according to Siddha)

Source of supply of drugs : Pharmacy of SCRI, Chennai.

| S.No | Phase | Work status |
|------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Preclinical Study | Clearance for trial drug Poovarasam Pattai kudineer by IAEC IAEC Approval No: 105/Pharma/SCRI/2011, dated 08.07.2011 Acute, Sub-acute and Chronic Toxicity studies completed by the Dept. of Pharmacology in the year 2013. |
| 2. | Clinical Study | The study not yet registered in CTRI and the Clinical recruitment not initiated till date. |

MULTICENTRIC OPEN LABELED CLINICAL TRIAL ON PEENISAM (SINUSITIS)

Title of the : Peenisam (Sinusitis)
 problem

Title of the : AN OPEN LABELED CLINICAL TRIAL ON PEENISAM
 Study (SINUSITIS)

Investigators : Dr. M. Kannan
 Dr. S. Natarajan

Year and month
 of starting the
 study : September 2011

Year and month
 of closure of the
 study : ----

Principal Drug : APNC
 (s) therapies
 taken for clinical
 evaluation/trial
 and supporting

therapy (s)
 Duration of
 treatment : 42 Days
 Diagnosis and
 response of
 therapy : Based on Siddha fundamentals and modern parameters

Results of the
 cases completed : Nil

Whether the
 study is
 continuing? : Still continuing

Specific
 observation if
 any : Clinical and biochemical investigations were done as per the protocol. The patients were regularly assessed as per Siddha and Bio-chemical parameters. The drug was administered for 42 days. The trial drug APNC was prescribed at the dose of 1 Capsule twice a day before food in the morning and night. Proper strategy and designing of clinical trials may produce a better scope for potential drug development.

Design of study : Open labeled clinical trial, at OPD Level.

No of groups : One group

Number of Cases : 30

Plan of study : The subjects are being screened and selected according to the Siddha and modern parameters. The patients have also been instructed to attend the outpatient department every week for observations and to collect the medicine. Their X-Ray and blood parameters are estimated and recorded, before and after treatment.

| | |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Criteria for inclusion | : Age between 18 and 60 years Rhinorrhea Redness & lacrimation of the eyes Nasal congestion Nasal Speech Itching & blockage of ears Difficulty in breathing Head ache Dull ache in mid face or deep into eyes Sneezing Chronic hyperplastic Sinusitis (Nasal polyp) Deviated Nasal Septum (DNS) X Ray PNS - Sinusitis – Positive |
| Criteria for exclusion | : Bacteremia /Glaucoma/Trachoma Meningitis /Aneurysms of arteries of brain Acute pyrexia/SOL Habitual snuffer Epistaxis / Saddle nose / Syphilitic chancre DM/Thyroid/HT/Trigeminal Neuralgia/Dental caries Hansen's disease Bronchial asthma |
| Criteria for assessment | : The full details of history and physical examination of the patients will be recorded as per the proformae (Forms I & IA). Clinical and physiological assessment will be done before drug administration and after every week. The laboratory investigations will be recorded before drug administration (Form-III) and at the end of treatment (Form-III) |

Criteria for success of treatment : Treatment outcome as assessed by the patient and the investigator on the 'Integrated Medicine Outcomes Scale' (IMOS), a five point verbal rating scale with the categories 'complete recovery', 'major improvement', 'slight to moderate improvement', 'no change' and 'deterioration.

Principal drug and the supporting therapy including diet prescribed:

Principal Drug : APNC
Diet Regimen : Prescribed diet schedule.
Dose schedule : APNC 1 Capsules, Twice a day with water.
Before food
Duration of treatment : Forty-two days (i.e.) One Mandalam (According to Siddha)
Source of supply of drugs : Pharmacy of SCRI, Chennai.

| | |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preclinical Study | <p>Clearance for trial drug APNC by IAEC & IEC</p> <p>IAEC Approval No: 106/Pharma/SCRI/2011, dated 08.07.2011</p> <p>IEC Approval No: CCRS/SCRI-1/2011-12/04</p> <p>Acute and sub-acute toxicity studies completed. Chronic toxicity study will be carried out in the year 2015-16.</p> |
| Clinical Study | <p>Preclinical study is in progress and after the completion of preclinical study the clinical trial will be initiated. (Acute toxicity study completed)</p> <p>The project is included in the IMR project. As per the SAB recommendation, the clinical trial will be initiated after the completion of preclinical study.</p> |

3.6. Other Projects:

During the reporting period, apart from the above said multicentric clinical trials the following single centric studies have been carried out.

Other than the above said trials the following clinical trials are carried forward to the next year, as pre-clinical trials related to them have been completed/are nearing completion.

The details are mentioned below:

Table-20: Other projects carried out at CCRS

| S.No | Title | Single/ Multicentric | Institutes involved | Remarks |
|-------------|------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------|----------------------------------|
| 1. | Open labeled clinical trial on Peenisam (Sinusitis) | Single centre | SCRI, Chennai | Preclinical study is in progress |
| 2. | Multicentric studies on Dyslipidemia | Multicentric | SCRI, Chennai; SRRI, Puducherry; SRRI, Trivandrum | Preclinical study is in progress |
| 3. | Survey questionnaire for assessment of Siddha treatment in OPD of SCRI | Single centre | SCRI, Chennai | Data Analysis is in progress |
| 4. | Observational studies on the role of Siddha medicine as an add on therapy in Diabetes Mellitus | Single centre | SCRI, Chennai | Data Analysis is in progress |

3.7. Health Care Services

3.7.1. Health Care Services through Out-Patient Department (OPD) and In-Patient Department (IPD)

The Clinical Research Programme under this Council focuses mainly on clinical evaluation of selected therapies. The activities in the following areas have been carried out during the reporting period:

All the cases registered in IPD and OPD were screened for ADRs under the Pharmaco-vigilance programme. The hospitals functioning under the Council provided medical aid to 85086 patients at OPD level. Out of them 44472 are male cases and 40614 were female cases. Besides this a total number of 167 patients were admitted in the In-patient Department of the Institutes of (SCRI, Chennai and SRRI, Puducherry). The geriatric OPD was also conducted in 4 (SCRI, Chennai; SRRI, Puducherry; SRRI, Thiruvananthapuram and SCRUI, Palayamkottai) Clinical Research Centres. A total number of 11530 patients have benefited from the geriatric specialty OPD. A special Flu-like illness OPD was also conducted in the 2 (SCRI, Chennai and SRRI, Puducherry) peripheral Institutes of the Council and 127 patients of different Flu-like illnesses were provided treatment. Apart from the above Varmam and Thokkanam therapies have also been provided to 4771 patients.

The census of OPD and IPD patients are as follows:

Table-21: Census of OPD and IPD Patients

| Sl. No | Instt. / Unit | No. of patients in OPD | | | | | No. of patients in IPD | | | | BOR (%) |
|--------|---------------------|---------------------------|------|-------|-------|-------|---------------------------|----|------------|----|---------|
| | | New | | Old | | Total | Admitted | | Discharged | | |
| | | M | F | M | F | | M | F | M | F | |
| 1 | SCRI, Chennai | 7089 | 5980 | 17456 | 13792 | 44317 | 90 | 35 | 80 | 34 | 28.76 |
| 2 | SRRI, Puducherry | 3004 | 2932 | 12222 | 12768 | 30926 | 5 | 37 | 5 | 37 | 9.72 |

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| | | | | | | | | | | | |
|----------|------------------------------------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|-----------|-----------|
| 3 | SRRI, Thiruvanantha puram | 368 | 517 | 1186 | 1921 | 3992 | -- | -- | -- | -- | -- |
| 4 | SCRU, Palayamkottai | 1455 | 1125 | 1692 | 1579 | 5851 | -- | -- | -- | -- | -- |
| | Total | 11916 | 10554 | 32556 | 30060 | 85086 | 95 | 72 | 85 | 71 | -- |

BOR- - Bed Occupancy Ratio

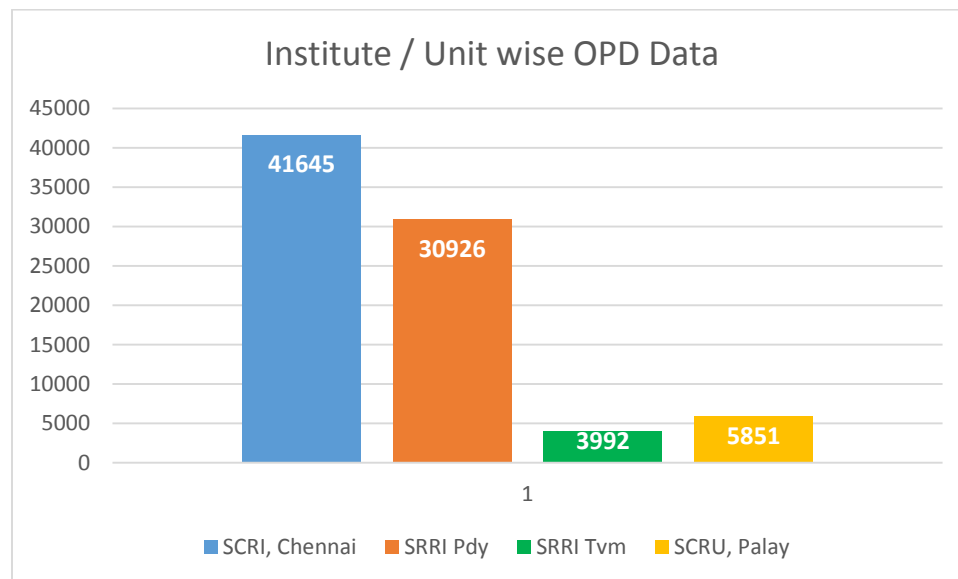


Table-22: CCRS Hospitals Male/Female patient ratio

| Institute | Male | Female |
|-----------------------------|--------------|---------------|
| SCRI, Chennai | 24545 | 19772 |
| SCRUI, Palayamkottai | 3147 | 2704 |
| SRRI, Thiruvananthapuram | 1554 | 2438 |
| SRRI, Puducherry | 15226 | 15700 |
| TOTAL | 44472 | 40614 |
| Grand Total | 85086 | |

