# CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA

## Annual Report
1994-95


MINISTRY OF HEALTH AND FAMILY WELFARE

(Government of India)

NEW DELHI

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**III. Technical Report-Siddha**

# PREFACE

The Central Council for Research in Ayurveda and Siddha an autonomous body under Ministry of Health and Family Welfare, Government of India is an apex body in India for the formulation, co-ordination, development and promotion of research on scientific lines in Ayurveda and Siddha. The Council carries out its objects and functions through the net work of Research Institutes and Centres functioning under its direct control and through a number of Units located in Universities, Ayurveda/Siddha and modern Medical Colleges etc., in different parts of the country. A brief review of the work carried out under different research programmes during the reporting period is reported hereunder :

**Clinical Research Programme**

Clinical conditions studied in Ayurveda during the reporting period include Amavata (rheumatoid arthritis), Paksvadha (hemiplegia), Gridhrasi (sciatica), Saisaviyavata (poliomyelitis), Amlapitta (hyperacidity), Kamala (jaundice) Bhagandar (fistula-in-ano), Tamaka swasa (bronchial asthma), Swetapradara (leucorrhoea), Madhumeha (diabetes-mellitus), Medoroga (obesity), Mutrasmari (urolithiasis) Vyanbalvaishmya (hypertension), Hridroga (ischaemic heart diseases), Slipada (filariasis), Kalazar, Visamajwara (malaria), Kitibha (psoriasis), Svitra (leucoderma), Apasmara (epilepsy), Kuposhan (malabsorption syndrome) and timira (refractive error).

Clinical conditions under Siddha System of Medicine studied during the reporting period include Kalanjaga padai (psoriasis), Putrunoi (cancer), Majjal Kamalai (infective hepatitis), Sandhivatha soolai (rheumatoid arthritis), Gunmam (intestinal disorders), Venkuttam (leucoderma), Velluppunoi (anaemia), Neerazhivu (diabetes mellitus) etc.

During the execution of this programme, medical aid to 2, 25, 791 patients through Out Patient Departments and 1464 patients at Indoor Patient Departments functioning at different Institutes/Centres/Units of the Council have been provided.

**Health Care Research Programme**

Health Care Research Programme carried out by the Council include Service oriented Survey and Surveillance screening Programme, Community Health Care Research Programme and Tribal Health Care

Research Programme. These programmes are modulated to have rural bias so that benefits of the research programme carried out can reach the grass root level. Under these programmes, teams of research personnel visit each and every house in the villages/tribal pockets selected/adopted and provide incidental medical aid besides collecting data pertaining to the nature and frequency of prevalent diseases, food habits with ragard to different seasons, socio-economic status, natural resources, the standard and types of treatment available to the rural/ tribal folk. During the period under report a population of 67,614 individuals pertaining to 59 villages including 20 tribal pockets have been covered under this programme and incidental medical aid provided to 23, 864 patients.

**Drug Research Programme**

The Drug research programme consists of Medico-Botanical Survey, Cultivation of Medicinal Plants, inter-disciplinary research programmes like Pharmacognostic, Chemical, Pharmacological and Toxicological studies besides Drug Standardisation studies. Under Medico-Botanical Survery programme local survey tours were conducted for collection of raw drug material for use in OPD/IPD and supply to other Institutes/ Centres/Units and PLIM, Ghaziabad for research purposes. The Survey Units have also taken up maintenance work of their Herbarium and Museum. About 450 medicinal species are presently growing in different Gardens. Pharmcognostical studies of 14 drugs, Chemical studies of 18 drugs and Pharmacological and Toxicological studies of 30 drugs used in Ayurveda and Siddha System of Medicine have been carried out during the reporting period. The Council is also maintaining a Musk Deer Breeding Farm at Mehroori in Kumaon Hills and there were 19 animals at the end of reporting period.

Under Drug Standardisation research studies 46 single drugs, 13 finished products and three methods of manufacture have been studied besides laying analytical standards for 19 formulations used in Ayurveda and Siddha.

The Council has organised a workshop on Rasashastra on 28th August, 1995 at Hastinapur (U.P.).

**Literary Research programme**

Literary Research Programme broadly covering medico-historial studies, collection and compilation of references relating to drugs and diseases from classical treatises, lexicographic works, contemporary literature and publications of Ayurveda, Siddha and Modern sciences

continued further. The Council is bringing out "Journal of Research in Ayurveda and Siddha", "Bulletin of Medico-Ethno-Botanical Research". "Bulletin of Indian Institute of History of Medicine" besides the 'News Letter'.

**Family Welfare Research Programme**

Clinical screening and Pharmacological studies of the oral contraceptive agents are being carried out under this programme. 259 new cases were studied besides old cases carried forward from the previous year for clinical evaluation of oral contraceptive agents like AYUSH-AC 4, K capsule, Pippalyadi yoga, Neem oil and Vandhyavari (*Vicoa indica*). Pharmacological studies on seven drugs have been carried out.

The Council has celebrated its Silver Jubilee during 20-22nd March, 1995. An Expert Group Meeting on Veda Mantra Chikitsa and a Scientific Seminar was also organised on this occasion.

The Council's officials were the recipients of Awards from the Council as well as other august organisations for the outstanding research work carried out by them in various field under the aegis of the Council.

V. N. Pandey

(Dr. V. N. Pandey)
Director
and
Member Secretary
(Governing Body)

Dated : 2-11-95

## ADMINISTRATIVE REPORT

The Central Council for Research in Ayurveda and Siddha is a Society registered on 30th March. 1978 under the Societies Registration, Act XXI of 1860. During the period under report ending 31st March, 1995 the Membership of the Society and Governing Body of the Council were as under:-

| | |
|---|---|
| President | Shri B. Shankaranand, Union Minister for Health & Family Welfare. |
| Vice-President | Shri Paban Singh Ghatowar Deputy Minister for Health & Family Welfare. |
| Official Members | 1. Shri I. Choudhuri, Additional Secretary (H) Ministry of Health & F.W. |
| | 2. Shri Pawan Chopra Joint Secretary (ISM) Ministry of Health & F.W. upto 8.9.94 |
| | 3. Shri K. Chandramouli Joint Secretary (ISM) Ministry of Health & F.W. from 9.9.94.... |
| | 4. Mrs. A.P. Ahluwalia Joint Secretary (F.A.) Ministry of Health & F.W. |
| Non-official Members | 1. Vd. B.D. Triguna |
| | 2. Dr. Nanak Chand Sharma |
| | 3. Shri P.K. Warrier |
| | 4. Vd. S.K. Mishra |
| | 5. Dr. S.T. Gujjar |
| | 6. Vd. Prof. V.J. Thakar |
| | 7. Dr. R. Kannan |

| | |
|---|---|
| | 8. Dr. K.V. Vaitheswaran |
| | 9. Prof. P.K. Das |
| | 10. Prof. A.N. Namjoshi |
| | 11. Prof. C. Santhamma |
| Director, NIA, Jaipur | Dr. C.H.S. Shastri |
| Director, CRI (S) | Dr. G. Valuchammy. |
| Member, Secretary | Director, CCRAS. |

During the period under report the Governing Body did not meet.

**Finance Committee (23rd and 24th) 31.10.94, 13.2.95 respectively**

During the year under report, the Standing Finance Committee consisted of the following:-

| | | |
|---|---|---|
| 1. Joint Secretary (ISM) Ministry of Health & F.W. | 1. Sh. Pawan Chopra upto 8.9.94 | Chairman |
| | 2. Sh. K. Chandramouli from 9.9.94..... | |
| 2. Deputy Secretary (IF) Ministry of Health & F.W. | 1. Sh. H. Lal upto May, 1994 | Member |
| | 2. Sh. V.S. Punni from June, 94... | |
| 3. One Technical Member to represent Ayurveda | Vd. B.D. Triguna | Member |
| 4. One Technical Member to represent Siddha | Dr. R. Kannan | Member |
| 5. Director, CCRAS | | Member-Secretary |

During the period under report the Finance Committee met twice on 31.10.94 and 13.2.95

**Representation of Scheduled Castes/Scheduled Tribes in the Council Services and Welfare Measures for SC/ST.**

The Council is following the order and guidelines laid down by the Government of India in respect of reservation and representation of SC/

ST in the services of the Council. The recruitment / promotion is done according to the roster points. The Council is having a total staff strength of 1605 employees and No. of SC/ST employees in differerent groups as on 1.1.1995 is as under (upto 31.12.94)

| Group | No. of emplo-yees | SC | Percentage of total employees | ST | Porcentage of total employees |
|---|---|---|---|---|---|
| A | 112 | 8 | 7.14 | 3 | 2.68 |
| B | 118 | 9 | 7.63 | 1 | 0.85 |
| C | 691 | 87 | 12.59 | 23 | 3.33 |
| D | 684 | 226 | 33.04 | 56 | 8.19 |
| Total : | 1605 | 330 | 20.56 | 83 | 5.17 |

The Council is having nine Tribal Health Care Research Projects which have been specially located in tribal pockets. These programmes envisage great scope not only to understand the local health problems and interdependent issues but also to identify and apply/advise the methods and measurcs suitable to surmount them. Beside some of the Research centres are also located in rural areas. Through OPD/IPD of Institutes/Centres and under Mobile Clinical Research, Programmes and Community Health Care Research Programm, medical relief and incident benefit have been extended to a large number of SC/ST population. The budget of the Council stipulates specific allocations for SC/ST component plans.

**Official Language Implementation Committee**

The Council is having an Official Language Implementation Committee under the Chairmanship of the Director, CCRAS to review the position regarding implementation of Official Language Act/Policy/Rules, Orders, Programmes etc. and to suggest measures for increasing the pace of Hindi in the Council. During the period under report the Committee met on 12.6.94 & 28.10.94.

**Scientific Advisory Committee (Ayurveda)**

During the year under report the Scientific Advisory Committee (Ayurveda) consisted of the following:

| | | |
|---|---|---|
| 1. | Vd. B.D. Triguna | Chairman |
| 2. | Vd. S.S. Changani | Member |
| 3. | Prof. A.N. Namjoshi | Member |
| 4. | Vd. S.P. Gupta | Member |
| 5. | Vd. D.K. Triguna | Member |
| 6. | Vd. S.K. Mishra | Member |
| 7. | Dr. Rajender Gupta | Member |
| 8. | Dr. S.M. Angadi | Member |
| 9. | Vd. Sri Ram Sharma | Member |
| 10. | Shri P.R. Krishna Kumar | Member |
| 11. | Dr. (Miss) P.V. Tewari | Member |
| 12. | Vd. M.S. Shastri | Member |
| 13. | Vd. R.P. Swami | Member |
| 14. | Vd. Bhagwan Singh | Member |
| 15. | Director, CCRAS | Member - Secretary |

The Scientific Advisory Committee (Ay) met on 5.6.94 during the period under report and evaluated various Research Programmes/ Schemes of the Council and provided necessary guidance and reviewed the on-going programmes and suggested improvements wherever felt necessary.

**Scientific Advisory Committee (Siddha)** 20th meeting on 4.4.94
21st meeting on 24.9.94

During the year under report, the Scientific Advisory Committee (Siddha) consisted of the following:

| | | |
|---|---|---|
| 1. | Dr. R.Kannan | Chairman |
| 2. | Dr. K.V. Vaitheswaran | Member |
| 3. | Dr. A, Ananda Kumar | Member |
| 4. | Dr. V.Subramanian | Member |
| 5. | Dr. R. Thyagarajan | Member |
| 6. | Dr. J. Joseph Thas | Member |
| 7. | Director, CCRAS | Member - Secretary |

During the period under report, the Scientific Advisory Committee (Siddha) met twice on 4.4.94 & 24.9.94 and evaluated the programmes and provided necessary guidance.

**Organisational Network of CCRAS**

There are 5 Central Research Institutes, 7 Regional Research Institutes, 10 Regional Research Centres, 27 Research Units, 7 Tribal Health Care Research Projects in Ayurveda, 1 Documentation and Publication Division, 12 Family Welfare Research Projects and one Research Project on Tibetan Medicine besided one Central Research Institute, one Regional Research Institute, 10 Research Units, 2 Tribal Health Care Research Projects and one Siddha Medicinal Plants Garden in Siddha System on Medicines.

**Budget Provision**

The following Table shows the budgetory provisions made for the Council at a glance:

| Scheme | Funds released 93-94 | Actual exp. 93-94 | Budget estimates 94-95 | Funds released 94-95 | Actual exp. 94-95 |
|---|---|---|---|---|---|
| Plan | 137.40 | 143.68 | 330 | 300 | 200.99 |
| Non -Plan | 656 | 746.16 | 676 | 700 | 723.17 |
| F.W.R.S. | 19.50 | 19.96 | 19.00 | 14.25 | 20.47 |

**Audited Statement of Accounts**

The Accounts of the Council for the year 1994-95 for the period from Ist April, 1994 to 31 st March, 1995 is being audited by the D.A.C.R. at present.

**Silver Jubilee Celebration**

During the period under report the Council organised Silver Jubilee Celebration of CCRAS during 20-3-95 to 22-3-95.

**Shifting Hqrs. Office**

Headquarter Office, CCRAS and DPD have shifted from rented building to newly constructed building complex at Janakpuri, New Delhi on 11-7-1994.

Abbreviations used for Institutes/Centres/Units

| S.No. | Institutes/Centres/Units | Abbreviations |
|---|---|---|
| 1. | Central Research Institute (Ay.), New Delhi | CRID |
| 2. | Central Research Institute (Ay.), Bhubaneshwar | CRI Bh |
| 3. | Central Research Institute (Ay.), Bombay | CRIB |
| 4. | Indian Institute of Kayachikitsa, Patiala | IIKP |
| 5. | Indian Institute of Panchakarma, Cheruthuruthy | IIPC |
| 6. | Regional Research Institute (Ay.), Calcutta | RRIC |
| 7. | Regional Research Institute (Ay.),Patna | RRIP |
| 8. | Regional Research Institute (Ay.), Lucknow | RRIL |
| 9. | Regional Research Institute (Ay.), Gwalior | RRIG |
| 10. | Regional Research Institute (Ay.), Jaipur | RRIJ |
| 11. | Regional Research Institute (Ay.), Junagadh | RRIJu |
| 12. | Regional Research Institute (Ay.), Trivandrum | RRIT |
| 13. | Regional Research Centre (Ay.), New Itanagar | RRCI |
| 14. | Regional Research Centre (Ay.), Gauhati | RRCGa |
| 15. | Regional Research Centre (Ay.), Gangtok | RRCG |
| 16. | Regional Research Centre (Ay.), Mandi | RRCM |
| 17. | Regional Research Centre (Ay.), Jammu | RRCJ |
| 18. | Regional Research Centre (Ay.), Hastinapur | RRCH |
| 19. | Regional Research Centre (Ay.), Jhansi | RRCJh |
| 20. | Regional Research Centre (Ay.), Nagpur | RRCN |
| 21. | Regional Research Centre (Ay.), Vijayawada | RRCV |
| 22. | Regional Research Centre (Ay.), Bangalore | RRCB |
| 23. | Mobile Clinical Research Unit, Varanasi | MCRUV |
| 24. | Mobile Clinical Research Unit, Jamnagar | MCRUJ |
| 25. | Dr. A. Laskhmipati Research Centre for Ayurveda, V.H.S., Madras | ALRCAM |
| 26. | Clinical Research Unit (Ay.), NIMH& NS, Bangalore | CRUB |
| 27. | Clinical Research Unit (Ay,), Hyderabad | CRUH |
| 28. | Clinical Research Unit (Ay.), Kottakal | CRUK |
| 29. | Clinical Research Unit (Ayurvedic and Modern Team undor CDRS), Varanasi | CRUV |

| | | |
|---|---|---|
| 30. | Indian Institute of Ayurveda for Drug Research, Tarikhet | IIADRT |
| 31. | Captain Srinivasamurthy Drug Research Institute for Ayurveda, Madras | CSMDRIAM |
| 32. | Jawahar Lal Nehru Ayurvedic Medicinal Plants Garden, Herbarium and Museum, Pune | JNAMPGHP |
| 33. | Clinical Research Unit under FWRP, Patiala | CRUFP |
| 34. | Clinical Research Unit under FWRP, Bombay | CRUFB |
| 35. | Clinical Research Unit under FWRP, Lucknow | CRUFL |
| 36. | Clinical Research Unit under FWRP, Jaipur | CRUFJ |
| 37. | Clinical Research Unit under FWRP, Calcutta | CRUFC |
| 38. | Clinical Research Unit under FWRP, Ahmedabad | CRUFA |
| 39. | Clinical Research Unit under FWRP, Trivandrum | CRUFT |
| 40. | Clinical Research Unit under FWRP, Varanasi | CRUFV |
| 41. | Pharmacological Research Unit FWRP, Jamnagar | PhRUFJ |
| 42. | Pharmacological Research Unit FWRP, Varanasi | PhRUFV |
| 43. | Pharmacological Research Unit FWRP, Bhubaneswar | PhRUFB |
| 44. | Pharmacological Research Unit FWRP, Trivandrum | PhRUFT |
| 45. | Pharmacological Research Unit, Calcutta | PhRUC |
| 46. | Pharmacological Research Unit, Lucknow | PhRUL |
| 47. | Pharmacological Research Unit, Jaipur | PhRUJ |
| 48. | Pharmacological Research Unit, Varanasi | PhRUV |
| 49. | Pharmacological Research Unit, New Delhi | PhRUC |
| 50. | Pharmacological Research Unit, Trivandrum | PhRUT |
| 51. | Toxicity Research Unit, Jhansi | TRUJh |
| 52. | Chemical Research Unit, Calcutta | ChRUC |
| 53. | Chemical Research Unit, Varanasi | ChRUV |
| 54. | Chemical Research Unit, Hyderabad | ChRUH |
| 55. | Chemical Research Unit, Lucknow | ChRUL |
| 56. | Pharmacognosy Research Unit, Calcutta | PRUC |
| 57. | Pharmacognosy Research Unit, Pune | PRUP |
| 58. | Indian Institute of History of Medicine, Hyderabad | IIHMH |
| 59. | Literary Research Unit, Madras | LRUM |
| 60. | Documentation and Publication Division, New Delhi | DPDD |
| 61. | Tribal Health Care Research Project (Ay.) Car-Nicobar | THCRPC |
| 62. | Tribal Health Care Research Project (Ay.) Ziro | THCRPZ |

| | | |
|---|---|---|
| 63. | Tribal Health Care Research Project (Ay.) Palamau | THCRPP |
| 64. | Tribal Health Care Research Project (Ay.) Jhabua | THCRPJ |
| 65. | Tribal Health Care Research Project (Ay.) Chinchpade | THCRPCh |
| 66. | Tribal Health Care Research Project (Ay.) Jagdalpur (M.P.) | THCRPJa |
| 67. | Tribal Health Care Research Project (Ay.) Imphal (Manipur) | THCRPI |
| 68. | Drug Standardisation Research Project (Ay.) Jamnagar | DSRPJ |
| 69. | Drug Standardisation Research Project, Varanasi | DSRPV |
| 70. | Research Project in Tibetan System of Medicine, Leh | RPTSML |
| 71. | Medicinal Plant Garden at RRC, Itanagar | MPGI |

## CLINICAL RESEARCH PROGRAMMES

The therapeutic application is the main objective of any bio-medical research. Thus it is considered prominent among the different types of medical research. Its importance is further heightened with respect to Ayurveda because it is largely based on clinical observations. The Community based health programmes e.g. Survey, Surveillance, Community Health Care and Tribal Health Care research programmes are also included under clinical research programmes.

**Therapeutic Trials**

The development of effective remedies for many chronic diseases from Ayurveda has been the main objective of the Clinical Research Programmes. Some of the significant achievements during last 25 years have been Ayush 64 for Visamajvara (Malaria), Ayush 56 for Apasmara (Epilepsy), Nimbatiktam for Kitibha (Psoriasis) and Parinama Sula (Duodenal ulcer), Ksarasutra for Bhagandara (Fistula in Ano) and Panchkarma therapies in the management of Vata-Vyadhies (Neurological disorders). A good number of Monographs on these studies have also been published. Some of the drugs clinically studied have been patented and commercialised through NRDC. About 6, 34, 609 patients had been treated in OPD and 35, 424 patients have been treated in IPD during the course of these studies.

These studies have been suitably planned with a view to derive precise data. This process had been started in 1978 with the preparation of programme projection which was further developed and modified in 1983, 1986 and 1992. The programme projection 1992-97 had been finalised after extensive discussion in the co-ordination sub-committee of SAC (Ay.). This Sub-committee had also visited many major Institutes for this purpose. The programme projection 1992-97 covers about 30 diseases. The treatmens selected for the studies have classical bearing and for comparative evaluation more than one treatment has been taken for study. These studies are mostly conducted at 3-4 centres simultaneously with a common plan of study.

• The Clinical studies on Amavata (rheumatoid arthritis), Paksavadha (hemiplegia), Parinamasula (duodenal ulcer), Kamala (jaundice), Tamaka Svasa (bronchial asthma), Madhumeha (diabetes mellitus), Mutrasmari (urolitheasis), Medoroga (lipid disorders), Hridroga (ischaemic heart diseases), Vyana bala Vaisamya (hypertension), Slipada (filariasis), Kitibha (psoriasis), Apasmara (epilepsy) and Manasa Mandata (mental

retardation) etc. had been conducted during the year 1994-95. The assessment of Prakriti through objective parameters and its relationship with incidence of various objective parameters and its relationship with incidence of various diseases has further been continued. The hospitals functioning under the Council provided medical aid to 1,82,829 patients at OPD level and 1,285 patients were admitted in IPD. The progress of the work on each of the disease is discussed herewith separately. A background note regarding progress made earlier is also given for each disease.

**Amavata (Rheumatoid arthritis)**

The studies on Amavata had been conducted since inception of the Council and a number of single and compound drugs had been tried. Sunthi Guggulu and Nirgundi Guggulu combinations have shown good effect. Nowthe studies on assessment of the effect of Pippali Vardhamana with Samira Pannaga Rasa and Mahayogaraja guggulu with Simhnada guggulu and Vaisvanara curna have been taken up. Another study on Asvagandha curna with Eranda taila and Panchkarma therapy has also been taken up. These studies have been taken up during this year alongwith some other drugs continued from previous programme projection. A total number of 201 patients have been studied at CRIs Bhubaneswar and Bombay; Indian Institute of Kayachikitsa, Patiala, Indian Institute of Panchkarma, Cheruthuruthy, RRI, Gwalior and RRCs Jammu and Itanagar.

**Table I**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Samira Pannaga Rasa + Maha Yoga Raja Guggulu + Simhanada Guggulu,+ Vaisvanara Curna | CRIBh | 23 | 6 | 7 | 2 | - | 8 |
| 2. | a) Asvagandha Curna with Sunthi guggulu | IIKP | 86 | - | 35 | 16 | 2 | 33 |
| 3. | a) Musta Curna | IIPC | 7 | 2 | 2 | 2 | - | 1 |
| | b) Asvagandha Curna | IIPC | 3 | - | - | - | 2 | 1 |
| | c) Pancakarama therapy | IIPC | 8 | 4 | 1 | 2 | - | 1 |

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 4. | a) Asvagandha Curna with Eranda Taila | CRIB | 4 | - | 1 | - | 3 | - |
| | b) Baluka Sveda | CRIB | 7 | - | 3 | - | 1 | 3 |
| 5. | a) Samire Pannaga Rasa with Pippali Vardhamana | RRIG | 8 | - | - | 3 | 4 | 1 |
| | b) Maha Yogaraja Guggulu+ Simha Nada Guggulu+ Vaisvanara Curna | RRIG | 12 | - | - | 3 | 8 | 1 |
| 6. | a) Cakramarda with guggulu | RRCJ | 7 | 3 | 4 | - | - | - |
| | b) Asvagandha Curna | RRCJ | 15 | 1 | 9 | 4 | - | 1 |
| 7. | a) Awagandha Curna | RRCI | 14 | 6 | 2 | 1 | 1 | 4 |
| | b) Mahayoga Raja Guggulu + Simhanada guggulu | RRCI | 7 | 1 | 1 | 1 | - | 4 |
| | Total: | | 201 | 23 | 65 | 34 | 21 | 58 |

**Paksavadha (Hemiplegia)**

The Clinical studies to assess the effect of Ekangavira Rasa and Samira Pannaga Rasa with snehana and Sastika Sali Pinda Seveda and course of Panchakarma Procedure in separate groups of patients had been further continued on 124 patients of Paksavadha at CRIs Bhubaneswar and Bombay, IIK Patiala and IIP Cheruthuruthy. The earlier studies on 457 had shown better effect of Ekangvira Rasa and Panchkarma group of treatment.

