

**CENTRAL COUNCIL FOR RESEARCH
IN AYURVEDA AND SIDDHA**

**ANNUAL REPORT
1993-94**



**MINISTRY OF HEALTH AND FAMILY WELFARE
(GOVERNMENT OF INDIA)
NEW DELHI**

**CENTRAL COUNCIL FOR RESEARCH
IN AYURVEDA AND SIDDHA**

**ANNUAL REPORT
1993-94**



**MINISTRY OF HEALTH AND FAMILY WELFARE
(GOVERNMENT OF INDIA)
NEW DELHI**

CONTENTS

| S. No. | Subject | Page No. |
|------------|---|-----------|
| | Preface | (v)-(vii) |
| I. | Administrative Report | 1-6 |
| II. | Technical Report-Ayurveda | |
| 1. | Abbreviations used for Institutes/Centres/Units | 7-8 |
| 2. | Clinical Research Programme | |
| a) | Clinical Therapeutic Trials | 9-26 |
| b) | Statement showing disease groups, number of patients studied and participating projects | 27-28 |
| c) | Statement of the patients attended at OPD and admitted/dischared in the IPD | 29 |
| d) | Amchi Research Unit, Leh | 30 |
| e) | Health Care Research Programme | 31-34 |
| 3. | Medico-Ethno-Botanical Survey Programme | 35-41 |
| 4. | Musk Deer Breeding Programme | 42 |
| 5. | Cultivation of Medicinal Plants Programme | 43-50 |
| 6. | Pharmacognosy Research Studies | 51 |
| 7. | Plant Tissue Culture | 52 |
| 8. | Chemical Research Programme | 53-56 |
| 9. | Pharmacological Research Programme | 57-62 |
| 10. | Pharmaceutical Research/Standardisations Studies | 63-66 |

| | | |
|-------------------------------------|---|---------|
| 11. | Literary Research Programme | 67-69 |
| 12. | Family Welfare Research Programme | 70-72 |
| 13. | Publications/Participations | 73-92 |
| III. Technical Report-Siddha | | |
| 1. | Abbreviations | 93 |
| 2. | Clinical Research Programme | 94-100 |
| 3. | Health Care Research Programme | 101 |
| 4. | Chemical Research Programme | 102 |
| 5. | Pharmacognosy Research Programme | 103 |
| 6. | Medico-Botanical Research Programme | 104-105 |
| 7. | Pharmaceutical/Standardisation Research Programme | 106-108 |
| 8. | Pharmacological Research Programme | 109-111 |
| 9. | Pharmacy | 112 |
| 10. | Literary Research Programme | 113-114 |
| IV. Acknowledgement | | 115 |

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/Enquiries located in Universities, Ayurveda/Siddha and Modern Medical Colleges etc., in different parts of the country. A brief review of the work carried out during the reporting period is indicated hereunder:

Clinical Research Programme

Clinical conditions studies in Ayurveda during the reporting period include Amavata (rheumatoid arthritis), Paksvadha (hemiplegia), Saisaviyavata (poliomyelitis), Gridhrasi (sciatica), Pangu (paraplegia), Parinamasula (doudenal ulcer), Annadravasula (gastric ulcer), Amlapitta (hyperacidity), Kamala (jaundice), Grahani roga (malabsorption syndrome), Arsha (piles), Bhagandar (fistula-in-ano), Pravahika (dysentery), Tamaka swasa (bronchial asthma), Madhumeha (diabetes mellitus), Mutrasmari (urolithiasis), Medoroga (lipid disorders), Hridroga (ischaemic heart diseases), Vyanbalvaishmaya (hypertension), Visamajvara (malaria), Kitibha (psoriasis), Switra (vitiligo), Apasmar (epilepsy), Arbuda visesa (cancer), Timira (errors of refraction), Kuposana (malnutrition) and Swetapradara (leucorrhoea).

Clinical conditions under Siddha System of Medicine studied during the reporting period include Kalanjaga padai (psoriasis), Putrunoi (cancer), Manjal Kamalai (infective hepatitis), Sandhuvatha soolai (rheumatoid arthritis), Valligunmam (peptic ulcer), Velluppunoi (anaemia), Gunmam (intestinal disorders), Neerazhivu (diabetes mellitus), Venkuttam (leucoderma), Vellainoi (leucorrhoea) and Eraippu noi (bronchial asthma).

During the execution of this programme, medical aid to more than 2,42,617 patients through Out Patient Departments and about 1,672 patients at In-door 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 regard 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 about 72,270 individuals pertaining to 79 villages including 42 tribal pockets have been covered under this programme and incidental medical aid provided to more than 35,467 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 Survey 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 500 medicinal species are presently growing in different Gardens. Pharmacognostical studies of 14 drugs, Chemical studies of 17 drugs and Pharmacological and Toxicological studies of 28 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 Mehrori in Kumaon Hills and there are 19 animals in this Farm.

Drug Standardisation research studies of about 63 single drugs, detailed Standardisation studies of 15 formulations and three methods of manufacture

have been carried out besides laying preliminary analytical standards for 20 formulations used in Ayurveda and Siddha System of Medicine.

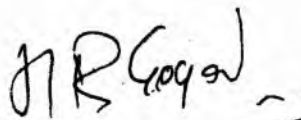
Literary Research Programme

Literary Research Programme broadly covered medico-historical 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. 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. About 325 new cases were studied besides old cases carried forward from the previous year for clinical evaluation of oral contraceptive agents like Ayush-AC IV, K-capsule, Pippalyadi yoga, Neem oil and Vandhyavari (*Vicoa indica*). Pharmacological studies on eight drugs have been carried out.

The Council's scientists 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 fields under the aegis of the Council.



(H.R. Goyal)

Director and Member Secy.
Governing Body

Dated 17.10.1994

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, 1994 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 and Family Welfare. |
| Official Members | <ol style="list-style-type: none">1. Shri I. Choudhuri, Additional Secretary (H) Ministry of Health & F.W.2. Shri Pawan Chopra, Joint Secretary (ISM), Minsitry of Health & F.W.3. Mrs. A.P. Ahluwalia, Joint Secretary (F.A.) Ministry of Health & F.W. |
| Non-Official Members | <ol style="list-style-type: none">1. Vd. D.K. Triguna2. Dr. S.S. Changani3. Vd. Satya Pal Gupta4. Dr. N. Hanumantha Rao5. Dr. (Miss) P.V. Tewari6. Dr. G.V. Satyavati7. Prof. H.H. Siddiqui8. Prof. A.N. Namjoshi9. Dr. Y.K. Sarin |

| | | |
|-----------------------|-----|--|
| | 10. | Dr. A. Ananda Kumar |
| | 11. | Dr. R. Kannan |
| Director, NIA, Jaipur | | Vd. L.N. Sharma/ Vd. M.G. Sharma |
| Director, NIS/CRI (S) | | Vacant |
| Member-Secretary | 1. | Shri R.K. Mukhi (from 1.4.93 to 6.7.93) |
| | 2. | Dr. C.H.S. Sastri (from 6.7.93) |

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

Finance Committee:

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

| | | |
|---|--|---------------------|
| 1. Joint Secretary (ISM) Ministry of Health & F.W. | Shri Pawan Chopra | Chairman |
| 2. Dy. Secretary (IF) Ministry of Health & F.W. | Shri H. Lal | Member |
| 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 | Shri R.K. Mukhi (upto 6.7.93) Dr. C.H.S. Sastri (from 6.7.93) | Member Secretary |

During the period under report the Finance Committee did not meet.

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

The Council is following the orders 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 1610 employees and No. of SC/ST employees in different groups as on 1.1.1994 is as under (upto 31.12.1993) :

| Group | No. of employees | SC | Percentage of total employees | ST | Percentage of total employees |
|-------|------------------|-----|-------------------------------|----|-------------------------------|
| A | 114 | 7 | 6.14 | 2 | 1.75 |
| B | 114 | 7 | 6.14 | 2 | 1.75 |
| C | 699 | 83 | 11.87 | 21 | 3 |
| D | 683 | 219 | 32.06 | 52 | 7.61 |
| Total | 1610 | 316 | 19.62 | 77 | 4.78 |

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 inter-dependent issues but also to identify and apply/advise the methods and measures suitable to surmount them. Besides, 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 Programme, medical relief and incidental 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 Charimanship 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 27.9.1993.

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. | Dr. C.H.S. Sastri | Director & Member Secretary |

The Scientific Advisory Committee (Ay.) met twice on 25th October, 1993 and 19th February, 1994 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)

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. | Dr. C.H.S. Sastri | Director & Member Secretary |

During the period under report, the Scientific Advisory Committee (Siddha) met once on 25th August, 1993 and evaluated the programmes and provided necessary guidance.

Organisational Network of CCRAS:

There are 12 Central/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 Units and 1 Research Project on Tibetan Medicine besides 2 Research Institutes, 10 Research Units and 2 Tribal Health Care Research Projects in Siddha System of Medicine.

Budget Provision:

The following table shows the budgetary provisions made for the Council at a glance :

| Scheme | Funds released 92-93 | Actual exp. 92-93 | Budget Estimates 93-94 | Funds released 93-94 | Actual Exp. 93-94 |
|----------|-------------------------|----------------------|---------------------------|-------------------------|----------------------|
| Plan | 267.00 | 180.72 | 345.00 | 137.40 | 143.68 |
| Non-Plan | 599.00 | 659.18 | 597.00 | 656.00 | 746.16 |
| F.W.R.S. | 19.73 | 16.38 | 17.50 | 19.50 | 19.71 |

Audited Statement of Accounts:

The Accounts of the Council for the year 1993-94 for the period from 1st April, 1993 to 31st March, 1994 were audited by the D.A.C.R.

Special Events:

During the period under report the Council organised the following Seminars/Workshops :—

Workshop on Drug Research in Ayurveda at RRC, Itanagar on 24-25th May, 1993 (funded by WHO).

2. Silver Jubilee of Indian Institute of Ayurveda for Drug Reserch at IIADR, Tarikhet on 27-28th October, 1993.
3. Workshop on Panchakarma Therapy at Indian Institute of Panchakarma, Cheruthuruthy on 10-20th February, 1994 (funded through WHO).

TECHNICAL REPORT-AYURVEDA

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 | CRIBh |
| 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 Institute (Ay.), New Itanagar | RRII |
| 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. Lakshmiapati Research Centre for Ayurveda, V.H.S., Madras | ALRCAM |
| 26. | Ayurvedic Research Unit, NIMIH & NS, Bangalore | ARUB |
| 27. | Clinical Research Unit (Ay.), Hyderabad | CRUH |
| 28. | Clinical Research Unit (Ay.), Kottakal | CRUK |
| 29. | Clinical Research Unit (Ayurvedic and Modern Team under CDRS), Varanasi | CDRSV |
| 30. | Indian Institute of Ayurveda for Drug Research, Tarikhet | IIADRT |
| 31. | Captain Srinivasamurthy Drug Research Institute for Ayurveda, Madras | CSDRIAM |

| | |
|---|----------|
| 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 under FWRP, Varanasi | PhRUFV |
| 43. Pharmacological Research Unit under FWRP, Bhubaneswar | PhRUFB |
| 44. Pharmacological Research Unit under FWRP, Trivandrum | PhRUFT |
| 45. Pharmacological Research Unit, Calcutta | PhRUC |
| 46. Pharmacological Research Unit, Lucknow | PhRUL |
| 47. Pharmacological Research Unit, Jodhpur | PhRUJ |
| 48. Pharmacological Research Unit, Varanasi | PhRUV |
| 49. Pharmacological Research Unit, New Delhi | PhRUD |
| 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 Enquiry, Lucknow | ChREL |
| 56. Pharmacognosy Research Unit, Calcutta | PRUC |
| 57. Pharmacognosy Research Unit, Pune | PRUP |
| 58. Indian Institute of History of Medicine, Hyderabad | IIMH |
| 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.), Palamu | THCRPP |
| 64. Tribal Health Care Research Project (Ay.), Jhabua | THCRPJ |
| 65. Tribal Health Care Research Project (Ay.), Chinchpada | 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, Jamnagar | DSRPJ |
| 69. Drug Standardisation Research Project, Varanasi | DSRPV |
| 70. Research Project in Tibetan System of Medicine, Leh | RPTSM |
| 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 preeminent 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 in last 25 years have been Ayush-64 for Visamajvara (Malaria). Ayush-56 for Apasmara (epilepsy), Nimbaktam for Kitibha (Psoriasis) and Parinama Sula (Duodenal ulcer), Ksarasutra for Bhagandara (Fistula-in-Ano) and Panchkarma therapies for the management of Vata Vyadhis (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 43,85,000 patents had been treated in OPD and 34,000 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 treatments 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 in 3-4 centres simultaneously with a common plan of study.

The clinical studies on Amavata (rheumatoid arthritis), Paksavadha (hemiplegia), Pariamamla (duodenal ulcer), Kamala (Jaundice), Tamaka Svasa (Bronchial asthma), Madhumeha (diabetes mellitus), Mutrasmari (urolithiasis), Medoroga (lipid disorders), Hrdroga (ischaemic heart diseases), Vyana bala Vaisamya (hypertension), slipada (filariasis), Kitibha (psoriasis), Apasmara (epilepsy) and Mansa Mandata (mental retardation) etc. had been conducted during the year 1993-94. The assessment of Prakriti

through objective parameters and its relationship with incidence of various diseases has been further continued. The hospitals functioning under the Council provided medical aid to 1,96,109 patients at OPD level and 1,424 patients were admitted in IPD. The progress of the work on each of the diseases are 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. Now the studies on assessment of the effect of Pippali Vardhamana with Samira Pannaga Rasa and Mahayogaraja guggulu with Simhnada guggulu and Vaisvanaraurna has been taken up. Another study on Asvagandhaurna 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 203 patients have been studied at CRIs Bhubaneswar and Bombay, Indian Institute of Kayachikitsa, Patiala, Indian Institute of Panchkarma, Cheruthuruthy, RRI Gwalior and at RRCs Jammu and Itanagar.