| S.No | Male | Female |
|------|-------|--------|
| 1. | 44472 | 40614 |

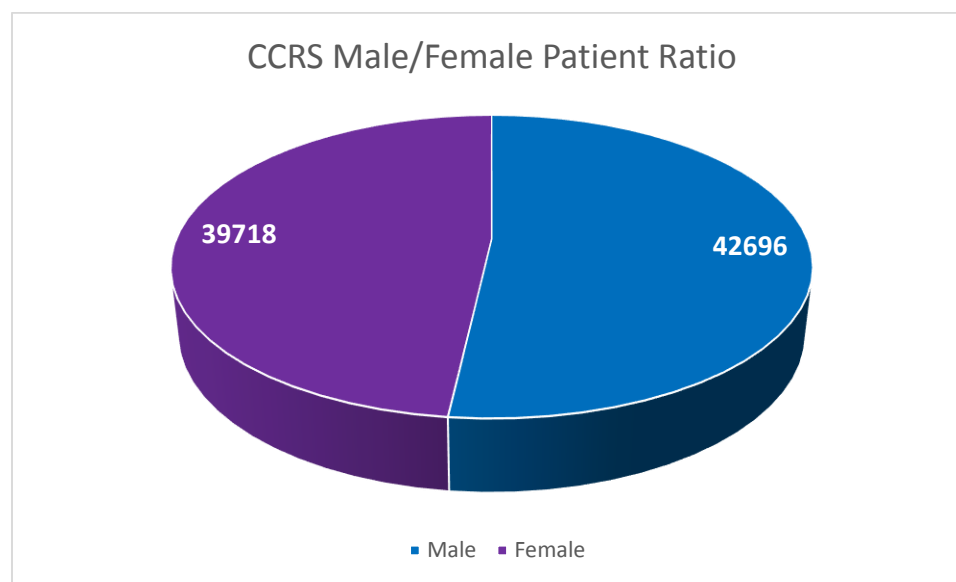


Diagram No.4. Schematic presentation of Male & Female population of General OPD

3.7.2. Pharmacovigilance Programme

Worldwide movement for the improvement of patients' safety is gaining momentum. Hence the subject of drug safety has gained more significance in the present day scenario. Presently with increased use of Siddha drugs the issue of adulteration and use of counterfeit drugs have also increased. Hence a mechanism is required to address these issues. Pharmacovigilance aims at documenting the harmful effects of any drug causing adverse reactions. The number of adverse reactions / ill-effects of Siddha drugs reported in the National Pharmacovigilance in India are negligible. To collate and document the data related to ADRs this programme was initiated.

Aims & Objective

This programme aims at providing the data of adverse drug reactions of the drugs of herbal mineral, metallic, animal and other origin used in Siddha system of medicine.

Date of Implementation: April 2009

Participating Institutes/Units

1. SCRI, Chennai
2. SRRI, Puducherry
3. SRRI, Thiruvananthapuram
4. SCRUI, Palayamkottai

Participating Institutes / Units have screened all the OPD and IPD patients for ADRs, if any. All the 4 Institutes / Units have not found any ADRs.

3.7.3. Specialty Geriatric Clinic

Geriatric OPD was started in the peripheral Clinical Siddha Institutes/units of CCRS viz., SCRI, Chennai; SRRI, Puducherry; SRRI, Thiruvananthapuram and SCRUI, Palayamkottai in 2008. During the reporting period, 11530 patients were benefited by the Geriatric Special OPD Clinics.

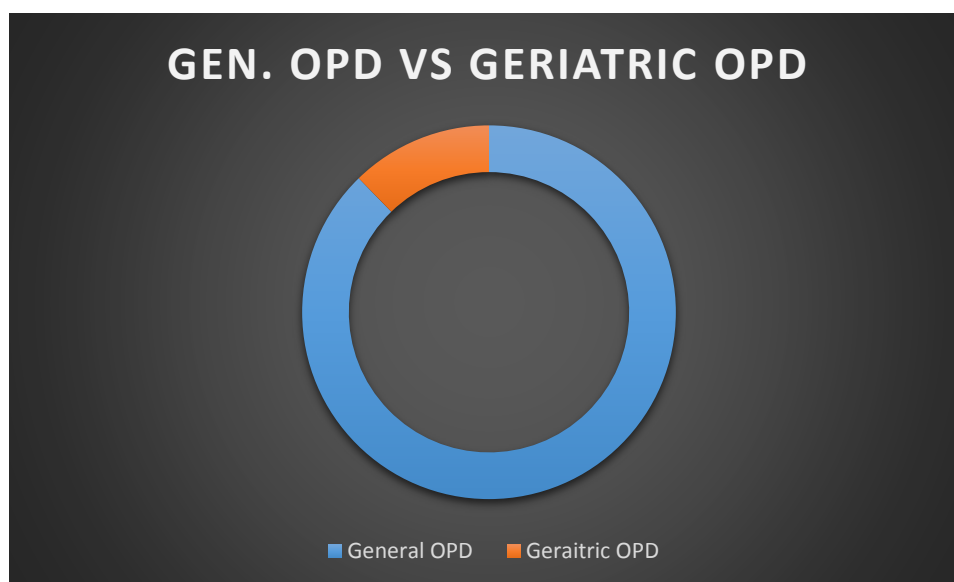


Diagram No 5. Schematic presentation of General OPD and Geriatric Specialty OPD census

3.7.4. Flu-like Illness Specialty OPD

As per the direction of Dept. of AYUSH in August 2009 the Council started specialty OPD clinic for Flu-like illness in October, 2009 in the peripheral Institutes / Units of CCRS viz. SCRI, Chennai and SRRI, Puducherry for prevention and management of the patients with flu-like symptoms and also for rendering counseling for such patients. During the reporting period 127 patients with such conditions attended the OPD.

Table-23: Details of beneficiaries of Specialty Clinics of Flu-like Illnesses

| Sl. No. | Institutes / Units | New Cases | | Old Cases | | Total |
|--------------------|--------------------|-----------|-----------|-----------|-----------|------------|
| | | M | F | M | F | |
| 1. | SCRI, Chennai | 30 | 29 | 02 | 02 | 63 |
| 2. | SRRI, Puducherry | 16 | 09 | 19 | 20 | 64 |
| Grand Total | | 46 | 38 | 21 | 22 | 127 |

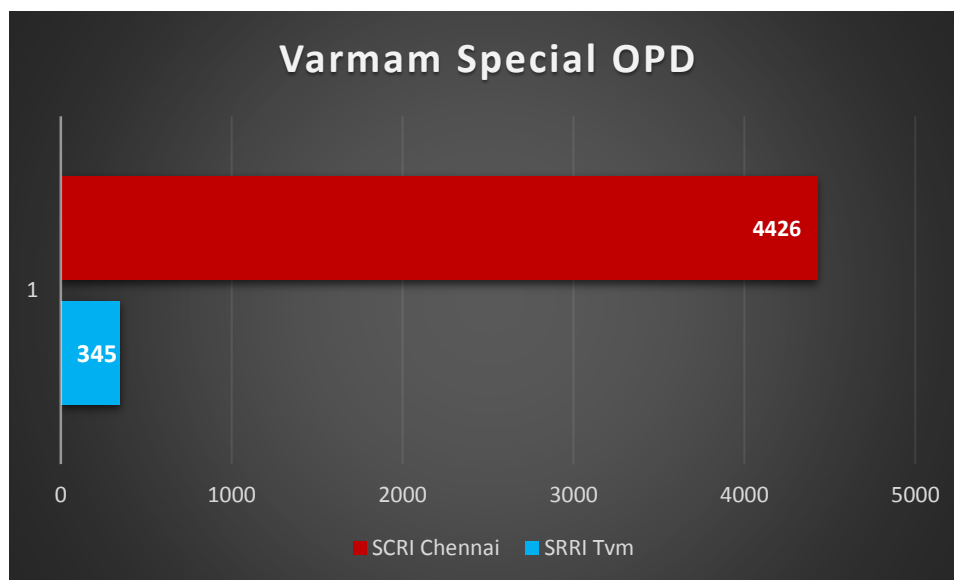
3.7.5. Varmam Specialty OPD

Varmam and Thokkanam are unique and special therapeutic entities in Siddha, which are useful in treating several neurological and musculo – skeletal diseases mostly without the intervention of internal drugs.