**Table II**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | a) Samira Pannaga Rasa, Nirgundi Taila Snehan & Sastika Sali Pinda sveda | CRIBh | 5 | - | - | 2 | - | 3 |
| | b) Ekangavira Rasa, Nirgundi Taila svedan & Sastika Sali Pinda sveda | CRIBh | 5 | 1 | 1 | 1 | 1 | 1 |
| 2. | Ekangvira Rasa | IIKP | 30 | 1 | 7 | 7 | 4 | 11 |
| 3. | a) Samira Pannaga Rasa, Nirgundi Taila & Sastika Sali Pinda sveda | IIPC | 25 | 3 | 5 | 13 | 2 | 2 |
| | b) Ekanga vira Rasa, Masa Taila Snehana & Sastika Sali Pinda sveda | IIPC | 30 | 3 | 6 | 12 | 5 | 4 |
| | c) Pancakarma theraphy exeluseltsively | IIPC | 22 | 2 | 3 | 10 | 3 | 4 |
| 4. | Ekangvira Rasa with Snehana & Svedana | CRIB | 7 | - | 3 | 1 | - | 3 |
| | Total: | | 124 | 10 | 25 | 46 | 15 | 28 |

**Saisaviya Vata (Post-Polioparalysis)**

The studies on the evaluation of the role of combination of Ekangavira Rasa with Snehana and Sastika Sali Pinda Sveda has been further continued on 10 patients at CRI, Delhi and IIPC, Cheruthuruthy. Earlier observations on 170 patients have showing reasonably good response.

**Table III**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ekangvira Rasa Mahamasa Taila & Sastika Sali Pinda Sveda | IIPC | 4 | - | - | 2 | 1 | 1 |
| 2. | Ekangvira Rasa, Mahamase Taila & Sastika Sali Pinda Sveda | CRID | 7 | 2 | 4 | - | 1 | - |
| | Total : | | 11 | 2 | 4 | 2 | 2 | 1 |

## Gridhrasi (Sciatica)

The studies for the assessment of effect of Suddha Bhallataka and a combination of Trayodasanga Guggulu with Visatinduka vati had been conducted on 117 patients of Gridhrasi in the past. Further studies on 43 patients have been carried out at CRIs Delhi and Bhubaneshwar and IIP, Cheruthrurthy during the reporting year.

**Table IV**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Trayodasanga Guggulu & Visatinduka Vati | CRIBh | 12 | 3 | 1 | 2 | - | 6 |
| 2. | Sh. Bhallataka (2.5-10 gm.) Vardhman | IIPC | 13 | 1 | 4 | 2 | 1 | 5 |
| 3. | Trayodasanga Guggulu & Maharasanadi Kwath | CRID | 18 | 7 | 4 | 4 | 2 | 1 |
| | Total : | | 43 | 11 | 9 | 8 | 3 | 12 |

**Pangu (Paraplegia)**

The trial of a combination fo Gorocanadi Vati, Asvagandha kavatha and Balasvagandha Taila Abhiyanga in comparison with Pancakarma therapies has been already carried out on 68 patients. Further, 12 more cases have been added during the reporting period in this study being carried out at IIP, Cheruthuruthy.

**Table V**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. a) | Pancakarma thereapy with Murchita Taila | IIPC | 6 | - | 1 | 2 | 1 | 2 |
| b) | Asvagandha Kvatha, Gorocanadi Vati & Balasvagandha Taila | IIPC | 6 | - | - | - | 4 | 2 |
| Total : | | | 12 | - | 1 | 2 | 5 | 4 |

**Parinamsula (Duodenal ulcer)**

This disease has been investigated extensively at many centres of the Council using the drugs like Suta Sekhara Rasa and its combinations, Satavari, Indukanta Ghrita, Mahatiktaka Ghrita and the Amasaya Praksalana with Varuna and Bilva Patra etc., have been standardised on over 1000 cases. Further studies on assessment of the effect of Indukanta Ghrita and Mahatiktara, Ghrita with endoscopic evidence of ulcer, Nimbatiktam and Amasaya Praksalana has been continued during the reporting year also at CRI Bhubaneshwar, RRI Trivandrum and CRU's Kottakkal and Hyderabad and 58 patients were included in the studies.

**Table VI**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | a) Indukanta Ghrita snehane & Amasaya *Praksalana* with Bilva patra kwath | CRUH | 20 | - | 20 | - | - | - |
| | b) Mahatiktaka ghrita Snehana | CRUH | 15 | - | 8 | - | - | 7 |
| 2. | a) Mahatiktaka ghrita & Sodhana Samana | CRUK | 2 | 2 | - | - | - | - |
| | b) Indukanta ghrita Sodhana/ Samana | CRUK | 6 | 2 | 1 | 3 | - | - |
| 3. | Nimbatiktam | CRIBh | 14 | 7 | - | 3 | - | 4 |
| 4. | Indukanta ghrita | RRIT | 1 | 1 | - | - | - | - |
| | Total | | 58 | 12 | 29 | 6 | - | 11 |

**Annadravasula (Gastric ulcer)**

A combination of Pisti of Pravala, Mukta Sukti and Jahara Mohara in comparison to Eladicurna and Amalaki curna has been already studied over 207 patients of Annadrava sula. The same has been further continued and 13 patients included during the reporting period in the study being carried out at RRC Itanagar.

**Table VII**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Amalaki Curna | RRCI | 13 | - | 3 | 3 | - | 7 |
| | Total | | 13 | - | 3 | 3 | - | 7 |

**Amlapitta (Non-Ulcer Dyspepsia)**

The study of the effect of already conducted over 265 patients. The study further been continued at IIP Cheruthuruthy, RRI Calcutta, RRC's Nagpur and Hastinapur and 63 patients have been included during the reporting period.

**Table VIII**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Avipatikar curna | IIPC | 34 | 12 | 9 | 9 | - | 4 |
| 2. | Avipattikara curna | RRIC | 9 | 4 | - | - | - | 5 |
| 3. | a) Avipattikara curna alongwith Kaparda Bhasma | RRCH | 11 | 1 | 2 | - | - | 8 |
| | b) Avipattikara curna alongwith Shankha Bhasma | RRCN | 9 | - | 1 | 3 | - | 5 |
| | Total : | | 63 | 17 | 12 | 12 | - | 22 |

**Kamala (Jaundice)**

A combination of Arogyavardhini, Punarnavadi Mandoora and Sveta Parpati has been already studied on 143 patients of Kamala in the past. Further studies on 43 patients with this combination has been conducted at Lucknow and RRC Hastinapur during the reporting period. A group of 3 patients has been kept on placebo also at RRC Jammu.

**Table IX**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Placebo | RRCJ | 3 | 1 | - | 1 | 1 | - |
| 2. | Punarnavadi Mandoora, Arogyavardhini & Sveta parpati | RRCH | 4 | 1 | - | - | - | 3 |

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 3. | Punarnava Mandoora | RRIL | 39 | 17 | 14 | 8 | - | - |
| | Total | | 46 | 19 | 14 | 9 | 1 | 3 |

**Arsha (Piles)**

The effect of Ksarahsutra and Taila varti treatment has been already observed over 172 patients of Arsa. Further studies on these therapies and combination of Sphatika, Surana kanda Bhasma and Kasisadi taila has been carried out at CRIs Bombay and Delhi and RRC, Nagpur and 151 patients have been included in this study during the reporting period.

**Table X**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Balabaddha Rasa & Kasisadi Taila | RRCN | 10 | 1 | 3 | - | 1 | 5 |
| 2. | Taila varti | CRIB | 11 | - | 10 | 1 | - | - |
| 3. | Kshara sutra | CRID | 130 | 43 | 23 | 5 | 1 | 58 |
| | Total : | | 151 | 44 | 36 | 6 | 2 | 63 |

**Bhagandara (Fistula in Ano)**

The Kashara sutra application in 108 patients of Bhagandara had been conducted in past with excellent response. Further observations on 48 patients has been reported from CRIs Bombay and Delhi during the reporting period.

**Table XI**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Kshara sutra | CRIB | 10 | 5 | - | - | 4 | 1 |
| 2. | Kshara sutra | CRID | 38 | 30 | 2 | - | - | 6 |
| | Total | | 48 | 35 | 2 | - | 4 | 7 |

**Parikartika**

Taila varti treatment in 10 cases of Parikartika at CRI, Bombay provided good response in all cases. Further observation on 14 patients have been reported from the said Institute with the response of 10 fair and 4 poor.

**Guda vidara (Fissure in Ano )**

The Kshara Karma treatment of Guda vidara (Fissure in Ano) has been studied upon 44 cases in the past. Further observations over 83 cases have been carried during the reporting period which showed good response in 45 cases, fair response in 20 patients and poor in 6 cases and 7 patients have been grouped as drop out.

**Tamaka Svasa (Bronchial Asthma)**

The studies conducted on Tamaka swasa, since inception have standardised Svasa Kesari, a combination of Naradiya Laksmi Vilasa, Godanti Bhasma, Sirisa, Haridra and Sati in its treatment.

The comparative effect of Somalatadiyog and Bhagottara gutika has been studied on about 800 cases of Tamaka svasa. Bhagottara Gutika has better effect. The studies on Pippali Vardhamana with Samira Pannaga Rasa and Sirisa tvak Kwatha been started during 1993 petients. Further observations on these therapies have dicted 177 patients of Tamaka svasa at CRI Bombay, IIK RRIs Junagarh, Gwalior, Patna and RRCs Bangalore, Vijayawada reporting year.

**Table XII**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | A) Pippali Vardhamana with Samira Pannaga Rasa | RRI Ju | 11 | 1 | 2 | 5 | 1 | 2 |
| | B) Sirisa Tvak | RRI Ju | 14 | - | 1 | 7 | 3 | 3 |
| 2. | Sirisa Tvak Kwatha | IIKP | 44 | 3 | 24 | 11 | 6 | - |
| 3. | A) Pippali Vardhamana | CRIB | 10 | 3 | 1 | - | - | 6 |
| | B) Sirisa Tvak Kwatha | | 15 | - | 2 | 2 | 3 | 8 |

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 4. | Sirisa Tvak Kwatha | IIPC | 3 | - | 2 | 1 | - | - |
| 5. | A)Pippali Vardhamana with Samirapannaga Rasa | RRIG | 20 | - | 2 | 3 | 10 | 5 |
| | B) Sirisa Tvak Kwatha | RRIG | 37 | - | 5 | 10 | 15 | 7 |
| 6. | Sirisa Tvak Kwatha | RRCV | 19 | 1 | 10 | 3 | - | 5 |
| 7. | Pippali Vardhaman with Sameera Pannaga Rasa. | RRCB | 4 | - | 1 | 3 | - | - |
| | Total | | 177 | 8 | 50 | 45 | 38 | 36 |

**Madhumeha (Diabetes Mellitus)**

The anti-diabetic (Hypoglycaemic) effect of Ayurvedic drugs e.g. Bimbi, Bilva patra, Mamajjaka and Ayush 82 have been studied with encouraging response since inception of the Council. The studies on Ayush 82, Methika Curna and a combination of Chandra Prabha Vati, Trivanga Bhasma alongwith Vijaya Sara Kwatha have been taken up since 1992-93. 384 cases had been studied. Further studies on 83 patients have been completed at CRI's Bombay and Delhi, IIK Patiala, IIPC, ALRCA Madras and RRC Jammu during the reporting preiod.

**Table XIII**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Methika Curna | ALRCAM | 4 | - | 2 | - | - | 2 |
| 2. | Methika Curna | IIKP | 20 | - | 9 | 6 | - | 5 |
| 3. | Chandra Prabha Vati and Trivanga Bhasma with Vijaya Sara Kwatha | CRIB | 30 | 3 | 3 | 2 | 6 | 16 |

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 4. | A) Ayush-82 | RRCJ | 8 | 4 | 3 | 1 | - | - |
| | B) Bilva, Nimba, Tulasiand Marica | RRCJ | 3 | 2 | 1 | - | - | - |
| 5. | Ayush-82 | CRID | 18 | 1 | - | 3 | 4 | 10 |
| | Total | | 83 | 10 | 18 | 12 | 10 | 33 |

**Mutrashmari (Urolithiasis)**

The lithotropic effect of Varuna, Kulatha and Gokhsura have been already studied and a monograph in their effect has also been published. Further trials of a combination of Sveta parpati alongwith Kulatha, Pasanaheda, Goksura Kvatha in comparison with Palasakshara has been initiated since 1992-93. The studies on 201 cases showed good response to both the treatment. The observations on 29 patients of Mutrashmari have been carried out at RRC Hastinapur and CRI, Delhi during the reporting year.

**Table XIV**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Sveta Parpati, Goksura, Pasanbheda and Kulatha Kwatha | CRID | 21 | 5 | 4 | 6 | 1 | 5 |
| 2. | Sveta Parpati & Gokshuradi guggulu | RRCH | 8 | 2 | - | - | - | 6 |
| | Total | | 29 | 7 | 4 | 6 | 1 | 11 |

**Medoroga (Lipid Disorders)**

The Council has extensively studied the hypolipidemic anti obesity effect of Guggulu. The role of Guggulu in the management of patients of Ischaemic heart diseases has shown good results. The rate of Arogyavardhinih as also shown good response but the studies on 127 patients with Ayush 55 did not show much effect. Further trials on Ayush 55 and Vyosadi Guggulu have been taken up. Observations on 45 patients of Medoroga have been reported from CRI, Delhi, RRI, Junagarh and ALRCA, Madras during the year 1993-94. as enumerated below.

**Table XV**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Triphala Guggulu | RRIJU | 17 | - | 5 | 12 | - | - |
| 2. | Vyosadi Guggulu | ALRCAM | 6 | - | 1 | 3 | - | 2 |
| 3. | Vyosadi Guggulu | CRID | 22 | - | 4 | 3 | 4 | 11 |
| | | Total : | 45 | - | 10 | 18 | 4 | 13 |

**Hridroga (Ischaemic heart diseases)**

The role of Pushkara Guggulu combination has been studied on more than 300 cases of Angina pectoris and in cases of post - infaret rehablitation. Further studies on Arjuna-Ghana Satva has also been initiated during the reporting year. The observation made on 34 patients of Hridroga has been reported from IIK Patiala, CRU (AY. Team), Varanasi and RRI, Lucknow are indicated below:

**Table XVI**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Pushkara Guggulu | CDRSV | 12 | 4 | 4 | 1 | - | 3 |
| 2. | Arjuna Ghanasatva | IIKP | 3 | - | 1 | 2 | - | |
| 3. | Arjuna Ghanasatva | RRIL | 19 | - | 10 | 1 | - | 8 |
| | Total : | | 34 | 4 | 15 | 4 | - | 11 |

**Vyana-Bala-Vaisamya (Hypertension )**

The comparative evaluation of Tagaradi Curna with Arjuna and Jatamansi and Ushiradi Curna with Arjuna and Jatamansi had been already studied on 305 patients of Vyana Bala Vaisamya before the reporting period. Further studies on the same line has been continued at CRIs Delhi and Bombay, IIP, Cheruthuruthy; RRIs Calcutta and Lucknow and at RRC Mandi and 64 more patients have been included in this study during the reporting period.

**Table XVII**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | A) Tagaradi Cuma Arjuna and Jatamansi | IIPC | 6 | 2 | 1 | - | - | 3 |
| | B) Ushiradi Cima Arjuna & Jatamansi | IIPC | 2 | 1 | - | - | - | 1 |
| 2. | Usiradi Cuma Arjuna & Jatamansi | CRIB | 17 | 2 | 3 | 5 | - | 7 |
| 3. | Twak Chuma Kwatha Arjuna & Jatamemsi | CRID | 26 | 4 | 6 | 3 | 6 | 7 |
| 4. | Usiradi Cuma | RRIC | 13 | 3 | 1 | - | - | 9 |
| | Total : | | 64 | 12 | 11 | 8 | 6 | 27 |

**Visama Jwara (Malaria)**

The studies on clinical evaluation of Ayush-64 in Vishamajvara have been conducted over more than 5000 cases. Both types of patients i.e. with positive P. vivax and without positive smear on blood examination have been studied. Further studies on 22 cases of Vishamajvara have been conducted at RRI, Jaipur and RRCs Nagpur and Jammu. One positive patient showed good response. Effect on clinically diagnosed cases has been in the Table provided hereunder :

**Table XVIII**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ayush 64 | RRCN | 1 | 1 | - | - | - | - |
| 2. | Ayush 64 | RRIJ | 18 | 14 | 3 | - | 1 | - |
| 3. | Ayush 64 | RRCJ | 3 | 3 | - | - | - | - |
| | Total : | | 22 | 18 | 3 | 0 | 1 | 0 |

**Kala-a-zar**

The Clinical studies on evaluation of the effect of Vidramanjana Rasa, Lokanatha Rasa Jvarasan and Sarvajvara-Hara-Lauha has been carried out on 154 cases of Kala -a-zar. Further trial has been continued and five new cases included in the studies.

**Shleepada (Filariasis)**

The studies on the effect of a combined therapy of Sudarsana Ghana Vati, Arogyavardhini and Punarnavadi Rista or Kwatha have been conducted on 178 chronic cases of manifested disease. The study on the effect of Saptanarna Ghana Vati and Ayush 64 on microfilaremia had been already taken up on 29 cases prior to reporting period. Observations on another 48 cases at Chronic menifested disease have been reported from CRI, Bhubaneswar and RRC Vijayawada during the reporting period.

**Table XIX**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Arogya Vardini, Sudarsana Ghanavati & Punarnavadi Kwatha. | RRCV | 8 | - | 3 | 2 | - | 3 |
| 2. | Sudarsana Ghana vati, Ayush 55 & Punarnavadi rista. | CRIBh | 17 | 6 | 7 | 1 | 1 | 2 |
| 3.A) | Sudarsana Ghanavati & Arogyavardini | RRCN | 2 | - | 1 | 1 | - | - |
| B) | Ayush 64 | RRCN | 2 | 2 | - | - | - | - |
| | Total | | 29 | 8 | 11 | 4 | 1 | 5 |

The study of the effect of Saptaparna Ghana-Vati has further been conducted on one microfilaremia case at CRI, Bhubneswer which has been reported to good response.

**Kitibha (Proriasis)**

The comparative efficacy of Arogyavardhini and Chakramarda Kera with Nimbatiktam and Lajjalu kera had been already conducted over 318 cases of Kitibha. Further studies on 32 cases at CRI, Delhi; RRI, Trivandrum and RRI, Junagarh have been completed during the reporting period.

**Table XX**

| S.No. | Trial therapies | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Nimbatiktam & Lajjalu Kera | RRIJU | 8 | 3 | 1 | 1 | 1 | 2 |
| 2. | Nimbatiktam & Lajjalu Kera | CRID | 6 | - | 1 | 2 | 2 | 1 |
| 3. | a) Kaishora guggulu Visvamitra Kapala Taila | RRIT | 2 | - | - | 1 | - | 1 |
| | b) Nimbatiktam Lajjalu Kera | RRIT | 12 | 2 | 7 | 1 | - | 2 |
| | c) Arogya Vardhini & Cakramarda Kera. | RRIT | 4 | - | 2 | - | - | 2 |
| | Total : | | 32 | 5 | 11 | 5 | 3 | 8 |

**Switra (Vitiligo)**

The effect of Ayush-57 had been already studied over 130 cases before the reporting period. Further observations have been made on 10 cases at RRCs Jammu and Hastinapur.

**Table XXI**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ayush 57 | RRCJ | 7 | - | - | - | - | 7 |
| 2. | Ayush 57 | RRCH | 3 | - | 2 | 1 | - | - |
| | Total | | 10 | - | 2 | 1 | 0 | 7 |

**Apasmara (Epilepsy)**

The effect of Ayush 56 in the management of Apasmara has been conducted earlier over 400 cases and a monograph based on its efficacy is in process of publication. Further studies on Ayush 56 has been conducted on 107 cases and another drug Ayushman-22 has also been studies on 17 cases. The analysis of data is in process and improvement has been noticed in 33 cases of follow-up.

**Manasa Mandata (Mental retardation)**

The controlled clinical trial of Ayushman-8 with placebo had been carried out on 49 patients of Manasa Mandata at ALRCA Madras prior to reporting period and study has been continued and during the year under report 36 cases have been included in the study.

**Table XXII**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | A) Ayushman-8 | ALRCAM | 17 | 5 | 2 | 4 | 3 | 3 |
| | B) Control | ALRCAM | 19 | - | - | - | 10 | 9 |
| | Total | | 36 | 5 | 2 | 14 | 12 | 3 |

**Rasayana (Health Promotive)**

Studies on the Rasayana effect of a combination of Shatavari, Punarnava, Bala, Guduci and Yasti on 31 elderly human volunteers has been carried out in the past. Further studies on this preparation and another combination of Jyotismati, Shankhapushpi, Brahmi and Grnjana have been carried out a 13 velunteors at IIK, Patiala and ALRCA, Madras with following observations.

**Table XXIII**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Jyotismati, Sankhapushpi, Brahmi & Grnjana. | IIKP | 13 | 3 | 2 | 3 | - | 5 |
| | Total | | 13 | 3 | 2 | 3 | 0 | 5 |

**Manasa Gatavata**

The controlled clinical trial of Ayushman-8 and placebo group had been carried out at ALRCA Madras and CRU Bangalore in the past. During the year 87 new patients have been treated with a general mild improvement which is encouraging and 187 cases are being followed.

**Shirah Sula**

A study on the role of Varunadi Ksheera Paka Nasya in cases of Shirah Sula started at ALRCA & VHS Madras. 6 cases were taken for study. 3 got marked relief and the other 3 are under treatment.

**Prakriti Pariksha**

The assessment of Prakriti on objective parameters in healthy individuals and patients of selected psychosomatic diseases has been done at CRU (AY. Team), Varanasi. Earlier observations include 2221 cases. 564 individuals were included in the study during the year under review. The analysis of data is in progress .

**Arbhuda Visesa (Cancer)**

The study on the effect of two phytochemical compounds Viz Plumbagin and S.T.G. has been carried out on 47 patients of different types of cancer. Further studies on 1 patient is under progress at CRI (AY.), Delhi.

**Timira (Errors of Refraction)**

The patients with errors of refraction like myopia have been managed with Netrabindu, Saptamrit Lauha and exercises. So far, 81 children with these conditions have been attended.

**Table XXIV**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Netrabindu, Saptamrit Lauha & Exercise | CRID | 81 | 19 | 17 | 18 | 27 | - |
| | Total | | 81 | 19 | 17 | 18 | 27 | - |

**Abhishyanda (Conjunctivitis)**

Combination of Sphatika, Rasanjana and Rose water has shown 50 cent percent efficacy in 50 cases of conjunctivitis treated at RRC, Jammu.

**Sveta Pradara (Leucorrhoea)**

The combination of Svarna Vanga, Kukkutanga Tvaka Bhasma, Punarnava Mandoora and Nirgundi Taila Picu has been studied on 73 more cases as reported from IIP, Cheruthurthy RRCs Nagpur and Vijayawada.