Results of Clinical Studies of Ayurvedic Preparations on Amavata (Rheumatoid arthritis)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1. | a) Pippali Vardhmana, Samira Pannaga Rasa | CRI Bh | 3 | 2 | 1 | - | - | - |
| | b) Maha Yoga Raja Guggula, Simhanada Guggulu, Vaisvanaraurna | CRIBh | 21 | 4 | 7 | 1 | 1 | 8 |
| 2. | a) Asvagandha Sunthi guggulu | IIKP | 51 | 6 | 14 | 9 | 2 | 20 |
| | b) Samira Pannaga Rasa | IIKP | 8 | - | 1 | 3 | 3 | 1 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
|-------|----|---|------|-----|----|----|----|----|----|
| 3. | a) | Musta Curna | IIPC | 4 | 1 | 1 | 1 | 1 | - |
| | b) | Asvagandha Curna | IIPC | 3 | 1 | - | 1 | 1 | - |
| | c) | Pancakarama therapy | IIPC | 10 | 3 | 2 | 1 | 2 | 2 |
| 4. | a) | Asvagandha Curna, Eranda Taila | CRIB | 5 | - | 4 | - | - | 1 |
| | b) | Mahayoga Raja Guggulu, Vaisvanara curna Simhanada Guggulu | CRIB | 3 | - | - | - | 2 | 1 |
| | c) | Sunthi Guggulu Baluka Sveda | CRIB | 4 | - | 3 | - | 1 | - |
| 5. | a) | Samira Pannaga Rasa Pippali Vardhamana | RRIG | 11 | - | 1 | 2 | 6 | 2 |
| | b) | Maha Yogaraja Guggulu Simha Nada Guggulu Vaisvanara Curna | RRIG | 9 | - | 1 | 2 | 5 | 1 |
| 6. | | Cakramarda | RRCJ | 53 | 40 | 11 | 2 | - | - |
| 7. | a) | Asvagandha Curna | RRCI | 13 | 1 | 4 | 1 | 1 | 6 |
| | b) | Mahayoga Raja Guggulu Simhanada Guggulu | RRCI | 5 | 2 | - | - | - | 3 |
| Total | | | | 203 | 60 | 50 | 23 | 25 | 45 |

Paksavadha (Hemiplegia):

The Clinical studies to assess the effect of Ekangavira Rasa and Samira Pannaga Rasa with Snehana and Sastika Sali Pinda Sveda and course of Pancakarma procedure in separate groups of patients had been further continued on 8.2 patients of Paksavadha at CRIs Bhubaneswar and Bombay,

IIK, Patiala and IIP, Cheruthuruthy. The earlier studies on 375 had shown better effect of Ekangvira Rasa and Pancakarma group of treatment.

**Results of Clinical Studies of Ayurvedic Preparations
on Paksavadha (Hemiplegia)**

| S. No. | Trial Therapy | 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 | 4 | - | 1 | 1 | - | 2 |
| | b) Ekangavira Rasa Nirgundi Taila Snehan Sastika Sali Pinda sveda | CRIBh | 4 | - | 1 | 1 | 1 | 1 |
| 2. | Ekangavira Rasa Maha Masa Taila | IIKP | 22 | 4 | 7 | 2 | 9 | - |
| 3. | a) Samira Pannaga Rasa Nirgundi Taila Sastika Sali Pinda Sveda | IIPC | 15 | 1 | 2 | 7 | 2 | 3 |
| | b) Ekanga Vira Rasa Maha masa Taila Svedana Sastika Sali Pinda sveda | IIPC | 12 | 1 | 2 | 5 | 4 | - |
| | c) Pancakarma therapy | IIPC | 18 | 1 | 3 | 8 | 4 | 2 |
| 4. | a) Samira Pannaga Rasa Snehana Svedana | CRIB | 2 | - | 1 | - | - | 1 |
| | b) Ekangvira Rasa Snehana Svedana | CRIB | 5 | 1 | 2 | - | 1 | 1 |
| Total | | | 82 | 8 | 19 | 24 | 21 | 10 |

Saisaviya Vata (Post-Polioparalysis)

The studies on the evaluation of the role of a combination of Ekangavira Rasa with Snehana and Sastika Sali Pinda Sveda has been further continued on 10 patients at CRI Delhi and IIP Cheruthuruthy. Earlier observations on 160 patients showed reasonably good response.

Results of Clinical Studies of Ayurvedic Preparations on Saisaviya Vata (Post-Polioparalysis)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ekangavira Rasa Mahamasa Taila Sastika Sali Pinda Sveda | IIPC | 5 | - | - | - | 3 | 2 |
| 2. | Ekangavira Rasa Mahamasa Taila Sastika Sali Pinda Sveda | CRID | 5 | 2 | 3 | - | - | - |
| Total | | | 10 | 2 | 3 | - | 3 | 2 |

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 112 patients of Gridhrasi. Further studies on 35 patients have been taken on 35 patients at CRI Delhi and Bhubneshwar and IIP Cheruthuruthy during the reporting Year.

Results of Clinical Studies of Ayurvedic Preparations on Gridhrasi (Sciatica)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Trayodasanga Guggulu Visatinduka vati | CRIBh | 4 | 1 | 1 | 1 | - | 1 |
| 2. | Sh. Bhallataka (2.5-10gm.) | IIPC | 16 | 6 | 3 | 2 | 4 | 1 |
| 3. | Trayodasanga Guggulu Visa Tinduka Vati | CRID CRID | 15 | 3 | 4 | 4 | 1 | 3 |
| Total | | | 35 | 10 | 8 | 7 | 5 | 5 |

Pangu (Paraplegia)

The trial of a combination of Gorocanddi Vati, Asvagandhakvatha and Balasvagandha Taila Abhiyanga in comparison with Pancakarma therapies has been carried out on 58 patients. Further 10 more cases have been added included during the reporting period in this study being carried out at IIP Cheruthuruthy.

Results of Clinical Studies of Ayurvedic Preparations on Pangu (Paraplegia)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | | |
|--------|---------------|--|-------------|------------|------------|------------|-----------|----------|---|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out | |
| 1. | a) | Pancakarma therapy with Mierchyadi Taila | IIPC | 4 | - | 2 | 2 | - | - |
| | b) | Asvagandha Kvatha Gorocanadi kvatha Balasvagandha Lakshadi Taila | IIPC | 6 | - | - | 1 | 4 | 1 |
| Total | | | | 10 | - | 2 | 3 | 4 | 1 |

Parinamasula (Duodenal ulcer)

This disease has been investigated extensively at many centres in the Council using the drugs like Suta Sekhara Rasa and its combinations, Satavari, Indukanta Ghrta and Mahatiktaka ghrta. 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 ghrta and Mahatiktaka ghrta with endoscopic evidence of ulcer, Nimbatiktam and Amasaya Praksalana has been continued during reporting year at CRI Bhubneswar, RRI Trivandrum and CRU's Kottakal and Hyderabad and 63 patients were included in their studies.

**Results of Clinical Studies of Ayurvedic Preparations
on Parinamsula (Duodenal ulcer)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|-------------------------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | a) Indukanta ghrta snehana | CRUH | 19 | - | 12 | - | - | 7 |
| | b) Mahatiktaka ghrta Snehana | CRUH | 16 | - | 11 | - | - | 5 |
| 2. | a) Mahatiktaka ghrta Sodhana Samana | CRUK | 2 | - | 2 | - | - | - |
| | b) Indukanto ghrta Sodhana Samana | CRUH | 4 | 1 | 1 | 2 | - | - |
| | c) Nimbatiktam | CRUH | 6 | 3 | 2 | 1 | - | - |
| 3. | Nimbatiktam | CRIBh | 12 | 3 | 3 | - | 1 | 5 |
| 4. | a) Indukanta ghrta | RRIT | 2 | 1 | 1 | - | - | - |
| | b) Mahatiktaka ghrta | RRIT | 2 | 1 | 1 | - | - | - |
| Total | | | 63 | 9 | 33 | 3 | 1 | 17 |

Annadravasula (Gastric ulcer):

A combination of Pistis of Pravala, Mukta Sukti and Jahara Mohara in comparison to Eladicurna and Amalaki curna has been studied on 197 patients of Annadravasula. The same have been further continued and 10 patients were included during the reporting period in the studies being covered out at RRC Itanagar during the reporting period.

**Results of Clinical Studies of Ayurvedic Preparations
on Annadravasula (Gastric ulcer)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------------------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | a) Eladicurna Amalaki curna | RRCI | 6 | - | 1 | - | 1 | 4 |
| | b) Muktasukti Pisti Jaharamohra Pisti | RRCI | 4 | 1 | - | - | - | 3 |
| Total | | | 10 | 1 | 1 | - | 1 | 7 |

Amlapitta (Non-ulcer dyspepsia):

The study of the effect of a combination of Avipattikara curna and Kaparda bhasma has been conducted on 245 patients. The study was

further continued at RRCs Nagpur and Hastinapur and 20 patients were included.

**Results of Clinical Studies of Ayurvedic Preparations
on Amlapitta (Non-ulcer dyspepsia)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|-----------------------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Avipattikara curna Kaparda Bhasma | RRCN | 3 | 3 | - | - | - | - |
| 2. | Avipattikara curna Kaparda Bhasma | RRCH | 17 | 1 | 3 | - | - | 13 |
| Total | | | 20 | 4 | 3 | - | - | 13 |

Kamala (Jaundice)

A combination of Arogyavardhini, Punarnavadi Mandura and Sveta Parpati have been studied on 100 patients of Kamala. Further studies on 43 patients with this combination has been conducted at RRI Lucknow and RRC Hastinapur. A group of 13 patients has also been kept on placebo at RRC Jammu.

**Results of Clinical Studies of Ayurvedic Preparations
on Kamala (Jaundice)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Placebo | RRCJ | 13 | 3 | 4 | 3 | 3 | - |
| 2. | Punarnavadi Mandura Arogyavardhini Sveta Parpati | RRCH | 5 | 1 | - | - | - | 4 |
| 3. | Arogyavardhani Punarnava Mandura | RRIL | 38 | 25 | 10 | 2 | 1 | - |
| Total | | | 56 | 29 | 14 | 5 | 4 | 4 |

Grahani Roga (Malabsorption syndrome)

The role of a combination of Kutaja Bilva, Babbula Phali and Sveta Jiraka, has been studied on 30 cases. Further, studies have been continued at RRC Jammu and out of the 17 cases included in these studies, good response was observed in 10 cases while seven cases reported fair response.

Arsha (Piles):

The effect of Ksarasutra and Taila varti treatment have been observed on 75 patients of Arsha. Further studies on these therapies and a combination of Sphatica, Surana kanda Bhasma and Kasisadi taila has been continued at CRI's Bombay and Delhi and at RRC Nagpur and 97 patients were included in this study during this period.

Results of Clinical Studies of Ayurvedic Preparations on Arsha (Piles)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Sphatika Suranakanda Bhasma Kasisadi Taila | RRCN | 5 | 1 | - | - | - | 4 |
| 2. | Taila varti | CRIB | 7 | 7 | - | - | - | - |
| 3. | Ksara sutra | CRID | 85 | 21 | 14 | - | - | 50 |
| Total | | | 97 | 29 | 14 | - | - | 54 |

Bhagandara (Fistula-in-Ano)

The Ksara Sutra application on 69 patients of Bhagandara had been conducted with excellent response. Further observations on 39 patients had been reported from CRIs Bombay and Delhi during this period.

Results of Clinical Studies of Ayurvedic Preparations on Bhagandara (Fistula-in-Ano)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ksara Sutra | CRIB | 3 | 3 | - | - | - | - |
| 2. | Ksara Sutra | CRID | 36 | 26 | 10 | - | - | - |
| Total | | | 39 | 29 | 10 | - | - | - |

Parikartika

Taila varti treatment of 10 cases of Parikartika at CRI Bombay provided good response in all cases.

Gudavidara (Fissur- in-Ano)

The Ksara karma treatment of Guda vidara has been studied on 16 cases.

Further observation on 28 cases showed good response in eight cases, and fair response in nine patients and 11 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 Rasa and Godanti Bhasma, Sirisa, Haridra and Sati in its treatment.

The comparative effect of Somalatadiyog and Bhagottara gutika had been studies on about 800 cases of Tamaka svasa. Bhagottara gutika showed better effect. The studies on Pippali Vardhamana with Samira Pannaga Rasa and Sirisa tvak kwatha has been started during 92-93 on 34 patients. Further observations on these therapies have been conducted on 136 patients of Tamaka svasa at CRI Bombay, IIK Patiala, RRI Junagarh and Gwalior during reporting year.

Results of Clinical Studies of Ayurvedic Preparations on Tamaka Svasa (Bronchial asthma)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---|----------------|-------------|------------|------------|------------|-----------|-----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Pippali Vardhamana Samira Pannaga Rasa Sirisa Tvak Kvatha | RRIJu | 13 | 3 | 3 | 3 | 2 | 2 |
| 2. | a) Bhagottara gutika | IIKP | 33 | 1 | 11 | 5 | 16 | - |
| | b) Samira Pannaga Rasa | IIKP | 28 | - | 12 | 6 | 10 | - |
| 3. | a) Pippali Vardhamana | CRIB | 16 | 4 | 2 | - | - | 10 |
| | b) Sirisa Tvak Kvatha | | 1 | - | - | - | 1 | - |
| 4. | a) Pippali Vardhamana Samira Pannaga Rasa | RRIG | 12 | - | 3 | 4 | 4 | 1 |
| | b) Sirisa Tvak Kvatha | RRIG | 22 | - | 3 | 3 | 10 | 6 |
| 5. | a) Somalatadi yoga | RRIP | 5 | 2 | 1 | 1 | 1 | - |
| | b) Sirisa Tvak kvatha | RRIP | 6 | - | - | 1 | 3 | 2 |
| | Total | | 136 | 10 | 35 | 23 | 47 | 21 |

Madhumeha (Diabetes mellitus):

The anti-diabetic hypoglycaemic effect of Ayurvedic drug 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 Curma and a combination of Chandra Prabha Vati, Trivanga Bhasma and Vijaya Sara Kvatha has been taken up since 1992-93. So far 296 cases have been studied. Further studies on 88 patients have been taken at CRI's Bombay and Delhi, IIK Patiala, ALRCA Madras and RRC Jammu.