Patients who attended Varmam special OPD at SCRI, Chennai SRRI, Thiruvananthapuram, during the reporting period are tabulated below:

Table-24: Census of Varmam special OPD

| Sl. No. | Institute | M | F | Total |
|--------------------|--------------------------|-------------|-------------|-------------|
| 1. | SRRI, Thiruvananthapuram | 231 | 114 | 345 |
| 2. | SCRI, Chennai | 2151 | 2275 | 4426 |
| Grand Total | | 2382 | 2389 | 4771 |



3.7.6. Pharmacy

Pharmacy of Siddha Central Research Institute was established to fulfill the needs of Clinical research activities of all the peripheral Institutes/Units of CCRS. Since inception the pharmacy had been functioning in the main building and later it was shifted to the new pharmacy block constructed during the year 1986 and it is currently functioning in the same building. The drugs are being prepared for OPD/IPD purposes. The drugs are also prepared as per SOPs for clinical research activities and supplied to all the CCRS peripheral Institutes/Units. Apart from this some of the medicines are prepared for activities related to Siddha Pharmacopoeia scheme.

Table-25: Details of Medicines prepared in the pharmacy

| S. No | Name of Trial / General Medicines | Quantity prepared (in Kg) |
|-------|------------------------------------------------------------|---------------------------|
| 1. | Amukkara chooranam combination (Siddha Formulary of India) | 136.854 |
| 2. | Amukkara chooranam(plain) | 253.700 |
| 3. | Annabedhi chenduram | 24.400 |
| 4. | Arathai chooranam | 177.700 |

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| | | |
|-----|---------------------------------------|--------------|
| 5. | Arathai kudineer chooranam | 57.000 |
| 6. | Arugan Thylam | 806 liters |
| 7. | Asta chooranam | 41.500 |
| 8. | D5 chooranam (Trial Drug) | 513.000 |
| 9. | Dhasana Podi | 11 |
| 10. | Elathy chooranam | 277.450 |
| 11. | G1 chooranam | 55.500 |
| 12. | Gowri chinthamani Chenduram | 8.450 |
| 13. | K.P.E oil | 10 liters |
| 14. | Karpoorathi Thylam | 665 liters |
| 15. | Kazharchi chooranam | 4.250 |
| 16. | Kazharchi chooranam (ext) | 5.850 |
| 17. | Kukkil Parpam | 48.000 |
| 18. | Kukkil Thylam No II | 1539 liters |
| 19. | Linga Chenduram | 6.800 |
| 20. | Mathan Thylam with Thurusu (Research) | 288 liters |
| 21. | Muthuchippi Parpam | 43.000 |
| 22. | Nagapoochu marundhu | 13 |
| 23. | Neerkovai Mathirai | 25.600 |
| 24. | Neermulli kudineer chooranam | 15.900 |
| 25. | Nilavaagai chooranam | 92.900 |
| 26. | Nilavembu kudineer chooranam | 37.000 |
| 27. | Padiga panneer | 3.500 liters |
| 28. | Palagarai Parpam | 93.000 |
| 29. | Parangipattai chooranam | 265.550 |
| 30. | Poovarasampattai kudineer chooranam | 49.000 |
| 31. | Sangu Parpam | 24.500 |
| 32. | Silasathu Parpam | 31.000 |
| 33. | Sivanar amirtham | 23.000 |
| 34. | TAT chooranam | 266.900 |
| 35. | Thalisathi chooranam | 115.500 |
| 36. | Thirikadugu chooranam | 100.500 |
| 37. | Thripala chooranam | 463.000 |
| 38. | Vangavirana kalimbu | 152 |
| 39. | Vengarapodi | 12 |
| 40. | 777 Oil | 197.3 liters |

3.8. LITERARY RESEARCH AND DOCUMENTATION

- Siddha Central Research Institute holds nearly 1500 Manuscripts
- Calligraphy, annotation, cataloguing and digitization of the manuscripts are periodically done
- Rare books are published periodically from the Manuscripts

Literary research lays the platform for any research in Siddha System as they are scientific reflections of the intuition of Siddhars. Palm leaves and paper manuscripts still hold with them many unfolded scientific details which are to be unearthed.

A Literary Research Unit was started by the Government of India, at Saraswathi Mahal Library, Thanjavur in the year 1964 for the enlightenment of the Siddha system. In 1971, one more Literary Research Unit of erstwhile CCRIMH was started at Govt. Siddha Medical College, Palayamkottai. They have made wonderful collections of traditional manuscripts and very old Siddha printed books dealing with treatment of ailments by the traditional physicians all over Tamilnadu. In 1979, the units were merged to form LITERARY RESEARCH & DOCUMENTATION DEPARTMENT as a separate unit under Central Research Institute of Siddha, Chennai. In April 2007 the LR&DD was merged with CRIS, Chennai-106. The mandate of this department is to carry out literary research.

The wealth of traditional medicines is available both as coded and non-coded documents. Answers to many unsolved questions have been properly culled out via extensive literary research. This traditional knowledge should be properly documented, digitalized, preserved and published in the public domain. Both virtual and real manuscripts are made available as a ready reckoner for students, research scholars and the public. Literary Research and Documentation Department under the umbrella of Siddha central research institute is carrying out the above said activities in a systematic manner.

MAJOR RESEARCH ACTIVITIES

- Collection of Manuscripts and other old rare printed books and hand written copies.
- Cleaning and preservation of collected materials.
- Preparing, cataloguing and classification.

- Transcription of palm leaf Manuscripts.
- Annotation of poems.
- Typing of transcribed poems along with annotations.
- Correction of typed copies.
- Comparison with original
- Submission for approval.
- Publication.
- Translation of Siddha books published in Tamil into English & Hindi.
- Publication of translated Siddha text in English and Hindi.
- Sale of publications.
- Preparation of IEC Materials for AYUSH and CCRS.
- Periodical training for students.

Table-26: Activities in the current year

| S.No. | Title of the Books in Tamil | version | Status | Remarks |
|-------|-------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------|---------------------------|
| 1. | A Hand book of Common remedies in Siddha system of medicine | English | Published | - |
| 2. | Cancer Research Reviews in Siddha System of Medicine | English | Published | - |
| 3. | CCRS e-Book Research in Siddha system of medicine (The science of holistic health) | English | Published | - |
| 4. | A to Z Know your alphabet through Siddha medicinal Plants | English | Published | - |
| 5. | உயிர் மெய் மூலிகைகள் தமிழ்எழுத்துக்களும்சித்தமருத்துவமூலிகைகளும் | Tamil | Published | - |
| 6. | Kal Nandu Soothiram (Multi lingual book- Tamil, Malayalam, Kannadam, Telugu, Hindi, Malaya, Singalam and English) | Multi lingual book | in print | Will be published shortly |
| 7. | Preparation of CD-ROM of The Siddha Formulary of India part II First edition | Tamil | Software testing and proof correction of Content is in progress | Will be published shortly |

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|----|--------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| 8. | Preparation of CD-ROM of The Siddha Pharmacopoeia of India part I, Volume II First edition | English | Software testing and proof correction of Content is in progress | Will be published shortly |
| 9. | Yakobu Vaithiya Chinthamani-700 | English | Proof correction is being carried out | Will be published shortly |
| 10 | Siddhar Kaya Karpam | English | Proof correction is being carried out | Will be published shortly |
| 11 | Theraiyar Kudineer | Hindi | Ready for printing | Will be published shortly |
| 12 | Collection of digitized books and pdf for launching the e-library | - | Collection process in progress | Will be launched in due course |
| 13 | Materials collected for launching the Museum | - | Collection process in progress | Will be launched in due course |
| 14 | Planning for digitization of manuscripts and rare books | - | Purchased Camera Canon EOS 7D for Digitization through purchase committee | Purchase of Digitization Unit will be done |
| 15 | Library Management Software | - | Preliminary discussion had with Software developers Purchase of Software and hardware through Purchase committee | Order placed for purchasing the same |

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|----|-------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------|-----------------------------------------------------|
| | | | after codal formalities | |
| 16 | Materials collected and given during the Workshop on Good Clinical Practice Training for various stake holders in AYUSH | - | AYUSH GCP Guidelines, GCP in Tamil Language and articles | provided to all the delegates as workshop materials |

3.8.1. AYUSH Research Portal

Periodically Research papers/articles on Literary, Drug and Clinical Research have been uploaded by CCRS Officials during the reporting period.

3.8.2. Siddha Dossier

Siddha dossier will be published by the Ministry of AYUSH, Government of India and the preparation work has been allotted to the Central Council for Research in Siddha. The draft was revised by many Siddha experts by conducting various review meetings held at SCRI, Chennai and National Institute of Siddha, Chennai.

The review meetings on Siddha Dossier organized by the CCRS were conducted at National Institute of Siddha on 13th and 14th May, 2014 and the meetings were chaired by the Joint Secretary (BP). The subsequent meetings were held on 30th and 31st July 2014 and 11th and 12th August 2014 at CCRS, Chennai for drafting the dossier and designing the cover page in which the members of the working group and other experts participated. The contents of the Siddha dossier were again reviewed by Dr. R. S. Ramaswamy, DG, CCRS and Dr. G. Ganapathy, Former Joint Director, Directorate of Indian medicine and Homeopathy and the senior member of the working group.