**Table XXV**

| S.No. | Trial therapy | Instt./ Centre | Total Cases | Results | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop ou |
| 1. | Svarna Vanga Kukkutanda Tvak Bhasma, Punarnava Mandoora & Nirgundi Taila Picu | RRCN | 4 | 1 | - | - | - | 3 |
| 2. | Pushyanuga Churna and Patrangasava | RRCV | 10 | 5 | 2 | 2 | 1 | - |
| 3. | Pushyanuga Churna and Patrangasava | IIPC | 59 | 21 | 17 | 13 | 1 | 7 |
| | Total | | 73 | 27 | 19 | 15 | 2 | 10 |

**Diseases, Number of Patients and Participating Projects Under Clinical Research Programmes During 1994-95.**

| S.No. | Diseases Groupwise | Pts. Nos. | Participating Projects |
|---|---|---|---|
| 1. | **Vatavyadhis** | | |
| | i) Amavata | 201 | CRIBH, IIKP, IIPC, CRIB, RRIG, RRCJ, RRCI. |
| | ii) Paksavadha | 124 | IIPC, IIKP, CRIBH, CRIB |
| | iii) Saisaviya vata | 11 | IIPC, CRID |
| | iv) Gridhrasi | 43 | IIPC, CRIBH, CRID |
| | v) Pangu | 12 | IIPC |
| 2. | **Amlapitta/Parinamasula** | | |
| | i) Parinam-sula | 58 | CRIBH, RRIT, CRUH, CRUK |
| | ii) Annadrava-sula | 13 | RRCI |
| | iii) Amlapitta | 63 | RRCN, RRCH, IIPC. |
| | iv) Kamala | 46 | CRIJ, RRCJ, RRCH. |
| | v) Arsa | 151 | CRIB, CRID, RRCN. |
| | vi) Bhagandara | 48 | CRID, CRIB |
| | vii) Parikartika | 14 | CRIB |
| | viii) Gudavidara | 83 | CRID |
| 3. | **Tamaka Swasa** | 177 | RRICU, RRCV, RRCB, IIKP, IIPC, CRIB, RRIG, RRIP. |
| 4. | **Mutra Roga** | | |
| | i) Madhumeha | 83 | IIKP, CRIB, ALRCAM, CRID, RRCJ |
| | ii) Mutrasmari | 29 | CRID, RRCJ. |
| 5. | **Medoroga** | 45 | CRID, RRIJU, ALRCAM |
| 6. | **Hridroga** | 34 | CDRSV, IIKP, RRIL |
| 7. | **Vyana Bala Vaishamya** | 64 | IIPC, CRIB, CRID, RRIC. |
| 8. | **Visama-jvara** | 22 | RRIJ, RRCN, RRCJ |
| 9. | **Kala-a-Zar** | 5 | RRIP |
| 10. | **Slipada** | 29 | CRIBH, RRCV, RRCN |
| 11. | **Tvaka Roga** | | |
| | i) Kitibha | 32 | RRIT, RRIJU, CRID. |
| | ii) Svitra | 10 | RRCJ. |
| 12. | **Manasa Roga** | | |
| | i) Apasmara | 124 | CRID, ARUB. |
| | ii) Manasa Mandata | 36 | AIRCAM |
| | iii) Manasa gatavata | 87 | |
| 13. | **Rasayana** | 13 | IIKP. |
| 14. | **Prakriti Pariksha** | 564 | CDRSV |
| 15. | **Other diseases** | | |
| | i) Arbuda Visesa | 1 | CRID, CRIB. |
| | ii) Timira | 81 | CRID. |
| | iii) Abhishyand | 30 | RRCJ. |
| | iv) Sveta Pradara | 73 | RRCN, RRCV. |
| | v) Shrirah Shoola | 6 | CRU Varanasi. |

## Statement Showing Number of Patients Attended at O.P.D. and Admitted in I.P.D. during 1994-95

| S. No. | Instt./Centre | OPD PATIENTS | | | IPD PATIENTS | | |
|---|---|---|---|---|---|---|---|
| | | NEW | OLD | Total | Admitted | Discharged | Bed-occupancy in% |
| 1. | CRI, Bhubanewar | 4384 | 3338 | 7722 | 93 | 82 | 12.95 |
| 2. | CRI, Delhi | 11405 | 11672 | 23077 | 161 | 148 | 28 |
| 3. | CRI, Bombay | 1790 | 5576 | 7366 | 109 | 102 | 11.61 |
| 4. | IIK, Patiala | 5092 | 5150 | 10242 | 317 | 298 | 38 |
| 5. | IIP, Cheruthuruthy | 4840 | 11242 | 16082 | 178 | 166 | 57.72 |
| 6. | RRI, Lucknow | 4769 | 5993 | 10762 | | | 25 |
| 7. | RRI, Calcutta | 3142 | 10318 | 13460 | 37 | 35 | 18.16 |
| 8. | RRI, Junagarh | 1988 | 2451 | 4439 | 8 | 8 | 2.08 |
| 9. | RRI, Patna | 2388 | 2191 | 4579 | | | 43.75 |
| 10. | RRI, Gwalior | 2053 | 2294 | 4347 | 20 | 19 | 15.09 |
| 11. | RRI, Trivandrum | 3207 | 8140 | 11347 | 65 | 59 | 59 |
| 12. | RRI, Jaipur | 1750 | 2927 | 4677 | 77 | 72 | 20.38 |
| 13. | RRC, Nagpur | 1629 | 4217 | 5846 | | | |
| 14. | RRC, Bangalore | 697 | 1696 | 2393 | | | |
| 15. | RRC, Jammu | 5853 | 10460 | 16313 | | | |
| 16. | RRC, Mandi | 5987 | 5388 | 11375 | 29 | 24 | |
| 17. | RRC, Hastinapur | 3482 | 5559 | 9041 | 24 | 24 | |
| 18. | RRC, Gangtok | 4656 | 2721 | 7377 | | | |
| 19. | RRC, Vijayawada | 4339 | 5430 | 9769 | 20 | 19 | 33.27 |
| 20. | RRC, Itanagar | 4944 | 6809 | 11753 | 14 | 14 | 16.71 |
| 21. | ALRCA, Madras | 312 | 445 | 757 | | | |
| 22. | ARU, Bangalore | 353 | 376 | 729 | | | |
| 23. | CRU, Kottakkal | | | | 147 | 143 | 52.16 |
| 24. | CRU, Hyderabad | | | 751 | 15 | 15 | 35.02 |
| 25. | RRC, Jhansi | 5987 | 5388 | 11375 | 29 | | |
| | Total : | 79060 | 1,14,393 | 1,94,204 | 1314 | 1228 | |

## Health Care Research Programmes

The Council has taken up three programmes i.e. Survey, Surveillance Programme, Community Health Care Research programme and Tribal Health Care Research programme for providing medical aid to the people at their door steps. The study of their health status, the incidence of diseases and local health care practices is being undertaken. About 596 Villages/Tribal pockets with a population of 8,16,059 have been studied and medical aid to about 3,45,572 patients have been provided. The progress made during the year 1994-95 on these Programmes is discussed herewith.

## Service Oriented Survey and Surveillance Research Programme

The data regarding socioeconomic status, incidence of diseases and their relationship with various etiological factors are compiled in randomly selected villages. The folk lore medical practices are also noted. During the period of report 20 villages with a population of 24,611 were surveyed and 5,216 patients were also treated with ayurvedic drugs.

## Community Health Care Research Programme

Each of the Institutes/Centres has been assigned a few villages in their vicinity under this programme. The knowledge about health care, prevention of diseases, health promotive measures and use of local herbs for treatment of common ailments is imported to the people of selected villages. The details of socioeconomic status, environmental factors influencing the disease proneness are recorded. This programme has been executed in 18 villages with a population of 16,10 and 5,063 patients have also been provided medical aid.

## Tribal health Care Research Programme

This programme has been initiated with the aim to study living conditions of tribal people, folk medicines used by them, occurrence of medicinal plants of the area, propagation of knowledge about oral hygienes, prevention of diseases, use of common medicinal plants in the area and to extend medical aid at their door steps. This programme has been continued further by the Tribal Health Care Research Projects functioning at Car-Nicobar (Andaman Nicobar Islands) Jamune, Distt. Palamau (Bihar) Chinchapada, Distt. Dhule (Maharashtra) Jagdalpur (Madhya Pradesh) Jhabua (M.P.) Imphal (Manipur) Ziro (Arunachal Pradesh). Villages consisting of a population of 15,038 individuals have been covered and incidental medical aid extended to 10,293 patients

(table I). About 100 specimen of plants found growing in these areas have been collected. About 10 folk claim were also recorded during the visits of Tribal villages. Compilation and analysis of data/information gathered by these projects have been started. Besides this the project at Palamau carried out clinical trials on 66 Patients of Raktapradar, Vishamjwar, Parinamshool, Sandhi vata and Arsh.

**Statement of work carried out during 1994-95 Under Service Oriented Survey & Surveillance Research Programme**

| S.No. | Name of the Instt./Centre/Unit | Village | Population | Patients Treated | Common Diseases |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | IIP, Chy. | Pengarappilly | 3125 | 203 | Atisara, Pandu, Grahani, Jwara, Sandhishula, Sirah Sula, Twak roga Switra, Vata vikar. |
| 2. | CRIA, Delhi | Mubarakpur | 3500 | - | - |
| 3. | CRI, Bhubaneshwar | Barilo & Garedipanchan | 382 | 157 | Twak-roga, Koshtbadhta, Katishula, Prameha, Kasa. |
| 4. | RRI, Calcutta | Pudra | 752 | 250 | Atisara, Hridroga, Amlapitta, Jwara, Kasa, Krimi, Kamala, Kandu, Karn roga, Pratishyaya, Twakroga, Prameha, Shula, Vat-vyadhi, Koshtbadhta. |
| 5. | RRI, Gwalior | Nainagar | 340 | 117 | Jawara, Netraroga, |
| | | Jigosli | 1700 | 172 | Vrana, Gridhrasi, Pratishyaya, Kandu, Pradar. |
| 6. | RRI, Junagadh | Nagalpur | 1787 | 40 | Kasa, Swasa, Vatavyadhi, Jwara, Pratisyay, Udarshula, Kandu, Mukhroga, Tyak-roga, Pandu Pradara. |
| | RRI, Patna | NIL | | | |

| S.No. | Name of the Instt./Centre/Unit | Village | Population | Patients Treated | Common Diseases |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 8. | RRC, Mandi | Sanyared & Chadyara | 877 | 156 | |
| 9. | RRC, Vijaywada | Pathapadu | 1417 | 794 | Kasa, Daurbalya, Sweta-Pradra, Vatvyadhi, Udar-shul, Uraha-shula, Swasa, Sirah-sula, Pratishyaya, Katishuia, Jawara. |
| 10. | RRC, Nagpur | Yerkheda | 8390 | 751 | Pratishyaya, Kasa, Krimi, Sveta-pradara, Kuposhana, Twakroga, Swasa. |
| 11. | RRC, Bangalore | Melegalu | - | 169 | Kasa, Jwara, Vat-vyad, Vrana, Atisar, Amla pitta, Grahani-dosha Pratishyaya, Twakroga. |
| 12. | RRC, Gauhati | Ghograpara | - | 600 | |
| 13. | RRC, Jhansi | Takori | 1240 | 166 | Jwara, Twak-roga, Kasa, Netra-roga, Kandu, Svet-pradara, Kati-shula. |
| 14. | RRC, Gangtok | Shatok | - | 140 | Atisara, Kasa, Krimi, Kandu, Pratishyaya, Swasa, Twak-roga, Vrana, Agni-mandya, Jwara. |
| 15. | RRC, Jammu | Chakdatbioali | 201 | 192 | Pratishyaya, Kasa, Pama, Amla-pitta, Pandu, Swasa, Twakroga, Jwara. |
| 16. | RRC, Hastinapur | Mod Khurd | - | 401 | Atisara, Amla-pitta, Jwara, Jeerna Kasa, Krimi. |
| 17. | Unit : Varanasi | Kabirpura Domari | 900 | 1008 | Stri-roga, Atisara, Pratishyaya, Krimi, Pandu, Kasa, Pravahi, Yakrit-shotha, Sandh Shotha, Kuposhana. |
| | Total | | 24611 | 5216 | |

## STATEMENT OF WORK CARRIED OUT DURING 1994-95 UNDER COMMUNITY HEALTH CARE RESEARCH PROGRAMME

| S.No. | Name of the Instt./Centre/Unit | Village | Population | Patients Treated | Common Diseases |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | IIP, CHY. | Elandu & Kalukkallur | - | 1251 | Atisara, Grahani, Jwara, Kasa, Kandu, Sandhi-shool, Sirah-shula, Switra, Twakroga, Vataroga |
| 2. | IIK, Patiala | Swajpur | - | 47 | Kasa, Amavata, Sandhi-shula, Udarshula. |
| 3. | CRI, Bombay | Karave | - | 741 | Kasa, Jwara, Krimi, Sandhivat, Twak-rog, Swasa, Katishula, Sula, Pratishyaya, Karna rog, Pandu, Vat-vyadhi, Vyanbai vaishamya. |
| 4. | CRI, Bhubnesh-war | Kerudrapur | 504 | 166 | Twak-roga, Katisula, Urah-sula Amavata, Vicharchika Gridhrasi, Pratishyaya. |
| 5. | IIADR, Tarikhet | Dabhar Ghati | 5326 | 297 | Jwara, Vat-vyadhi Amla-pitta, Sandhi shula, Twak-vikara, pratishyaya, Krimi, Atisar, Kati-sula. |
| 6. | RRI, Gwalior | Lakhnoti Khurd<br>Bitholi | 500<br>350 | 63<br>88 | Jwara-krimi, Kasa<br>Netra-roga, Kandu Varana, Mutra-roga, Gridhrasi, Pradara. |
| 7. | RRI, Junagadh | Goladhar | 2131 | 229 | Kasa, Swasa, Vata-vyadhi, Jwara, Kati shula, Kandu, Mukh-roga, Twak-roga, Pandu, Pradara. |
| 8. | RRI, Patna | Nil | - | - | - |
| 9. | RRC, Mandi | Panjayati | 500 | 202 | |
| 10. | RRC, Itanagar | Chinpur | - | 138 | Atisara, Twak-roga, Jwara, Kasa, Vatvyadhi, Vrana, Karna paka, Krimi, Pama, Vicharchika. |

| S.No. | Name of the Instt./Centre/Unit | Village | Population | Patients Treated | Common Diseases |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 11. | RRC, Nagpur | Wallni | 6067 | 837 | Twak-roga, Udarsula, Vatvyadhi, Sirasula, Swasa, Kuposhana, Kasa, Katishula, Pratishya Kosthabahta, Pandu. |
| 12. | RRC, Gauhati | Satgaon | - | 250 | Krimi, Jwara, Kasa, Pratishyaya. |
| 13. | RRC, Bangalore | Obichudalhalli Vaderhalli | - | 436 | Jwara, Kasa, Krimi, Kati sula, Atisar, Koshtbadhta, Amla-pitta, Pandu, Vat-vyadhi, Vrana, Twak-roga, Udar-sula, Pradara, Sirahsula. |
| 14. | RRC, Jhansi | Daun Pallar | 880 | 146 | Sveta-pradra, Twakroga, Jwara, Udar sula. |
| 15. | RRC, Jammu | Keran | 152 | 112 | Ampitta, Pratishyaya Pandu, Sandhi-sula, Kasa, Pradara, Prameha. |
| | Total | | 16410 | 5063 | |

**Statement of work carried out during 1994-95 Under Tribal Health Care Research Programme**

| Sl. No. | Location of the project | Tribal Pockets covered | Population | No of Patients treated SC/ST& others | Common Diseases |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | Chinchapada (Maharashtra) | Karaji, Budruk Dudhava, Dokoray Maintalav | 5620 | 2231 | Jwar, Kasa, Sandhisul, Vatvyadhi, Atisar, Amla-pitta, Krimi, Timira, Rajo-dosha, Switra, etc. |

| Sl. No. | Location of the project | Tribal Pockets covered | Population | No of Patients treated SC/ST& others | Common Diseases |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 2. | Car-Nicobar (A. N. Islands) | - | 2870 | 2870 | Swas, Kasa, Rakta chap, Krimi, Twak-roga, Swasa, Sotha, Kamala, Kati-shula, Apasmara, Sitapitta, Vatavyadhi, Agnimandya etc. |
| 3. | Imphal | Konthoujam | 1000 | 223 | Amvata, Raktavata, Adhman, Sandhivat, Sirasul, Svetpradar, Yakrit-vikar, Pravahika, Daurbalya etc. |
| 4. | Jagdalpur (M.P.) | Sargipal | 850 | 2247 | Kasa, Krimi, Katisula, Vishamjwar, Pratisyaya, Sandhishool, Vrana, Abhighat, Vatvyadhi Rajdosha, Kandu, Atisara. |

## MEDICO-ETHNO BOTANICAL SURVEY-PROGRAMMES 1994-95

The Council has planned research programmes in various fields and one such programme is the Medico-ethno-botanical survey of different areas of the country. The exploration of medicinal flora of the country is of paramount importance to procure authentic drugs (Dravyas) for other research programmes and as well as to meet the demand of the growing Ayurvedic pharmaceutical industry. The estimation of medicobotanical potential of the country, extending from alpine Himalayan ranges to the coastal areas and penetrating to the arid-zones, helps to determine the areas where a particular plant grows in abudance or it is scarce in a particular region. This shall ultimately lead to the qualitative and quantitative estimation of several Ayurvedic drugs which are currently in demand of research work and pharmaceutical industry.

**Some of the major achievements of the Medico-botanical survey programmes undertaken are :**

1. The Council has been able to collect, identify and supply the authentic/genuine drugs for its various research programmes besides actually locating the zones where the required drugs are available.

2. The survey teams at various Institutes/Centres/Units have conducted qualitative and quantitative surveys of different forest areas to unearth the hidden treasure of medico-botanical wealth of the country.

3. The Council has more than one lakh herbarium specimens in different regional herbarium and have 3000 different drugs samples belonging to animal, mineral and vegetable kingdom in the various regional museums of the country.

4. The Council has made a start to establish Central Medicinal Plants Herbarium and Museum at CCRAS Hqrs. which was initiated at CRIA, New Delhi. This shall be a unique Centre to meet the demand of research workers and the pharmaceutical industry as a whole.

Several articles on the of important controversial drugs identification and new reconds have also been published from time to time.

**Resume of Medico-botanical survey work done:-**

The seventeen survey units of the Council, spread over sixteen states, are located at Bangalore, Bhubaneshwar, Calcutta Gangtok, Guwahati, Itanagar, Jaipur, Jammu-Tawi, Jhansi, Junagadh, Mandi, Nagpur, Patna, Tarikhet, Trivandrum and Vijaywada and have carried out some of the following programmes during the year 1994-95

The survey unit located at RRC(Ay.), Bangalore (Karnataka) during the current year has carried out three medicobot anical survey tours of District Uttarakannada (North Kanara). A total no. of 168 species belonging to 131 genera and 30 families were collected and procsessed. The herbarium having 11,365 specimen comprising of 186 families, 800 genera and 1550 species and museum having 656 drug samples of plant origin, 2 of animal origin being maintained by regular fumigation and naphthalene treatment to prevent fungal and insect attack. Participated in National Seminars and Workshops on medicinal plants and contributed 4 research papers and one book entitled Medicinal Plants. of Karnataka.

The survey unit located at CRI (Ay.) Bhubaneshwar orisa carried out the survey work at Chandak area and collected about 100 plant specimens 1.4 kg. of *Evolvulus alsinoides* was also collected for supply purpose. Maintenance work of herbarium comprising of 5018 plant specimens belonging to 132 families, 542 genera and 829 species and museum samples numbering 300 of plant origin and 6 of mineral origin was continued.

The survey unit located at RRI (Ay.) Gwalior (M.P.) has earlier surveyed Bilaspur, East and West Chhindwara, Hosangabad and Chhatarpur forest divisions. No survey tour could be undertaken due to paucity of funds. Compilation work on Sarguja monograph undertaken earlier still continued. The unit participated in national seminars on medicinal plants and 4 research papers were presented .

The survey unit located at RRC (AY.) It anagar (Arunachal Pradesh) has carried out the survey work in forest area of Nirjubi to Banderdowa, Kimin, Itanagar and adjoining areas and West and East Kameng districts. During the course of survey 379 plant specimens and 7 museum samples were collected. About 13 kg. of raw drug material was collected for supply. The unit also participated in national seminar and presented two papers on medicinal plants.

The survey unit located at RRI(Ay.), Jaipur, (Rajasthan) has earlier surveyed the Sikar, Bundi, Baran, Kota, Dholpur and other forest divisions. No survey tour could be undertaken during current year.

Maintenance of herbarium comprising of 8728 plant specimens belonging to 137 families 532 genera and 968 species and museum having 380 samples of plant origin, 16 of mineral origin and 4 of animal origin was continued.

The survey unit located at RRC(Ay.) Jammu (J&K) has earlier undertaken survey work in the Sind, Poonch, Reasi and Bahufort forest divisions. This year survey work in Katra hills was undertaken under the joint programme with IIADR, Tarikhet and only two days of this financial year were involved during which 75 plant specimens were collected: 7Kg. of raw drugs were collected for supply purpose. Maintenance of herbarium comprising 18269 specimen covering 161 families, 751 genera and 1645 species and museum containing samples of plant, mineral, and animal origin was continued.

The survey unit located at RRI, Patna (Bihar) has surveyed Koderma, Chatra South, Garhawa, Gumla, Daltongunj North and South forest divisions. No survey tour was sanctioned during the current year. Local tours for collection of 585 kg. of Vandhavari were carried out. Maintenance of herbarium consisting 4676 plant specimens comprising of 111 families, 428 genera and 695 species and museum having 349 samples of plant origin, 2 of mineral and 1 of animal origin was continued. A monograph or medicinal plants of district Ranchi has been completed and is under typing process. The unit also participated in the national seminar and one research paper on medicinal plants was presented.

The survey unit located at IIADR, Tarikhet (UP) has surveyed all the forest divisions falling under 8 districts of uttarakhand for one season or another. In addition to these the unit covered forest divisions falling in districts of Sitapur, Bulandshahar, Kheri, Baharaich and Basti. During current year a survey tour of 4 days of Lower Kali valley and Tarai Bhabar was undertaken during which 44 plant specimens, 5 folk claims, 41 kg. of raw drugs for supply were collected. Compilation of monograph on Herbal Wealth of Garhwal and Kumaon Himalaya has already been done and submitted to the council. Maintenace of herbarium consisting of 36269 plant specimens comprising of 179 families 1200 genera and 2600 species and museum containing 991 samples including 463 market samples of plant origin, 26 of mineral and 13 of animal origin was continued. Participated in the national seminars and presented 7 research papers on medicinal plants and other related subjects.

The survey unit located at RRI (DR), Trivandrum (Kerala) has undertaken a survey tour for quantitative assessment of commercial availability of raw drugs in Idukki, Tarissur and Ernakulum districts

during the current year. Maintenance of herbarium consisting 4538 plant specimens comprising of 146 families, 701 genera and 1216 species and museum containing 134 samples of plant origin, 14 of mineral and 13 of animal origin was continued. About 50 kg. of raw drug meterial was collected for supply.

The survey unit located at RRI(Ay.), Junagadh (Gujarat) has earlier surveyed the Dohod, Banaskantha, Godhra and Rajkot forest divisions. No survey tour could be undertaken during the current year. Monograph on Medicinal plants of Rajpipla is under final typing and flora on Junagadh is under process. The unit participated in two seminars and presented two papers on medicinal plants.

The survey unit located at RRC (Ay.), Vijaywada (Andhra Pradesh) has undertaken a survey tour for quantitative assessment of commercial source of raw drugs used in Ayurveda, in Gunturu, Kurnool, Mahabubnagar, Prakasam, Luddapah and Chittor districts during the current year. 5.30 kg. of raw drug material was collected for supply. Maintenance of herbarium consisting 5336 plant specimens comprising of 181 families, 649 genera and 1103 species and museum containing 110 drug samples of plant origin was continued.