Results of Clinical Studies of Ayurvedic Preparations on Madhumeha (Diabetes mellitus)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ayush 82 | ALRCAM | 8 | - | 2 | 1 | - | 5 |
| 2. | Methika Curma | IIKP | 15 | - | 6 | 6 | - | 3 |
| 3. | a) Candra Prabha Vati Trivanga Bhasma Vijaya Sara Kvatha | CRIB | 27 | - | 2 | 5 | 3 | 17 |
| | b) Methika curma | CRIB | 6 | - | - | - | - | 6 |
| 4. | Bilva, Nimba Tulasi Marica | RRCJ | 27 | 17 | 7 | 3 | - | - |
| 5. | Ayush-82 | CRID | 5 | - | - | - | 2 | 3 |
| Total | | | 88 | 17 | 17 | 15 | 5 | 34 |

Mutrasmari (Urolithiasis)

The lithotropic effect of Varuna, Kulatha and Goksura have been studied and a monograph is also published. Further trials of a combination of Sveta Parpati alongwith Kulatha, Pasanbheda, Goksura kvatha in comparison to Palasaksara has been initiated since 1992-93. The studies on 142 cases showed good response to both the treatments. The observations on 59 patients of Mutrasmari have been reported from RRC Jammu and CRI Delhi during the year 1993-94.

**Results of Clinical Studies of Ayurvedic Preparations
on Mutrasmari (Urolithiasis)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Palasaksara | RRCJ | 40 | 21 | 8 | 9 | 2 | - |
| 2. | Sveta Parpati Goksura Pasanbheda Kulatha kvatha | CRID | 19 | 4 | 3 | 5 | - | 7 |
| Total | | | 59 | 25 | 11 | 14 | 2 | 7 |

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 also been studied with good results. The study of effect of Arogyavardhini has also shown good response. Studies on 74 patients with Ayush 55 did not show much effect. Further trials on Ayush 55 and Vyosadi Guggulu have been taken up. Observations on 53 patients of Medoroga have been reported from CRI Delhi, RRI Junagarh and ALRCA Madras during the year 1993-94.

**Results of Clinical Studies of Ayurvedic Preparations
on Medoroga (Lipid disorders)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ayush 55 | RRIJu | 7 | - | - | 6 | - | 1 |
| 2. | Vyosadi Guggulu | ALRCAM | 16 | - | 6 | 2 | 1 | 7 |
| 3. | Vyosadi Guggulu | CRID | 30 | 2 | 3 | 4 | - | 21 |
| Total | | | 53 | 2 | 9 | 12 | 1 | 29 |

Hridroga (Ischaemic heart diseases):

The role of Puskara Guggulu combination has been studied on more than 300 cases of Angina pectoris and post-infarct rehabilitation. Further studies on Arjuna ghana satva has also been initiated during the reporting year. The observation made on 34 patients of Hridroga at IIK Patiala and CRU (Ay. Team), Varanasi are indicated as below.

**Results of Clinical Studies of Ayurvedic Preparations
on Hridroga (Ischaemic heart diseases)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|-------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Puskara Guggulu | CDRSV | 31 | 19 | 9 | 3 | - | - |
| 2. | Arjuna Gnanasatva | IHKP | 3 | - | 1 | 1 | 1 | - |
| Total | | | 34 | 19 | 10 | 4 | 1 | - |

Vyana Bala Vaisamy (Hypertension):

The comparative evaluation of Tagaradi Curna with Arjuna and Jatamansi and Ushiradi Curna with Arjuna and Jatamansi has been studied on 305 patients of Vyana Bala Vaisamy. Further studies on the same lines have been continued at CRIs Delhi and Bombay, IIP Cheruthuruthy, RRI, Calcutta and Lucknow and at RRC Mandi and 76 patients were included during the reporting period.

**Results of Clinical Studies of Ayurvedic Preparations
on Vyana Bala Vaisamy (Hypertension)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------------------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Tagaradi Curna Arjuna Jatamansi | RRCM | 17 | 2 | 6 | 3 | 1 | 5 |
| 2. | Tagaradi Curna | IHKP | 11 | 6 | - | 2 | 1 | 2 |
| 3. | a) Tagaradi Curna Arjuna Jatamansi | IIPC | 1 | 1 | - | - | - | - |
| | b) Ushiradi Curna Arjuna Jatamansi | IIPC | 3 | 1 | - | - | 1 | 1 |
| 4. | Ushiradi Curna Arjuna Jatamansi | CRIB | 11 | 4 | 3 | 2 | - | 2 |
| 5. | Ushiradi Curna Arjuna Jatamansi | CRID | 9 | 2 | 2 | 1 | 3 | 1 |
| 6. | a) Tagaradi Curna | RRIC | 1 | - | - | 1 | - | - |
| | b) Ushiradi Curna | RRIC | 13 | 3 | - | 2 | - | 8 |
| 7. | Arjuna Jatamansi | RRIL | 10 | 1 | 2 | 5 | 2 | - |
| Total | | | 76 | 20 | 13 | 16 | 8 | 19 |

Visama Jvara (Malaria):

The studies on clinical evaluation of Ayush-64 in Visamajvara have been conducted on more than 5000 cases. Both types of patients i.e. with positive *P. vivax* and without positive smear on blood examination were studied. Further studies on 28 cases of Visamajvara have been conducted at RRI Jaipur and RRCs Nagpur and Jammu. One positive patient showed good response. Effect on clinically diagnosed cases may be seen in the Table provided hereunder:

Results of Clinical Studies of Ayurvedic Preparations on Visama Jvara (Malaria)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ayush 64 | RRCN | 2 | 1 | - | - | - | 1 |
| 2. | Ayush 64 | RRIJ | 25 | 11 | 9 | 2 | 3 | - |
| Total | | | 27 | 12 | 9 | 2 | 3 | 1 |

Kala-a-zar

The studies on evaluation of the effect of Praval Mukta Vidramanjana Rasa, Lokanatha Rasa, Jvarasani and Sarvajvara Hara Lauha has been carried out on 154 cases. Further trial has been continued and out of 19 cases included in the studies four cases showed fair response while three cases showed poor response while 12 cases discontinued the study.

Slipada (Filariasis)

The studies on the effect of a combined therapy of Sudarsana Ghana Vati, Arogvavardhini and Punarnavadi arista or Kvatha have been conducted on 162 chronic cases of Filariasis disease. The study on the effect of Saptaparna Ghana Vati and Ayush-64 on microfilaremia has been taken up on 16 cases. Observations on 48 cases of chronic manifest disease have been reported from CRI Bhubneswar and RRC Vijaywada.

**Results of Clinical Studies of Ayurvedic Preparations
on Slipada (Filariasis)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------------|---|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Arogyavardini Sudarsana Ghanavati Punarnavadi kvatha | RRCV | 31 | - | 6 | 18 | - | 7 |
| 2. | Sudarsana Ghana vati Ayush 55 Punarnavadyarista | CRIBh | 17 | 9 | 4 | 1 | 1 | 2 |
| Total | | 48 | 9 | 10 | 19 | 1 | 9 | |

The effect of Ayush 64 and Saptaparna Ghana Vati has been further conducted on one case each of Slipada microfilaremia at CRI Bhubneswar. Both the cases reported good response.

Kitibha (Psoriasis):

The comparative efficacy of Arogyavardhini and Chakramarda kera with Nimbatiktam and Lajjalu kera has been conducted on 285 cases of Kitibha. Further studies are conducted on 28 cases at CRI Delhi, RRI, Trivandrum and RRI Junagarh.

**Results of Clinical Studies of Ayurvedic Preparations
on Kitibha (Psoriasis)**

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------------|---|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Nimbatiktam Lajjalu kera | RRIJu | 5 | 1 | 3 | 1 | - | - |
| 2. | Nimbatiktam Lajjalu Keram | CRID | 5 | - | 1 | 2 | 1 | 1 |
| 3. | a) Kaishora guggulu Visvamisra Kapala Taila | RRIT | 5 | 3 | 1 | - | - | 1 |
| | b) Nimbatiktam Lajjalu kera | RRIT | 5 | 4 | 1 | - | - | - |
| | c) Arogya-wardhini Cakramarda kera | RRIT | 8 | 5 | 1 | - | - | 2 |
| Total | | | 28 | 13 | 7 | 3 | 1 | 4 |

Svitra (Vitiligo)

The effect of Ayush-57 has been studied on 118 cases. Further observations are made on 12 cases at RRCs Jammu and Hastinapur.

Results of Clinical Studies of Ayurvedic Preparations on Svitra (Vitiligo)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Ayush-57 | RRCJ | 6 | - | - | 1 | 3 | 2 |
| 2. | Ayush-57 | RRCH | 6 | - | 2 | - | - | 4 |
| Total | | | 12 | - | 2 | 1 | 3 | 6 |

Apasmara (Epilepsy)

The effect of Ayush-56 in the treatment of Apasmara has been conducted earlier over 400 cases and a monograph based on these is in the process of publication. Further studies on Ayush-56 has been conducted on 91 cases while another drug Ayushman-22 has been studied on 11 cases. The analysis of data is in progress.

Manasa Mandata (Mental retardation):

The controlled clinical trial of Ayushman-8 with placebo has been carried out on 49 patients of Manasa Mandata at ALRCA Madras during the year under report.

Results of Clinical Studies of Ayurvedic Preparations on Manasa Mandata

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | a) Ayushman 8 | ALRCAM | 24 | 2 | 1 | 7 | 6 | 8 |
| | b) Control | ALRCAM | 25 | - | 1 | 10 | 9 | 5 |
| Total | | | 49 | 2 | 2 | 17 | 15 | 13 |

Rasayana (Health Promotive)

Studies on the Rasayana effect of a combination of Satavari, Punarnava, Bala, Guduci and Yasti on 31 elderly human volunteers has been carried out. Further studies on this preparation and another combination of Jyotismati, Sankhapuspi, Brahmi and Grnjana are also taken at IIK Patiala and ALRCA Madras on 18 volunteers.

Results of Clinical Studies of Ayurvedic Preparations on Rasayana (Health Promotive)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|--|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Satavari Punarnava Bala Guduci Yasti | ALRCAM | 13 | 7 | 3 | 1 | - | 2 |
| 2. a) | Satavari Punarnava Bala Guduci Yasti | IIKP | 2 | - | 1 | 1 | - | - |
| b) | Jyotismati Sankhapushpi Brahmi Grnjana | | 3 | - | 1 | 1 | 1 | - |
| Total | | | 18 | 7 | 5 | 3 | 1 | 2 |

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 were made on 860 cases, 1361 individuals were included in the studies during the year under review. The analysis of data is in progress.

Arbuda Visesa (Cancer):

The study on the effect of two phytochemical compounds Plumbagin and S.T.G. has been carried out on 42 patients of different types of cancer. Further studies on 5 patients has been continued at CRIs Bombay and Delhi.

Timira (Errors of refraction):

The patients with errors of refraction like myopia and hypermetropia have been managed with Netrabindu, Saptamrit Lauha and exercises. So far 70 children with these conditions have been attended. Further studies on 6

cases have been continued. The results show fair response in these cases, poor response and no response in one case each while remaining one patient discontinued the study.

Kuposana (Malnutrition):

The studies on 14 cases of Kuposana in young children has been initiated at RRCs Nagpur and Mandi to assess the effect of a combination of Asvagandha, Satavari and Amalaki.

Results of Clinical Studies of Ayurvedic Preparations on Kuposana (Malnutrition)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---------------------------------|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Asvagandha Satavari, Amalaki | RRCN | 2 | - | 1 | - | - | 1 |
| 2. | Asvagandha Satavari Amalaki | RRCM | 12 | 4 | 3 | 5 | - | - |
| Total | | | 14 | 4 | 4 | 5 | - | 1 |

Sveta Pradara (Leucorrhoea):

The combination of Svarna Vanga, Kukkutanda Tvak Bhasma, Punarnava Mandura and Nirgundi Taila Picu has been studied on over 200 cases of Sveta Pradara. Further studies on 7 more cases are reported from RRCs Nagpur and Vijaywada.