SCRI officials who participated in various meetings are as follows:

1. Dr. P. Sathiyarajeswaran
2. Dr. Shyamala Rajkumar
3. Dr. M. Kannan

3.9. Research articles

Table-27: Publication of research papers/articles

| S. No. | Name of the Author | Title of paper | Name of Journal/ Bulletin | Year of Publication |
|--------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
| 1. | Akila B, Manickavasakam K, Shakila R | Chemical Analysis of Gomutra Silasathu Parpam | International Journal of Drug Delivery | 2014; 6(1): 88-93 |
| 2. | Sunilkumar KN, Shakila R , Amerjothy S | Physicochemical evaluation, nutraceutical composition and HPLC.UV fingerprint of <i>Helicanthus elastica</i> (Desr.) Danser (Indian Mango Mistletoe) | International Journal of Green Pharmacy | 2014; 8(3): 175-179 |
| 3. | E.Rajabudeen, A.Saravana Gandhi, M.Padma Sorna Subramanian and K.Natarajan | “GC-MS Analysis of the methanol extract of <i>Tephrosia spinosa</i> (L.f.) Pers ^t | International Research Journal of Chemistry | 2014; April (IRJC) ISSN 2321 – 2845 (on line), 2321 – 3299 (Print). Page no. 09 to 15 |
| 4. | E.Rajabudeen, A.Saravana gandhi and M.Padma Sorna Subramanian | Pharmacognostical studies on <i>Indigofera aspalathoides</i> Vahl ex.DC (Fabaceae)” | Journal of Pharmacognosy and Phytochemistry | 2014; 3 (3) 86-91 ISSN 2278-41736 |

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|-----|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------|
| 5. | Saravanan Subramanian and M.Padma Sorna Subramanian | Merremia emarginata (Burm.f.) Hall. F.: A substituted market source for Centella asiatica (L.) Urban: An observation from Salem district, Tamilnadu." | Journal of Ancient science of Life /Oct-Dec.2013/Vol.33/ Issue 2. | 2014 |
| 6. | Akila B, Manickavasakam K, Shakila R | Analytical study on Siddha herbomineral formulation: Chandrakanthi chooranam. | International Journal of Pharm Bio Science | 2014; Oct 5(4): (P) 175 – 185 |
| 7. | Shakila R , Meeradevi Sri P, Arul Antony S, Gopakumar K | Antimicrobial Studies on <i>Desmostachyabipinnata</i> Rootstock | Journal of Pharmaceutical, Chemical and Biological Sciences | 2014; 2(3): 197-201 |
| 8. | Shakila R , Arul Antony S, Gopakumar K | Lipid Composition of <i>Desmostachya bipinnata</i> rootstock | Der Chemica Sinica | 2014; 5(5): 47-51 |
| 9. | Akila B, Manickavasakam K, Shakila R | Pharmacognostical and physicochemical studies on <i>Adhatoda vasica</i> Nees seed | International Journal Pharmaceut Sci Res | 2014; 5(12): 1000-1009 |
| 10. | S. Selvarajan, V. Gayathri Devi , Anitha John, J. Jeyakannan, D. Balakrishnan and N. Raaman | Pharmacognostical identification of Asparagus racemosus willd. (root) with the help of hptlc method | World Journal of Pharmaceutical Research (WJPR) (International Journal) | 2014; Volume 3, Issue 6, 486-498 |
| 11. | Lavanya A, Ramaswamy RS, Shakila R | Pharmacognostical studies on the leaves of <i>Canavalia virosa</i> (Roxb.) Wight & Arn. | Asian Journal of Traditional Medicine | 2014; 9(1): 20-29 |

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| 12. | Aarthi V, Shakila R, Sasikala E , Pitchiahkumar M | Pharmacognostical studies on <i>Ehretia microphylla</i> Lamk. | Asian Journal of Traditional Medicine | 2014; 9(5): 118-129. |
| 13. | Lavanya Alagusolaiyan, Shakila Ramachandran, Sasikala Ethirajulu , Ayyasamy Sengan | Pharmacognostical studies on the leaves of <i>Canavalia virosa</i> (Roxb.) Wight & Arn | Asian Journal of Traditional Medicines | 2014; 9(1), 8-17 |
| 14. | R.Ganesan, Mathuram Venkatanarasimhan, G. Aadinaath Reddy , Sharad Pawar, Jega Jothi Pandian, Premagurumuthy | Hepatoprotective Effect of Methanolic Extract of <i>Coldenia Procumbens</i> Linn against D-Galactosamine Induced Acute Liver Damage in Rats | Pharma Science Monitor | 2014; 5(3), Jul-Sep: 13-18 |
| 15. | Aruna R, Sasikala Ethirajulu and Jega Jothi Pandian | Pharmacognostical studies on Siddha Medicinal Plant <i>Boerhaavia diffusa</i> L | Research Journal of Pharmacognosy and phytochemistry | 2014; 6(4) October – December; 156-159 |
| 16. | Dr.H.Mubarak (Co author) | Evaluation of phytochemical and in vitro anti-oxidant, anti-proliferative activity of a polyherbal Siddha formulation <i>Vallarai nei</i> | International Journal of Current Microbiology and Applied Sciences | 2014 |
| 17. | Dr.H.Mubarak (Co author) | Anti ulcer efficacy and Safety of <i>Anda leghyam</i> a polyherbal Siddha formulation | International journal of Pharmaceutical sciences and Research | 2014 |
| 18. | Dr.H.Mubarak (Co author) | In vitro α -amylase inhibitory assay and anti-oxidant, phytochemical screening of polyherbal Siddha formulation <i>Madhumega chooranam</i> | Indo American journal of Pharmaceutical Research | 2014 |

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|-----|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------|
| 19. | Dr.H.Mubarak (Co author) | In vitro anti proliferative, anti oxidant and phytochemical screening of a Siddha Drug <i>Chittiramoola Kuligai(CMK)</i> | World Journal of Pharmacy and Pharmaceutical Sciences | 2014 |
| 20. | Shakila R , Arul Antony S, Gopakumar K | Phytochemical studies on <i>Desmostachyabipinnata</i> rootstock | International Journal Pharm Bio Sci | 2015; Jan 6(1): (P) 305-310 |
| 21. | Chitra B, ShakilaR , SasikalaE , Ayyasamy S | Characterization of a Siddha drug (<i>Pūrṇa Cantiroṭaya Centūram</i>): an approach to standardization | International Journal Pharm Bio Sci | 2015; Jan 6(1): (P) 566-576 |
| 22. | S. Selvarajan , V. Gayathri Devi , Anitha John, J. Jeyakannan, D. Balakrishnan, N. Raaman | “Pharmacognostical studies of <i>Tinospora cordifolia</i> (Miers.) Hk. F & Th. (stem)” | International Journal of Pharmacy and Technology (IJPT) (International Journal) | 2015; Vol. 6, Issue No.3, Jan, 7065-7077 |
| 23. | V. Gayathri Devi , Anitha John and S. Selvarajan | “Physico-chemical standardisation and review on <i>Capparis zeylanica</i> Linn., a common siddha herbal drug” | World Journal of Pharmaceutical Research (WJPR) (International Journal) | 2015; Vol 4, Issue 05 |
| 24. | Sariga CD, Shakila R , Kothai S | Isolation Characterization and Quantification of bergenin from <i>Syzygium cumini</i> stem bark | International Research Journal of Pharmacy | 2015; 6(2): 108-110 |
| 25. | Jayasree D, Shakila R , Meeradevi Sri P | Evaluation of antibacterial activity of ethanolic extract of <i>Butea monosperma</i> (Lam.) Kuntz pod | Journal of Pharmaceutical, Chemical and Biological Sciences | 2015; 3(1): 1-5 |

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|-----|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------|
| 26. | D. Vasanthraja, V. Ramalingam, G. Aadinaath Reddy | Oral toxic exposure of titanium dioxide nanoparticles on serum biochemical changes in adult male wistar rats | Nano Medicine Journal | 2015; Vol 2 (1), 46 – 53 |
| 27. | A. Kalaiselvi, G. Aadinaath Reddy , V. Ramalingam | Ameliorating Effect of Ginger Extract (Zingiber officinale Roscoe) on Liver Marker Enzymes, Lipid Profile in Aluminium chloride Induced Male Rats | International Journal of Pharmaceutical Sciences and Drug Research | 2015; 7(1): 52-58 |

Table-28: Publication of books

| S.No. | Name | Title | Publication | Year |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------|------------|
| 1. | Dr. M. Kannan Dr. P. Sathiyarajeswaran Dr. S. Natarajan | A Hand book of Common remedies in Siddha system of medicine | LRDD, SCRI (CCRS) | Feb. 2015 |
| 2. | Dr. M. Kannan Dr. P. Sathiyarajeswaran Dr. Shyamala Rajkumar Dr. S. Natarajan | உயிர்மெய் மூலிகைகள் தமிழ் எழுத்துக்களும் சித்தமருத்துவ மூலிகைகளும் | LRDD, SCRI (CCRS) | March 2015 |
| 3. | Dr. R. S. Ramaswamy Dr. P. Sathiyarajeswaran Dr. M. Kannan Dr. S. Natarajan Mr. D. Radha | Cancer Research Reviews in Siddha System of Medicine | CCRS Publication | March 2015 |