The survey unit located at RRC(Ay.), Nagpur (Maharashtra) has undertaken a survey tour of North Chandrapur circle covering Kurkheda, Armori, Wadsa and Badgoan ranges and collected 18 plant specimens Maintenance of herbarium consisting 2488 plant specimens comprising of 120 families, 483 genera and 748 species and museum containing samples of 417 plant origin, 3 of animal origin and 13 of mineral origin was continued.

The survey unit located at RRC (Ay.) Jhansi (U.P.) has earlier surveyed Tikamgarh and Karwai forest divisions under joint survey programme in collaboration with RRI(Ay.) Gwalior. During current year no survey tour was conducted 66 kg. of raw drug was collected locally and supplied. Maintenance of herbarium consisting of 7230 plant specimens comprising of 106 families 465 genera and 753 species and museum having 1201 drug samples of plant origin 29 of mineral and 2 of animal origin was continued.

The survey unit located at RRC (Ay.), Gangtok (Sikkim) has earlier covered the forest areas in the North, East and West forest divisions during the special survey programmes.

The survey unit located at RRI(Ay.), Calcutta (West Bengal) has undertaken a local survey tour of Amta, Shibpur, Najirgunj areas during

the current year. 43 plant specimens belonging to 40 genera and 40 families and 11 raw drug samples for museum were collected. Survey tour of Sikkim and Kalimpong could not be undertaken due to lack of funds/sanction.

The survey unit located at RRC(Ay.), Guwahati (Assam) has earlier covered the forest area of Mona range of South Kamrup, Bokajan, Silonijan range of Mikir hills & Hongkhlow, Umsaw area of Meghalaya. During current year survey tour around Jalukbari, Jorahat, Rani Chandrapur etc. of Kamrup district in search of new flora was undertaken About 36 kg. of fresh raw drug material was also collected for supply.

The survey unit located at RRC, Mandi (Himachal Pradesh) have continued the maintenance work of Harbarium specimens.

The Medico-botanical survey programmes planned has covered most of the areas of the country, through regular survey tours as well as special intensive survey programmes have been designed to identify the specific areas of survey work in each state of the country. The information gathered and the plant specimens collected during the past two decades are being utilized for compilation of information for preparation of monographs of particular areas. Some of the monographs compiled on the Medico-ethno-botanical information have already been published and several others are under preparation at different centres. Annual survey tour programmes in the proposed 8 Zones identified, have also been initiated to overcome the financial costrains and absence of survey staff. It has further been initiated to make efforts for collection of information on the commercial availability of drugs in different commerical drug markets. The collection and supply of drug material for Concil's various other recearch programmes has also been entrusted to these survey units.

## CULTIVATION OF MEDICINAL PLANTS

Five herbal gardens of the Council located at Pune (Maharashtra), Mangliawas (Rajasthan), Jhansi and Tarikhet (U.P.) and Itanagar (Arunachal Pradesh) has taken up a small scale experimental and semi large scale cultivation of a few important medicinal plants of Ayurveda and Sidha systems of medicine. About 475 important medicinal species are presently properly maintained in these different gardens and the plantation includes those of tropical, sub-tropical and temperate regions, besides exotic ones. The main aim of this programme is to study the adaptability, growth, flowering, fruiting and also to assess the yield at different altitudinal levels and other ecological conditions etc., besides providing quality drug material in adequate quantity for research and pharmaceutical purposes. These herbal gardens also work out suitable agro-chemical techniques for the successful cultivation and growth of scarcely distributed/rare/threatened medicinal species.

The Guggulu Herbal Farm in Mangliawas which is exclusively devoted to a large scale experimental cultivation of Guggulu has provided adequate information base to consider cultivation of this species on a large scale for the procurement of oleo-gum-resin and also conservation of this most important Ayurvedic medicinal plant which is at the verge of extinction.

Successful propagation of Saffron (Kumkum) at Ranikhet and Chamma (U.P.) and other adjoining areas is noteworthy feature in view of its non habitance to that region.

A brief review of the cultivation programme carried out in each of the cultivation centres is provided hereunder :

### Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune, posses about 19 acres of land, out of which 10 acres are presently being utilised for cultivation studies and maintenance of a demonstrative garden of medicinal plants. The garden has maintained about 450 important plants, out of which 157 taxa are from among the medicinal plants included in Ayurvedic Formulary Part-I. Some of the important species growing for demonstration and research purpose are Vacha (*Acorus calamus*), Shatavari *(Asparagus racemosus),* Bhunimba

*(Andrographis paniculata),* Danti (*Baliospermum montanum*), Agnimantha bheda *(Clerodendrum multiflorum),* Jyotishmati *(Celastrus paniculatus),* Patha *(Cissampelos pareira),* Yastimadhu *(Glycyrrhiza glabra),* Meshashringi (*Gymnema sylvestre*), Langali *(Gloriosa superba),* Japa (*Hibiscus rosa-sinensis),* Kapikacchu *(Mucuna prurita),* Trivrita (*Operculina turpethum*), Chitraka (*Plumbago zeylanica*), Pippali *(Piper longum),* Vanapalandu *(Urginea indica),* Usira *(Vetiveria zizanioides),* Gandhaprasarini *(Paederia foetida),* Sirisha *(Albizia lebbeck),* Swarnakshiri *(Argemone mexicana),* Atibala *(Abutilon indicum),* Daruharidra (*Berberis aristata),* Ingudi *(Balanites aegyptica),* Pashanabheda *(Bergenia ligulata),* Punarnava *(Boerhavia diffusa),* Latakaranja *(Caesalpinia bonduc),* Tvakpatra *(Cinnamomum tamala),* Shalparni *(Desmodium gangeticum),* Bhringaraja *(Eclipta prostrata),* Amalaki *(Emblica officinalis),* Latakasturi *(Hibiscus abelmoschus),* Kutaja *(Holarrhena antidysenterica),* Lajjalu *(Mimosa pudica),* Kadali *(Musa paradisiaca),* Shyonaka *(Oroxylum indicum),* Pippali *(Piper longum),* Jayanti *(Sesbania sesban),* Kantakari *(Solanum surattense),* Kakamachi *(Solanum nigrum),* Gokshura *(Tribulus terrestris),* Nirgundi *(Vitex negundo),* Dhataki *(Woodfordia fruticosa)* and Madana *(Catunaregam spinosa)*

The Institute has also taken special measures to multiply and develop a gane bank of important, threatened and scarce medicinal taxa. A few of them worth mentioning include Sarpaganda *(Rauwolfia serpentina),* Prasarani *(Paederia foetida).* Jivanti *(Leptadenia reticulata),* Gambhari *(Gmelina arborea),* Ashoka *(Saraca asoca),* Arjuna *(Terminalia arjuna).* Guggulu I(*Commiphora wighttii*), Sariva (*Hemidesmus indicus*), Mandukparni (*Centella asiatica*), Ishwari (*Aristolochia indica*), Guduchi *(Tinospora cordifolia).*

Under experimental cultivation. preliminary trials to domesticate and cultivate Kapikacchu *(Mucuna prurita)* in the medium black soil of Pune were undertaken. The plants were raised from seedlings in the month of July. The growth of the plant was quite satisfactory and yielded flowers and fruits in Sept./Oct. The yield per plant was 25 gms. and calculated yield per acre comes to 600 kg.The experimental studies have suggested that Kapikacchu can profitably be cultivated in medium black soil of Pune.

The experimental studies undertaken during 1994 to study the effect of manures and fertilizers on the total yield of biomass of Bhunimba (*Andrographis paniculata)* and yield of the active constitutents were continued. The observations indicate that the application of cow dung manure as a basal dose increased the main active ingredient i.e andrographolide to about 2 times as compared to control group. Application

of Urea and Ammonium sulphate also increased the andrographolide content but moderately.

The experimental studies undertaken earlier related to storage and preservation of crude drugs, namely, Trivrita (*Operculina turpethum)* and Bhunimba *(Andrographis paniculata)* were continued to assess their shelf life in powder form The studies have indicated that these drugs do not undergo any deterioration in 12 months, if their powders are stored in air tight containers at room temperature. Further studies to assess the maximum shelf life are still in progress.

The Garden has collected about 170 Kg. of the crude drug material consisting of different drug parts of about 10 species. The important among them are Amalaki *(Phyllanthus emblica)*. Bhallataka *(Semecarpus anacardium)* Madana *(Catunaregam spinosa),* Bibhitaka *(Terminalia belerica)* and Japa *(Hibiscus rosa sinensis)*. Moreover, about 25 quintals of fresh leaves of Kumari (*Aloe barbadensis)* and about 10 quintals of Usira *(Vetiveria zizanioides)* can be harvested, when required, from the plants cultivated in the garden. About 1000 plants of Nirgundi (*Vitex negundo)* are also being maintained in the garden to meet the requirements of their flowers and leaves respectively, as and when requisitions are received from different Institutes/ Centres. Out of the collection made,about 60 Kg. of the drug material i.e.59Kg of Amalaki and 1 Kg. of Japa in powder form have been supplied to Council's various Institutes/ Centres for research purpose. The remaining drug material is properly preserved for making future supplies.

The Institute has also taken steps for the popularisation/ encouragement of medicinal plants to some research/academic organisation and Govt. Departments for research purpose and establishment of medicinal plants garden etc.

**Regional Research Centre (Ayurveda), Itangar**

The Centre has a medicinal plant garden located at a distance of about 2 km. from the main centre and occupies about 17 acres of the land consisting of steep slopes and ditches etc. About 9 acres of this land has been put under cultivation of the medicinal plants and a total of 150, plants species of Ayurvedic importance are presently growing in the garden and also well maintained for demonstration and research purpose. This includes 81 plants species mentioned in the Ayurvedic formulary Part-1

Some of the important medicinal plants of Ayurveda represented in the garden are Arjuna *(Terminalia arjuna)*, Bibhitaka (*Terminalia belerica*),

Bakula *(Mimusops elengi).* Banafsha *(Viola odorata)* Chitraka (*Plumbago zeylanica*). Guduchi *(Tinospora cordifolia)* Haritaki *(Terminalia chebula),* Bhunimba *(Andrographis paniculata)* Nagakesara *(Mesua ferrea)* Gandh prasarini *(Paedaria foetida),* Prisniparni *(Uraria picta)* Saptaparna *(Alstonia scholaris).* Satavari *(Asparagus racemosus).* Trivrita *(Ipomoea turpethum),* Vasa *(Justicia adhatoda)* etc.

The plantation also represents about 15 medicinal species belonging to different climatic and geographical regions of the country and introduced in the garden for studying their adaptability and growth behaviour etc. under the climatic conditions of the region. A few iimportant species are Hamsapadi *(Adiantum lunulatum),* Chakramarda *(Cassia tora),*Saptaparna (*Alstonia sholaris*),Krisna datura *(Datura stramonium)* Tagar *(Valeriana waichii),Manjistha(Rubia cordifolia),*Tvakpatra *(Cinnamomum tamala),* Manjistha *(Rubia cordifolia),* Sthoreyaka *(Taxus baccata),* Gajapipali *(Scindapsusofficinalis),* Guggulu *(Commiphora wightii),* Kumkum *(Crocus sativus),* etc.

Most of these species have shown satisfactory growth behaviour and are under continuous observation for their survival etc. Kumkum could not survive and Guggulu has shown very poor vegetative growth.

Some of the important medicinal species such as Mamiri *(Thalictrum foliolosum),* Pashanbheda *(Berginia ciliata),* Tagar *(Valeriana wallichii)* have also been introduced in the garden and systematic observations are being made for their survival under the climatic conditions of the region.

Steps have also been made by the Centre for preventing the plants from damage from insects and pests etc., by the application of proper insecticides.

About 36 Kg. of the crude drug material consisting of different drug parts of 10 medicinal plants species have been collected from the garden for the use in the O.P.D./I.P.D. of the Centre and also for supply to other organisations such as P.L.I.M., Ghaziabad and CIMAP, Lucknow etc. for research purpose.

**Guggulu herbal Farm, Manglia was, Rajasthan**

The main activity of this herbal farm is conservation. Cultivation and propagtion of Guggulu plant *(Commiphora wightii)* on large scale and observing its growth behaviour under different experimental conditions. The total area of the farm is 142 acres with undulated topography. The farm has been divided into 20 blocks based on topographical

characteristics and Guggulu cultivation is presently being carried out in about 1/3rd area of the land.

At present 14815 Guggulu plants are growing on mass experimental cultivation scale in different blocks of the garden and all possible efforts are being made for their maintenance. The remaining portion i.e. 2/3rd of the land has about 69 species of medicinal plants which are growing naturally or cultivated.

Under expansion programme several important medicinal plants have also been brought under cultivation which include beside Guggulu *(Commiphora wightii),* Kumari *(Aloe barbadensis),* Vanpalandu *(Urgenia indica),* Peeta-kaner *(Thevetia peruviana)* Sadapushpa *(Catharanthus roseus),* Arka *(Calotropis procera),* Saireyaka *(Barleria prionitis),* Kantakari *(Solanum surattense),* Aswagandha *(Withania somnifera),* Sarpunkha *(Tephrosia purpurea),* Satavari *(Asparagus racemosus),* Dhatura *(Datura metel),* Apamarga *(Achyranthes aspera),* Guduchi *(Tinospora cordifolia),* Rohitaka *(Tecomella undulata),* Madayanti *(Lawsonia inermis)* etc.

During the period, seeds of Katkaranj *(Caesalpinia bonduc),* Satavari *(Asparagus racemosus)* and Guggulu *(Commiphora wighii)* were also sown for the study of their germination behaviour under different experimental conditions.

During the year, plantation of 5906 Gugglu cuttings and 1000 air layering of Guggulu plants were also done for experimental studies. Various studies carried out on Guggulu include propagation through air layering; standardization of tapping techniques using ethephon; effects of micronutrients on vegetative growth and development of roots on stem cuttings; vegetative growth and development of roots after removal of branches of sprouted cuttings; usefulness of drip system of irrigation in air layering.

The farm has also supplied Guggulu gum to Council's Institutes/ Centres and.cuttings and plants of Guggulu to various institutions for research purposes.

**Indian Institute of Ayurveda for Drug Research, Tarikhet.**

The Institute's herbal garden at Ranikhet is located on a hillock and is bounded by pine forest on its northern and western sides. It has also another small medicinal plants garden at Chamma about 400 Km. away from Ranikhet. At both places, cultivation of medicinal plants activities have been continued with the main objective to study the possibilities of

cultivation of important medicinal plants drawn from wild sources as well as belonging to different climatic/geographical and altitudinal conditions, by studying their adaptability and growth behaviour etc. in the climatic conditions of Ranikhet and Chamma.

The Institute has about 7.69 acres of land having bed areas of about 5 acres. Out of this 4 acres of land are being utilized for the cultivation of medicinal plants which include 1.5 acres of land exclusively devoted to Saffron Experimental Project. At Chamma, cultivation activities are carried out in about I acre of land out of 2 acres available for the purpose.

At Ranikhet herbal garden, the medicinal plants of tropical, subtropical and mountaineous climate have been grown successfully and it has about 156 medicinal plants species which are mostly of Ayurvedic importance. The plantation is mostly for demonstration purpose, besides a few plants taken up for experimental trials for their acclamatisation and adaptability etc.

This year the adaptation and acclamatization studies on some very important medicinal plants of Ayurveda procured from other localities were also continued. The seedlings of the plants such a trivirta. Aparajita, Brihati, Ulatkambal, Prisniparni and Lata Kananj transferred from Green House to the field in the previous years showed satistactory growth.

The entire plantation includes about 80 medicinal plants species mentioned in Ayurvedic Formulary Part I and a few important ones are Ashwagandha (*Withania somniferea*), Tumuru (*Zanthoxylum alatum*), Eranda (*Ricinus communis*) Nirgundi (*Vitex negundo*), Vasa (*Justicia adhatoda*), Chitraka (*Plumbago zeylanica*), Sarpagandha (*Rauwolifia serpentina*), Dhatakai (*Woodfordia floribunda*) Satavari-bheda (*Asparagus curillus*), Kantakari (*Solanum surattense*), Brihati (*Solanum indicum*), Salmali (*Bombax ceba*), Karavira (*Nerium odorum*), Daruharidra (*Berberis asiatica*), Pasanbheda (*Bergenia ligulata*), Bhringaraja (*Eclipta alba*), Mandukparni (*Centella asiatica*), Mahanimba (*Melia azadarach*), Yashtimadhu (*Glycyrrhiza glabra*), Rudraksha (*Eleaeocarpus ganitrus*), Vacha (*Acorus calamus*). Brhadela (*Amomum subulatum*). Atmagupta (*Mucuna prurita*), Syonak (*Oroxylum indicum*), Aragwadha (*Cassia fistula*), Guduchi (*Tinospora cordifolia*).

Medicinal plants garden at Chamma has about 50 medicinal plants species growing in different beds and are properly maintained. A few important species are : Manjistha (*Rubia cordifolia*), Akarkara (*Anacylus pyrethrum*), Vacha (*Acorus calamus*), Eranda (*Ricinus communis*),

Dhataki (*Woodfordia fruticosa*), Kumkum (*Crocus sativus*), Rudraksha (*Elaeocarpus ganitrus*), Asokabhed (*Polyalthia longifolia*), Nirgundi (*Vitex negundo*), Kuth (*Sassurea lappa*) and Bhringaraj ( *Eclipta prostata*). The Institute has also supplied raw drug materials to different Institutes/ Centres of the Council for research purpose from time to time.

**Saffron Experimental Cultivation**

Saffron Experimental Cultivation and research investigations were continued on about 1.5 acres of land out of total land available for medicinal plants cultivation activities in the herbal garden of the Institute at Ranikhet. Regular observations were carried out on growth, development and multiplication behaviour etc. of the Saffron corms. About 3.8 lakhs corms of large, medium and small sizes were maintained in 560 beds of different sizes. The flowering season lasted for about one and half month which started from last week of September and continued to second week of November. During the reporting period a total of 5,383 flowers were collected, yielding approximately 40 gms. of saffron consisting of dry stigma and little part of style.

A monograph of Saffron (Kumkum) was also prepared and released during the Silver Jubilee Celebrations of CCRAS held on 20-22nd March. 1995.

**Regional Research Centre (Ayurveda), Jhansi**

The Regional Research Centre, Jhansi has under its possession about 45 acres of land for cultivation activities. The cultivation programme is presently confined to about 15 acres of the land and restricted mostly to mass scale cultivation of important Ayurvedic medicinal plants and a few on semi-experimental scale, besides a large number of plantation for demonstration purposes. Presently, the herbal garden has more than 200 medicinal species which are properly growing and maintained. The major portion of this plantation includes important medicinal species mentioned in Govt. Ayurvedic Formulary Part-I.

Some of the important plants taken up on large scale cultivation are Guggulu (*Commiphora wightii*) Sarpagandha (*Rauwolfia serpentina*), Rasna (*Pluchea lanceolata*). Prishnaparni (*Uraria picta*). A few important plants taken up for demonstrative purpose are Vasa (*Justicia adhatoda*), Bhunimba (*Andrographis paniculata*), Ghrit Kumari (*Aloe barbadensis*). Danti (*Baliospermum montanum*). Sahachar (*Barleria prionitis*), Sankhapuspi (*Convolvulus pluricaulis*), Mesh sring (*Gymnema sylvestre*), Bala (*Sida cordifolia*). Mahabala (*Sida rhombifolia*), Rajbala (*Sida varoniceafolia*), Nagbala (*Sida spinosa*), Arkaparni (*Tylophora indica*),

Chitrak (*Plumbago zeylanica*), Ushira (*Vetiveria zizanioides*), Dhataki (*Woodfordia fruticosa*) etc.

The Centre has also grown some important Ayurvedic plants species belonging to different geographical areas for observing their adaptability, growth behaviour etc. under the climatic conditions of Jhansi. A few of these plants are Vacha (*Acorus calamus*), Pashanbneda (*Bergenia ligulata*), Jyotishmati (*Celastrus paniculatus*), Mandukparni (*Centella asiatica*), Yastimadhu (*Glycyrrhiza glabra*), Chopchini (*Smilax aspera*). These species have been reported to be growing well and also maintained properly. About 135 species of important medicinal plants are also being maintained in polythene bags and cement pots in the Green House and regular observations are being made for their adaptability and survival etc. These species are also for demonstration purposes under pot cultivation programme.

The garden's drug produce during the reporting period, was about 50 kg. consisting of different drug parts of about 30 species and were supplied to Council's Institutes/Centres for research purposes.

**Pharmacognosy Research Studies**

Proper identification and evaluation of the authenticity genuineness of the crude drugs, utilising different methods/aspects of approach are the prime requisites in the initiation and carrying out the Drug Research Programmes. Pharmacognostical studies play an important role in the entire gemut of research studies taken up by the council. Different Pharmacognosy. Research Units functioning at Calcutta, Delhi, Lucknow, Jammu and Pune have taken up the pharmacognostical investigations on the following drugs widely used in Ayurveda.

1. Agnimantha (*Premna latifolia* Roxb.) : Root.
2. Agnimantha-Bheda (*Premna integrifolia* Linn.) Root.
3. Amlika (*Tamarindus indica* Linn.) : Fruit, flower.
4. Asana (*Pterocarpus marsupium* Roxb.): Leaf
5. Bilva (*Aegle marmelos* Corr.) : Leaf
6. Kantakari (*Solanum surattense* Burm. f.) : Whole plant
7. Karkata-sringi (*Pistacia integerrima Stew.* ex Brand.) : Roots
8. Kuberaksha (*Caesalpinia bonduc* Linn.) Root-Bark
9. Kukuradru *(Blumea lacera* Burm. f.): Whole plant
10. Japa (*Hibiscus rosa-sinensis* Linn.) : Flower
11. Rajbala *(Sida acuta* Burm.) : Root, stem, leaf.
12. Sarshapa (*Brassica nigra* Linn.) : Seed & oil.
13. Upakunchikaa (*Nigella sativa* Linn.)) : Seed

The Pharmacognostical investigations covered elaboration of details in respect of their origin, botanical identification and correct determination of Ayurvedic nomenclature including synonyms together with properties, botanical description and key characters. This comprehensive task includes study of different facets, viz., morphology of crude drugs including the sensory characters, cell and tissues structures (both qualitative and quantitative), cell contents, preliminary phytochemical analysis, chromatographic studies, identification of the chemical constituents like alkaloids, steroids and terpenoids, phenols, tannins, saponins, flavonoids, proteins etc., fluoresence analysis, physical constant values including ash and extractive values., dry matters and moisture contents etc. The analytical studies of the powdered drug which is considered to be of immense help in detection of adulterants was also carried out.

These studies find useful place in evolving the pharmacopoeial standards for single drugs besides helping in overcoming the controversy and confusion that exists regarding their proper identity/authenticity due to synonyms and use of one and the same name for more than one drug thus giving scope for substitutes and adulterants.

**Plant Tissue Culture**

Plant tissue culture laboratory at JNAMPG & H, Pune continued studies on Sariva (*Hemidesmus indicus* R. Br.) and Gandhaprasarini (*Paederia foetida* Linn). for in-vitro propagation and multiplication. Axillary buds of Sariva gave response on MS medium supplimented with BAP and IAA and showed fast growing shoot, When these regenerated shoots were transferred to Wighte's media it produced rootlet forming a complete plantlet in in-vitro condition. In Gandhaprasarini, multiple shoot growth was observed on MS + IAA and rooting was observed on Wighte's media producing a complete plantlet.