Results of Clinical Studies of Ayurvedic Preparations on Sveta Pradara (Leucorrhoea)

| S. No. | Trial Therapy | Instt./ Centre | Total Cases | Results | | | | |
|--------|---|----------------|-------------|------------|------------|------------|-----------|----------|
| | | | | Good Resp. | Fair Resp. | Poor Resp. | No. Resp. | Drop out |
| 1. | Svarna vanga Kukkutanda Tvak Bhasma, Punarnava Mandura, Nirgundi Taila Picu | RRCN | 3 | 2 | 1 | - | - | - |
| 2. | Svarna Vanga Kakkutanda Tvak Bhasma | RRCV | 4 | 2 | - | - | 1 | 1 |
| Total | | | 7 | 4 | 1 | - | 1 | 1 |

**Diseases, Number of Patients and Participating Projects under
Clinical Research Programmes during 1993-94**

| S.No. | Diseases Groupwise | Pts. Nos. | Participating Projects |
|-----------|-------------------------------|-----------|---|
| 1. | Vatavyadhis | | |
| i) | Amavata | 203 | CRIBh, IIKP, IIPC, CRIB, RRIG, RRCJ, RRCI |
| ii) | Paksavadha | 82 | IIPC, IIKP, CRIBh, CRIB |
| iii) | Saisaviya vata | 10 | IIPC, CRID |
| iv) | Gridhrasi | 35 | IIPC, CRIBh, CRID |
| v) | Pangu | 10 | IIPC |
| 2. | Amlapitta/Parinamasula | | |
| i) | Parinamasula | 63 | CRIBh, RRIT, CRUH, CRUK |
| ii) | Annadravasula | 10 | RRCI |
| iii) | Amlapitta | 20 | RRCN, RRCH |
| iv) | Kamala | 56 | RRIL, RRCJ, RRCH |
| v) | Grahani Roga | 17 | RRCJ |
| vi) | Arsa | 97 | CRIB, CRID, RRCN |
| vii) | Bhagandara | 39 | CRID, CRIB |
| viii) | Parikartika | 10 | CRIB |
| ix) | Gudvidara | 28 | CRID |
| 3. | Tamaka Swasa | 136 | RRIJu, IIKP, CRIB, RRIG, RRIP |
| 4. | Mutra Roga | | |
| i) | Madhumeha | 88 | IIKP, CRIB, ALRCAM, CRID, RRCJ |
| ii) | Mutrasmari | 59 | CRID, RRCJ |
| 5. | Medoroga | 53 | CRID, RRIJu, ALRCAM |
| 6. | Hridroga | 34 | CDRSV, IIKP |
| 7. | Vyana Bala Vaisamya | 76 | IIKP, IIPC, CRIB, CRID, RRIC, RRIL, RRCM |
| 8. | Visamajvara | 28 | RRIJ, RRCN, RRCJ |
| 9. | Kala-a-zar | 19 | RRIP |

| | | |
|-----------------------------|------|-------------------|
| 10. Slipada | 48 | CRIBh, RRCV |
| 11. Tvak Roga | | |
| i) Kitibha | 28 | RRIT, RRIJu, CRID |
| ii) Svitra | 12 | RRCJ, RRCH |
| 12. Manasa Roga | | |
| i) Apasmara | 102 | CRID, ARUB |
| ii) Manasa Mandata | 49 | ALRCAM |
| 13. Rasayana | 18 | ALRCAM, IIKP |
| 14. Prakriti Pariksa | 1361 | CDRSV |
| 15. Other diseases | | |
| i) Arbuda Visesa | 5 | CRID, CRIB |
| ii) Timira | 6 | CRID |
| iii) Kuposana | 14 | RRCM, RRCN |
| iv) Sveta Pradara | 7 | RRCN, RRCV |

**Statement Showing Number of Patients Attended at O.P.D. and
Admitted in I.P.D. during 1993-1994**

| S.No. | Instt./Centre | OPD Patient | | | IPD | | |
|-------|-------------------|-------------|----------|----------|----------|------------|----------------|
| | | New | Old | Total | Admitted | Discharged | Bed-occupancy% |
| 1. | CRI Bhubaneswar | 4011 | 2954 | 6965 | 77 | 69 | 11 |
| 2. | CRI Delhi | 10946 | 10984 | 21930 | 140 | 140 | - |
| 3. | IIC Patiala | 5186 | 4819 | 10005 | 306 | 293 | 36.58 |
| 4. | IIP Cheruthuruthy | 5174 | 18554 | 23728 | 162 | 138 | 42.86 |
| 5. | CRI Bombay | 2094 | 5682 | 7776 | 140 | 112 | 23.6 |
| 6. | RRI Lucknow | 4367 | 4754 | 9121 | 85 | 85 | 6.24 |
| 7. | RRI Calcutta | 4362 | 16734 | 21096 | 30 | 30 | - |
| 8. | RRI Junagarh | 2111 | 3503 | 5614 | 15 | 15 | 4.98 |
| 9. | RRI Patna | 3337 | 4092 | 7429 | - | - | - |
| 10. | RRI Gwalior | 2172 | 2582 | 4754 | 35 | 34 | 27.83 |
| 11. | RRI Trivandrum | 3367 | 3297 | 6664 | 65 | 64 | 69.00 |
| 12. | RRI Jaipur | 1833 | 1604 | 3437 | 95 | 86 | 29.10 |
| 13. | RRC Nagpur | 1324 | 4663 | 5987 | - | - | - |
| 14. | RRC Bangalore | 795 | 1809 | 2604 | - | - | - |
| 15. | RRC Jammu | 6418 | 10919 | 17337 | 30 | 30 | 51.96 |
| 16. | RRC Mandi | 5015 | 4262 | 9277 | - | - | - |
| 17. | RRC Hastinapur | 3403 | 5116 | 8519 | 10 | 10 | 3.31 |
| 18. | RRC Gangtok | 4847 | 2492 | 7339 | 21 | 21 | - |
| 19. | RRC Vijayawada | 3813 | 5633 | 9446 | 28 | 27 | 22.00 |
| 20. | RRC Itanagar | 5539 | 7309 | 12848 | 46 | 46 | - |
| 21. | ALRCA Madras | 218 | - | 218 | - | - | - |
| 22. | ARU Bangalore | 317 | 368 | 685 | 20 | 15 | 32.8 |
| 23. | CRU Kottakal | - | - | - | 140 | 133 | 70.1 |
| 24. | CRU Hyderabad | 669 | - | 669 | - | - | - |
| Total | | 81,318 | 1,22,130 | 2,03,448 | 1445 | 1348 | |

AMCHI RESEARCH UNIT, LEH

Clinical studies on two important diseases like Rgya-la mig ser (Jaundice) and Tagarnad (Paralysis) have been identified and many cases taken up for clinical evaluation. The compound preparation are made from indigenously available herbals and mineral. The therapy is found useful in the cases of jaundice. The final result is yet to be assessed. Use of golden needle therapy alongwith medical measures proved to be effective in certain cases of paralysis.

Another study to evaluate three drugs Tikta and rGyatpa, Serdugchhuhik and Garnak Chhupa in the treatment of Hepatitis was taken in three groups with 20 patients in each group. Tiktar Gyatpa have shown better effect in comparision of other two drugs taken for study.

One Survery tour was conducted covering the areas of Leh Tahashil for identification and collection of drugs. About 40 drugs were identified and collected.

The English translation of Amchi Pharmaco-therapeutics work is in progress.

During reporting 1856 patients were attended in O.P.D. using Hydro therapy, Moxaboxtion, Accupuncture and Abssess Drainage etc.

Seminar on Astrology called 'Kartsia' held at Ladakh Ecology in the month of April 1994, in which 70 astrologers, two Amchis and other Astrologers have participated.

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 Programmes 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 548 Villages/ Tribal pockets with a population of 7,60,000 have been studied and medical aid to about 3,25,000 patients have been provided. The progress made during the year 1993-94 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 folklore medical practices are also noted. During the period of report 22 villages with a population of 23,921 were surveyed and 4,594 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 in this programme. The knowledge about health care, prevention of diseases, health promotive measures and use of local herbs for treatment of common ailments is imparted to the people of selected villages. The details of socioeconomic status, environmental factors influencing the disease proveness are recorded. This programme has been executed in 14 villages with a population of 10,040 and 3,653 patients have also been provided medical aid.

Tribal Health Care Research Programme

This Programme has been initiated with the aim to study living condition of Tribal people, folk medicines used by them, occurrence of medicinal plants in 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 Island), Jamune, Distt. Palamau (Bihar), Chinchapada, Distt. Dhule (Maharashtra), Jagdalpur (Madhya Pradesh), Jhabua (Madhya Pradesh, Ziro (Arunachal Pradesh) and Imphal (Manipur). During reporting period 32 Tribal pockets/villages consisting of a population of 31,016

individuals have been covered and incidental medical aid extended to 26,323 patients, About 90 specimens of the plants found growing in these areas have been collected. Efforts have also been initiated to compile and analyse the data/information gathered by these project. Besides this the project at Palamau carried out some clinical trials on Visamjvara, Anakushkrimi in the field conditions.

Statement of Work Carried out during 1993-94 under Service Oriented Survey and Surveillance Research Programme

| S.No. | Name of the Instt./Centre/Unit | Villages | Population | Patients treated | Common Diseases |
|-------|--------------------------------|--------------------------------|------------|------------------|--|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | IIP, Cheruthuruthy | Pangarpilly | 922 | 478 | Vata Vyadhi, Tvak Roga, Udara Sula |
| 2. | CRI, Delhi | Tehar Jail | - | 1,323 | Amlapitta, Udara Sula, Kasa, Tvak Roga |
| 3. | RRI, Calcutta | Nowbharga | 281 | 268 | Atisara, Jvara, Krimi |
| 4. | RRI, Gwalior | Jaraga | 1,500 | 327 | Vrana, Pratisyay, |
| | | | | Kandu | |
| 5. | RRI, Junagarh | Vadhari | 1,385 | 269 | Jvara, Kasa, Sula, Vata-vyadhi |
| 6. | RRI, Patna | Makshood pur | 337 | 98 | Amlapitta, Kasa, Slipada |
| 7. | RRC, Mandi | Chhipmu Bhuli, 565 Tunga Dudar | | 156 | Kasa, Tvak, Roga, VyanaBala Vaisarnya |
| 8. | RRC, Vijayawada | Pallarapadi | 236 | 70 | Jvara, Daurbalya, Raktavikara |
| 9. | RRC, Nagpur | Borkhede Yarkhede | 4,180 | 174 | Pratisyaya, Svasa Atisara |
| 10. | RRC, Bangalore | Malathalli Maleqalu | 1,062 | 247 | Jvara, Kasa, Atisara, Tvak Roga, Vata-Vyadhi |
| 11. | RRC, Guwahati | Kewatgaon | 2,500 | 305 | Svasa, Krimi, Pandu, Atisara |
| 12. | RRC, Jhansi | Lalira Chhapra | 1671 | 212 | Kandu, Tvak-Roga, Kasa |
| 13. | MCRU, Varanasi | Vyaspur Bhojpur Ratanpur | 400 | 608 | Atisara, Pravahika Krimi, Stri Roga, Amavata, Pratisyaya |
| 14. | MCRU, Jamnagar | Navagam khed | 8,882 | 59 | Jvara, Svasa |
| Total | | 22 | 23,921 | 4,594 | |

Statement of Work Carried out during 1993-94 under Community Health Care Research Programme

| S.No. | Name of the Instt./Centre/Unit | Villages | Population | Patients treated | Common Diseases |
|-------|--------------------------------|------------------------|------------|------------------|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | IIP, Cheruthuruthy | Vatakkathura Elnadu | - | 507 | Vatavyadhi, Tvak Roga, Udarsula |
| 2. | IHK, Patiala | Sawajpur | 305 | 267 | Amavata, Kasa Sandhi vata, Rakta vikara |
| 3. | CRI, Bombay | Karave | 5,000 | 386 | Tundikari Krimi Pratisyaya, Udarsula |
| 4. | RRI, Gwalior | Junavali Lakshnotitala | 1,700 | 285 | Jvara, Kasa, Kandu |
| 5. | RRI, Junagarh | Bhiyal | 1,068 | 161 | Jvara, Pratisyaya, Sula, Vata vyadhi |
| 6. | RRI, Patna | Barki Kewai | 670 | 161 | Slipada, Tvak' Roga Katisula, Kasa |
| 7. | RRC, Mandi | Gehera Chanvawani | 297 | 287 | Amlapitta, Twak Roga, Vyana Bala Vaisamy |
| 8. | RRC, Itanagar | Chimpu Vasti | - | 345 | Atisara, Jvara, Kasa, Tvak Roga |
| 9. | RRC, Nagpur | Khery Pennese walni | - | 507 | Vatavyadhi, Tvak Roga, Udara sula |
| 10. | RRC, Guwahati | Kamar Kuchi | 10,000 | 180 | Jvara, Kasa, Krimi, Prameha, Atisara |
| 11. | IIADR Tarikhat | Dasherghati | 5,266 | 616 | Jvara, Kasa, Tvakvikar Vatavyadhi, Amtapitta, Krimi |
| Total | | 14 | 10,040 | 3,653 | |

Statement of Work Carried out during 1993-94 under Tribal Health Care Research Programme

| S.No. | Location of the Project | Tribal/Pockets covered | Population | No. of Patients treated | Common Diseases |
|-------|-------------------------|----------------------------------|------------|-------------------------|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | Imphal (Manipur) | Keikhu, Sabbal Tongba, Heigrujam | 947 | 107 | Amlapitta, Arsha, Jvara, Kasa, Pandu, Udarsula, Sweta Prader, Gridrasi etc. |

| 1 | 2 | 3 | 4 | 5 | 6 |
|-------|-----------------------------|---|--------|--------|---|
| 2. | Car-Nicobar | Mus, Kinmai, Samall Lapathy Viglapathy, Papoiming, Chukukhucha, Kinyuka, Tamaloo Terka and Malacca etc. | | 2,799 | Atisara, Amalapitta Amavata, Chafdi, Jwara Kasa, Krimi, Katisula, Pratishyaya, Swasa, Sirhsual, Sotha, etc. |
| 3. | Jhabua (M.P.) | Proper Jhabua Village. | | 150 | Amlapitta, Swasa, Sandhishoola, Jwara, Vishamjvara, Swetapradara and Pandu etc. |
| 4. | Jagdal Pur | Pandri Pani, Aghanpur, Sarjipal | 3,774 | 7,090 | Atisara, Kasa, Krimi, Pratishyaya, Shvasa, Twaka-Roga, Udarashul, Kandu, Pradara, Sandhi Shoola, etc. |
| 5. | Ziro (Arunachal Pradesh) | Dutta, Hong, Tajang | 3,500 | 4,238 | Amlapitta, Atisara, Amavata, Arbuda, Arsha, Agnimandya, Hrdroga, Jwara, Kasa, Madhumeha Sirahsula, Swasa etc. |
| 6. | Palamu | Pokharaha, Oriya, Lotwa, Rajhara, Chandu | 10,435 | 4,825 | Atisara, Arsh, Apasmara, Jvar, Kasa, Hridroga, Krimi, Pradara, Swasa, Twakroga, Visham Jwara, Swetra etc. |
| 7. | Chincha Pada | Karanjwal, Janialaw Borwel, Raipur, Pangharan Bhamamand, Kolde, Sull | 12,360 | 7,124 | Atisara, Arsha, Apasmara, Amalpitta, Kasa, Jwara, Kamala, Kandu, Katishula, Mutarakricra, Pandu, Mutarakricra, Pandu, Rajodosa, Tvaka Roga, Timira, Udarsula, Vata Vyadhi, Dadaru etc. |
| Total | | 32 | 31,016 | 26,323 | |

MEDICO-ETHNO-BOTANICAL SURVEY PROGRAMMES

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 medico-botanical 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 abundance or it is scarce in a particular region. This shall ultimately lead to the Qualitative and Quantitative estimation of several Ayurveda drugs which are currently in demand for research work and pharmaceutical industry.