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|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------|
| | Krishna Reddy | | | |
| 4. | Dr. R. S. Ramaswamy Dr. P. Sathiyarajeswaran Dr. Shyamala Rajkumar Dr. M. Kannan Dr. S. Natarajan Mr. D. Radha Krishna Reddy | CCRS e-Book Research in Siddha system of medicine (The science of holistic health) | CCRS Publication | March 2015 |
| 5. | Dr. P. Sathiyarajeswaran Dr. M. Kannan Dr. S. Natarajan Mr. D. Radha Krishna Reddy Mr. Anwar Babu | Kal Nandu Soothiram (Multi lingual book- Tamil, Malayalam, Kannadam, Telugu, Hindi, Malaya, Singalam and English) | LRDD, SCRI (CCRS) | March 2015 (Inprint) |
| 6. | Dr. R. S. Ramaswamy Dr. P. Sathiyarajeswaran Dr. M. Kannan Dr. S. Natarajan | CD-ROM The Siddha Formulary of India Part I, First Edition, Tamil Version | LRDD, SCRI (CCRS) | March 2015 (Inprint) |
| 7. | Dr. R. S. Ramaswamy Dr. P. Sathiyarajeswaran Dr. M. Kannan Dr. S. Natarajan | CD-ROM The Siddha Pharmacopoeia of India Part I, Volume II, First Edition, English Version | LRDD, SCRI (CCRS) | March 2015 (Inprint) |

Table-29: Publications research papers/articles in the conference/ workshop/ Seminar proceedings only

| | Name of the Author | Title of paper | Name of Journal/ Bulletin | Year of Publication |
|-----------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1. | Ganesan R. Mathuram Venkatanarasimhan,Aadinaath Reddy G, Sharad Pawar,Jega Jothi Pandian, Pre magurumuthy | Hepatoprotective effect of methanolic extract of <i>Coldenia procumbens</i> Linn. against D-galactosamine induced acute liver damage in rats, | International Journal of Pharmacy and Pharmaceutical Sciences | 2014, Jul-Sep 0976-7908; 5(3): 13-18 |
| 2. | Shyamala Rajkumar, J.Annathai,S.Natarajan | Medicinal plants mentioned in the Holy Bible and in Siddha system and their ethanomedicinal studies | International Journal Of Reviews, Surveys and Research | 2014;3(2):69-85 |
| 3. | Shyamala Rajkumar, V.Vijayakumar, C.Pommuthu Rani, K.Gopakumar, R.S. Ramaswamy | Management of Fibroid Uterus with a Traditional Siddha Formulation - A Review | International Journal of Multidisciplinary Health Sciences | 2014, July-Sep; 1(1):1-15 |
| 4. | E.Rajabudeen, A.Saravana gandhi and M.Padma Sorna Subramanian | Phytochemical and Antibacterial analysis of <i>Tephrosia spinosa</i> (L.f.) Pers. | Proceedings of the International Conference on Bioprospecting of Natural Resources for Human Health (2014) ISBN978*93- 80394-44-2. | (September 2014) |
| 5. | M.Padma Sorna Subramanian | Phytochemical and Antibacterial analysis of | International conference on Bioprospecting of Natural | 10 th Sep. 2014 |

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|----|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| | Research officer – Botany | <i>Tephrosia spinosa</i> (L.f.) Pers. | Resources for Human Health at Dr.Zakir Husain College, Ilayangudi, Sivagangai dt. Tamil nadu. | |
| 6. | N. Raaman, S. Selvarajan , D. Balakrishnan, V. Gayathri Devi , Anitha John, J. Jeyakannan | ""Pharmacognostical studies of <i>curculigo orchioides</i> (gaerten)"" | International Conference on "Medicinal plants and Herbal drugs for Human Welfare (International Seminar)" | 28-30 January 2015, Proceedings: ICMP-2015 |
| 7. | M.Padma Sorna Subramanian | Vegetation of Point calimere | Abstract of "National Level Seminar on "Coastal and Marine Eco systems -challenges and opportunities" sponsored by Ministry of Earth sciences, Govt. Of India, organized by the Dept. of Botany, Rani anna Govt. College for women, Tirunelveli - 627 008, Tamilnadu | March 12-13 2015 |
| 8. | E.Rajabudeen, K.Subramonian and M.Padma Sorna Subramanian | Phytochemical and Antibacterial analysis of <i>Indigofera aspalathoides</i> Vahl. Ex DC. | Abstract of "National Level Seminar on "Coastal and Marine Eco systems-challenges and opportunities" sponsored by Ministry of Earth sciences, Govt. Of India, organized by the Dept. of Botany, Rani anna Govt. College for women, Tirunelveli- 627 008, Tamilnadu. | March 12-13 2015 |

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|-----------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 9. | M.Padma Sorna Subramanian Research officer – Botany | Presented a lead article entitled “Vegetation analysis of Point Calimere wildlife and bird sanctuary”. | National Level Seminar on “Coastal and Marine Eco systems -challenges and opportunities” sponsored by Ministry of Earth sciences, Govt. Of India, organized by the Dept. of Botany, Rani anna Govt. College for Women, Tirunelveli-627 008, Tamilnadu. | March 12-13 2015 |
|-----------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|

4. Information, Education and Communication

4.1. IEC Materials / Pamphlets

10 Brochures revised and reprinted / 11 Translites reprinted/remade and were distributed/displayed in the AROGYA health melas and other campaigns.

4.2. Seminars / Conferences / Workshops

Table-30: Participation in Workshops, Training programmes, Conferences by scientists of CCRS

| S. No. | Name of the participant | Name of Seminar/ conference / workshop / Training | Name of the Organiser | Date of Participation |
|---------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------|
| 1. | Dr. M. Kannan | 31 st Workshop on Research methodology & Bio-statistics | The Tamil Nadu Dr.M. G. R. Medical University | 28 April 2014 to 02 May 2014 |
| 2. | Mrs. R. Shakila & Mrs.Anitha John | Training on HPTLC | HPTLC at Anchrom, Mumbai | 26-27 May 2014 |
| 3. | Mr.R. Ganesan | Training programme on NPS | NSDL, Mumbai, | 20 th , June 2014 |
| 4. | Dr. V. Gayathri Devi | Ph. D. Pre-submission seminar of Mr. Janeesh.P.A, entitled "Polymeric Nanocapsules Mediated Therapeutic Strategies in Atherosclerosis" | Dept. of Biochemistry, University of Kerala, Thiruvananthapuram | 19 th July, 2014 |
| 5. | Dr. M. Kannan | NABH On-site assessment training- As a trainee assessor Final Assessment of Kokila Siddha Hospital & Research Centre | Nomination given by the NABH, Quality Council of India, Govt. of India | 23 rd to 24 th July 2014 |

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| 6. | Mrs. R.Shakila | Deminor of TLC-MS | TLC-MS at Shimadsu, Mumbai | 26 th Aug.2014 |
| 7. | Dr. P. Elankani | Workshop on “Prevention and Conservation of Manuscripts” | Saraswathi Mahal Library and Research Centre,Thanjavur, Tamil Nadu. | 5 th to 9 th September 2014 |
| 8. | Dr.M.Padma Sorna Subramanian, Research officer – Botany | International conference on Bioprospecting of Natural Resources for Human Health | Dr.Zakir Husain College, Ilayangudi, Sivagangai dt., Tamil nadu. | 10 th September 2014 |
| 9. | Dr. V. Gayathri Devi | Ph. D open defence viva of the thesis entitled “Aagillterations in lens by the leaves of <i>Moringa oleifera</i> Lam. in selenite cataract” by Ms. Sasikala V | Dept. of Biochemistry, University of Kerala, Thiruvananthapuram | 19 th September 2014 |
| 10. | Dr.S.Selvarajan, Dr.V.Gayathri Devi Dr.S.Saravanan | National Seminar on ‘Intellectual Property Rights and Bio-diversity’ | Kerala State Biodiversity Board and Confederation of Indian Industry | 30 th September 2014 |
| 11. | Dr. G. Aadinaath Reddy Mr.R. Ganesan | (C.A.P.S) “Communication And Presentation Skills” | Organized by DST and conducted by the IMTR at Goa | 13 th to 17 th October, 2014 (5 days) |
| 12. | Dr. V. Gayathri Devi | One day seminar – Agilent Technologies’Optimize your Lab Productivity Seminar- held at | Agilent Technologies | 15 th October, 2014 |

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|-----|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------|
| | | Vivanta, Taj Hotel, Thycaudu, Thiruvananthapuram | | |
| 13. | Dr. M. Kannan | Training on Results Framework Documentation (RFD) and Research Framework Management System (RFMS) – a web based training programme | Performance Management Division Cabinet Secretariat Government of India | 27 th & 28 th October 2014 |
| 14. | Dr. P. Elankani | Workshop on “Research Methodology and Bio-Statistics” | T.N. Dr. M.G.R Medical University, Chennai – 32 | 17 th to 21 st November 2014 |
| 15. | Dr. M. Kannan Dr. S. Natarajan | Workshop on Subtle Energy Diagnostics through latest technologies GDV/EPI, Acugraph & Nadi Tarangini | SVYASA, deemed University, Prashanti Kutiram Jigani Bengaluru | 23 rd to 27 th November 2014 |
| 16. | Dr. Shyamala Rajkumar R. Shakila | Training on Communication and Presentation Skill (C.A.P.S) | IMTR, Goa | 8 th to 12 th December 2014 |
| 17. | Dr. P. Elankani | WHO In - Country Fellowship Training Programme | St. George’s Medical University, Lucknow, Uttar Pradesh | 1 st to 21 st December 2014 |
| 18. | Dr. V. Gayathri Devi | ‘Nelli Fest – Thiruvananthapuram’ | National Amla Mission New Delhi | 28 th January, 2015 |