## CHEMICAL RESEARCH PROGRAMME

Chemical studies have an important role in the development of drug research. These studies reveal the hidden secrets of plant kingdom i.e. what are the various compounds present and which are the active ingredients responsible for their effectiveness. The Phytochemical Research Units located at Calcutta, Delhi, Hyderabad, Lucknow, Trivandrum and Varanasi have conducted studies on 18 plants and have isolated active principles from them to carry out further studies. A brief resume of the work carried out during the year 1994-95 is reported as under :

**1. Akara (*Anacyclus pyrethrum* DC.)** **ChREL**

Dried roots were first extracted with hexane in soxhlet apparatus. The residual material on chromatography afforded five compounds viz. AP/1-light yellow m.p. 120°, AP/2- colourless, m.p. 124°, AP/3-colourless m.p. 140°, AP/4- colourless m.p. 130° & AP/5-light yellow m.p. 115. Further structure elucidation is in progress with the aid of various spectral data.

**2. Bharangi Bheda (*Clerodendrum splendens*)** **ChRUD**

Chemical investigation of the flowers yielded a sterol and other anthocyanin pigments. Further work is in hand.

**3. Bilva (*Aegle marmelos* Corr.)** **ChREL**

Alcoholic extract of the ripe fruits of *A. marmelos* showed anti-triamoebic activity. Fractionation & column chromatography would be followed up for further chemical and biological investigation.

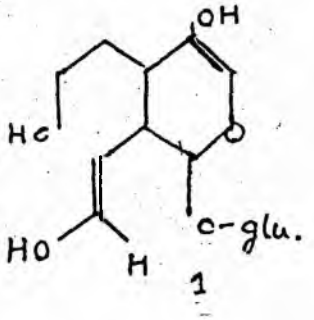
**4. Durva (*Cynodon dactylon* Pers.)** **ChRUT**

Apigenin and luteolin and their 6 and 8 C-glycosides were isolated from the aerial parts of the plant.

**5. Haridru (*Adina cordifolia* Benth & Hook f.)** **ChREL**

The extraction and fractionation of the bark of the plant was completed during the year and the fractions given for biological studies to the different pharmacological divisions. Antifungal activity was found in the benzene as well as in the butanol fractions.

Column chromatography of different fractions over silica gel led to the isolation of skimnin, adicardin, longanin and a new compound for which a tentative structure (Secoiridoid) is given below (Fig. 1).

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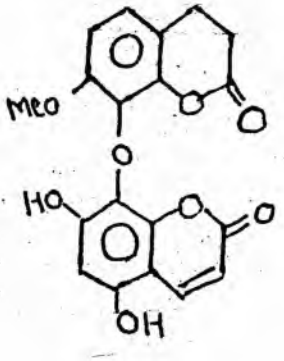
Further detailed structural investigation is in hand.

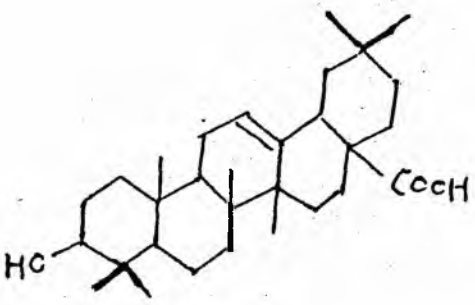
**6. Karnasphutica (*Boenninghausenia albiflora* R & M). ChRUC**

Continued search for phytochemicals in this drug, afforded two more coumarin derivatives. One a new dimeric coumarin, Boennin (Fig. 2) and another monomeric coumarin which is awaiting characterization.



**7. Lavanga (*Syzygium aromaticum* (Linn.) Merr. & Per.) ChRUC**

Concentrated chloroform extract of the flowers of Lavanga afforded a pentacyclic triterpene, Oleanolic acid (Fig. 3).




**8. Mahanimba (*Ailanthus excelsa* Roxb.) ChRUC**

Petrol extract of stem bark of the plant was chromatographed over silica gel. Benzene eluent furnished sitosterol and a crystalline solid, AE-23. Further investigations are going on.

**9. Malabar lemon grass (*Cymbopogon flexuosus* (Stendtrs) Wats). ChRUD**

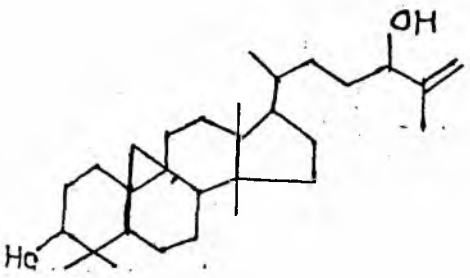
Four flavone glycosides viz. orientin, vitexin, iso-orientin and iso-vitexin were isloated from the leaves of the above plant.

**10. Musali (*Chlorophytum tuberosum* Baker) ChRUD**

Benzene extract of the roots was prepared. It was also column chromatographed which yielded a colourless solid, giving positive L. B. test for steroid. Further work is in hand. Ethanol extract of the drug is also under investigation.

**11. Panasa (*Artocarpus heterophyllus* Lamk.) ChRUC**

Chemical investigation of the latex of the drug resulted in the isolation and characterization of another tetracyclic triterpene (Fig. 4) for the first time from this plant. Its structure was elucidated by using all the spectral data i.e. IR,UV,NMR, 13 CNMR, Mass.




**12. Parijata (*Nyctanthes arbortritis* Linn.)** **ChREL**

The chemical investigation of different fractions of its seed, leaf and flowers led to isolation of new iridoid glycosides, sitosterol, p-methoxy cinnamic acid, nyctanthic acid, nyctantheside, carotenoid, glucose and mannitol.

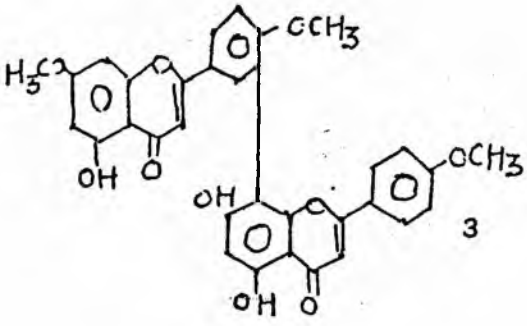
**13. Pithari (*Glossocardia bosvallia* DC.)** **ChRUH**

Tissue culture studies were carried out on the ephemeral plant *G. bosvallia* successfully. The steroid obtained from the plant (m.p. 286) was acetylated and the product thus obtained is under identification with the help or various specral data (IR, UV, NMR and Mass).

**14. Sthoneyaka (*Taxus baccata* Linn.)** **ChRUV**

In continuation to previous work on *Taxus baccata*, the detail spectral studies of the isolated phytochemicals were undertaken. Petroleum-ether extract afforded a crystalline compound, m.p. 280-90°. Various spectra (I.R., U.V., HNMR & Mass) confirmed its stucture as sciadoptysin (7, 4', 4" tri-o-methylementoflavone (Fig. 5). The structure is further confirmed by Co-TLC, m.m.p. and superimposable I.R. with authentic sample.

Chromatographic resolution of the methanol extract furnished another crystalline compound, conidendrin (Fig. 6), m.p. 205-7°. Different spectral studies (I.R., U.V., N.M.R. & Mass) confirmed its structure.



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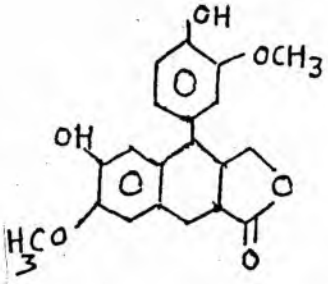
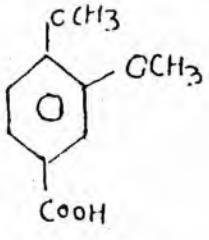
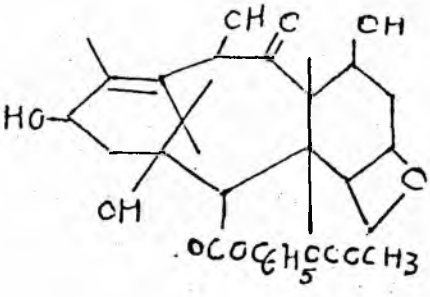


Methanol extract further afforded a crystalline compound, m.p. 172-75°. i.R., U.V., N.M.R. and mass spectra confirmed its structure as 4 - methoxy vanillic acid, (Fig. 7).





Ethyl acetate fraction of the methanolic extract furnished 10 deacetyl - baccatin III (Fig. 8), m.p. 230-32 (colourles needles). Various spectra supported its structure.

**15 Talisa (*Abies pindrow* Spac.)** **ChRUV**

Dried leaves were extracted with rectified spirit. The extract was distilled off and the solid part was subjected to column chromatography. Further work is in hand. The complete literature survey was also done during this period.

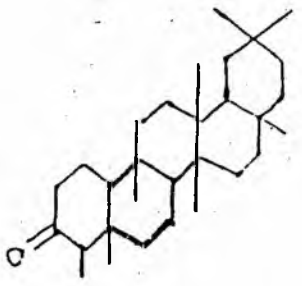
**16. Tejpatra (*Cinnamomum tamala* Nees & Eberm).** **ChREL**

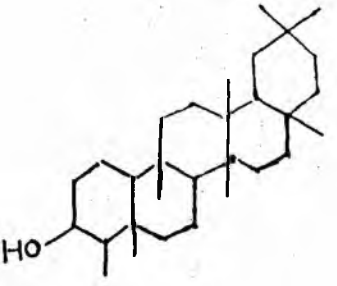
The extract of the leaves and its oil showed an antifungal activity. It was also found active against *Encephala mycorditis* virus.

Cinnamic acid, hentriacontanol, sitosterol & its D-glucoside, Kaemferol glycoside and sucrose were isolated from its different fractions.

**17. Vijaya (*Cannabis sativum* Linn.)** **ChRUC**

Petroleum - ether extract of the whole plant on chemical examination resulted in the isolation and characterization of two pentacyclic triterpene, friedelin (Fig. 9) and epifriedelinol (Fig. 10)




**18. Vishnugandhi (*Evolvulus alsinoides* Linn..)** **ChRUH**

The whole plant was extracted successively with petroleum-ether, chloroform and methyl alcohol in soxhlet extractor. TLC examination of petrol extract and chloroform extract indicated the presence of a fluorescent compound. Attempts to isolate this compound in pure form are in progress.

**Miscellaneous work :**

**(i) Extraction Supply Unit :** **ChRUC**

From the Extraction Supply Unit, the following extracts have been supplied to the R.R.I. (Ay.), Calcutta for the preparation of the Coded drugs Ayush-56 and Ayush-64.

| | |
|---|---|
| 1. Alcoholic extract of *N. jatamansi* | 3.0 Kg. |
| 2. Alcoholic extract of *M. minuta* | 3.0 Kg. |
| 3. Alcoholic extract of *S. chirata* | 9.5 Kg. |
| 4 Alcoholic extract of *A. scholaris* | 9.0 Kg. |

**(ii) Other work** **ChRUC**

Apart from what has been given above, it is worth mentioning that in the area of drug development some interesting observations have been made with isolated compounds/or crude extracts both *Baugainvellea spectabillis* and *Hemidesmus indicus* have shown promising hypoglycemic activity. Work in this line is going on in the Pharmacology Unit at the Department of Pharmacology, University College of Medicine, Calcutta. Another drug *Jasminum grandiflorum* DC. has shown calcium channel blocking property, which might be useful in peripheral vascular disease.

**(iii) Extraction Supply :**

**(a) Shigru (*Moringa oleifera* Lam.)** **ChRUH**

Petrol extract (2.1 g), chloroform extract (2.6 g) and methanol extract (40 g) of the above drug were prepared and sent to Pharmacology unit at Trivandrum.

**(b) Tandula (*Amaranthus spinosus* Linn.)** **ChRUH**

About 2.85 g of petrol extract, 7.4g of chloroform extract and 42.85 g of methanol extract of the whole plant were also prepared and despatched to Pharmacology unit at Trivandrum.

**(c) Meda/Mahameda (*Polygonatum cirrhifolium* Royle)** **ChRUH**

Chloroform (0.5) g) and methanol (15 g) extracts of the root of the above drug were prepared and despatched to the Pharmacology Unit at Trivandrum.

**IV. Extraction and supply :** **ChRUT**

Plant materials and oils (500 gms. 3 Kg lots) were extracted with different solvents for the preparation of relative fractions & active components for Pharmacological and clinical trials.

| | | |
|---|---|---|
| (i) | Quantity of Neem oil worked out | 163 kg. |
| (ii) | Qty. of Nimbathiktham isolated/ supplied to the Clinical/Pharmacology Unit. | 4.6 kg. |
| (iii) | Qty. of Psoralin oil supplied to clinical section. | 4.550 lit. |

**(V) Extraction and Supply**

**(a) Madhuka (*Madhuca longifolia* (Linn.) / Mac.)** **ChRUD**

Benzene, ethanol, aq. extract of ethanol extract and aq. extracts of the stem bark were prepared and sent to the Pharmacological Unit, New Delhi.

**(b)Tagara (*Valeriana wallichii* DC.)** **ChRUD**

Ethanol, aqueous and benzene extract of the roots were prepared.

**(vi)Extraction and Supply**

***Syzygium megacarpum*** **ChREL**

The extraction and isolation work have been completed and the extractives and isolates were sent to the different Pharmacological Units for pharmakodynamic studies. It was observed that the n-butanol fraction possessed significant antiviral activity against EMCV and SFV viruses.

## PHARMACOLOGICAL RESEARCH PROGRAMME

Drug Research is a continuous process and studies on experimental animals constitute an important component of it. Whether it is the development of a new drug or confirmation of old claims, Pharmacological and Toxicological studies play a very vital role. Such studies are persued by the Council for the overall development of Ayurvedic drug research. These studies are carried out by various Institutes and Units of the Council located at Bombay, Calcutta, Cheruthuruthy, Delhi, Jaipur, Jhansi, Lucknow, Patiala, Trivandrum and Varanasi. During the reporting period 30 drugs (single drugs, coded drugs and compound formulations) were studied. A brief review of these studies is reported hereunder :

**1. Arka (*Calotropis procera* (Ait.) R. Br.) - leaves and stem**

**PhRUD**

The alcoholic extract of its leaves and stem were investigated for their Electro-convulsive activities in Albino rats using different dosages in different groups of animals and by using different animal models. However, none of the extracts exhibited any significant activity.

**2. Auto-Urine therapy** **IIPC**

These studies are being carried out in Albino rats. Decreased rates of weight gain was noticed in Auto-urine therapy group as compared to control.

**3. Badara (*Zizyphus jujuba* Lam.)** **PhRUC**

**(A) Pet. - ether extract of root**

In continuation of studies reported earlier, experiments were repeated on isolated smooth muscle preparations. The extract produced no effect against Ach and histamine induced contractions of guineapig ileum, but produced definite antispasmodic effect against $BaCl_2$ induced contractions which was suggestive of musculotropic antispasmodic property.

**(B) Pet.- ether extract of leaf**

The extract neither produced any effect in itself nor against Ach. induced contractions of guineapig ileum. But it produced almost 100 percent inhibition of histamine induced contraction and also produced musculotropic antispasmodic property against $BaCl_2$ induced spasm.

It possessed no effect in itself and also against Ach. induced contractions in frog rectus abdominis.

**4. Bala (*Sida cordifolia* Linn.) PhRUC**

**(A) Pet.- ether extract of root**

The extract exhibited significant reduction of spontaneous motility which was completely stopped by increased dose. It exhibited significant analgesic effect on rat tail method.

It exhibited significant CNS effect which was revealed by MES Test in rats (Absence of tonic convulsions and reduction of clonic convulsions). It produced 50 per cent mortality at 2000 mg/kg. orally.

**(B) Pet. ether extract of aerial part**

It exhibited significant analgesic effect on rat tail method. It produced no significant effect either by pentobarbital hypnosis in mice or by MES test in rats.

It produced significant antispasmodic effect against Ach. induced contractions of guineapig ileum; significant reduction of spontaneous motility of rabbit jejunum; produced no effect on skeletal muscle (frog rectus abdominis) against Ach. induced contractions.

It produced 60 percent mortality with 2000 mg/kg dose orally

The extract administered once daily for ten consecutive days in a dose of 250 mg/kg p.o. on infected mice since the day of innoculation and prepatency and patency of infection was observed. None of the extracts possessed trypanosomicidal property.

**(C) Alcoholic extract of aerial part**

It produced significant analgesic effect but it was found less potent than pet.- ether extract of root and the aerial parts. The extract most significantly reduced spontaneous motility of rabbit jejunum.

**5. *Baugainvilla spectabilis* (Alcoholic extract of leaf) PhRUC**

Serum lipid profile; serum Na+ and K+ and serum T3 & T4 level reported earlier were repeated. The extract partially protected decrease in HDL level in STZ control group of rats, recovered decrease in T3 and T4 level in STZ treated group by pretreatment with the extract.

**6. Brahmi Rasayan** **PhRUJ**

Brahmi Rasayan studied in rodents for its inflammatory effects witn oral dose ranging from (1-10 gm per kg. body weight). The drug suppressed various experimentally induced inflammatory reactions and did not show any gastric irritation in anti-inflammatory doses. It is suggested that it may partially radiated its anti-inflammatory activity by interfering with action and/or synthesis of prostaglandins and also perhaps by stablization of lysosoral membranes. Its anti-inflammatory activity is comparable to that of indomethacin and merits further studies.

**7. Chameli (*Jasminum officinale* Linn.)** **PhRUL**

Chameli (leaves) with 70 per cent alcoholic extract residue studies were conducted on albino rats for its effect on intestinal transit of charcoal feed. It produced a dose dependent reduction in the travel of the charcoal in the intestine. This can be useful in diarrhoeal diseases.

**8. Chorak (*Angelica glauca* Edgew.)** **PhRUB**

The drug at a dose of I gm/kg. showed anti-inflammatory activity and exhibited 29.2 per cent inhibition when compared with hydrocortisone (64.9 percent inhibition) in rats.

**9. Gandhamarjara Veerya (Civet)** **IIPC**

There is only one Civet cat maintained in captivity. 10.3 gm of veerya was collected during this period. This is being used in the preparation of various drugs. The breeding of animals have not been successful so far due to various reasons.

**10. G. Austrate :** **PhRUC**

The aqueous and alcoholic extracts perse in the dosages of 10 microgram to I mg. neither produced any effect nor altered the contractions induced with 5 HT and histamin agonists on rabbit ileum.

**11. Indravaruni (*Cirtullus colocynthes* Schrad):** **PhRUB**

Anti-inflammatory activity of Indravaruni showed that the drug in a dose of 250 mg/kg and 500 mg/kg showed significant anti-inflammatory activity.

It also exhibited analgesic activity in mice in doses of 250 mg./kg. and 500 mg/kg.

**12. Jvarasani Rasa :** **TRUJH**

The three drug treated groups were administead 50, 100 and 200 mg per kg. body weight orally for 15 days.

Certain histopathological changes could be seen in spleen, liver and lungs. Biochemical parameters were not found to be devoid of analgesic, anti-convulsant nerve block and surface activities, histopathological effect and pentobarbitone induced hypnosis.

**13 Jayapala (*Croton tiglium* Linn.)** **PhRUT**

50 Per cent alcoholic extract of the seeds was investigated for CNS activity, Gastro-intestinal activity including cathartic effect. Studies revealed that the extract possessed moderate C.N.S. sedative effect, significant cathartic effect on rats and increased GI motility in rats. *In vitro* experiments also showed significant smooth muscle stimulant effect.

**14. Kapni (*Holmskioldia sanguinea* Retz.)** **PhRUL**

The plant extract fraction were found to possess anti-inflammatory activity on Carragenin induced rat hind paw oedema.

**15. Karanja (*Pongamia pinnata* Pierre) - Seeds and Roots PhRUL**

Petroleum-ether,benzene, chloroform, acetone and ethanol extracts of seeds & roots were prepared and put to certain chemical identification tests.

Pharmacological investigation on albino rats, albino mice and frogs were carried out to study the toxicity of various extracts, hypnotic effect, anti-inflammatory effectiveness, analgesic effect and cardiac effectiveneses studies. No gross behavioural changes with any of the extracts were observed. All the animals survived after 24 hours of drug administration of 50 mg./kg. intra peritoneally. All the seed fractions of *P. pinnata* exhibited inerease in Pentobarbitone, sleeping time significantly. The anti-inflammatory effect of various extracts were studied by different experimental models and it was observed that the benzene, acetone and ethanolic extracts of its roots, possessed anti-inflammatory effect which was comparable to phenylbutazone. Similarly petroleum-ether and chloroform extracts of its seeds possessed significant anti-inflammatory effect. No analgesic effects with various extracts of roots and seeds could be established by hot plate method. However, such studies by other models shall be carried out in due course.

All the extracts demonstrated cardiac stimulant effect which could be antognised by pre-treatment with propanalone.

**16. Kasturi (Musk)** **PhRUL**

It increased the endurance and survival time of mice in swimming test and was found better than *Panax ginseng.* It also increased the protection to living cells against free radical damage. Thus, the drug could prove to be a longevity inducer in man (Ayurvedic concept).

**17. Khas-Khas; Ushir (*Vetiveria zizanioides* (Linn. ) Nash.)(Root):**

**IIPC**

Petroleum -ether, chloroform and ethanol extract and decoction were prepared and studied for their pharmacological actions. The extracts were administered in dose of 100 mg/kg intraperitoneally and the decoction I mg/kg intraperitoneally. showed mild sedation and reduction in spontaneous motor activity in mice. These animals were less responsive to tactile and auditory stimuli. Ethanol extract and decoction failed to show significant anti-inflammatory activity (mouse ear oedema). Petroleum -ether extract also failed in this respect. All these extracts and decoction failed to influence amphetamine toxicity in aggregated mice and ethanol induced hypnosis in mice.

**18. Kustha (*Saussurea lappa* C.B. Clarke) :** **PhRUB**

Kustha in dose of I gm/kg. showed anti-inflammatory activity and exhibited 24.0 per cent inhibition when compared with hydrocortisone (64.9 per cent inhibition) in rats.

**19. Loknath Rasa :** **TRUJh**

Adult healthy rabbits weighing between 1 to 1.5 kg. were selected by random allocation in groups of ten. Except the control group the three drug treated groups were administered 10, 30 and 100 mg per kg. body weight orally, once daily for 15 days. On the 16th day the animals were sacrificed and their vital organs were collected for histo-pathological studies. All the vital organs did not exhibit any macroscopic changes but histopathologically with 30 mg. per kg. dose there was swelling, conjestion and with 100 mg. dosage similar changes, were observed. There was no change in their general behaviour, appetite and other activities. Urine and feacal output and food consumption were unaffected. There was no mortality in the drug treated groups. There was no significant change in any of the biochemical parameters in the drug treated animals as compared to control group.

Further the drug did not exhibit any anti-convulsant effect or analgesic effect, nerve block, surface anaesthetic effect in frogs and rabbits, hypothermic effect in rats, pentobarbetone induced hypnosis.

**20. Madhuka (*Madhuca longifolia* (Koenig.) Macbr - flowers PhRUD**

Aqueous and alcoholic extracts were used for carrying out pharmacodynamic studies e.g. anti-pyretic activity, pentobarbetone sleeping time study and analgesic effectiveness studies. However, the drug did not exhibit anti-pyretic effect, no significant effect on pentobarbetone sleeping time but it exhibited significant analgesic effect.

**21. Mandukparni (*Centella asiatica* (Linn.) Urban)-Leaves PhRUL**

70 Per cent alcoholic extract was used in the study. The saline suspension of the drug was given orally to the animals in different dosages. It was found to possess antiinflammatory effect and it reduced the intestinal transit of charcoal meal in rats. Hence, it could be used as anti-diarrhoeal and anti-rheumatic in addition to its memory enhancing property.

**22. Musta (*Cyperus rotundus* Linn.) - roots powder PhRUL**

Musta root powder in large prolonged clinical trials in rheumatoid and osteo-arthritis has been proved as difinite useful remedy which is non-toxic and had great patient preference.

**23. Nimbu (*Cirtus limon* Linn.) PhRUT**

Decoction of stem and root-bark of the plant was prepared and screened for acute toxicity in mice & G.I. activity. No toxicity noticed upto 100 g/kg. orally and did not show any effect on gastric acid secretion and its volume in shay rats.