The 17 Ayurveda Survey Units of the Council, located at different parts of the country, during the past two decades have undertaken scientific study to assess and identify the potential areas of their availability and to enrich the Ayurvedic pharmacopoeia. During this period a number of special medico-botanical survey programmes conducted in the forests and tribal areas of Andaman and Nicobar Islands, Arunachal Pradesh, Bastar, Godavari, Ladakh, Puri and Sikkim etc. have yielded quite useful results in identifying the potential of medicinal plant wealth of these regions.

Some Major Achievements of the Medico-Botanical Survey Programmes Undertaken:

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. More than 380 forest areas in the different states have been surveyed. The Council has more than one lakh herbarium specimens in different regional herbaria 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 CRIA New Delhi. This shall be a unique centre to meet the demand of research workers and the pharmaceutical industry as a whole.
5. During the survey programmes a good collection of 3,500 folklore claims have been made by these teams and out of these a monograph on 2,700 claims have been prepared.
6. The Council has published XII volumes of the quarterly Bulletin of Medico-ethno-botanical Research which contains several articles published on survey work conducted by the survey teams in different areas e.g. Pithoragarh Distt. (M.P.), Karimnagar Distt. (Andhra Pradesh), Siang and Subansiri Distt. (Arunachal Pradesh), Udhampur Forest Division and Gurez Valley (J.K.), Rajpipla Forest Division (Gujarat), Lahul-Spiti (Himachal Pradesh), Gwalior Forest Division (Madhya Pradesh), Tezpur (Assam), Garhwal Himalayas (U.P.), Subansiri Distt. (Assam), Gurez Valley (J.K.), Udaipur Distt. (Rajasthan), North Arcot Distt. (Tamil Nadu), Santhal Pargana Distt. Dumka (Bihar), Rajgir (Bihar), Amravati Division (Maharashtra), Silent Valley (Kerala).

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

Some monographs have also been published on the basis of survey work conducted e.g.

- A. Medico-Botanical Exploration of Puri Distt. (Orissa)
- B. Observations on Medico-Botany of Andaman Nicobar Islands.
- C. Medico-Botany of East and West Godavari (Andhra Pradesh).
- D. Medico-Botanical Explorations in Sikkim Himalayas.
- E. Medico-Botanical Survey of Baster Distt. (Madhya Pradesh)

Resume of Medico-botanical survey work done:—

The seventeen survey units of the Council are spread over 16 states, located at Bangalore, Bhubaneshwar, Calcutta, Gangtok, Guwahati, Itanagar,

Jaipur, Jammu-Tawi, Jhansi, Junagadh, Mandi, Nagpur, Patna, Tarikhet, Trivandurm and Vijayawada and have carried out some of the following programmes during the year 1993-94.

The survey unit located at R.R.C. (Ay.), Bangalore (Karnataka) in the past has carried out survey work in Chikmangalur, Chamarajanagar, Mysore, Bhadravati, Hunsur, Kollegal, Koppa, Kanakpur, Coorg, Tumkur, Kolar, Shimoga and Sagar areas. During the current year the unit has continued compilation work of medico-botanical survey monographs on Kolar and Tumkur districts. Participated in National seminars on medicinal plants, attended Technical meetings on Biodiversity, arranged lectures in U.G.C. refresher course. No survey tour could be undertaken due to lack of funds/sanction. Identified 700 plant specimens earlier collected from North Canara, Bangalore and Shimoga. About 1365 herbarium sheets were accessioned. Routine upkeep of the Herbarium and Museum specimens/samples was continued.

The survey unit located at C.R.I. (Ay.), Bhubaneshwar (Orissa) has in the past covered Bolangir, Puri, Behrampur, Chandalla, Khandagiri, Nayagrath, Kalahandi, Koraput, Parleknmundi & Phulbani Distt. etc. During current year local survey work around Cuttack area undertaken. Selected medicinal plant specimens were collected. 15 Kg. of fresh drug material was also collected for supply purposes.

The survey unit located at R.R.I. (Ay.), Calcutta (West Bengal) has undertaken survey work in West Midnapur, Burdwan, Birbhum, Purulia, Buxa, Jalpaigaudi and Central Forest division areas etc. During the reporting period survey of Howrah Distt. was undertaken. Collected 95 medicinal plant specimens and 11 museum drug samples. Maintenance work of Herbarium and Museum was continued.

The survey unit located at R.R.C. (Ay.), Gangtok (Sikkim) has earlier covered the forest areas in the North, East & West forest divisions during special survey tour programmes conducted in Sikkim.

The Survey unit located at R.R.C. (Ay.), Guwahati (Assam) has earlier surveyed forest division of South Kamrup, Nowgong & Lakhimpur of

Assam. Also surveyed Garo, Khasi & Jayantia hills of Meghalaya and Kameng & Tirap Distt. of Arunachal Pradesh. In absence of any survey staff the work could not be continued.

The survey unit located at R.R.I. (Ay.), Gwalior (Madhya Pradesh) has earlier surveyed Gwalior, Guna, Shivpuri, Datia, Bhind, Sheopur, Shadol, Sagar, Narsijpur, Sarganja, Jhabua and Orcha forest divisions. No major survey tours could be undertaken, local survey work for drug collection and better specimens collections was continued. 24 specimens and 7 raw drug samples weighing 13 Kg. were collected. Identified 154 specimen sheets compilation work of Sarguja monograph continued.

The survey unit located at R.R.C. (Ay.), Itanagar (Arunachal Pradesh) has earlier surveyed Itanagar & Doimukh Forest areas. During the current year local survey tours in the Papumpara district were carried out collected 50 plant specimens, mounted 199 herbarium sheets. Accessioned 134 specimens in the herbarium and added 5 museum drug samples. Monograph on Lower Subansiri district compiled and released during the workshop on Drug Research in Ayurveda arranged at Itanagar.

The survey unit located at R.R.I. (Ay.), Jaipur (Rajasthan) has earlier surveyed the forest divisions of Jaipur, Ajmer, Udaipur, Chittorgarh, Banswara, Bharatpur, Sirohi and Ajmer etc. No survey tours could be undertaken during the current year. Identified and mounted 559 specimens and accessioned 1977 specimen sheets in the Herbarium.

The survey unit located at R.R.C. (Ay.), Jammu (J & K) has earlier undertaken survey work in the Baramulla, Naushera, Bhadarwah, Rajouri, Drass, Kargil, Zanskar, Udampur, Jammu, Gurez Forest Division and Tilei Valley and Ladakh. No survey tour conducted during the current year. Maintenance work of the Herbarium was continued. Poisoned 2700 specimen sheets, Accessioned 24 specimen sheets and prepared 13 index cards.

The survey unit located at R.R.I., Patna (Bihar) has surveyed Rajgit, Ranchi, Gordh, Champaran, Daltonganj and Dumka forest areas and Sarhand forest division. No survey tours were sanctioned. Local tours for collection of raw drug material undertaken. 10 Kg. of Vandhavari and 30 Kg. fresh bark of Kala Siris were collected for supply purposes. Two drug samples were also supplied to PLIM, Ghaziabad. Identified 173 plant specimens. Maintenance work of Herbarium and Museum was continued.

The survey unit located at I.I.A.D.R., Tarikhet (U.P.) has surveyed the forest areas of Mussoorie, Kanatal, Yamuna, Uttarkashi, Tehri, Almora, Nainital, Pitthoragarh and Rohilkhand, Pilibhit, Tons, Gorakhpur, Shivalik, Bhabar area, Badrinath, Lansdown, Kalagarh and Social forestry areas of Meerut, Bulandshahr, Muzaffarnagar and Saharanpur etc.

The survey unit located at R.R.I. (DR), Trivandrum (Kerala) has earlier covered Kottoor, Chalakudy, Vectipara, Ekkappara, Idduki, Kottayam, Malaytoor, Munnar and Nilambur forest division. No survey tour was sanctioned during the current year. Mounted 4,256 plant specimen sheets. 48 Plants were supplied to other units. Compilation work of monograph on Munnar forest division completed. Helped garden development at Cheruthuruthy.

The survey unit located at R.R.C. (Ay.), Vijaywada (Andhra Pradesh) has earlier surveyed Medak, Warrangal, Karim Nagar (E), Kakinada, Nandhyala, Atamkuru, Giddalaru, Guntur, Bhadrachalam (N. & S.), Vishakhapattanam, Sitaputtanam and 6 divisions of Adilabad district. No survey tour sanctioned during current year. Accessioned 600 specimens to the herbarium. Supplied 94 Kg of the raw drug material. Arranged one medicinal plants exhibition.

The survey unit located at R.R.C. (Ay.), Jhansi (U.P.) has earlier surveyed areas covering Degari, Tirakhe in Lalitpur forest division and Madwara, Gunna ranges, Jwahar, Chat Bar, Madanipur and Pahaj etc. Basin areas and Barna Sagar range under Jhansi forest division were surveyed under Joint Survey Programme of Jhansi & Gwalior Survey Units.

The survey unit located at R.R.I. (Ay.), Junagadh (Gujarat) has earlier surveyed the Rajpipala, Gir, Valsad, Chhotaudaypur, Junagadh, Vyara, Denga, Jamnagar, Mangrol, Bhavnagar and Namnagar coastal areas and parts of Kutch. No major survey tour could be undertaken during the current year. 23 Days local survey tour for plant specimens and crude drug collection were undertaken, collected 33 specimens representing 26 families identified 68 specimens, mounted 26 sheets, accessioned 514, sheets in the Herbarium, 7 drug samples for museum and 17 crude drugs weighing 96 Kg. were collected for supply purposes. Completed monograph on Rajpipala and compiled some information on Junagadh forest division. Monograph on Kachcha submitted for publication.

The survey unit located at R.R.C. (Ay.), Mandi has in the past surveyed Una, Hamirpur, Mandi, Kululu, Dalhausie, Lahul-spiti, Chamba, Pangi, Kangra, Bilaspur & Sirmor forest Division. No. survey tour undertaken during current year. Identified 300 plant specimens. Field data of 1000 sheets was incorporated. Accessioned 200 sheets to the herbarium.

The survey unit located at R.R.C. (Ay.) Nagpur (Maharashtra), has earlier surveyed Nagpur, Wardha, Bhandara, Gondiya, Chanderpur, Allapalli, West Melghat, Gondiya and West Yeotmal etc. No survey tour were sanctioned during the current year. Accessioned 18 specimen sheets and prepared 10 Index cards. Supplied one drug sample. One monograph compiled on Gondia division, Nagpur circle was completed and submitted for publication. Reviewing work of the monograph on Nagpur and Wardha circle continued. Participated in seminar at Itanagar and an exhibition at Nagpur.

The Medico-botanical survey programmes planned have covered most of the forest areas of the country, through regular survey tour as well as special intensive survey tour programmes undertaken in selected areas. The programmes have been designed to identify the specific areas for 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 monograph compiled on the Medico-ethno-botanical information have already been published and several others are under preparation at different centres. Zonal Survey Tour Programmes in the proposed 8 zones identified, have also been initiated to overcome the financial constraints and absence of survey staff. It has further been initiated to make efforts for collection of information on the commercial availability of different drug material in the different commercial drug markets. The collection and supply of drug material for Council's various other research programmes has also been entrusted to these survey units.

Central Herbarium and Museum of Medicinal Plants at New Delhi:

The 17 Survey Units of the Council located in 16 states of the country are maintaining their collection in their own respective state level herbaria. The Governing Body of the Council has approved the establishment of a Central Herbarium & Museum at New Delhi, which may have representative

specimens and raw drug samples from all the states of the country, Vide 0/0 No. 805/82 (F.9-43/8-CCRAS/Admn.) dt. 24th June, 1982, a nucleus of the Central Herbarium and Museum was initiated at Central Research Institute for Ayurveda, New Delhi. During the past years collections of specimens from different survey unit were received for the Central Herbarium, which have been maintained. The further extension of this is shortly proposed to be taken up at the new building of the Council in Janakpuri, at New Delhi.

MUSK DEER BREEDING PROGRAMME

The musk deer breeding farm is being maintained by the Council at a height of 7.500 ft. m.s. l, on a two acre land at Mehruri in Kumaon Hills. At present there are 19 male and female animals. During the last 21 years, the Council has made efforts to maintain properly these animals in the natural surroundings and the feed given to them is also obtained from the locally growing herbs. The observations made on the behavioural adoptability of the animals, in taking milk feed, fodder, grain, water and also their pasture, growth and development during heat and pregnancy, diseases, injury and wounds and their remedial measures 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 animals in rainy season prefer to eat *Prunus domestica*, *Bergenia* species, *Persicaria nepalenses*, *Garanium wallichinum* sweet leaves. The adult male animal prefers start grazing with *Agaricus* species and ferns. This years 5 matured female musk deers gave birth to 5 fawns. Twins not born this year. Only one fawn mas male. By the end of the year two female and one male fawn, were found surviving. Three female fawns and two adult males died this year. The causes were indigestion-flatulance, pneumonia, weakness in general. Loramine cream and septran syrup found beneficial in injury. In rodent bite application of Loramine cream with oral dose of brufane syrup was found effective. In liver disorders liv. ertc injection and Livomin syrup gave good result.