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| | | | | |
|-----|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| | | | &State Medicinal Plant Board, Kerala | |
| 19. | Dr.S.Selvarajan | ICMP-2015 | CAS in Botany, University of Madras, Chennai. | 28 th to 30 th January 2015 |
| 20. | Dr.M.S. Shree Devi | 9th International Conference – Seminar on Tamil Studies | Lecture Hall – BS 15, University of Malaya, Kuala Lumpur | 29 th January – 1 st February 2015 |
| 21. | Dr.M.Padma Sorna Subramanian, Research officer – Botany | National Level Seminar on “Coastal and Marine Eco systems -challenges and opportunities” sponsored by Ministry of Earth sciences, Govt. of India | Dept. of Botany, Rani anna Govt. College for women, Tirunelveli -627 008, Tamilnadu. | 12 th to 13 th March 2015 |
| 22. | Mr.R. Ganesan | GCLP workshop on International Standard | YRG care centre, Chennai | 12 th to 14 th March 2015 |
| 23. | Dr.A.Rajendra Kumar | National Workshop on Educational Reforms on Ayurveda, Siddha & Unani System | CCIM held at AYUSH Auditorium, Janakpuri, New Delhi. | 18 th & 19 th March 2015 |
| 24. | Dr. P. Sathiyarajeswaran | | | |

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| | | | |
|------------------------|--------------------------------------------------------------------------------|------|-----------------------------------------------------|
| Dr. P. Elankani | | | |
| Dr. Shyamala Rajkumar | | | |
| Dr.M. Kannan | | | |
| Dr. G. Aadinaath Reddy | | | |
| Mr.R. Ganesan | | | |
| Dr.A. Kanaga Rajan | | | |
| Dr.A. Rajendra Kumar | | | |
| Dr.S.Selvarajan | Good Clinical Practice (GCP) training for various stake holders in AYUSH | SCRI | 30 th and 31 st March 2015 |
| Dr.I.Chelladurai | | | |
| Dr. S. Natarajan | | | |
| Dr.M.S. Shree Devi | | | |
| Dr. R. Vasudevan | | | |
| Dr. S. Bhavani | | | |
| Dr.K. Kalaiselvi | | | |
| Dr.G. Lekha | | | |
| Dr.R. Meena | | | |
| Dr. Muralidoss | | | |

| | | | | |
|--|------------------|--|--|--|
| | Dr.J. Jayakannan | | | |
|--|------------------|--|--|--|

4.3. Special Lectures

Table-31: Lectures delivered in Training programmes/Workshops/Colleges

| S. No | Name of the Author(s) | Name of the paper/ abstract published | Conference/ Seminar | Date |
|-------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1. | Dr. V. Gayathri Devi | An introduction to Phytochemical techniques" | Academic staff college, University of Kerala, Thiruvananthapuram conducted by UGC | 18.07.2014 |
| 2. | Mr.R. Ganesan | Nephroprotective Effect of Poonai Meesai Kashayam in Carbon Tetrachloride (CCl ₄) induced Nephrotoxicity in rats. | 6 th World Ayurveda Congress & Arogya Expo. Ayurveda and Health Challenges | 6 th to 9 th November, 2014 at Hall No. 18, Pragati Maidan, and New Delhi. |
| 3. | Dr.S.Selvarajan | Graduates' Day – Felicitation address | Santhigiri Siddha Medical college, Pothencode, Thiruvananthapuram. | 27.11.2014 |
| 4. | Dr.S.Selvarajan | Geriatric diseases and its management through Siddha medicine | Yuvajana samajam Grandasala, Poojappura, Thiruvananthapuram | 30.11.2014 |
| 5. | Dr.M.S. Shree Devi | Siddha Medicine – A History | 9 th International Conference on Tamil Studies, Kuala lumpur, Malaysia | 29 th January – 1 st February 2015 |
| 6. | Dr. G. Aadinaath Reddy, R. Ganesan, N.Priyadarshini, Dr. P. Satyarajeswaran and Dr. | Evaluation of Immunomodulatory Activity of <i>Mahaveera Mezhu</i> (A Siddha | National Symposium on Animals in Research and Testing: A Cross-link between Relevance & Ethics" CDRI, | 13th & 14th Mar, 2015. |

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| | | | | |
|--|-------------|-----------------------------|----------|--|
| | K.Gopakumar | Formulation) on Albino rats | Lucknow. | |
|--|-------------|-----------------------------|----------|--|

Table-32: Organized Arogya / Mela / Exhibition / Camp / others

| S. No | Name of Mela/ Exhibition / Camp | Name of the Officers | Activities | Duration & place |
|-------|-------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------|------------------|
| 1. | Women's Day Celebration, an awareness programme | Dr.Shyamala Rajkumar, Dr.S.Bhavani Dr. K.Kalaiselvi | "Food to be followed by women in day-to-day life from Menarche to Menopause" | SCRI O.P.D. |

Table-33: Participation in Arogya/Mela/Exhibition/Camp/Others by the Officers

| S. No | Name of Mela/ Exhibition / Camp | Participation | Duration & place | Activities |
|-------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | 6 th World Ayurveda Congress & Arogya Expo. Ayurveda and Health Challenge | Dr.K.Gopakumar Dr.A.Rajendra Kumar Dr. Shyamala Rajjkumar Mr.R. Ganesan | 6 th to 9 th November, 2014 at Hall No. 18, Pragati Maidan, and New Delhi. | Conducted Special OPD and issued free Siddha medicines Publications of CCRS were sold. Charts were exhibited. Lectures given to the public. |

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| | | | | |
|----|----------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. | Arogya Fair | Dr.S.Selvarajan | 07-13 Jan 2015, Ahemadabad, Gujarat | Pamphlets about the Siddha system of medicine and remedy for different diseases were distributed. Created awraeness about Siddha System of medicine |
| 3. | National Level Arogya | Dr. P. Elankani Dr.R. Vasudevan | 21 st to 24 th January 2015 Ulsoor, Bengaluru,Karnataka | |
| 4. | National Level Arogya Fair | Dr. M. Kannan Dr.A.Kanaga Rajan | 30 Jan 2015 to 02 Feb 2015 Sonaram High School Ground, Bharalumukh, Guwahati, Assam | |
| 5. | National Level Arogya | Dr.A.Rajendra Kumar Dr.R. Vasudevan Dr.S.Saravanan | 6 th to 9 th February, 2015 Raipur, Chattisgarh | |
| 6. | Arogya Mela | Dr. P. Elankani Dr.V.Vijaya Kumar | 13 th to 16 th February 2015 SMS Investment Ground, Jaipur, Rajasthan | |
| 7. | National level Arogya | Mr.R. Ganesan Dr.M.S. Shree Devi | 22 nd to 25 th February, 2015. Janata Maidan, Nandan Kanan rad Bhubaneswar, Odisha | |

Table-34:Lectures delivered in Arogya Mela/Camp/Others by the Officers

| S. No | Name of Mela/ Exhibition / Camp | Name of the Officers | Organizer | Topic of the Lecture | Duration & place |
|-------|---------------------------------|----------------------|-----------|----------------------|------------------|
|-------|---------------------------------|----------------------|-----------|----------------------|------------------|

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| | | | | | |
|----|----------------------------|------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1. | National AROGYA Mela | Dr. P. Elankani Dr.R. Vasudevan | Ministry of AYUSH | Common Respiratory Disorders and its Management in the Siddha System of Medicine | 21 st to 24 th January 2015 Ulsoor, Bengaluru, Karnataka |
| 2. | National Level Arogya Fair | Dr. M. Kannan | Ministry of AYUSH Govt. of India, New Delhi | Role of Siddha in NCD Management | 30 Jan 2015 to 02 Feb 2015, Auditorium Sonaram High School Ground, Bharalumukh, Guwahati, Assam |
| | | Dr. A. Kanagarajan | | Basics of Siddha Science | |
| 3. | National level Arogya | Dr.A.Rajendra Kumar | Ministry of AYUSH Govt. of India, New Delhi | Medicinal plants in skin care | 6 th to 9 th February, 2015, Raipur, Chattisgarh |
| | | Dr.R. Vasudevan | | "Bird's eye view on Siddha" | |
| 4. | AROGYA Mela | Dr.S.Saravanan | Ministry of AYUSH | Kayakalpa medicinal plants | 08-02-2015 Raipur, Chattisgarh. |
| 5. | National AROGYA | Dr.V.Vijayakumar | Ministry of AYUSH | Siddha perspectives and its role in the management of Anaemia (Veluppu Noi) | 13 th to 16 th February 2015 at Jaipur, Rajasthan |
| 6. | National Arogya Fair | Dr.M.S. Shree Devi | Ministry of AYUSH Govt. of India, New Delhi | Perspectives of Siddha Medicine in gynecological disorders | 22 nd – 25 th February 2015 Bhubaneswar, Odisha. |

Table-35: Workshops/Conferences /Seminars organized by CCRS

| S.No | Name of workshop | Organizing Institute | Date |
|-------------|-------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------|
| 1. | Good Clinical Practice (GCP) training for various stakeholders in AYUSH | Siddha Central Research Institute, Chennai | 30 th March – 31 st March 2015 |

5. Objectives and achievements of Siddha Pharmacopoeia Committee (SPC)

The Secretariat of SPC is functioning at SCRI, Chennai under the supervision of CCRS. The main objective of Siddha Pharmacopoeia Committee (SPC) is to develop the Pharmacopoeial Standards for Siddha Medicines with a focus on the following areas:

1. To prepare Siddha Pharmacopoeia of India of Single and Compound drugs.
2. To prepare Siddha Formulary of India.
3. To prepare Pharmacopoeial Standards for single drugs mentioned in the Siddha Formulary of India.
4. To prepare standards of compound formulations mentioned in The Siddha Formulary of India.
5. Development and standardization of methods of preparation, quality parameters for compound formulations including tests for identity, purity, strength and quality to ensure uniformity of the finished products.
6. Data generation on heavy metals, microbial load and pesticide residues present in the Siddha compound formulations.
7. To develop SOPs for maintaining the Pharmacopoeial Standards and Shelf-life of compound formulations.
8. Translation of Pharmacopoeias / Formularies into Hindi / Tamil / English.