**24. Nishoth (*Operculina turpethum* (Linn.) Silva Manso) PhRUL**

Protacin fraction increased survival time by 75% in mice given fatal dose of semlike forest virus (S.F.V.)

**25. Prisniparni (*Uraria picta* Desv.) (Fruit) IIPC**

Chloroform and ethanol extracts and decoction were prepared and studied for their pharmacological actions. The extracts were administered in a dose of 100 mg/kg, p.o.) and decoction (I g/kg, p.o) produced mild reduction in spontaneous motor activity in mice and these animals were less resposive to tactile and auditory stimuli. Chloroform extract failed to show this effect. Ethanol extract and decoction also produced significant anti-inflammatory activity (mouse ear oedema) while chloroform extract failed to influence amphetamine toxicity in aggregated mice and ethanol induced hypnosis in mice.

**26. Puskarmula (*Inula racemosa* Hook. f.)** **PhRUL**

Prolonged clinical trials, on asthma patients even resistant to modern therapy has been found to be very useful drug . Hence it should be propogated by the Council all over the country for its effctiveness in the treatment of asthma cases.

**27. Sigru (*Moringa oleifera* Lam.)** **PhRUT**

Methanol extract (stem bark) possessed very significant hypogycaemic effect in fasting rabbits as compared to tolbutamide, Glucose tolerance tests in albino rats and studies in fed rats and diabetic rats are also in support of the above findings. This extract was also being screened to detect its effect on CVS, analgesic and antipyretic activity.

**28. Sinsapa (*Dalbergia sisoo* Roxb.)-root :** **PhRUD**

Aqueous extract in different dosages was screened for its various pharmacodynamic activities including toxicity studies. The extract did not exhibit any significant analgesic activity, anti-inflammatory effect, pentobarbetone sleeping time and anti-convulsive effect. During acute toxicity study no adverse effect was observed upto 6 hours and none of the animals died within 10 days of drug treatment upto 4 mg. per kg. oral administration.

**29. Tagaradi Curna** **PhRUB**

Acute toxicity studies of Tagaradi in rats and mice reveals no toxic symptoms in a dose ranging from 0.5 gm/kg. to 2.0 gm/kg. administered orally. $LD_{50}$ in rats and mice is more than 2.0 gm./kg. orally.

**30. Talisa (*Taxus baccata* Linn.)** **PhRUB**

It failed to exhibit anit-inflammatory activity in a dose as high as I.O gm./kg. in rats with Carragenin induced hind paw oedema method.

## PHARMACEUTICAL RESEARCH/STANDARDISATION RESEARCH STUDIES

The Council during the period under report has evolved analytical standards on the formulations of I & II part of Ayurvedic formulary of India. The study assumes importance as analytical data are based on the textual formulations prepared by the Research Project itself. This approach vouchsafe for quality control of the formulations which are used in the Clinical Research Studies and other medicare programmes undertaken by the Council.

Having regard to this, the Council has undertaken the task of laying down physico-chemical values of the single drugs that are entering as ingredients in the particular formulations on the process of manufacture like Asava, Arishta, Avaleha, Bhasma etc. in addition to shelf life etc. Standardisation studies on single drugs, Process of manufacutre and finished products (formulations) are carried out at Captain Srinivas Murthy Drug Research, Institute for Ayurveda, Madras (CSMDRIA), Regional Research Institute, Trivandrum (RRI-T), Indian Institute of Ayurveda for Drug Research, Tarikhet (IIADR) and Drug Standardisation Research Project, Gujarat Ayurveda University, Jamnagar (DSRP-J). While rapid analytical values were laid down to CSMDRIAM DSRP-J and Drug Standardisation Research Project., IMS, BHU, Varanasi (DSRP-V) and the studies on single drugs as well as finished products were taken up at Regional Research Centre, Bangalore (RRC-B). Based on the experience gained by the studies carried out as a second phase of study the Council has worked out a plan to lay down analytical values and to identify main and other costly ingredients, and by preparing different proportinate ingredients, in different quantity or deleting some of them other than the standard Formularly and to establish whether there is any change in the analytical value other thar. the Standard formularly already worked out. This study has indicated good encouraging results, and it is presumed that in time to come genuine, authentic, and quality control formulations will be available for clinical armamentarium so that Health for all by 2000 AD could be achieved.

Further as per Union Health Ministry's directive some other Patent Medicines of Private Pharmacies are also analysed.

The details of the standardization studies carried out during the year 1994-95 are as follows :-

**Physico-chemical values of the following single drugs have been carried out :-**

| | | |
|---|---|---|
| Raw guggulu | (*Commiphora mukul)* | (DSRP-J) |
| Agaru | (*Aquilaria agallocha*) | (RRI-T) |
| Arjun | (*Terminalia arjuna*) | (RRI-T) |
| Udumbar | (*Ficus glomerata*) | (RRI-T) |
| Pippali | (*Piper longum*) | (RRI-T) (IIADRT) |
| Bilva | (*Aegle marmelos*) | (RRI-T) |
| Haritaki | (*Terminalia chebula*) | (RRI-T) |
| Chavika | (*Piper retrofractum*) | (RRI-T) |
| Dhataki | (*Woodfordia fruticosa*) | (RRI-T) |
| Udumbar bhed | (*Ficus globosa*) | (RRI-T) |
| Vata | (*Ficus bengalensis*) | (RRI-T) |
| Kushtha | (*Saussurea lappa*) | (RRI-T) |
| Dhanyak | (*Coriandrum sativum*) | (RRI-T) |
| Jau (Yava) | (*Hordeum vulgare*) | (RRI-T) |
| Tamalpatra | (*Cinnamomum zeylanica*) | (RRI-T) |
| Gokshur | (*Tribulus terrestris*) | (RRC-B),(RRI-T) |
| Usheer | (*Vetiveria zizanioides*) | (RRI-T) |
| Sunthi | (*Zinzeber officinale*) | (IIAOR) |
| Guduchi | (*Tinospora cordifolia*) | (IIADR) |
| Ashwagandtha | (*Withania somnifera*) | (RRC-B) |
| Daruharidra | (*Berberis aristata*) | (RRC-B) |

**Process of Manufacture**

Guggulu shodhana with godughdha & Gomutra (DSRP-J)

Guguulu shodhana with Triphala Kwath (DSRP-J)

Vasavaleh prepared with freshly collected leaves (DSRP-V)

Vasavaleh prepared with one year ago collected leaves (DSRP-V)

Vasavaleh prepared with market samples of leaves (DSRP-V)

Chandraprabha vati with all ingredients (CSMDRIA)

Chandraprbha vati with all ingredients except guggulu (CSMDRIA)

Chandraprbaha vati with all ingredients except karpura silajit (CSMDRIA)

Chandraprabha vati commercial sample (CSMDRIA)

**Finished Products-**

| | |
|---|---|
| Nalpamradi Taila | (DSRPT) |
| Parrharishta | (DSRPT) |
| Kusmanda rasayan | (DSRPT) |
| Vasavaleha | (DSRPV) |
| Bhaskar lavan churna | (DSRPV) |
| Indukant ghrita | (RRC-B) |
| Ashwagandha leh | (RRC-B) |
| Chandraprabha vati | (DSRP-V) (CSMDRIA) |
| Balarishta | (CSMORIA) |
| Abhrak Bhasma | (CSMDRIA) |
| Lohabhrak Bhasma | (CSMDRIA) |
| Kaseesa Bhasma | (CSMDRIA) |
| Kajjali | (CSMDRIA) |

## MUSK DEER BREEDING PROGRAMME

The Musk Deer Breeding Farm is being maintained by the Council on a two acres of land at Mahroori at a height of 2250 m.a.s.l. in Kumaon hills for last 22 years. At present there are 19 deers-8 males and 11 females being maintained in the natural surroundings. The observations made in-stockades such as habits, behaviour, feed of fodder intake, routine movements, affect of season on behaviour, sickness, injury and recovery response etc. have been studied.

It has been observed that the animals do not like any type of change, alternation, addition and disturbances etc. They prefer clean and quite surroundings in their living area. Females also did not like to live in herds. The animal becomes restless and breath fast when temperature rises above 22°c. The animal enjoys bruishing new leaves and flower buds growing in natural habitate. During winters 8 females were found desirous for copulation and with due care attempts were made to fertilize them and all of them are under observations. One male animal has expired this year at the age of 10 years 3 months 10 days. The cause of death was higher degree of redness on the inner wall of intestine and kidney. However, retention of urine and faeces is the common disease found in these animals. On wounds and skin eruptions Loramine cream is found beneficial with oral dose of Brufen with milk.

## LITERARY RESEARCH PROGRAMME

Research has to be a continuous process because a new thing becomes old soon after its discovery and further new ground needs to be covered to keep one abreast of the developments. The Literary Research Programme fulfills this initial need of fast coming advancing frontwave of the ever expanding knowledge.

The Literary and Medico-Historical Research Programms of the Council are being carried out at Indian Institute of History of Medicine, Hyderabad. Documentation and Publication Division, New Delhi and Literary Research Unit, Madras. The programme included medico-historical studies, collection and compilation of references relating to drugs and diseases from classical treatise, lexicographic work and contemporary literature, publication of critical and rare books of Ayurveda and allied medical sciences. Survey of manuscripts from the oriental libraries of repute and collection of medicohistorical events from the archieves and musuems is also being undertaken.

**Indian Institute of History of Medicine, Hyderabad.**

The Institute is engaged in collection of the source material related to the history of medicine like study and collection-compliation of old and rare manuscripts. Books editing and translation of valuable treatises, collection of information from archaeology epigraphic material, heriditary physicians biographies and such other sources viz., Accounts of foreign travellers in India.

Publication of selected important manuscripts. Study of historical development and evolution of concepts/historical aspects on drugs & diseases. Maintenance/development of medico-historical museum and library and provision of reference service for research workers.

Submitted an article 'Arundatta' and zerox copies of the three rare books were procured viz., Nadidarshan by Rajvaidya Anand Swamy, Plague Vrithanth' by Surajprasada Sharma, Sarath Charaka Samhita by Gopal Dixit. Collected 13 medical manuscripts from Tirupati, Tirumala, Vijaywada, Vanukur and Rajmundari. Procured 32 pages of Kulliyat Advia, written by H.K. Kabeeruddin. Preparation of article on drug . Arjuna and disease "Vicharchika" is under progress. Prepared article "Eminent Ayurvedic Physicians of Nizam Dynasty'- Biographies of 10 Physicins of Andhra Pradesh were collected. Bibiliogrphic index of B.I.I.H.M. and other medico-historical journals upto Vol. 23/1993 consolidated for publication.

During the reporting period Volume No. 23/1993/Issues No. 2 and Vol. 24/1994 No. 1 have been brought out and issue No. 2 of Vol. 24/1994 is ready for Press. In the Library 72 books are added. 286 periodicals were obtained for the Library of the Institute. 12 medical manuscripts are acquired, Zerox copies of 8 rare books on medicine and allied sciences are acquired. 137 new illustrations were made for referrel services.

The Research Officer Incharge has presented a paper on 'Swarna Kshiri' in Dusta Vrana at the 1st National Symposium on Charaka Samhita held at Varanasi on 3rd Feb., 1995. R.O. and R.A. both presented papers at the Silver Jubilee Celebrations and Seminar on Research in Ayurveda & Siddha, organised by C.C.R.A.S., New Delhi on 20 - 22nd March, 1995.

As usual the museum & photographic section with facilities of plain paper copier helped scholars and research staff of the Institute and enriched the material of the Institute by taking copies of paper manuscripts, books and articles from journals, etc. Renovation of Museum been taken up and all the photographs have been replaced with new enlarged size.

**Documentation and Publication Division, New Delhi**

The references from classical and current information have been gathered Ten (10) single drugs of vegetable and mineral origin viz., Nimba, Kamsya (Bronze), Kasisa, Peetals, Shilajit, Vanga, Swarna, Tankana, Tamra, Rajata. Additional information have been collected i.e. Amlapitta Haran Ausadhian viz., Amalaki, Bhringaraja, Jalakumbhi-Naweela Patola, Shatavari, Vasa, Yastimadhu besides a few herbomineral formulations i.e. Agnitundivati, Tamrabhasma, Sutasekhara rasa, Sankha bhasma, as regards compilation of references on diseass. Textual references on disease conditions on Rajayaksma from Sangrah granthas and periodicals have been collected.

Under Bibliographical series-Index cards numbering two hundred have been prepared from selected Ayurvedic/modern scientific journals on Medical Research/Journal of Research in Indian Medicine Yoga and Naturopathy, Nagarjuna. Sachitra Ayurveda etc. The querries were replied and Xerox copies of the article were provided to Vaidyas, research scholars. scientists on their requisitions.

On the spot orientation-cum-training information handling have been provided to Dr. Damodar Sharma- W.H.O. fellow of Nepal during his visit in Dec., 1994. Assistance of D.P.D. Technical staff was provided to Hqrs.-C.C.R.A.S. for technical write up, querries related to Ministry of Health & Family Welfare, preparation of monograph and its publication.

Efforts have been made to procure manuscripts and rare Ayurvedic works from oriental Institutes, archives, P.G. Institutes and Vaidyas. Worked on Ayurveda with a view to enrich the literary potential of the Centre. 11 Books/reports and three journals were added. 23 books were classified. Reducted press clipping services was provided on demand to readers services. Photographic coverage of Seminar on Amachi System of Medicine-Leh, during Oct., 1994, Silver Jubilee Celebrations and Seminar on Ayurveda and Siddha held during March, 1995. Photographs taken 653 (35 mm.), photo prints prepared 733. Transparencies for Silver Jubilee Seminar prepared 132, Zerox work 28184 impressions.

**Publication Wing :**

Conjoined issue of the 14th volume of the J.R.A.S. for the year 1993 (Issue 1 & 2, 3 & 4) and one conjoined issue (1 & 2) of B.M.E.B.R., 1993 beside two monographs, one of Saffron and other one-"Valmiki-Ramayan Mein Ayurved" have been released. In addition to this Bimonthly News Letter (Jan-Feb., 1995) and Souvenir on Silver Jubilee Celebrations are being published. Total sales of B.M.E.B.R. & J.R.A.S. is Rs. 17400/- and Books / Monographs is Rs. 29176 only.

During the period under report the D.P.D. was visited by Dr. Brijmeyer of U.S.A., Dr. Damodar Sharma. W.H.O. Fellow (Nepal) and Managing Director, Dhootpapeswar Pharmacy.

**Literary Research Unit, A.L.R.C.A., Madras.**

The Literary Research Unit of Thanjavur was transferred to Dr. A. Lakshmipathi Research Centre for Ayurveda, V.H.S. Campus, Madras. The works conducted by the Literary Research Unit, Thanjavur are being taken up by this Unit. At present the following works are being scrutinized, edited and press copies are being prepared.

1) Sharbhendra - Vaidyarathnavali
2) Chikitsamaritasagara
3) Netraprakasika
4) Rasarajalakshmi
5) Dhanvantrivilasam
6) Sathasloki
7) Dhanvantri Saranidhi
8) Nanavidha vaidyam
9) Pathyapathya
10) Kaumara Tantram
11) Netra Roganidanam.

The manuscript Sharbhendra-Vaidyaratnavali and Chikitsamrit-sagar have been completed by the erstwhile unit of Thanjavur. The works was further taken up by the Hqrs. Literary Research cell. The press copies of two manuscripts Sharebhendra Ratnawali and Chikitsamritasagar are ready to be handed over for publication. The rest of the manuscripts are in a small booklet form which needs re-scrutiny, editing afterwards the press copies can be prepared. In addition to this, this unit is also engaged in upkeeping of 80 palm leaf manuscripts. This unit has a reference library, manuscripts and its upkeep. Purchase of books from time to time and catalouging work is being done.

## AMCHI RESEARCH UNIT, LEH

This unit has carried out clinical trials of Tibetan/Amchi medicinal preparations in the treatment of peptic ulcer, rheumatic diseases, hypertension and eczema. Compliation work on manuscripts of Tibetan medicine which are quite old and rare has been taken up by the unit and have also published a book based on the tanents of Amchi/Tibetan Medicine entitled "Amchi Pharmaco-Therapeutics". The Council have also extensively surveyed the medico-botanical wealth of Ladakh area and have identified sources of Shilajatu and many other minerals.

The Council has organised an Expert-Group meeting on 20-22 October, 1994 at Leh wherein fundamentals and medical practices of Tibetan medicine alongwith practices of Agnikarma and Moxibustion etc. practiced by Amchis were discussed between the experts of Ayurveda and Amchi system of medicine. 50 local Amchi and 15 Ayurvedic experts have participated in this work-shop.

The Project Officer and Research Officer have attended National Seminar at New Delhi and presented research papers on Amchi system of medicine.

## FAMILY WELFARE RESEARCH PROGRAMME

The programme have main aspect i.e. trails and chemico-pharmcological studies including toxicological studies. The clinical trials of herbal, herbo-mineral formulations and single plant drugs are conducted in human volunteers for study of their antifertility potential. On the other hand Chemico- pharmacological studies are designed for phytochemical fractions of plant drugs and study of their anti fertility potential anit-implantation, (anti-ovulatory and estrogenic) activity. The toxicological studies cover acute, sub-acute and chronic toxicity of drugs.

### Clinical Studies

Clinical evaluation of five drugs and drug combinations have been taken up at the Institutes/Units functioning at Ahmedabad, Bombay, Calcutta, Delhi, Jaipur, Lucknow, Patiala, Madras, Trivandrum and Varanasi. The details about the number of new cases included into the study during the reporting period, number of old cases carried forward from previous year number of drop outs and number of cases continuing at the end of reporting period separately for each drug is as under.

### Chemico-Pharmacological Studies

Chemico-Pharmacological studies were carried out at the Units functiong at Bhubaneshwar, Jamnagar, Trivandrum, Varanasi and Jhansi. The work carried out by these units is summarised hereunder :

1. **Banjauri (*Vicoa indica*)** - Whole extract Anti-implantation study **PhRUFT**

Earlier study upto 2 gm./kg. did not give any significant activity in female rats.

The extract was further tested using 5/10 and 25g./1kg. orally. The study is in progress and the results are to be analysed.

**2. Arka (*Calotropis procera*)** **PhRUFT**

Aqueous extracts of leaves and root were used for acute toxicity studies in the doses of 100 mg/kg - Not toxic.

**Arka (*Calotropis procera*)** Anti-implantation study **PhRUFT**

Leaf and root decoctions were given in doses of 10 and 25 g/kg. The study is in progress.

**3. Nirgundi (*Vitex negundo*)** Anti-implantation activity - carried out by using Holtzman rats. **PhRUFT**

Proven fertile females were used for study in groupsof 6 or more.

Vitex negundo stem extract in 10 gm and 25 g/kg and leaf extract in 5, 10 & 25 gm/kg. was administered to rats during the trial in control group, water was given orally. The study is in progress and the results are to be analysed

(b) Anti-fertility

Aqueous extract of shade dried leaves and stem were separately taken for preliminary study in female rats for their anti-fertility potentiality.

(c) Acute toxicity

Conducted by using albino mice (20-30 g.) of either sex and given decoction orally in single doses ranging from 100 mg. to 100 g./kg. (crude drug wt.)

The decoction upto 100 g/kg. dose level did not exhibit any toxicity or mortality

**4. Gunja (*Abrus precatorius*)** Anti-fertility effect **PhRUFT**

Whole plant at the doses of 150 mg. per rat per day showed 50% anti-fertility effect. Another set of the experiment by increasing the doses is in progress.

**5. Kemuka (*Costus specious*)** Anit-fertility effect **PhRUFV**

Juice part of the Kemuka has already been evaluated on different doses, but these were not effective in alcoholic extract. During reporting period, its alcoholic extract was screened on female albino rats at the dose of 100 mg. per rat/per day showed no significant anit-fertility effect.

**6. Ghrit kumari (*Aloe barbadensis*)** Anti-fertility studies. **PhRUFJ**

The water soluble portion of Aloe barbadensis was taken for study in doses of 200 mg./kg. It did not produce anti-fertility effect. However 50% mortality was observed. The drug did not effect pup weight, length and litter size.

**7. Japakusum (*Hibiscus rosasinenis* (Flower) & Gunja (*Abrus precatorius* (Seeds) PhRUFJBh**

Earlier in our laboratory trials on Hibiscus-rosasinensis (Flower) and Abrus precatorius (seeds) proved their efficacy in controlling the fertility. Further trials have been taken to study their effect on the metabolism and cytological studies with efficacy in target.

After feeding the powdered seeds of *Abrus precatorius* and *Hibiscus rosasinensis* (flower) for 120 days. 50 percent of animals in each group are selected for breeding efficacy. Experimental female drug treated. After daily examination of vaginal smear for about four to five cells (20 to 30 days) start with control male for breeding and control females with experimental male successful mating. Gestation of normal period observed. However the litter size was unusual in most of the groups. Usually the litter size in control groups is 5-7 in number but the treated groups maximum number 4. Except this observation the drug could not reveal any cumulative effect.

Regarding the cytogenetics to confirm whether the prolonged treatment have any affect on structure or number of chromosome in albino rats. It requires following procedure in future for further results (i) measurement of chromosome (ii) preparation of laryotype and idiogram (iii) and statistical analysis work carried out till the final preparation of slides and needs to photogrphic exposure and preparation of karuotype idiogram which involves a good amount of expenditures.

However, these trials require repeatation. Till such period nothing can be concluded.

**8. Aphrodisiac compound PhRUFJ**

A preliminary study on a compound herbal preparation made from 10 well known drugs viz. 1. Akarkara 2. Amalaki, 3. Atmagupta, 4. Jatiphala, 5. Kokilaksha, 6. Svetamusali, 7. Salmali were assessed for aphrodisiac activity.

The drug was administered orally in the form of fine suspension in milk and sugar in the dose of 600 mg/kg body weight. It did not affect sexual activity of normal male rats. However, it significantly enhanced the sexual activity in hypoactive males.

Further, it was inferred that the increased sexual activity in hypoactive males may be due to the presence of moderate androgenic activity in the test formulation.

**Statement of the Cases Studied for clinical evaluation of oral contraceptive agents during the year 1994-1995**

| Name of the drug | Tried Centres Studies | New | Old | Total | Number of cases Drop out due to pregnancy | toxicity | Others | Continuing | |
|---|---|---|---|---|---|---|---|---|---|
| Ayush AC-4 | Lucknow | 39 | 74 | 113 | | | | 20 | 93 |
| | Trivandrum | 53 | 82 | 135 | - | 1 | 21 | 30 | 83 |
| | Madras | - | - | - | - | - | - | - | - |
| | Calcutta | 13 | 11 | 24 | 2 | - | 11 | - | 11 |
| | Patiala | 36 | 15 | 51 | 5 | - | 3 | 26 | 17 |
| | Bombay | 20 | 37 | 57 | - | 3 | - | 19 | 35 |
| | Jaipur | 9 | - | 9 | - | - | 9 | - | - |
| Pipplyadi yoga | | | | | | | | | |
| | Calcutta | 13 | 19 | 32 | 1 | 1 | - | 11 | 19 |
| | Ahmedabad | 20 | 65 | 85 | 1 | - | 1 | 20 | 63 |
| Neem oil | | | | | | | | | |
| | New Delhi | 31 | 21 | 52 | 3 | 1 | 00 | 24 | 24 |
| Vandhyavari | | | | | | | | | |
| | Bombay | - | - | - | - | - | - | - | - |
| | Trivandrum | - | 7 | - | - | - | - | - | 7 |
| R.R.I., Lucknow | | | | | | | | | |

13 case dropped out as they have completed 36 cycles.