CULTIVATION OF MEDICINAL PLANTS PROGRAMME

The Council's five herbal gardens located at Pune, Jhansi, Mangliawas, Tarikhhet and Itanagar are maintaining about 545 medicinal plants species of Ayurveda and Siddha importance. A few important medicinal species have also been taken up on experimental as well as on semi-large scale level. The plantation includes those of tropical/sub-tropical and temperate regions besides exotic ones.

The main aim of this entire programme is to study the medicinal plants adaptability, growth, flowering, fruiting etc. at different altitudinal levels and other ecological conditions etc. Besides, providing quality drug material in adequate quantity for reserch and pharmaceutical purposes. These herbal gardens also work out suitable Agro-chemical techniques for successful cultivation and growth of scarcely distributed rare and threatened medicinal species.

Successful propagation of Kumkum at Ranikhhet and other adjoining areas is a noteworthy feature in view of its non-habitance to these regions. The experimental cultivation of Guggulu in Mangliawas has also provided adequate information base to consider mass scale cultivation of this important Ayurvedic medicinal plant which is almost at the verge of extinction.

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune has been recognised by WHO for imparting training to its fellows in the field of medicinal plants cultivation, due to its being the only Institute in the country carrying out research in the field of cultivation of Ayurvedic medicinal plants and tissue culture studies. The University, Pune, has also approved the Institute as an approved Post Graduate Research Centre to carry out research studies in the field of Medico-botany including Pharmacognosy.

A brief review of the cultivation programme carried out in each of the cultivation centre is provided here under:

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune

The cultivation of medicinal plant programme of the Institute which includes experimental, semi-mass scale and for demonstrative purpose of

important Ayurvedic medicinal plants is presently confined to about 10 acres of the land out of a total of 19 acres available for cultivation purpose. The garden in maintaining more than 450 species of medicinal, economic and ornamental importance out of which 157 taxa are from among the medicinal plants included in Ayurvedic Formulary Part I. Some of the important and threatened medicinal species multiplied and transplanted in the garden during the period included Tagara (*Valeriana wallichii* DC.), Sarpagandha (*Rouvolfia serpentina* Benth ex. Kurz.), Prasarani (*Paederia foetida* Benth.), Ashoka (*Saraca asoca* (Rosc.) DC. Wilde), Gambhari (*Gmelina arborea* Linn.), Arjuna (*Terminalia arjuna* W. & A.) etc. Amongst other important Ayurvedic medical plants represented in the garden a few worth mentioning are Satavari (*Asparagus racemosus* Willd.), Chitraka (*Plumbago zeylanica* Linn.), Beejaka (*Pterocarpus marsupium* Roxb.) Mandukparni (*Centella asiatica* (Linn.) Urban), Brahmi (*Bacopa monnieri* (Linn.), Pennel), Vacha (*Acorus calamus* Linn.), Danti (*Baliospermum montana* Muell. Arg.), Jyotishmati (*Celastrus paniculata* Willd.), Guggulu (*Commiphora wightii* (Arn.) Bhandari), Bhallataka (*Semicarpus anacardium* Linn. f.), Triphala group, Dashmoola group etc.

Under experimental cultivation of Kalmegha (*Andrographis paniculata* Nees), it is observed that among different manures and fertilizers used, the urea and Suphala increased the yield of total biomass considerably as compared to control group. The harvesting period of roots of Trivrita (*Operculina turpethum* (Linn.) Silva Manso.) was also evaluated. The observations indicated that the best time for harvesting is 15-18 months after plantation in between September to December as the resin content in the plant increased maximum during this period.

Studies on acclimatisation and multiplication of a few Sub-temperate threatened plants such as Tagara (*Valeriana wallichii* DC.) and Vanafsa (*Viola serpens* Wall.) were carried out to assess the feasibility of their cultivation/ex situ conservation.

For the investigation the appropriate conditions required for collection storage and preservation of medicinal plants used in Ayurvedic medicine, Trivrita (*Operculina turpethum* (Linn.) Silva manso) and Kalmegha (*Andrographis paniculata* Nees) were selected. These plants are stored in natural form as well as in powder form and their chemical analysis is being regularly carried out at every three months to find out the optimum conditions of storage and their shelf life.

The Institute has played an important role in meeting partly the drug requirement of the Council's different research projects and have also taken various steps to streamline the supply of crude drug material to Council's various research units etc.

About 128 kg. (dry weight) crude drugs belonging to five species collected from garden, were supplied to different Research Centres of the Council and about 50 kg. crude drugs collected and stored for future supplies.

Among the drugs supplied/stored Amalaki (*Phyllanthus emblica* Linn.), Bhallataka (*Semecarpus anacardium* Linn.), Madana (*Catunaregam spinosa* (Thunb.) Tirnv.), Bibhitaka (*Terminalia bellerica* Roxb.) are worth mentioning.

In addition to above more than 25 quintals of fresh leaves of Kumari (*Aloe barbadensis* Mill.) and about 10 quintals of roots of Ushira (*Vetiveria zizanioides* (Linn.) Nash.) can be harvested and supplied when required, from the plants cultivated in the garden. About 1000 plants of Japa (*Hibiscus rosa-sinensis* Linn.) and more than 100 plants of Nurgundi (*Vitex negundo* Linn.) are also being maintained in the garden to meet the requirements of their flowers and leaves respectively.

The other important activities of the Institute includes participation and presentation of scientific papers in seminars/workshops held at Bombay, Ranikhet and Pune during the reporting period. Two exhibitions were also organised, one on National Science day at Pune and garden was open for common man and other exhibition was organised at Nagpur on the occasion of Akhil Bhartiya Ayurveda Maha Adhiveshan. It also took steps to encourage and popularise cultivation of medicinal plants in the regions and extended free consultancy to interesting individuals/agencies in respect of cultivation techniques, knowhow for propagation, multiplication and cultivation medicinal plants etc, besides a sum of Rs. 525/- was earned from the sale of fruits of the garden.

The institute has also received several visitors including some eminent scientists, teachers, and students from research organisations/universities and colleges from all over the country and also from abroad.

Regional Research Centre, Jhansi

The cultivation activities of the Centre are being carried out on about 15 acres of the land out of a total of 40 acres under its possession for cultivation purpose. During the reporting period, the Centre has taken up cultivation of a few medicinal plants of Ayurvedic importance on experimental semi-large scale as well as for demonstration purpose. More than 200 medicinal plants species are presently growing and properly maintained at different places in the herbal garden including the Green House.

A few of the important Ayurvedic plants taken up on semi-large scale cultivation are Guggulu (*Commiphora wightii*), Ghritkumari (*Aloe barbadensis*), Prisiniparni (*Uraria picta*), Yashtimadhu (*Glycyrrhiza glabra*), Satavri (*Asparagus racemosus*), Sarpagandha (*Rauwolfia serpentina*), Rasna (*Pluchea lanceolata*) and Salparni (*Desmodium gangeticum*). Some of the important medicinal plants taken up on small scale experimentation to study their adoptability, growth behaviour under climatic conditions of Jhansi are Punarnava (*Boerhaavia diffusa*), Bharangi (*Clerodendrum indicum*), Shankhapushpi (*Convolvulus pluricaulis*), Atibala (*Abutilon indicum*), Kalmegh (*Andrographis paniculata*), Anantamula (*Hemidesmus indicus*) and Danti (*Baliospermum montanum*).

About 100 Ayurvedic medicinal plants species have been represented in the herbal garden in the form of demonstration beds representing mostly the species of Bundelkhand area and higher altitude habitate from 4000-6000 ft. height. A few important species are Anantmool, Akarkara, Asvagandha, Arkapatri, Latakasturi, Ulatkambal, Chitraka, Shankhapuspi, Vasa, Arni, Meshashringi, Trivrit, Tisaca, Karpasa, Swetgunja, Laghupanchmūla, Chopchini (*Smilax aspara*), Vacha (*Acorus calamus*), Mandukparni (*Centella asiatica*), Pashanbheda, Daruharidra, Brishpatri etc. These species have been reported to be growing well and maintained properly and regular observations are being made specially for such species which are not habitated to that region for their adoptability and growth behaviour etc. A few of the plants belonging to high altitude such as Tagar, Chopchini, Pashanbheda, Priyangu etc. have survived and are growing well, so far. Seeds, sapplings/cuttings of about 40 plants have also been planted at different places of the garden during reporting period. The entire garden's plantation represents about 55 species mentioned in Ayurvedic Formulary, Pt. I.

The Centre has also taken up plantation of some important medicinal plants creepers along boundary wall of the garden and Green House to protect entry of animals and unwanted persons etc. to prevent the damage to the garden's plantation. Some important species planted are: Vidara (*Argyria speciosa*), Trivrit (*Operculina turpethum*), Jyotishmati (*Celastrus paniculatus*), Arkapatri (*Tylophora indica*), Guduchi (*Tinospora cordifolia*), Patha (*Cissampelos pareira*) and Prasarni (*Paederia foteida*).

A total produce of the garden during the period has been about 116 Kg. of the dry material consisting of about 12 medicinal plants species and supplied about 80 kg. of the material to the Centres Drug Depot for research purpose. In addition to this, the garden has also earned a revenue of Rs. 1250/- by auctioning grass and weeds etc.

Guggulu Herbal Farm, Mangliawas (Rajasthan)

Guggulu Herbal Farm has about 142 acres of the land under its possession for Guggulu cultivation project which at present is confined to only about 46 acres of the land for taking up large scale cultivation of this species. The entire Farm is grouped in 20 blocks on topographic characteristics. The rest of the Farm's land which is about 96 acres occupied the natural vegetation including the medicinal plants such as *Acacia nilotica*, *A. senegal*, *Azadirachta indica*, *Zizyphus jujuba*, *Rhus mysorensis*, *Calotropis procera*, *Asparagus racemosus*, *Barleria prionitis*, *Euphorbia niyulia*, *Ocimum* sp., *Capparis decidua*, *Tribulus terrestris*, *Balanites roxburghi*, *Tephrosia purpurea* etc.

About 13,400 Guggulu plants are presently growing under mass scale cultivation at different places of the garden. All possible attempts were made for the proper maintenance and survival of the entire plantation. Besides this 65 species of other medicinal plants, mostly of Arid zone region are also growing and maintained in the garden and a few of the important species are Sallaki (*Boswellia serrata*), Kuberaaksh (*Caesalpinia crista*), Karanja (*Pongamia glabra*), Nimba (*Azadirachta indica*), Sadabahar (*Vinca rosea*), Kumari (*Aloes vera*), Ingudi (*Balanites roxburghii*), Shirish (*Albizia lebeck*), Erand (*Ricinus communis*), Guduchi (*Tinospora cordifolia*), Vanapalandu (*Urgenia indica*), and Bilva (*Aegle marmelos*).

About 3000 guggulu plant from stem cuttings and 300 Guggulu plant air-laying were produced and about 13,682 stem cuttings of Guggulu and 1100 other medicinal plant species were introduced in the Farm during the reporting period.

Different studies have been conducted to produce the quality seeds and cuttings through selection and hybridization. For getting desired characters and qualities a new method of regeneration air-laying in *Commiphora wightii* has been introduced and 300 plants have been developed by this method.

The most suitable period for Guggulu cutting plantation and air-laying method and for the transplantation of Guggulu plants has been observed in the month of June and July/August respectively.

Suitable and effective control measures have also been taken up to prevent the termite and other insects and bacterial/fungal growth etc.

To get the maximum yield and to standardise the tapping technique of gum-oleo-resin, the Guggulu plants had been treated with Ethephone of various concentrations, and it is observed that 450mg. Ethephone solution (5 c.c) when fed to the plant through thin lateral root, the flow and quantity of gum secretion was increased.

A total 16,500 kg of Guggulu gum has been collected from the farm and supplied the crude drug material consisting of different drug parts of different species to Council's various research projects and other Govt. organisations.

Indian Institute of Ayurveda for Drug Research, Ranikhet (U.P.)

The Institute has continued its cultivation programme both at Ranikhet and Chamma. The garden at Ranikhet was terraced in 7.69 acres of land and the net bed area under medicinal plants cultivation is 5 acres, which include 1.53 acres exclusively confined to Kumkum (*Crocus sativus*), cultivation. About 200 medicinal plants species mostly of Ayurvedic importance are growing in 296 beds, at Ranikhet. This year the adoption and acclimatization of very important medicinal plants of Ayurvedic importance from other zone to the garden was continued. The seedlings of Prisiniparni (*Uraria picta*) and Latakasturi (*Hibiscus abelmoschus*) transplanted from green house to the field, besides these Trivrit (*Operculina turpethum* (Linn.) S. Manso), Apararita (*Clitoria ternatea* Linn.), Brihati (*Solanum ferox* Linn.) Ulatkambal (*Abroma angusta* Linn.), Latakaranj (*Caesalpinia crista* Linn.) which were transplanted previous year were showing good progress in flowering and fruiting stages.

The seeds received by the courtesy of ICAR Centre, Bhowli, showed a good percentage of germination, among them the most important plant is Akarkara (*Anacyclus pyrethum* DC.).

The exotic plant species successfully introduced and maintained in the garden are *Artemisia annua*, *Digitalis purpurea*, *Digitalis tamala*, *Lallemantea royleana* and *Calendula officinalis*.

Medicinal plants garden at Chamma has about 42 types of medicinal plants species grown in about 2 acres of land, are reported to be properly maintained. Some of them are Satavari (*Asparagus curillus*), Pasanbheda (*Bergenia ciliata*), Tagara (*Valeriana wallichii*), Manjishtha (*Rubia cordifolia*), Daruharidra (*Berberis aristata*), Kalijiri (*Vernonia anthelmintica*), Kumkum (*Crocus sativus*), Talisa (*Abies pindrow*), Vanfisa (*Viola serpens*), Mandukparni (*Centella asiatica*), Vaca (*Acorus calamus*), and Kumari (*Aloe barbadensis*).