Work done during the year 2014-2015

- ✓ The Siddha Formulary of India Part I(Tamil) Revision which is approved by the SPC. To be sent for printing.
- ✓ The Siddha Pharmacopoeia of India Part I, Volume III. To be approved by the SPC.

Table-36: Siddha Pharmacopoeia Committee (SPC)

| Sl. No. | Name | Position |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 1. | Dr.G.Veluchamy, No.24, Chokkanathar Street, Karthikeyan Nagar, Maduravoyal, Chennai- 600 095 | Chairman |
| 2. | Dr.K.Ravi, Joint Advisor (Siddha), Ministry of AYUSH, AYUSH Bhawan, B- Block, GPO Complex, INA, New Delhi - 110023 | Member (Ex-officio) |
| 3. | Dr.Rajeev Kr. Sharma Director, PLIM, Kamla Nehru Nagar, Ghaziabad- 201 002 | Member (Ex-officio) |
| 4. | Dr.A.Kumaravel Rtd. Professor of GSMC, Palayamkottai, No/25, II Street Ram Nagar, North Extension Vijayanagar, Velacherry, Chennai | Member |
| 5. | Prof. P. Jayprakash Narayanan Former Vice-Principal, GSMC, Chennai, Old No.55, New No.70, Panchaliamman Koil Street, Arumbakkam, Chennai- 600 106 | Member |
| 6. | Dr.P.Jayaraman Retd. Prof. Of Botany, Plant Anatomy Research Center (PARK), No.4, Second Street, Sakthi Nagar, West Tambaram, Chennai- 45 | Member |
| 7. | Dr.(Prof.) I. Sornamariammal Joint Director (Retd) of ISM, Government of Tamil Nadu ,A-3, Hemasadtham apartments, 19th cross street, 3rd Main street, Lenin nagar, Ambattur, Chennai - 53 | Member |
| 8. | Dr. T. Anandan Rtd. Assistant Director In-charge SCRI, No.75,O-Block,Ganapathy Colony,Anna Nagar (E), Chennai | Member |

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| | | |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 9. | Dr.G.Thiyagarajan Joint Director (Retd) of ISM, Government of Tamil Nadu, No.19/5,Arunachalapuram Street, Sandrorpalayam,Aminjikarai, Chennai | Member |
| 10. | Dr.Sharada Vasanth Rtd. Research Officer (Chem), CSMDRIAS, No.6,Sowbakkiya Apartments, 60,Moosa Street, T.Nagar, Chennai-17 | Member |
| 11. | Dr. K.Balakrishnan Rtd. Research Officer (Chem), CSMDRIAS, No.4/930, Near Priya Mat.School, Block No.4, Door No.930, Mogappair West, Chennai- 37 | Member |
| 12. | Dr.Sasikala Ethirajulu, Rtd.Research Officer (P'cognosy) Scientist –II, SCRI, No.18, 10 th Cross Street, Indira Nagar, Adyar, Chennai-20 | Member |
| 13. | Prof. V. Gopal, Principal Govt College of Pharmacy, Mother Teresa, PG Research Institute of Health Sciences, Puducherry- 605 006 | Member |
| 14 | Dr.P. Kumar, Drug License Issuing Authority for ISM, Arumbakkam, Chennai- 106 | Member |
| 15 | Dr.V.Kalidass Proprietor, Raja Siddha Marunthagam, 1/3, Dhermathupatty, Madurai- 625 008 | Member |
| 16. | Dr.K.Vasanthira Prof. of Pharmacology, Stanley Medical College, Chennai | Member |
| 17. | Prof. Dr. R. S. Ramaswamy, Director General, CCRS Chennai -600 106 | Member Secretary |

6. Extra Mural Research (EMR) - Siddha

Background

The Ministry of AYUSH has introduced the scheme of Extra-mural Research in addition to the Intra-mural Research works undertaken by the Research Councils of Ayurveda, Siddha, Unani, Homoeopathy, Yoga and Naturopathy. The purpose of this scheme is to encourage academic and research organizations to pursue research activities in their respective field along with related sciences like Botany, Chemistry, Pharmacy, and Pharmacology to enrich scientific data and develop innovations having IPR value.

In the present era of globalization and development of a world market for traditional and herbal medicine, research and development are essential to promote the production and export of quality products in the form of drugs, nutraceuticals, cosmetics etc. There is a keen competition among other countries in the trade of herbal products. The Extra-mural Research scheme has been designed to encourage Research and Development in priority areas through financial assistance so that the research findings lead to validation of the AYUSH approaches and drugs. CCRS is coordinating the research projects related to Siddha under the Extra- mural Research Scheme of Department of AYUSH since 2011. Central Council for Research in Siddha was established and started functioning since 1st September 2010 (Ref. CCRAS office order No. 1634/2010 vide Lr. 12-38/2009-CCRAS/Estt. dated 01.09.2010) and all the projects related to Siddha have been transferred to Central Council for Research in Siddha.

Aims and Objectives

- To produce Research and Development (R & D) based AYUSH drugs for prioritized diseases
- To generate data on safety, standardization and quality control for AYUSH products and practices
- To develop evidence based support on the efficacy of AYUSH drugs and therapies
- To encourage research on classical texts and investigate fundamental principles of AYUSH Systems

- To generate data on heavy metals, pesticide residues, microbial load, Safety/Toxicity etc. in the raw drugs and finished products
- To develop AYUSH products having intellectual property Rights (IPR) and potential for increasing AYUSH exports
- To develop potential Human Resource in AYUSH systems, especially to develop scientific aptitude and expertise related to AYUSH systems
- To develop joint research venture among AYUSH Departments and other Organizations / Institutes

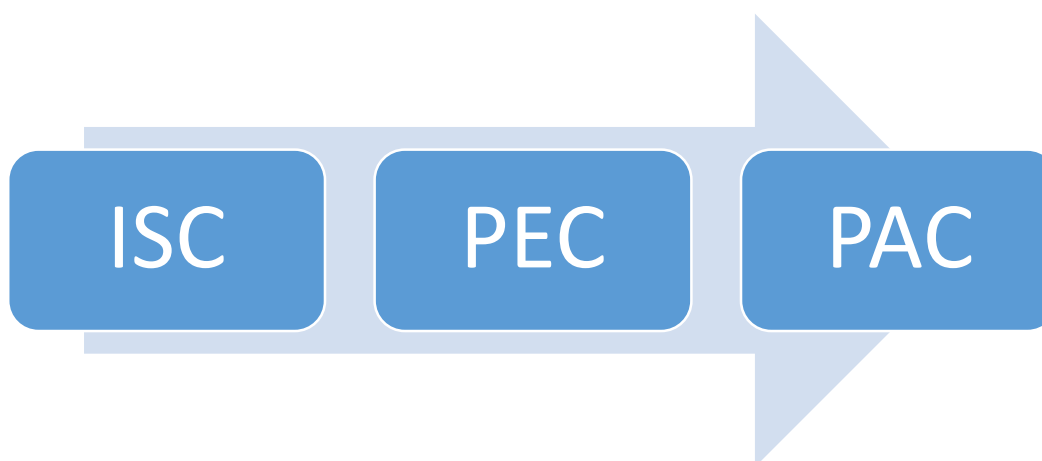


Diagram 7: Extra Mural Research Process Snap Shot

Role of Internal Scrutiny Committee in EMR

- Application by A stake holder (University, Researcher, College, NGO)
- Thorough examination by ISC (Internal Scrutiny committee)
- If found fit, EMR projects are recommended to PEC by DG, CCRS, Chairman of ISC.
- If not sent back to the PI for necessary modification/correction or rejection.

Role of PEC in EMR

- Applicant recommended by ISC is called for presentation.
- Thorough examination by PEC (Project evaluation committee)
- If found fit, EMR projects are recommended to PAC by JS, AYUSH, Chairman of PEC.