## PUBLICATIONS/PARTICIPATION

1. Publication

| S.No. | Name of the Author(S) | Title of the paper | Name of the Journal/Seminar | Date of Publication/Presentation |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| **A. Clinical Basic & Health Care Research** | | | | |
| 1. | Anil Kumar & Naresh Kumar | To evaluate the therapeutic- efficacy of different drug schedules in the management of Nephro uretero calculi | Silver Jubilee Seminar on Research in Ay. & Siddha at at HQs. New Delhi | 20-22 March 1995 |
| 2. | Bansal, N.K. | Some Observation on Community Health Survey of 76, Tribal villages of Navapur Taluka Distt. Dhule (M.S.) | - do - | - do - |
| 3. | Bhatia, d. Shahi, V.K. Ruhil S. D. & Sharma K.D. | Observation on the role of Ayush-64 in the malaria epidemic in Western Rajasthan | - do - | - do - |
| 4. | Chaturvedi, D.D. | Health Education (Key note paper) | - do - | - do - |
| 5. | Chopra, K.K. | Management of pre-auricular sinus with Kshara Sutra | - do - | - do - |
| 6. | Chopra, K.K. | Urinary diseases and their treatment | - do - | - do - |

| S.No. | Name of the Author(S) | Title of the paper | Name of the Journal/Seminar | Date of Publication/Presentation |
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| 1 | 2 | 3 | 4 | 5 |
| 7. | Choudhary D.P. | Observation on effect of Saptamrit Lauha and Netra Bindu on children suffering From Myopia | Silver Jubilee Seminar of CCRAS, New Delhi | March, 1995 |
| 8. | Choudhary, D.P. Rajagopalan, S.S. & Pandey, V.N. | Clinical studies on effect of Ayush - 82 in the management of Madhumeha (Diabetes mellitus) | - do - | - do - |
| 9. | Gopakumar Pillai, N.G.K. and Nair C.P.R. | Clinical study on Nisamalaki Curna in Ikshumeha (Diabetes mellitus) | - do - | - do - |
| 10. | Gouri, N. | Extensive clinical study of Ayush -64 for its Anti-malarial effect. | - do - | - do - |
| 11. | Gupta, S. Shahi, V.K. & Mishra, D.K. | Vyana Bala Vaishmya Nidan Cikitsa main Katipaya Ayurvediya Aushadiyan ki Karmukta ka Tulanatmaka Adhyanan (Hindi) | - do - | - do - |
| 12. | Jha, S.D. & Pandey V.N. | Jirna Saisaviya aikanga vata main Bahyabhyantara Ayurvedeiya Cikitsa ka Prabhava (Hindi) | - do - | - do - |
| 13. | Jha, S.D. Pandey V.N. | Kitibha Kustha par Bahyabhyantar Ayurvediya cikitsa ka prabhava (Hindi) | - do - | - do - |
| 14. | Jha, S.D. | Suddha Bhallataka in the management of Gridhrasi | - do - | - do - |

| S.No. | Name of the Author(S) | Title of the paper | Name of the Journal/Seminar | Date of Publication/Presentation |
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| 14(a) | Kuppurajan K. | Anti-anxiety effect of an Ayurvedic compound prepration a cross over trial | Silver Jubilee Seminar of CCRAS, New Delhi | March, 1995 |
| 14(b) | Kuppurajan K. | Hypoglycemic effect of Coccinia indica and Nisamalaki in Diabetes mellitus | - do - | - do - |
| 15. | Menon T.V. Nair P.K.S. & Namboodiri P. K.N. | Method of quantifying the clinical features in Vatavyadhis | - do - | - do - |
| 16. | Mishra A.K. | Management of risk factors of coronary heart disease (Hrid-Roga) by an Ayurvedic formulation Pushkar Guggulu. | - do - | - do - |
| 17. | Mishra, D.K. | Effect of Ksara sutra in ano-Coccygeal Pilonidal sinus/Shalyaja Nadi Vrana | - do - | - do - |
| 18. | Mishra R. Chopra R.P. Saxena I. & Audicya K.C. | Survey & Surveillance studies in some rural areas of Jaipur Distt. | - do - | - do - |
| 19. | Nair P.K.S, & Namboodiri P.K.N. | Role of Vaitharana Basti (Vangasena) in the management of low back pain | - do - | - do - |
| 20. | Naresh Kumar & Anil Kumar | A Comparision of different drug schedules under different group of Grahani roga. | - do - | - do - |

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| 21. | Paddhi, M.M. | A study on Vicharchika by topical applications of two formulations prepared with plant *Lygodium flexuosum* Sw. | Silver Jubilee Seminar of CCRAS, New Delhi | March, 1995 |
| 22. | Pandey P.N. | Incidence of Shleepada (Filariasis) around BBSR & Clinical trial of various Ayurvedic formulations in different stages of the disease. | - do - | - do - |
| 23. | Pandey S.N. Dixit R.s. & Sharma a R.P. | Some important Ayurvedic medicinal plants in Bundelkhand in treatment of pregnancy of the prevention and cure of infantile disorders | - do - | - do - |
| 24. | Pathak N.N. | Vrhattraye mein Satavari ka prayogic adhyayan | - do - | - do - |
| 25. | Pillai B.K.R. Amma, K.C.B. & Pillai N.G.K. | Double blind study on Psoriasis (Kitibha) | - do - | - do - |
| 26. | Pillai, N.G.K. Pillai. B.K.R. & Nair | The effect of Psoralia on epiatung folliculities Roma mula (Vicharchika) | - do - | - do - |
| 27. | Rajagopalan V. | Effect of Ayushman - 8 in Manasa Mandata (Mental retardation) | - do - | - do - |
| 28. | Ruhil. S.D. & Pandey, V.N. | Effect of Pippali vardhman and other Ayurvedic medicines in the management of Tamaka swasa | - do - | - do - |
| 29. | Sannd, B.N. Anil Kumar & Naresh Kumar | To evaluate the effect of Ayurvedic drugs-Sveta Parpati with Pasana bheda and Gokshru in the management of Mutrasmari | JRAS 1994 | XIV (3-4) 98-114 |

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| 31. | Sahrawat D. H.B. & Malviya N.K. | Clinical evaluation of the effect of Swet parpati Pashanabhed, Goksuru and Kulatha in the management of Mutrasmari | Silver Jubilee Seminar of CCRAS New Delhi | March - 95 |
| 32. | Sharma B.B., Sharma H.B. & Malviya N.K. | A Clinical trial of Chandra Prabhavati, Trivang Bhasma and Vijayasara in Madhumeha | - do - | - do - |
| 33. | Sharma B.B., Sharma H.B. and Jadhav A.D. | Community Health Care at Village Karave, Bombay | - do - | - do - |
| 34. | Shetty, B.R. | Studies on the Rasayana effect of an Ayurvedic compound drug in apparently normal aged person | - do - | - do - |
| 35. | Singh, N. | Role of *Azadiracta indica* (Neem) in common skin disorders of man | Nat. Conf. on Trad. Med. Plants in skin care CIMAP Lucknow | Nov. 1994 pp 16 |
| 36. | Sripathi Rao, T. | Madhura Rasa Rasayanam | 1st Nat. Symp. on Charak Samhita Deptt. of Basic Prinicples Faculty of Ayurveda, Instt. of M.S. BHU, Varanasi, | 1-3 Feb. - 95 |
| 37. | Sripathi Rao T. | Prakriti- A prestigious Proposition of Charaka | - do - | - do - |

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| 39. | Sripathi Rao T. | Total approach of Tamaka Swasa in Charak | - do - | - do - |
| 40. | Tersia T. Le et al | Clinical studies of Khanja (Poliomyelitis) . | CCRAS Seminar . Silver Jubilee Seminar on Research in Ayurveda and Siddha held at CCRAS New Delhi | March - 95 |
| 41. | Trivedi V.P. Singh S.K. Sharma S.C., Pandey H.C. & Singh N. | A clinical trial of Tulsi in cases of laryngo pharyngitis and common cold | - do - | - do - |
| 42. | Trivedi VP etal | A prelininary clinical evaluation of Ayurvedic formulation saptilin in laryngopharyangitis and coryza (Common cold). | Proc. of World Cong. on BDM PM Lucknow | Feb. 19-22 |
| 43. | Tyagi M.K. & Prasad R.D. | Clinical evaluation of the effect of Trayodashng guggulu, Vistindaka Vati in the management of Gridhrasi | Silver Jubilee Seminar of CCRAs held at New Delhi | March - 95 |
| 44. | Tyagi R.K. | Clinical trial of certain herbal and herbo mineral in Raktapradara | - do - | - do - |
| **B.Medico Botanical Survey and Cultivation** | | | | |
| 45. | Dave S.K. & Mehta P.J. | Collection/Preservation and Marketing of medicinal plants | - do - | - do - |

| S.No. | Name of the Author(S) | Title of the paper | Name of the Journal/Seminar | Date of Publication/Presentation |
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| 46. | Dennis, T.J. | Rudraksha-not just a spiritual symbol but also a medicinal remedy | - do - | March. 95 |
| 47. | Dixit R.S. & Pandey S.N. | Some important Ayurvedic Medicinal plants of Bundelkhand | All India Seminar on Vanoushedhi Vigyan. Sri Vaidyanath Ay. Bhawan Jhansi | March - 95 |
| 48. | Issar R.K. | Medico-ethno - botanical survey of plants potential and its commercial utility in India. | Silver Jubilee Seminar held at New Delhi | March - 95 |
| 49. | Maity S.K. | Amulya Banausadhi-Tulsi , Durba & Kokilaksha | Krishi Vikas Barta | 11/94 |
| 50. | Mishra O.P. | Reconvaissance of Herbal treasure of Bundelkhand | Vaidya Nath Ay. Bhawan Jhansi | 25-26 March 1995 |
| 51. | Mishra O.P. & Naqvi S.M. | Ethno-Medico-Botany from Tribes of M.P. | Silver Jubilee. Seminar of CCRAS held in New Delhi | March - 95 |
| 52. | Pandey G. | Arsa Vanaspatika Vikirna Samvodho ka kendriya niriksana | Sach. Ay. | 1994, 431 - 434 |
| 53. | Pandey G. | Gaja kanda vikas tatha Samiksa | Sach. Ay. | 1994, 46 (10) |
| 54. | Sharma P.C. & Dennis T.J. | Collection of Plant drugs with reference to eco-climatic-factors-Ayurvedic concepts | 1st Int. Sem. on copm. Med. Pune | 21-22 Jan.. 95 |

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| 55. | Singh D.N. | Use of Medicinal Plants of Sikkim in Ay. Med,. | Talk delivered on May 1994 at Planning & Dev. Deptt. at Community Hall Gangtok (Sikkim) | |
| 56. | Yoganarsimhan S.N. | Contributions to the Ayurvedic materia media from botanical survey Karnataka state | IV Int. Cong. on Eth. Bot Lucknow | |
| **C. CULTIVATION** | | | | |
| 57. | Acharya B.M. | Invitro culture of medicinally important ephimeral plant *Glossocardia bosvallia* | Nat. Symp. on current Trends in Plant Sciences held on at Hyderabad | 11-12 March, 1995 |
| 58. | Billore K.V. | Kamadgiri (Chitrakoot, Sacrew grove) - an example in situ conservation | CCRAS Silver Jubilee Seminar New Delhi | March - 1995 |
| 59. | Das S.R. | Some beneficial weeds of cultivation from Nadia Distt West Bengal | - d0 | - do - |
| 60. | Joseph T.G. & Yadav B.B.L. | Organised Training & Demonstration of Guggulu tapping and cultivation to villages first officials etc. at Paragarh (Orissa) | Programme Sponsored by M/s Trees for Life an Voluntary Organisation | |
| 61. | Joshi G.C. Tewari V.P. & Tewari K.C. | *Taxus baccata* Linn. emerging anticancer plant drug and its cultivation strategy | , Sach. Ay. | 1995 Feb. vol. I |

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| 62. | Joshi G.C., Tewari K.C., Pandey N.K. & Pandey G. | *Dioscorea kumaonsis* Kunth : a new source of anti rheumatic drug from kumaon Himalaya and its conservation strategy | Sach. Ay. | 1994, 47 298-299 |
| 63. | Mehendale VV Sharma P.C. | Preliminary observations on cultivation of Trivrita (*Operculina turpethum* (L.) S. Manso) | CCRAS Silver Jubilee Seminar on Ay & Siddha | March 20-22, 1995 |
| 64. | Pandey V.N. Joshi G.C. & Pandey G. | Successful cultivation of Pippali through agro trials in mountain region - a new achivement trends of drug development | - do - | - do - |
| 65. | Sharma P.C. & Yelne M.B. | Observations on in vitro propagation of Sariva (Hemidesmus indicus) R. Br. | - do - | - do - |
| 66. | Sharma P.C. & Dennis T.J. | Collection of plant drugs with reference to eco-climatic factors, Ayurvedic concepts vis-a-vis modern researches. | Seminar on Complementary Medicine Pune | Jan. 21-22, 1995 |
| 67. | Singh V.K. Shankeri Rama & Rao M.S. | Prospects of medicinal plants cultivation in Arunachal Pradesh | Silver Jubilee Seminar on Ay. held at New Delhi | March, 95 |
| 68. | Tiwari K.C. & Kabadal P.B. | Experimental cultivation of Saffron (Kumkum) | - do - | - do - |
| 69. | Tewari K.C. Pandey G. Gupta O.P., Uniyal M.R. Issar R.K. | Prospects of Saffron cultivation UP Hills with a nut shell account of agro technical resources | CCRAS Seminar held at N. Delhi | March 95 |

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| 70. | Tewari K.C. Tewari R. N. & Pandey N.K. | Important medicinal plant species of Jageswar forest range Distt Almora and conservation cultivation plant for yew (*Taxus baccata* Linn.) | Silver Jubilee Seminar of CCRAS, New Delhi | March, 95 |
| 71. | Tewari K.C. Joshi G.C. and Kabdal P.B. | A note on the insect/pest and fungal pathogens of Saffron (*Crocus sativus* Linn.) and their control. | Sach. Ay. 1994 | March, 46 (9) |
| 72. | Tewari R.N. & Pandey G. | Medicinal Pteridophytes of Kumaon & Garhwal U.P. | CCRAS Seminar held at New Delhi | March 95 |
| 73. | Yadav BBL, Billore K.V. Josheph T.G. | Seasonal effect on extraction of oleogum resin in *Commiphora wightii* (Arn) Bhand. | - do - | - do - |
| 74. | Yadav B.B.L. & Chaturvedi D.D. | A successful method of propogation through air layring in *Commiphora wightii* (Arn.) Bhand. | - do - | - do - |
| 75. | Yadav B.B.L. Joseph T.G., Billore K.V. Mishra K.P. & Chaturvedi D.D. | Effect of tapping using ethophon on the mortality of of guggulu plants. | - do - | - do - |
| **D. PHARMACOGNOSTICAL RESEARCHES** | | | | |
| 76. | Brindha P. et al | Pharmacognosy of Sariva (*Cryptolepis buchanani*) | - do - | - do - |
| 77. | Brindha P. | Pharmacognostic studies on *Leonotis nepetaefolia* R. Br. | 46th IPC held at Chandigarh | 28-30th Dec., 1995 |

| S.No. | Name of the Author(S) | Title of the paper | Name of the Journal/Seminar | Date of Publication/Presentation |
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| 78. | Brindha P. | Pharmacognostic studies in Solidago and Tridax | Int. Comp. Conf. at the Royal Botanical Garden Kew, England | 1-5th Aug. 94 |
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| 82. | Dey D. & Das M.N. | Pharmacognosy of Stem-bark of Pterocarpus marsupium | - do - | - do- |
| 83. | Dey D. & Das M.N. | Pharmacognostic analysis of root and fruit of Goksura (*Pedalium murex* Linn.) | Silver Jubilee Seminar of CCRAS. New Delhi | March, 95 |
| 84. | Dhar B. Pant P. and Issar R.K. | Chemotaxonomy of some Ayurvedic formulary plant of Delhi | - do - | - do - |
| 85. | Issar R.K. et al | Pharmacognostic studies of the Japa flowers & its possible substitutes. | - do - | - do- |
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| S.No. | Name of the Author(S) | Title of the paper | Name of the Journal/Seminar | Date of Publication/Presentation |
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| 88. | Sasikala E. Ali U.I. and Kundu AB | On the pharmacognosy of Clerodendrum inermii Gaertn. (leaf) | Seminar on CCRAS, New Delhi | -do- |
| 89. | Yelne M.B. Dennis T.J. and Sharma PC | Pharmacognostic investigations on stem bark and fruits of tinduka (D. peregrina (G) Gu. | - do - | -do- |
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| 90. | Ali Khan et al | Purification and characterisation of a low molecular weight antivial protein from Operculine turpethum | Proc. world Cong. BDM<br>KGMC Lucknow | Feb. 19-22, 1995 |
| 91. | Acharya B.M. | Terpene and steroid biosynthesis in tissue culture of Glosscardia bosvallia Roxb. | Silver Jubilee Seminar of CCRAS, New Delhi | March, 95 |
| 92. | Acharya B.M. | Preservation of Ayurvedic and Unani Herbal Drugs against fungal, bacterial and insect growth. | - do - | -do- |
| 93. | Banerji A. et al. | Chemical investigation of Hemidesmus indicus | 6th Asian chemical cong. Manila | |

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| 96. | Barik BR et al. | Triterpenoides from Artocarpus heterophyllus | Phytochemistry | 1994, 34 1001 - 1004 |
| 97. | Chatterjee A. et al. | Naturally occuring coumarino-lignoids | Phytochemistry | 1994 issue 1992, 69, 611 |
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| 99. | Dennis T.J. | Drug analysis and its role in herbal medicine | CCRAS Seminar, New Delhi | March, 95 |
| 100. | Joshi P.C. etal. | Chemistry of coumarinolignoids a rare class of plants having anti cancer and anti hepatotoxic activity | CCRAS Seminar, New Delhi | -do- |
| 101. | Joshi P.C. et al. | Coumarins from Indian Rutaceae Boenninghausenia albiflora Reichb ex Meissner | Pov Indian Science Cong. Calcutta | 1995 |
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| 106. | Mondal D. N. et al. | Holoptelin A and B, two new triterpenoid fatty acid esters from Holoptelea integrifolia | Ind. Drug. | 1993, 31 (2) |
| 107. | Mathurama V et al. | Iridods and pheny lpropanoid glycosides of Nyctanthes arbort ristis. | CCRAS Seminar New Delhi | March 95 |
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## Technical Report Siddha

| S. No. | Year of estb. | Name | Abbreviation |
|---|---|---|---|
| 1. | 1970 | Central Research Institute (Siddha) Madras. | CRISM |
| 2. | 1979 | Regional Research Institute (Siddha) Pondicherry. | RRISP |
| 3. | 1979 | Mobile Clinical Research Unit (Siddha) Madras. | MCRUSM |
| 4. | 1980 | Clinical Research Unit (Siddha) Palayamkottai. | CRUSP |
| 5. | 1981 | Clinical Research Unit (Siddha) New Delhi. | CRUSND |
| 6. | 1986 | Clinical Research Unit (Siddha) Trivandrum. | CRUST |
| 7. | 1979 | Drug Research Scheme (Siddha) (MD), Madras. | DRS (MD)M |
| 8. | 1979 | Drug Standardisation Research Unit (Siddha) Madras. | DSRUSM |
| 9. | 1982 | Drug Standardisation Research Unit (Siddha) Bangalore. | DSRUSB |
| 10. | 1981 | Drug Standardisation Research Unit (Siddha) Trivandrum. | DSRUST |
| 11. | 1971 | Survey of Medicinal Plants Unit (Siddha) Palayamkottai. | SMPUSP |
| 12. | 1979 | Literary Research and Documentation Department (Siddha) Madras. | LR&DDSM |
| 13. | 1986 | Tribal Realth Care Research Project (Siddha) Tirupatur. N.A.A. Dt. | THCRPST |
| 14. | 1986 | Tribal Health Care Research Project (Siddha) Kalasa. (Karnataka) | THCRPSK |

## CLINICAL RESEARCH PROGRAMME

The clinical research programme in Siddha Medicine is being carried out on selected clinical conditions by the Institutes/Units of Siddha Medicine functioning under the Council. During the reporting year, the clinical conditions like Kalanjaga padai (Psoriasis): Putru noi (cancer); Gunmam (Intestinal disorders); Manjal kamalai (Infective hepatitis); Saudhu vatha solli (Rhematoid arthritis); Velluppunoi (Anaemia); Venkuttam (Leucoderma) etc. Brief resume of work carried out on each clinical conditions are reported hereunder:

### Kalanjaga Padai (Psoriasis)

Kalanjaga padai has been taken up for study by the Central Research Institute (S) Madras and Clinical Research Unit (S) Palayamkottai. The coded drug" 777 oil" was administered at the dose level of 10 ml with milk two times a day to all the cases selected for trial. The patients were also advised to apply the oil externally on the effected parts of the body. The results of the treatment are reported hereunder:

Results of Clinical/ Therapeutic trial of 777 oil on Kalanjaga padai (Psoriasis)

| S. No. | Instt./Unit | Total cases | Results of the treatment Com. r. | mar.r. | mod.r. | LAMA |
|---|---|---|---|---|---|---|
| 1. | CRISM | 60 | 9 | 15 | 18 | 18 |
| 2. | CRUSP | 2 | - | 1 | - | 1 |
| | TOTAL | 62 | 9 | 16 | 18 | 19 |

### Putru Noi (Cancer)

This disease condition has been described in the Siddha texts under the head "Verananoigal". It is described that this conditions was named after the affected parts/organ i.e. if the breast is affected it is called as "Mulai putru noi". The study was under taken in Central Research Institute (S), Madras. The coded drugs RGX, VK2, and SKX which was fourmulated by the Institute has been taken up for trial. The drugs at the dose level of 500 mg. each filled in gelatine capsules were administered in two divided doses alongwith milk in a day. Ulcers and Tumors were dressed with Nithiyakalyani Kalkam and Pachaiennai with thurusu. Eight cases were studied during the reporting period. Out of which two cases showed mild relief and six cases discharged at request. It is noted that

all the cases showed considerable reduction in the size/growth of the ulcer/tumors, reduction/or arrest of the discharge and also reduction of pain.

**Manjal Kamalai (Infective hepatitis)**

The study on this clinical condition has been carried out in the Central Research Institute (S), Madras. The trial drug Athimathura chooranam was administered at the dose level of 1gm. in two divided doses alongwith water. Seven cases were selected for trial during the reporting year. Out of the seven cases, two cases showed marked relief, four cases showed moderate relief and remaining one case did not responded to the treatment.

**Sandhu Vatha Soolai (Rheumatoid arthritis)**

Sandhu Vatha Soolai is described as one of the 80 Vatharogaggal in the Siddha classical literature. A study to evaluate the effect of Vanga churnam in the management of Sandhu Vatha Soolai has been taken up by CRI(S) Madras. The drug was administered at the dose level of 200 mg. twice a day alongwith honey. Tamarind and chilli free diet with less salt was advised to all the 12 cases selected for trial. Myna tailam was advised for external for trial, one case showed complete relief, six cases showed marked relief and five cases showed moderate relief.

**Vatha Soolai**

This disease condition has been described in the Siddha texts in the head "Vatharogaggal". The study to evoluvate the effect of Chandamarutham and Vatha Kasari thailam in the cases of Vatha soolai has been taken up by the Regional Research Institute (S). Pondicherry. The trial drug was applied externally on the affected parts. Forty four cases were taken up for study during the reporting year. Out of the forty four cases, sixteen cases got complete relief, fifteen cases got marked relief and thirteen cases did not responded to the treatment.