It has been decided that the small Chamma garden shall be developed a store house of green plant of medicinal and Ayurvedic importance. The Institute had celebrated its Silver Jubilee on 27th and 28th October, 1993. On this occasion an exhibition and Seminar on medicinal plants was organised and 50 types of medicinal plants were arranged in pots, which was inaugurated by the Honourable Deputy Minister of Health and Family Welfare, Joint Secretary, ISM, Director, CCRAS and other dignitaries were also present in the celebration. One monograph on Saffron was compiled and released on this Silver Jubilee Year of the Institute.

Saffron Experimental Cultivation

Saffron cultivation project is carried out on about 15 acres of the land at Ranikhet and is spread out in about 560 beds of different sizes. About 3.8 lakh of corms of large, medium and small sizes corms were maintained in 2300 square meter of land. During the year sprouting was observed from the last week of August, and by the end of December the plants attained good height and vigorous vegetative growth, flowering was observed from the second week of September and continued till second week of November. During the reporting period a total of 6,384 flowers were collected, yielding approximate 47 gms of Saffron consisting of dry stigma and little part of style.

Regional Research Centre, Itanagar

The herbal garden of the Centre has taken up the cultivation of some of the important Ayurvedic medicinal plants mostly of North Eastern Regions in about 9 acres of the land out of a total of about 17 acres available for the purpose. The cultivation activity has been initiated both on small experimen-

tal and semi large scale level as well as for demonstration purpose. Presently, a total of about 140 medicinal plants species are growing in the garden at different places and also properly maintained. These plantation represents about 81 species mentioned in the Ayurvedic Formulary, Pt. I.

Some of the important plants represented for demonstration purpose are Arjuna (*Terminalia arjuna*), Chitraka (*Plumbago zeylanica*), Guduchi (*Tinospora cordifolia*), Nagakesara (*Mesua ferrea*), Saptaparna (*Alstonia scholaris*), Shatavari (*Asparagus racemosus*), Trivrit (*Operculina turpethum*), Prasarni (*Paedaria foetida*), Patha (*Cissampelos parieara*), Vasa (*Justica adatoda*), Kalmegh (*Andrographis paniculata*), Vanfsa (*Viola odota*), Bhringaraja (*Eclipta alba*), Bilva (*Aegle marmelos*), Lajjalu (*Mimosa pudica*), Kakamachi (*Solanum nigrum*), Sahadevi (*Vernonia cinerea*), Tamalpatra (*Cinnamomum tamala*), Atibala (*Abutilon indicum*) etc.

The important medicinal species have been taken up on semi large scale cultivation in order to meet the crude drug requirement of the Council's different Institute's/Centres are: Sarpagandha (*Rauwolfia serpentina*), Kustha (*Costus speciosus*), Karpura (*Cinnamomum camphora*), Satavari (*Asparagus racemosus*), Lajjalu (*Minosa pudica*), Gambhari (*Gmelina arborea*), Karanja (*Pongamia pinnata*), Kakamachi (*Solanum nigrum*), Chakramarda (*Cassia tora*), Mahanimba (*Melia azadirachta*), Mahabala (*Sidarhombifolia*).

The seeds, cuttings and seedlings of few medicinal species obtained from Tarikhet and Pune Institutes have also been introduced in the garden on experimental trial for studying their adoptability and growth behaviour etc.

About 93kg. crude drug material consisting of different drug parts of 16 medicinal plants species have been collected from the garden's and supplied to Council's different Institutes/Centres for research purpose.

PHARMACOGNOSY RESEARCH STUDIES

Pharmacognosy is an applied science which aims at a complete and systematic evaluation of authentication and genuineness of crude drugs used in Ayurveda/Siddha systems of medicine and other drug research studies taken up by the Council. The different Pharmacognosy Research Units of the Council have carried out Pharmacognostical studies on the following drugs of Ayurvedic importance with the objective to establish the correct identification of the drug and its adulterants so that genuine and authentic drug material can be made available for research and pharmaceutical Industry.

- Amra (*Mangifera indica* Linn.): Bark, kernel
- Arka (*Calotropis gigantea* R. Br.): Flower
- Atibala (*Abutilon indicum* (Linn.) Sw.): Stem, leaf & root
- Bilva (*Aegle marmelos* Corr.): Leaf
- Brihat-Goksura (*Pedaliium murex* Linn.): Root & fruit
- Japa (*Hibiscus rosa-sinensis* Linn.): Flower
- Kantakari (*Solanum surattense* Burm. f.): Whole Plant
- Kulanjan (*Alpinia galanga, A. officinarum*): Rhizome
- Manakanda (*Alocasia indica* (Roxb.) Schott): Rhizome
- Sarsap (*Brassica nigra* (Linn.) Koch.): Seed, oil
- Tinduka (*Diospyros peregrina* (Gaertn.) Gurka): Stem, bark, fruit
- Upakunchika (*Nigella sativa* Linn.): Seed
- Vaca (*Acorus calamus* Linn.): Rhizome

The Pharmacognosy Research Programme includes the study of source, collection, identification, correct determination of Ayurvedic nomenclature including synonyms morphological and histological characters (both qualitative and quantitative), identification of diagnostic characters, test for purity, preliminary phytochemical studies, chromatographic studies, identification of chemical constituents like alkaloids, steroids and terpenoids, phenols, tannins, saponins and flavonoids etc. and fluorescence analysis of the various plants parts. The analytical studies of the powdered drug which is considered to be of immense help in detection of adulterants/substitutes 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 due to its synonyms, and use of one and the same name for more than one drug.

PLANT TISSUE CULTURE

The plant tissue culture laboratory which was established at JNAMPG & H Pune started its functioning only in January, 1990. The main objective of this Laboratory is the propagation and multiplication of rare, endangered and important Ayurvedic medical taxa, maintenance and improvement of genotypes of medicinal plants.

The tissue culture studies on Satavari (*Asparagus racemosus*) and Langali (*Gloriosa superba*) initiated during the previous years were continued during the reporting period.

Few new plant species i.e. Sariva (*Hemidesmus indicus* Br.), Gandhaprasarini (*Paderia foetida* Linn.), Brahmi (*Centella asiatica* Linn.) and Tagara (*Valeriana wallichii* DC.) have been studied primarily for multiplication through tissue culture. In case of Sariva axillary and apical buds were inoculated on different auxins and cytokinins, callus and root formation was observed. Experiments are further continued to get the multiple shoots. Gandhaprasarini responded to BAP (2 mg/lit) & showed multiple shoot growth. The axillary buds of *Centella asiatica* (Linn.) Urban were inoculated on Ms+Kn 4 mg/lit. for its response to growth hormone, but no growth was observed. New shoots were observed in the culture raised from nodal and internodal portion of Tagara (*Valeriana wallichii* DC.) on the same medium.

CHEMICAL RESEARCH PROGRAMME

Chemical studies of plant drugs have an important role in the development of drug research. These studies comprises of isolation of active principles and ingredients responsible for their medicinal value. The Council is engaged in such studies through Phytochemical Research Units/Centres located at Calcutta, Delhi, Hyderabad, Lucknow, Madras, Trivandrum and Varanasi. A brief resume of the work carried out during the year is reported as under.

1. *Adina cordifolia*

ChREL

The ethanolic extract showed promising antifungal and immunostimulant (in virto) activities. A number of components have been isolated from the different fractions of the plant extract viz. alpha-amyrin, beta-sitosterol, skimmin, adicardin, longanin and sucrose.

A new compound Loganin has been isolated from this plant. Further detailed chemical investigations are in progress.

2. *Tandula (Amaranthus spinosus)*

ChRUH

The whole plant was extracted with petroleum ether and chloroform in soxhlet extractor. Methanolic extraction of this plant is in progress.

3. *Panasa (Artocarpus heterophyllus)*

ChRUC

The chemical investigation of the latex of *Artocarpus heterophyllus* resulted in the isolation and characterisation of 2 new tetracyclic triterpenes, 9, 19-2 one-24, 25 diol (24 S).

From the same source, two known compounds cycloartenone and cycloartenol have also been isolated.

4. *Karnasphutika (Boenninghausenia albiflora)*

ChRUC

The work on this plant was continued from the previous year which has resulted in the isolation and characterization of four more coumarin derivatives, Grevelliferone, 3 (1, 1-dimethyl-ally) xanthyletin, Bergapten and Luvangatin in addition to eight coumarin derivatives already reported.

5. Tejapatra (*Cinnamomum tamala*)

ChREL

Traditionally, the leaves are used in rheumatism, colic, diarrhoea and in scorpion sting. The ethanolic extract of leaves showed antiviral and hypotensive activity. The ethanolic extract was fractionated into hexane, chloroform, n-BuOH and aqueous fractions respectively. The chemical investigation led to the isolation of two flavanoids alongwith β -sitosterol, cinnamic acid, triacontanol, β -sitosterol D-Glucose. Structural characterization of these two flavanoid is under progress.

6. Agnimantha (*Clerodendron phlomidis* Linn.)

ChRUV

The work on the leaves was continued and two compounds A & B were isolated. The detailed chemical analysis of compound A was carried out and it was observed that its structure is identical to that of 7-hydroxyflavone.

Similarly compound B was chemically analysed and it was observed that the isolated sample is strictly similarly to that of flavone 7-O Glucoside.

7. Bharangi-Bhed (*Clerodendrum splendens*)

ChRUD

The flowers of this plant were collected from the Punjabi Bagh area and then extracted with benzene under reflux followed by 90% ethanol. Benzene extract on column-chromatography yielded a sterol identified as (24-S) ethyl cholesta-5, 22, 25-trien 3 β -ol. Ethanol extract on further fractionation into ether and ethyl acetate soluble fractions yielded caffeic acid and anthocyanin pigments. Further detailed investigations are in progress.

8. Parpata (*Fumaria parviflora*)

RRIT

Beta-sitosterol, alpha-amyrin, beta-sitosterol acetate and quercetin were isolated. The identification of a few phenolic compounds presents in this plant is in progress.

9. Pithari (*Glossocardia bosvallia*)

ChRUH

The air dried plant material was extracted with methanol in soxhlet extractor. About 100 gm. of the extract was obtained after removal of the solvent. The water soluble portion of the above extract was extracted repeatedly with ether, ethylacetate and n-butanol. About 1 gm. of impure compound was obtained. Glycosides were separated from the water soluble

portion of the above extract after removing butanol solubles as above by lead salt precipitation method. Thus obtained compound (5 gm.) is very impure and needs purification.

10. Musali/Safed Musali (*Chlorophytum tuberosum*) ChRUD

The chemical safed musali contains tubers of *Chlorophytum arundinaceum*, *C. tuberosum* and *C. indicum*. The benzene and ethanol extracts were prepared and concentrated under the reduced pressure. Further chemical investigations is in progress.

11. Nimbathiktham RRIT

A new programme for its isolation without using the ever increasing costly petroleum-ether was planned and the preliminary work has been initiated.

12. Parijata (*Nyctanthes arbortristis*) ChREL

50% Ethanolic extract possess a broad spectrum of biological activities, data of antiviral and antiallergic activities have been incorporated in this annual report. A new minor iridoid glycoside was isolated from the leaves of the plant. The other chemical constituents are arbortristoside A and arbortristoside C, p-methoxy cinnamic acid, nyctanthoside, nyctantic acid, oleonic acid, β -sitosterol and β -sitosterol D-glucoside. Further investigation of plants are in progress.

13. Meda/Maha Meda (*Polygonatum cerrifolium*) (root) ChRUH

Polygonatum cerrifolium (root) was extracted with petroleum ether, chloroform and methyl alcohol, TLC examination and colour tests were done for the above extracts. These extracts are being despatched to Pharmacology Unit at Trivandrum for screening.

14. Bala (*Sida cordifolia*) ChRUC

The important Ayurvedic plant during chemical investigation resulted in the isolation of a new dimeric flavone.

15. Talisa/Sthorayaka (*Taxus bacata* Linn.) ChRUV

Chemical studies on its leaves and stem were carried out for isolation of various compounds. From its leaves 4 compounds designated as TXL-1, TXL-2, TXL-3 and TXL-4 were isolated. The detailed studeis of spectral data

inferred that TXL-3 and TXL-4 are the same compounds and hence identical. Thus the compound so isolated has been identified as sciadontysin (7', 4', 4"-tri-O-methyl amonathflavone). Further final confirmation of the structure is in progress.

From the stem of *T. bacata* Linn. two compounds designated as TX-1 and TX-2 have been isolated. The detailed spectral studies have identified them as indicated below:

Further the Unit carried out certain toxicological studies in mice (acute and chronic) in collaboration with another department of the University. From acute toxicity studies, it was observed that the stem fractions i.e. TX-B1, TX-B2 and TX-B3 showed higher toxicity response as compared to the three fractions i.e. TXA-1, TXA-2 and TXA-3 isolated from the leaves. Even the small dose of 3.3 to 6 mg/kg, body weight of mice produce death within 10 to 15 minutes of administration. Perhaps the calcium channel as the molecular target of this poison in heart which releases in tetany, paralysis and cardio respiratory arrest. The acute toxicity elicited, most probably due to amorphous basic fraction which might be acting as a calcium antagonist particularly with respect to heart.

The chronic toxicity studies were carried out in albino rats. During the course of studies the blood samples were collected at an interval of 10-20 and 30 days for carrying out bio-chemical and haematological investigations. Elevated alkaline phosphates and transaminases (SGOT and SGPT) level in TXA-1, TXB-1 treated rats may be interpreted as toxic conditions associated with liver disorders and myocardial infarction. Most probably, such toxic conditions might be associated due to the presence of taxane, diterpinamide in almost all the fractions used.

16. Badara (*Zizyphus jujuba*)

ChRUC

The chemical investigation of its leaves resulted in the isolation of 3 components designed as ZJ-PL 1, ZJ-PL2 and ZJ-PL3 respectively. The work on their characterisation and structural elucidation is in progress.

17. Miscellaneous work

ChRUC

The Extraction Supply Unit, Calcutta has supplied the following plant extracts to RRI, Calcutta for the preparation of coded drug Ayush-56.