Role of PAC in EMR

- Thoroughly examines the project referred by PEC.
- If approved, recommends for grants by Secretary AYUSH, Chairman of PAC

Table-37: Status of EMR Projects

| S.No | No of projects received | No of projects recommended to PEC | Sent for modification | No of projects granted by PAC |
|------|-------------------------|-----------------------------------|-----------------------|-------------------------------|
| 1 | 10 | 4 | 2 | 4 |

Current Status

The EMR projects tabulated here were initiated before bifurcation of Siddha Council from CCRAS and now being pursued by CCRS:

Table-38: Ongoing Projects of EMR – Siddha

| Sl. No. | Title of the Project | Principal Investigators / Participating Institutes | Main Objectives | Status |
|---------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1. | Documentation and Clinical validation of efficacy of traditional medical practice Suttigai in Siddha medicine for Azal keelvaayu | Dr.S.Sridhar , BSMS,M.Sc,Ph.D(SID DHA), Ashram Siddha Yoga Research Institute, 3/33.Iyer line, Swarnapuri, Salem- 636 004, contact no; 09443244664 | The main objective of the proposal is to revalidate one of the external therapies “Suttigai” in Siddha medicine .The aim of the present proposal is <ul style="list-style-type: none"> • To collect the methods of suttigai found in ancient Siddha literature • To document the methods of suttigai followed by traditional vaidya • To study the efficacy of Suttigai | First year completed. |

| | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| | | | therapy in the treatment of azal keelvaayu in humans. | |
| 2. | Biochemical and Molecular investigations on the role of Thiratchathi Choornam and Thamaraga Kudineer in experimental model of myocardial infarction in rats. | Dr.J.Venkatesh Sri Ramachandra University, Chennai. | <ul style="list-style-type: none"> Phytochemical analysis and fingerprinting analysis, chemical standardizations of Thiraatchathi Chooranam and Thamaraga Kudineer for their active principle(s) and heavy metals contents as per the AYUSH guidelines. To ascertain the effect of Thiraatchathi Chooranam and Thamaraga Kudineer on cardiac myocytes viability by MTT assay. To investigate the effects of Thiraatchathi Chooranam and Thamaraga Kudineer on cardiac myocytes viability in vitro model of ischemia / re-perfusion. | 1 st Phase completed and has been recommended for second phase. |
| 3. | Documentation of Visha Vaidya Practices (Treatment for poison intake and poisonous bites) and related Local Health | Dr. V. Ganapathy Vivekananda Kendra-NARDEEP Kanyakumari. | <ul style="list-style-type: none"> To collect the addresses of Visha Vaidyas and encourage them for their practices. To document the methods of Visha Vaidya Practices including the local practitioners and traditional practitioners. To document the uses of local | Report to be modified and submitted. |

| | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| | Traditional Practices in the Southern parts of Tamilnadu. | | Visha Vaidya Practices / Medicines. <ul style="list-style-type: none"> To develop the Visha Vaidya herbal garden in selective regions. | |
| 4. | In vitro and in vivo evaluation of therapeutic potential of various drugs upon Chikungunya virus infection | Dr. Sujatha Sunil International Centre for Genetic Engineering and Biotechnology, New Delhi. | <ul style="list-style-type: none"> To establish and validate mouse model for CHIKV induced arthritis. To establish in vitro test system of primary mouse embryonic fibroblast cell culture for testing the medicines. To study efficacy of Siddha drugs currently in use for chikungunya management in vitro and mouse model. | Project Approved. |
| 5. | Scientific validation of a Siddha - formulation, Iedi Vallathi(Mezhugu) for arthritis and to derive its underlying mechanisms | Dr. D. Chamundeeswari, Principal, Faculty of Pharmacy, Sri Ramachandra University, Porur, Chennai - 600 116. | <ul style="list-style-type: none"> Literature search of the plant constituents present in Iedi Vallathi (Mezhugu). Standardization of Iedi Vallathi (Mezhugu) formulation as per Pharmacopoeial methods. To perform the in-vitro anti inflammatory activity by HRBC membrane stabilization and TPA induced inflammation in PMNL cells. To assess the safety profile of | Project Approved. |

| | | | | |
|----|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| | | | <p>Iedi Vallathi (Mezhugu) by performing acute, sub-acute toxicity studies to arrive at the dosage for oral administration.</p> <ul style="list-style-type: none"> • Studying anti inflammatory activity using carrageenan induced model. • Determination of the mechanism of anti arthritic activity of the Iedi Vallathi (Mezhugu) using complete freunds adjuvant induced model besides studying its chronic toxicity. | |
| 6. | Therapeutic efficacy of Rasaganthi Mezhugu (RGM) in 7-12 dimethyl benzanthracene (DMBA) induced mammary tumors in rats | Dr.C.Balachandran, Madras Veterinary College, Chennai 600 007 | <ul style="list-style-type: none"> • To study the toxicity of Rasaganthi Mezhugu in rats. • To study the therapeutic and chemopreventive effect of Rasaganthi mezhugu on 7,12-dimethylbenzanthracene(DMBA) induced mammary tumours in rats | Project Approved. |

Table-39: Members of Internal Scrutiny Committee

| S.No. | Name | Designation | Capacity |
|-------|-------------------------|----------------------------------------------------------|-----------------|
| 1 | Dr. R. S. Ramaswamy | Director General, Central Council for Research in Siddha | Chairman |
| 2 | Dr.S.Thirunavukkarasu | Asst.Director (Siddha)-Retd, CCRAS | External Member |
| 3. | Prof. P. Jayabal | Biostatistician (Retd), NIS. | External Member |
| 4. | Dr.E. Meenakshinathan | Biomedicine | Member |
| 5. | Dr. Sasikala Ethirajulu | Pharmacognosy | Member |
| 6. | Dr. G. Aadinaath reddy | Pharmacology | Member |
| 7. | Dr. P. Elankani | Pharmacy | Member |
| 8 | Dr. M. Kannan | LR&DD | Member |
| 9 | Mr.R.Ganesan | Biochemistry | Member |
| 10 | Mrs. R. Shakila | Chemistry | Member |
| 11. | Dr.P.Sathiyarajeswaran | Clinical Trial/Coordinator-EMR. | Member |

Table-40: Members of Project Evaluation Committee

| S.No. | Name | Designation/Institute | Capacity |
|-------|---------------------|----------------------------------------------------------|---------------|
| 1 | Dr.R.S.Ramaswamy | Director General, Central Council for Research in Siddha | Member |
| 2 | Dr.K.Manickavasagam | Director, NIS. | Siddha expert |
| 3. | Dr.A.Kumaravel | Retd. Professor/Principal | Siddha expert |

7. Miscellaneous Activities

7.1. SCIENCE CLUB

Science Club focuses its activities on dissemination of Scientific and updated Research information to Students and Research scholars. Following were the lectures delivered by the invited speakers in the science club:

Table-41: Special Invited Lectures in Science Club

| S.NO | DATE | SPEAKER NAME | TOPIC |
|------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. | 30 th -July 2014, 12.00 Noon | Dr.P.Hemraj,M.S.(Gen.Surg),Mch (Urology) Consultant Urologist, City Tower Hospitals, Chennai | Overview of Urolithiasis" |
| 2. | 20 th -August 2014, 12.00 Noon | Dr.G.KARTHIKEYAN,M.D.,D.M(Card), Senior Consultant-Cardiology(Tamilnadu Government Super specialities Hospital), Professor of Cardiology (Retd.), Madras Medical College | Overview of Ischemic Heart Disease |
| 3. | 14 th October 2014 | Dr.A. R. RAGHURAM, M.B.B.S., M.S., M.Ch. Cardio Thoracic Surgeon, S.R.M Institute for Medical Sciences, Chennai. | Overview of Coronary Artery Diseases and Role of Bypass Surgery |
| 4. | 07 th January 2015 (Wednesday), 12.00 Noon | Dr. R.Jagadeeswaran, B.S.M.S., M.Sc., Ph.D., Research Assistant Professor, College of Medicine, University of Illinois at Chicago | Identification and Development of Novel Anticancer Compounds |
| 5. | 11 th February 2015 (Wednesday), 2.00 pm | Prof.Dr. R.S.Ramaswamy Director General, Central Council for Research in Siddha(CCRS),Chennai | YOGAM IN SIDDHA SYSTEM |

7.2. Hindi Week

Hindi Week was celebrated in the Institute from 14th to 21st of September 2014. Various competitions were conducted for the employees. They actively participated and won prizes.

7.3. Vigilance Awareness Week

Vigilance Awareness Week was celebrated in the institute, SCRI from 27th October 2014 to 1st November 2014.

7.4. NABH

Being an Assesor in NABH, Quality Council of India, Dr.A.Rajendra Kumar, R.O(S) took up an assignment to assess Kokila Siddha Hospital & Research Centre, Madurai on 23rd& 24th July 2014.

APPENDIX – I

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|----------------|----------------------------------------------------------|-----------------|
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| Table 9 | Centre-wise Actual Expenditure | |

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|----------|--------------------------------------------------------------------------------------------------------------------------------------------|--|
| Table 10 | Centre-wise allocation of Research Projects / Activities | |
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| Table 13 | Plant saplings / stem cuttings / seeds collected | |
| Table 14 | Development activities | |
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| Table 16 | Identification/Microscopical study of Siddha Formulations/Single drug | |
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| Table 19 | Drugs allocated and studied during the current year | |
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| Table 21 | Census of OPD and IPD Patients | |
| Table 22 | CCRS hospitals Male/Female patient ratio | |
| Table 23 | Details of beneficiaries of Specialty Clinics of Flu-like Illnesses | |
| Table 24 | Census of Varmam special OPD | |
| Table 25 | Details of Medicines prepared in the pharmacy | |
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| Table 28 | Publication of books | |
| Table 29 | Publications research papers/articles in the conference/workshop/ Seminar proceedings only | |

| | | |
|----------|------------------------------------------------------------------------------------|--|
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| Table 31 | Lectures delivered in Training programmes/Workshops/Colleges | |
| Table 32 | Organized Arogya / Mela / Exhibition / Camp / others | |
| Table 33 | Participation in Arogya/Mela/Exhibition/Camp/Others by the Officers | |
| Table 34 | Lectures delivered in Arogya Mela/Camp/Others by the Officers | |
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| Table 37 | Status of EMR Projects | |
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APPENDIX - III

LIST OF CHARTS AND DIAGRAMS

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