**Vali Gunmam (Peptic ulcer)**

This disease condition is one of the eight varities of the "Gunmarogaggal" found in the Siddha texts. The Central Research Institute(S), Madras has taken up the trial on this disease condition to determine the usefulness of Naga parpam. The patients suffering with

severe pain in the abdomen in relation to food, discomfort in the epigastric region, nausea, vomiting both eructation and haematamesis etc. were selected for trial. The diagnosis was further confirmed with modern parameters such as FTM, Barium meal, X-Ray etc. The trial drug administered at the dose level of 200mg. filled in gelatine capsules twice a day for five days. Omam bath (Kalkam) and gengeli oil bath have been advised on 5th and 6th days. The course was repeated for two more time to complete the duration of the study. Eight cases were taken up for study during reporting year. Out of the eight cases, three cases, showed marked relief, two cases showed moderate relief and three cases showed mild relief.

**Vellupu Noi (Anaemia)**

Clinical studies were conducted in seven cases of Vellupu Noi at Regional Research Institute(S), Pondicherry to determine the effect of Aya bringaraja karpam. The trial drug it the dose level of 260 mg. three times a day alongwith honey. Duration of the study has been fixed as three weeks. Out of the seven cases taken up for trial, one case got complete relief, three cases got marked relief and rest of the three cases did not responded to the treatment.

**Gum (Intestinal disorders)**

A study was undertaken at Regional Research Institute (S), Pondicherry and Clinical Research Unit's (S) Trivandrum and Palayamkottai . The trial drugs Uppuchendooram, Gunmagudori mezhugu, and Kavithal chooranam were taken up to study their effect on this clinical condition. Out of the 7 cases taken up for the trial, one case got complete relief, three cases got marked relief and rest of the three cases did not responded to the treatment.

**Neerazhivu (Diabetes mellitus)**

Heerazhivu is one of the "Siruneer noigal" described in Siddha literature. The study in this clinical condition has been taken up by the Clinical Research Unit(S), New Delhi and clinical wing of Drug Research Scheme (MD), Madras. The trial drugs Abraga chendoorm and Kezhanelli chooranam are taken up to evaluate their efficacy in the management of Neerazhivu. The results of the treatment are tabled below :

**Results of Clinical/Therapeutic Trial of Siddha Preparations on Neerazhivu (Diabetes mellitus)**

| S. No. | Drugs | Total cases | Results of the treatment Co. r. | mar.r. | mod.r. | LAMA |
|---|---|---|---|---|---|---|
| 1. | Abraga chendooram (200mg. BD) | 77 | - | 41 | 20 | 16 |
| 2. | Keezhanelli Chooranam (500 mg. BD) | 178 | - | 20 | 84 | 74 |
| | TOTAL | 255 | - | 61 | 104 | 90 |

**Venkuttam (Leucoderma)**

Venkuttam is one of the eighteen varities of kuttanoigal discribed in Siddha texts under skin diseases. Response of the selected drugs like Thamira chendooram, Ponnimilai chendooram and Chirattai thailam (external use) were studied at the Clinical Wing of Drug Research Scheme (MD), Madras. The details of the results of the treatment are tabled hereunder. The study revealed that the drugs did not showed any toxic/side effects even it is tried for longer period.

| S. No. | Drugs | Total cases | Results of the treatment Co. r. | mar.r. | mod.r. | LAMA |
|---|---|---|---|---|---|---|
| 1. | Thamira chendooram | 10 | - | - | 2 | 8 |
| 2. | Ponnimilai chendooram Chirattai thailam | 10 | - | - | 2 | 8 |
| | TOTAL | 20 | - | - | 4 | 16 |

**Sarumanoigal (Skin disorders)**

The study on this clinical condition was carried out at the Clinical Research Unit(S), Trivandrum. The efficacy of the drugs such as Irunelli karpam, Gandhaga the dose levels of 130mg. and 2g. respectively two times a day in two groups. The third group received combination both the drugs. All the selected cases received Karappan thailam or Aruganpul thailam for external application. The results of the treatments is given in the following Table :

**Results of Clinical/Therapeutic Trial of Siddha Preparation on Sarumanoigal (Skin disorders)**

| S. No. | Drugs | Total cases | Results of the treatment Co. r. | mar.r. | mod.r. | LAMA |
|---|---|---|---|---|---|---|
| 1. | Irunellai karpam (130mg. BD) Karappan thailam (ext.) | 5 | 2 | 2 | - | 1 |
| 2. | Gandhaga rasayanam (2g. BD) Aruganpul thilam (ext.) | 6 | 3 | 1 | - | 2 |
| 3. | Combination of S. No. 1 & 2 | 4 | 2 | 1 | - | 1 |
| | TOTAL | 15 | 7 | 4 | - | 4 |

**Vellainoi (Leucorrhoea)**

Vellainoi is one of the maglirnoigal described in Siddha texts. Chemparuthipoo kudineer, Kukkil parpam have been taken up for trial at Clinical Research Unit (S) Trivandrum. 12 cases were studied during the reporting year. Out of the twelve cases, 7 cases showed complete relief, 3 cases showed marked relief and 2 cases did not responded to the treatment.

**Eraippunoi (Bronchial asthma)**

Eraippunoi is one of the respiratory diseases described in Siddha Literature. The efficacy of Iruneli karpam, Swasakudri mathirai was studied in the Clinical Research Unit(S), Trivandrum. 18 cases of Erippunoi were reported during the period under review. Out of the 18 cases, 15 cases showed complete relief, 2 cases showed marked relief and one case did not responded to the treatment.

**Yanaikkalnoi (Filariasis)**

Yanaikkalnoi is described in Siddha Literature as one of the 30 Vatha diseases. The effect of Linga chendooram, Thazhampoor mathirai and Kakkattanver karkam their combinations were studied in the Clinical Research Unit(S), Trivandrum. The study was carried out in three groups and also both in carrier and manifested cases of Yanaikkalnoi attended the out-patient department. 120 cases were studied during the reporting year. The following Table shows the results of the treatment :

**Results of Clinical/Therapeutic Trial of Siddha Preparations on Yanaikkalnoi (Filariasis)**

| S. No. | Drugs | Total cases | Results of the treatment Com. r. | mar.r. | mod.r. | LAMA |
|---|---|---|---|---|---|---|
| 1. | A. Linga chendooram | 40 | 31 | 7 | 2 | - |
| 2. | B. Thazhampoo mathirai and Nilavembu Kudineer | 40 | 22 | 11 | 7 | - |
| 3. | C. Kakkattanver karkam | 40 | 18 | 16 | 6 | - |
| | TOTAL | 120 | 71 | 34 | 15 | - |

**Out-Patients / In-Patients Attendence at a Glance**

| S. No. | Institutes/Units | No. of patients attended OPD. | | | No. of patients attended IPD. |
|---|---|---|---|---|---|
| | | New | Old | Total | |
| 1. | CRI(S), Madras | 5650 | 9772 | 15,422 | 95 |
| 2. | RRI(S), Pondicherry | 3862 | 7784 | 11,647 | 55 |
| 3. | CRU(S), Palayamkottai | 330 | 149 | 479 | - |
| 4. | CRU(S), New Delhi | 98 | 819 | 917 | - |
| 5. | CRU(S), Trivandrum | 1299 | 1775 | 3073 | - |
| 6. | DRS(MD), Madras | 49 | - | 49 | - |
| | Total | 11,288 | 20,299 | 31,587 | 150 |

## HEALTH CARE RESEARCH PROGRAMME

Health care research programme has been carried out by Mobile Clinical Research Units attached with Central Research Institute, Madras and Regional Research Institute, Pondicherry, and also two tribal Health Care Research Programme at Kalasa (Karanatak) and Tiruppatur (Tamil Nadu). Brief resume of the work carried during the reporting period is provided hereunder :

**Tribal Health Care Research Programme** **THCRPST**

The team conducted periodical study tours in the ten tribal pockets of Jawadhi Hills, Bhimakulam and Pungampattu nadu of Alangayam Block and also the nearby villages of the Tirupatur Block. The team conducted 29 trips and covered 9835 individuals from the total population. 1339 patients were provided incidental medical aid, Erigunmam, Iraippunoi, Kudarpuzhunoi, Neerkkovai, Moolam, Palnoigal, Sirangu, Peenasam, Sandhuvatham, Tholnoigal, Valigunmam, Venpadai, Suram Soothaganoi, etc.

**Mobile Clinical Research Programme** **MCRUSM**

The team conducted 56 visits in the villages during the reporting year and collected information on 1720 individuals. Incidental medical aid were provided to 1953 and noted that most of the villagers were suffering from one or more diseases. Irumal, Eraippunoi, Vaeeruvali, Vellai, Muttuvali, Thalivali, Suranoigal, Tholnoigal, Pun/Naalpattapun, etc. were commonly found in the areas undertaken for study. Out of the 1953 cases reported 582 cases were new and 1371 cases were old.

## MEDICO-BOTANICAL RESEARCH PROGRAMME

It is a wellknown fact that "Drug" (Mrunthu) is the primary tool of entire Research Programme. Survey of forest ares for procuring drugs and arranging the supply of required materials for Researh purposes occupies an important place.

Medico-Botanical Survey Unit functioning at Govt. Siddha Medical College, Palayamkottai has taken up this task. This unit was established in 1971. During the past two and half decades, the unit is engaged in exploring the availability of Medicinal plants especially used in Siddha Medicine, in the forest areas of Tamil Nadu. The study includes Identification, Quantitative and Qualitative of the genuine drugs their substitute/adulterants etc.

During the reporting year, the survey unit conducted 33 tours in and around Tirunelveli and Kanyakumari forest areas for collecting the Medicinal plants to supply to other units. 93 specimens also collected during such tours for Herbarium. These are belong to 51 families, 93 genera and 100 species were collected and reported. 97 Index cards were prepared and reported. The availability of the plant "Sanjeevini" was established and its botanical identity also confirmed as *Selaginella wightti* (Selaginellaeae).

From the total collection, 99 herbarium sheets were identified and mounted. Out of the 99 plant specimens added to the herbarium the following are some of the important and widely used in Siddha Medicine. They are Sanjeevini (Selaginella wigtti.); Marul (Sansiveria roxburghiana.); Sunanarai (Alphonsea sclercarpa Thw.); Chinni (Acalypha fruticosa Forssk.); Knol-Knol (Brassica oleracea L.) Pulisuradi (Ipomoea pestigiridisp L.); Pirai (Strebulus taxoides Kurz.); Chenbagam (Michlea champaca L.); Vellakodi (Vallaris solanacea (Rotte) Kuntze.); Akayathamarai (Pistia stratiotes L.); Nanjaruppan (Tylophora indica Burm.f.) (Merr.); Kumpool a (Phyllanthus reticulatus Poir.); Thaivezhai (Cleome gynandra L.); Murasakkodi (Resisantia indica Halle.); Pullamanakku (Sebastinia chamelea (L) Muell Arg.); Pacchilai (Ocimum basilicum L.); Usil (Albizzia amara Boivin.); Kurncha (Wattakaka volubilis (L.f.) Stapf.); Kollankovai (Corallocarpus epigaeus Clarke.); Kotti (Aponogeton natans.); Virali (Dodonaea viscosa (L) Jacq.); Akkirankolli (Orthosiphon thymiflous Sleansen.); Naithulasi (Ocimum americanum L.); Kanvalipoo (Gloriosa superba L.); Sukkupul (Cymbopogon flexuosus Watta.); Seppunarujil (Indigofera linnaei Ali.); etc.

9 Different parts of the plants samples were collected and added to the museum making the total 732 of different drugs samples.

22.650 kg. of different parts of fresh plants were collected and supplied to the needy units of the Council and also PLIM, Ghaziabad during the reporting year.

## PHARMACOGNOSY RESEARCH PROGRAMME

The Pharmacognosy research programme is being undertaken at Pharmacognosy research wing functioning in DRS(MD), Madras. During the reporting year pharmacognostic anatomy of the following drug was reported .

**Sirupeelai (*Aerva lanata* Juss.) (Fam : Amarantaceae.)**

The study includes macro and microscopic characters alongwith its availability in terms of qualitative and quantitative nature, extrative values, inorganic qualitative test, preliminary phyto-chemical screening for the presence of different groups of chemical compounds etc. Besides this the Unit is also reporting distribution, description and medicinal values of the drug.

## CHEMICAL RESEARCH PROGRAMME

The Chemical research programme has been carried out by the Chemistry wing of DRS (MD) Madras. The drug Imbural (Oldenlandia umbellata) was studied and reported. The study on extraction with alcohol and acetone is in progress. The data collected are being analysed.

## PHARMACOLOGY RESEARCH PROGRAMME

The Pharmacology research programme has been carried out in the Pharmacology Section of the Central Research Institute (Siddha), Madras and Pharmacology wing of Drug Research Scheme (MD), Madras. The study has been conducted on the pre-determined experimental models in the laboratary attached to the Institute. The following single/compound drugs are studied for their efficacy and also to determine their effect as anti-inflammatory, antitoxic and analgesic.

**I. Anti - inflammatory studies**

1. Athimathura chooranam
2. Kuppaimani thailam

**II. Anti - toxic studies :**

3. Naga parpam
4. Kadukkai chooranam
5. Pravala parpam
6. Athimathura chooranam
7. Cundai vattral chooranam
8. Vanga chunnam

**III. Analgesic studies :**

9. Sivanar amirtham

**I. Anti-inflammatory studies** : (Carrageenin induced odema method)

**1. Athimathura chooranam on albino rats :**

The drug Athimathura chooranam (Glycyrrhiza glabra) administered in the dose levels of 500 and 1000 mg/kg body weight. One group received Phenylbutazone in the dose of 100 mg/kg body weight served as standard control. Another group received vehicle only served as untreated control. The paw odema was induced by injecting 0.1 ml. of 1% Carrageenin suspended in 0.5% Carboxy Methyle Cellulose in

plantar aponeurosis of right hind paw of the each animal after one hour of the drug administration. The final volume of the right hind paw was measured plythysmographically after three hour of the Carrageenin injection. The data analysed statistically will be communicated in due course.

**2. Kuppaimani thailam on the albino rats :**

The drug kuppaimani thallam (Acalypha indica) was adminitered in the dose level of 2ml/kg body weight. One group received vehicle only served as untreated control. Another group received Phenylbutazone in the dose level of 100mg/kg body weight served as standard control. The odema was induced by injecting 0.1ml of 1% Carrageenin suspended in 0.5% Carboxy Methyle Cellulose in a plantar aponecurousis of right hind paw of each animal. The final volume was measured plythymoraphically after three hour of the injection. The data collected are being analysed and will be communicated in due course.

**II. Anti - toxic studies :**

**3. Naga parpam :**

a) on albino mice :

The drug Naga parpam administered in the dose of 4000 and 5000mg/kg body weight. One group which received only vehicle served as untreated control. The animals were observed for 72 hours. The animals showed more than 50% mortality in both the doses employed within 48 hours. LD 50 dose to be concluded on further higher doses.

b) on albino rats :

The drug Naga parpam administered in the dose levels of 8000, 9000, and 10,000mg/kg body weight. One group which received vehicle alone served as untreated control. The animals were observed for 72 hours. They were depressed and showed 50% and above mortatlity. The dose employed were maximum compared to human doses, the study was concluded and the data collected were being compiled.

**4. Kadukkaichooranam :**

a) on albino mice :

The drug kadukkai chooranam administered in the dose level of 9000 mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed dose and study is in progress on higher dose levels.

b) on albino rats :

The drug kadukkai chooranam administered in the dose levels of 9000 and 10,000 mg/kg weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed doses.

**5. Pravala parpam :**

a) on albino mice :

The drug Pavala parpam administered in the dose of 7000mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed dose. Further study is in progress on higher dose levels.

b) on albino rats :

The drug Pavala parpam administered in the dose levels of 6000 and 7000 mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed dose levels.

**6. Chundai vattral chooranam :**

a) on albino mice :

The drug Chundai vatral chooranam administered in the dose levels of 6000 and 7000 mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed dose levels.

**7. Athimathura chooranam :**

a) on albino mice :

The drug Athimathura chooranam administered in the dose of 6000mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed dose level.

b) on albino rats :

The drugAthimathura chooranam administered in the dose levels of 8000, 9000 and 10,000 mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for

72 hours. The drug found on-toxic the employed dose levels.

**8. Vanga churnam :**

a) on albino rats :

The drug vanga churnam administered in the dose levels of 5000 and 6000 mg/kg body weight. One group which received vehicle only served as untreated control. The animals were observed for 72 hours. The drug found non-toxic in the employed dose levels.

**III. Analgesic studies :** (Eddy's hot plate method)

**9. Sivanar amirtham :**

The drug Sivanar amirtham administered in the dose levels of 500 and 1000 mg/kg body weight. One group which received Analgin in the dose of 500 mg/kg body weight served as standard control. Another group which received vehicle only served as untreated control. The heat response of the animals were observed 30 mts. after the administration of the drug for 180 mts. The data collected are being analysed statistically.

## PHARMACEUTICAL/STANDARDISATION RESEARCH PROGRAMME

The Drug standardisation plays an important role for obtaining authentic medicinal preparations and genuine single drugs for therapeutic industry. It also occupies, important place in both drug and applied clinical research because this provides approach data for obtaining genuine single drugs and authentically prepared compound medicines. The following standardisation research units were engaged in the standardisation work. Siddha Formulary (part-I) has ben taken up for study alcngwith the single drugs which entering into those formulations.

1. Drug Standardisation Research Unit at CSMDRIA Madras.
2. Drug Standardisation Research Unit at RRI (DR), Trivandrum.
3. Drug Standardisation Research Unit at RRC (AY.) Bangalore.

The programme aims at the study of Single Drugs, Pharmaceutical process involved in the manufacture of the formulations and finished products including laying down their analytical values.

A List of single drugs on which Phyto-Chemical studies have been done (Analytical studies) :

| S. No. | Name of the drugs | Parts analysed | Name of the Instt./Units |
|---|---|---|---|
| 1. | Poochendrappattai (Plectranthus urticifolia) | Stembark | DSRUSM |
| 2. | Pidangunari (Premna tomentosa ) | Leaves | -do- |
| 3. | Kodikakkanam · (Clitoria ternatea) | Seeds Leaves | DSRUST |
| 4. | Mulam (Citrullus vulgaris) | Seeds | -do- |
| 5. | Nattamanakku (Ricinus communis) | Roots Aerial part | -do- |
| 6. | Karun surai | Stembark | -do- |
| 7. | Pulippan chedi (Cipadessa fruticosa) | Leaves | -do- |

| | | | |
|---|---|---|---|
| 8. | Nochi (Vitex trifolia ) | Aerialpart | -do- |
| 9. | Athandam (Capparis zeylanica) | Roots | DSRUSB |
| 10. | Isangu (Clerodendrum inerme) | Roots | -do- |
| 11. | Pulippan chedi (Cipadessa fruticosa) | Wholeplant | -do- |
| 12. | Arivalmookkupachilai | Leaves | -do- |

**Pharmacopoeial Standards (Analytical Standards) of finished products :**

| | | | |
|---|---|---|---|
| 1. | Idi vallati melugu | - | DSRUSM |
| 2. | Maha vallati ilekiyam | - | -do- |
| 3. | Manoocilaittailm | - | -do- |
| 4. | Silasathu parpam | - | DSRUST |
| 5. | Sirungi parpam | - | -do- |
| 6. | Aya chenduram | - | -do- |
| 7. | Appiraga parpam | - | -do- |
| 8. | Chandamarutha chenduram | - | -do- |
| 9. | Gowri chintamani | - | -do- |
| 10. | Linga chenduram | - | -do- |
| 11. | Vedi annabedi chenduram | - | -do- |
| 12. | Talaka chenduram | - | -do- |
| 13. | Linga chenduram No. 2. | - | -do- |
| 14. | Pavala parpam | - | -do- |
| 15. | kalnar parpam | - | -do- |
| 16. | kantha parpam | - | -do- |
| 17. | Nandukkal parpam | - | -do- |
| 18. | Palakarai parpam | - | -do- |
| 19. | Peranda parpam No.1 | - | -do- |

**Phyto-Chemistry :**

1. Arivalmookkuppachilai (Sida acuta Burm. f.)
2. Kallathi (Ficus retusa L.)
3. Ponkathiri (Solidago sempervirens L.)
4. Devatali (Lansium anamallayanum Bedd.)

**Pharmacognosy :**

The pharmacognostical identification of the following single drugs which enter into the Siddha Formulary-part-I have been done and reported :

I. The Pharmacognostical details of the following plants have been worked out and reported :

1. Itti (Ficus talboti King.)
2. Elathalari (Plumeria acuminata L.)
3. Pidangunari (Premna tomentosa Willd.)
4. Kattamanakku (Jatropha gossypifolia L.) Red.
5. Maramalli (Millingtonia hortensis L.)

II. The following plant drugs have been collected and pharmacognostically identified for chemical analysis :

1. Maramalli (Millingtonia hortensis L.)
2. Poduthalai (Lippia nodiflora Mich.)
3. Perunkalarva (Salvadora persica L.)
4. Mulam (Cucumis melo L.) - Seeds.
5. Pichavithai (Citrullus vulgaris Schrad.)-Seeds.
6. Isangu (Clerodendrum inermii (L) Gaertn.

## PHARMACY

The pharmacy attached to Central Research Institute (Siddha) Madras engaged in the preparation of classical preparations found in the Siddha Literature and also chosen trial drugs for the Institutes/Units of Siddha Medicine under the Council.

The raw drug requirement of the pharmacy met by the Medico-ethno-botanical survey projects also from the local markets. Thus collected drugs are identified through experts in the field of Siddha medicine and pharmacognosy to determine its genuineness/authenticity.

The method of preparation of the medicines are based on the method given in the Literature. Varities of the preparations both required for Research and General use are being prepared in the pharmacy such as Chendooram, Chooranam, Thailam, Nei, Parpam, Ennai, Kalkam etc. During the reporting period 382 kg. of Chendooram, Chooranam, Parpam, etc. and 462 litres of oil based preparations was prepared.

The pharmacy also supplied prepared medicines to the following Institutes/Units of Siddha under the Council. The following Table shows the name of the units and the quantity of the medicines supplied :

| S. No. | Name of the unit(s) | Quantity | |
|---|---|---|---|
| | | Solids in kg. | Liquid in Litres. |
| 1. | MRU(S), Madras | 6.200 | 2.000 |
| 2. | THCRP (S), Kalasa | 2.000 | - |
| 3. | CRU(S),Tiruvandrum | 4.750 | - |
| 4. | Hqrs. | - | 2.000 |

## LITERARY RESEARCH PROGRAMME

Literary research programme has been carried out by the Literary Research and Documentation Department, Madras. The work carried out during the reporting year are as given under :

Agathiar Pooranam -205 : The press copy has been completed. This is a original work deals with fundamental aspects of Siddha Medicine. Preparations both single and compound of unique nature are described elaborately.

Thariar Kuddineer (IInd edition) : The press copy of the revised IInd edition has been completed. This is an original work dealing with simple home made remedies for comman ailments.

Agathiar kalai gnanam-1200 and Agathiar vaidya kaviyam-1200 both the original works are corrected and also completed. The classifications and Index in respect of the above publications have been done.

The Department participated in the re-orientation camp organised by the Council during the second week of February '95 and also Silver Jubilee celebrations of CCRAS held during the third week of the March '95.

An amount of Rs. 3592.20 has been collected on account of sale of Publication and deposited to the Council's Headquarters.

## ACKNOWLEDGEMENT

The Director of the Council places on record its deep appreciation for the service rendered by the members of the Governing Body, Finance Committee and Scientific Advisory Committees. The valuable assistance, guidance and continued support given by them to the Council in the conduct of its work is acknowledged with gratitude.

The Director of the Council also places on record his gratitude and deep sense of appreciation to scientists and scholars of various disciplines of medical system and other ancillary sciences, universities and Government agencies who are directly or indirectly associated with this Council and officials of all the research projects including the Headquarters office for their cooperation in implementing the various programmes undertaken during the period under report.

The Council avails this opportunity to convey its profound thanks to Government of India, Ministry of Health and Family Welfare for their continuous support, helpful attitude and cooperation which enabled the Council to pursue its activities in the field of research and hopes to receive their continued support and cooperation in future also for the over all development of Ayurveda and Siddha.

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