1. Alcoholic extract of *Marsilea minutea*-7kg.
2. Alcoholic extract of *Nardostachys jatamansi*-3.5 kg.

PHARMACOLOGICAL RESEARCH PROGRAMME

Pharmacological and Toxicological studies constitute a very vital part in Drug Research Programme. These studies are based on experimental models in different species of animals. This provides vital information for pursuing clinical studies. These studies are carried out by various Pharmacological/ Toxicological Research Units located at Bombay, Calcutta, Cheruthuruthy, Delhi, Jaipur, Jhansi, Lucknow, Patiala, Trivandrum and Varanasi. During this period a number of single drugs and compound formulations were investigated by these units for routine Pharmacological screening/special effects such as analgesic, anti-pyretic, anti-inflammatory, anti-histaminic, C.N.S. depressant, cardio vascular, hypolipidaemic, anti-ulcer and adaptogenic effects etc. Toxicological studies comprising of acute, sub-acute and chronic toxicity studies were also carried out. A brief resume of the work carried out is reported below.

1. *Sthulaela (Amomum sabulatum)*

PhRUB

Acute toxicity studies were carried out. LD 50 value of *Amonum sabulatum* in rats and mice by oral route is more than 2.0 gm./kg. It failed to show antipyretic activity as compared to paracetamol and Tribhuvankirti.

2. *Chorak (Angelica alauca Edgew)*

TRUB

Acute toxicity studies were carried out. The LD 50 value in mice and rats by oral route is more than 2.0gm./kg.

3. *Bougainvillea*

PhRUC

The methanolic extract of leaf of *Bougainvillea spectabilis* was worked out in detail. It showed significant antidiabetic effect on normoglycaemic as well as in hyperglycaemic animals. The crude extract of *B. spectabilis* was compared with a known antidiabetic drug i.e. Tolbutamide. It showed no toxic effects, upto the dose of 2500 mg./kg. orally in mice.

4. *Brahmi Rasayan*

PRRUJ

An Ayurvedic preparation was studied in rodents for its anti-inflammatory effects at oral dosages ranging between 1 to 10 g./kg. The drug suppressed various experimentally induced inflammatory reactions and did

not show any gastric irritation in with these dosages. It is possible that it may partially mediate its anti-inflammatory activity by interfering with the action and or synthesis of prostaglandins and also perhaps by stabilization of the lysosomal membranes. Its antiinflammatory activity is comparable to that of indomethacin and merits further study.

5. Arka (*Calotropis procera*) PhRUD

No significant effect on CNS has been observed with alcoholic and aqueous extracts of calotropis procera.

6. Nimbu (*Citrus limon*) PhRUT

Citrus limon was screened using the decoction of the root and stem bark. No toxicity noticed upto 100g./kg. orally and did not show any effect on gastric acid secretion and its volume in shay rats.

7. Jayaphala (*Croton tiglium*) PhRUT

Croton extract (50% ethanol) was investigated for CNS activity. Gastro-intestinal activity including cathartic effect. Studies revealed that the extract possessed moderate CNS sedative effect. Significant cathartic effect of rats and increased GT motility in rats. Invitro studies showed significant smooth muscle stimulant effect.

8. Indravaruni (*Citrullus colosynthis* Schrad) TRUB

LD 50 value of Indravaruni determined according to Litch field-Wilcoxon method in rats by oral route is 1.1gm./kg. with fiducial limits between 0.89 gm./kg and 1.35 gm./kg. at 95% confidence level.

The LD 50 value of Indravaruni determined according to Litch field Wilcoxon method in mice by oral route is 1.15 gm./kg. with fiducial limits between 0.88 gm./kg. and 1.49 gm./kg. at 95% confidence level.

9. Madhuka (*Madhuka longifolia*) PhRUD

Aqueous and alcoholic extracts were prepared and dried. None of the extract upto the dose of 160 mg./kg. *i.m.* produced any toxic or lethal effect for 48 hours. These extracts also did not alter the effect of acetylcholine, histamine and serotonin on isolated piece of pig intestine.

Both the extracts are not effective against electroshock seizure and chemical seizure. It was interesting to note that both of these aqueous and

alcoholic extracts were effective antinociceptive in experimental models like rat tail flick method, Hot and chemical writhings. They were neither having-pyretic effect nor anti-inflammatory effect. Further work on the mechanism of analgesic effect of aqueous and alcoholic extracts of *Madhuka longifolia* is in progress.

10. Sigru (*Moringa oleifera*)

PhRUT

Moringa oleifera methanol extract (stem bark) possessed significant hypoglycaemic effect in fasting rabbits as compared to tolbutamide. Glucose tolerance tests in albino rats and studies in fed rats and diabetic rats are also support the above findings.

11. Mukta Vidrumanjau Rasa

TRUJh

The acute toxicity studies carried out in rabbits showed no toxic signs as all the general parameters were unaffected. Sub-acute toxicity studies were done in rats and there were no signs of any morbidity. The feed and water intake were normal. No change in the fecal and urine output was noticed. No appreciable change in their body weight taken weekly was recorded. The viscera of such treated rats exhibited no significant gross or histopathological change. The drug did not modify pentobarbitone induced hypnosis in rats. It was devoid of any analgesic, anticonvulsant, nerve block and surface anaesthetic activity. The body temperature of normal rats was not lowered by the drug. No antimicrobial, antifungal activity could be seen in these drugs.

12. Karanja (*Pongamia pinnata*)

PhRUV

The aqueous, ethanol, petroleum ether, chloroform and acetone fractions from its seeds were prepared. All these fractions were studied for their acute toxic effects in mice. There was no mortality with aqueous suspension orally upto 2,000 mg./kg., no mortality upto 10,000 mg./kg. with ethanol extract, 75% mortality upto 50 mg/kg. with chloroform, acetone and ethanolic extract. While ethanolic extract (2000 mg./kg.) and petroleum ether extract (10 mg./kg. to 2,000 mg./kg.) exhibited marked anti-inflammatory effect but the remaining three fractions i.e. chloroform, acetone and ethanol (50mg./kg. dosages each) exhibited no significant anti-inflammatory effect. Further, studies are in progress. All the fractions showed significant anti-ulcerogenic activity in mice. None of the extracts showed any significant hypnotic effect.

13. Svetachandan (*Santalum album*)

PhRUB

Santalum album in a dose of 1gm./kg. and 20gm./kg. orally failed to protect indomethacin induced ulcers in rats. It failed to show anti-pyretic effect as compared to paracetamol and Tribhuvankirti. It failed to show anti-inflammatory effect as compared with Hydrocortizone.

14. Sarvajvarhara Lauha

TRUJh

The acute toxicity studies carried out in rabbits showed no toxic signs as all the general parameters were unaffected. Sub-acute toxicity studies were done in rats and there were no signs of any morbidity. The feed and water intake were normal. No change in the fecal and urine output was noticed. No appreciable change in their body weight taken weekly was recorded. The viscera of such treated rats exhibited no significant gross or histopathological change. The drug did not modify penobarbitone induced hypnosis in rats. It was devoid of any analgesic, anticonvulsant, nerve block and surface anaesthetic activity. The body temperature of normal rats was not lowered by the drug. No antimicrobial, antifungal activity could be seen in these drugs.

15. Kustha (*Saussurea lappa* C.D. Clarka)

TRUB

Acute toxicity studies were conducted. The LD 50 value in mice and rats by oral route is more than 2.0 gm./kg.

16. Bala (*Sida cordifolia*)

PhRUC

The extract exhibited no effect on pentobarbitone hypnosis in albino rats. The extract produced reduction in spontaneous motility of rabbit jejunum. Alcoholic extract of aerial part exerted no antiinflammatory effect against carrageenin; produced inhibition of Ach induced contractions in isolated guineapig ileum; produced no diuretic effect could not potentiate pentobarbitone hypnosis; produced no effect on b.p. of anaesthetised cats; exhibited 50% mortality in 2000 mg./kg. p.o. in albino mice. The pet. ether extract of root also exhibited inhibition of Ach induced contractions on smooth muscles and reduction of spontaneous motility.

17. Talisa/Sthoravaka (*Taxus bacata* Linn.)

TRUB

Acute toxicity studies were carried out. The LD 50 value in mice and rats by oral route is more than 2.0 gm./kg.

18. Parsniparni (*Uraria picta*) (fruit)

IIPC

Ethanol extract (100mg./kg., p.o.) potentiated diazepam induced hypnosis, showed mild antagonism against d-amphetamine induced stereotypy, depressed exploratory behaviour of mice, produced significant anti-inflammatory activity (croton oil induced granuloma). Chloroform extract (100mg./kg. p.o.) produced mild protection against metrazol convulsions. Decoction (1 g./kg.p.o.) produced mild antagonism against d-amphetamine induced stereotypy and mild anti-inflammatory activity (Cotton pellet test). However all these extracts (100 mg./kg. p.o.) and decoction (1 g./kg. p.o.) failed to produce antipyretic activity, to influence muscle tone and balance in trained mice.

19. Usira (*Vetiveria zizanioides*)

IIPC

Petroleum ether and chloroform extracts (100 mg./kg.p.o.) potentiated diazepam induced hypnosis significantly. Ethanol extract and decoction failed in this respect. Petroleum ether extract (100 mg./kg.p.o.) also showed mild protection against metrazol convulsions. Ethanol extract (100mg./kg.p.o.) and decoction (1 g./kg.p.o.) produced mild antagonism against d-amphetamine induced stereotypy and mild anti-inflammatory activity (cotton pellet test). Ethanol extract (100 mg./kg.p.o.) also produced significant anti-inflammatory activity (Croton oil induced granuloma) and depressed exploratory behaviour of mice. However, all these extracts (100 mg./kg.p.o.) and decoction (1 g./kg.p.o.) failed to exhibit antipyretic activity and to protect mice from strychnine convulsions.

20. Adraka (*Zingibar officinale*)

PhRUC

The extract exhibited inhibition of histamine induced contractions in guineapig ileum.

21. Badar (*Zizyphus jujuba*)

PhRUC

The extract appeared to show antispasmodic effect against acetylcholine induced spasm in guineapig ileum. It produced anti-spasmodic effect against $BaCl_2$ induced contractions in guineaping ileum. Pet. ether extract of leaf produced inhibition of histamine induced contractions relaxation of $BaCl_2$ induced contractions in isolated smooth muscles; produced no effect on skeletal muscles; no effect on b.p. and respiration of anaesthetised cats. Pet. ether extract of root produced inhibition of histamine induced contractions & relaxation of $BaCl_2$ induced contractions in smooth muscles. Further studies are in progress.

22. Maintenance of Trypanosoma cruzi strain

PhRUC

More than one hundred fifteen albino mice were inoculated with trypanosoma strain and more than 85 to 90% animals exhibited parasitemia.

23. Antiinflammatory activity of the following plants on rats was investigated.

PhRUB

- a) *Terminalia chebula* (Haritaki)
- b) *Cassia angustifolia* (Suvarnpatri)
- c) *Alstonia scholaris* (Saptaparni, Local purchase)
- d) *Alstonia scholaris* (Saptaparni, sent by Council)
- e) *Oraxylum indicum* (Syonaka): Bark
- f) *Oraxylum indicum* (Syonaka): Roots

None of the plants showed anti-inflammatory effect as compared with Hydrocortizone.

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 the importance as the analytical data are based on the textual formulations prepared on 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 under taken by the Council.

Having regard to this, the Council has under taken the task of laying down Psycho-Chemical values of the single drugs that are entering as ingredients in the particular formulations on the process of manufacture like Avarista, Avaleha, Bhasma etc. in addition to shelf life etc. Standardisation Studies on single drugs, Process of manufacture and finished products (formulations) are at carried out at Captain Srinivas Murthy Drug Research Institute for Ayurveda, Madras (CSMDRIAM), Regional Research Institute, Trivandrum (RRIT), Indian Institute of Ayurveda for Drug Research, Tarikhet (IIADR) and Drug Standardisation Research Project, Gujarat Ayurveda University, Jamnagar (DSRPJ) while rapid analytical values were laid down at CSMDRIAM, DSRPJ and Drug Standardisation Research Project, IMS, BHU, Varanasi (DSRPV) and the studies on single drugs and as well as finished products were taken up at Regional Research Centre, Bangalore (RRCB). 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 proportionate ingredients in different quantity or deleting some of them other than the Standard Formulary and to establish whether there is any changes in the analytical value other than the Standard formulary 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 of the patent medicines of private pharmacies are also analysed.

The details of the Standardisation Studies carried out during the year 93-94 are as follows:

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

| | |
|--------------------|--|
| Raw guggulu | (<i>Commiphora mukul</i>) (CSMDRIA, DSRPJ) |
| Aragvadha | (<i>Casia fistula</i>) (CSMDRIAM) |
| Maricha | (<i>Piper nigrum</i>) (CSMDRIAM, RRCB) |
| Chakramarda | (<i>Casia tora</i>) (CSMDRIAM) |
| Svarna Patri | (<i>Casia angustifolia</i>) (CSMDRIAM) |
| Vandhyavari | (<i>Vicoa indica</i>) (CSMDRIAM) |
| Parijata | (<i>Nyctanthus arboristis</i>) (CSMDRIAM) (<i>Leonotis nepataefolia</i>) (CSMDRIAM) (<i>Plumeria indica</i>) (CSMDRIAM) (<i>Zippia nodiflora</i>) (CSMDRIAM) (<i>Walsura piscindia</i>) (CSMDRIAM) (<i>Maleethra madraspatana</i>) (CSMDRIAM) |
| Brihati (Bheda) | (<i>Solanum trilobatem</i>) (CSMDRIAM) |
| Agnimantha (Bhudo) | (<i>Premna tomentosa</i>) (CSMDRIAM, RRIT) (<i>Azima tetracantha</i>) (CSMDRIAM) (<i>Seheflera wallichiana</i>) (CSMDRIAM) |
| Vasa (Bheda) | (<i>Adhatoda bedemei</i>) (CSMDRIAM) (<i>Justecia aelhatoda</i>) (CSMDRIAM) |
| Kustha | (<i>Saussurea lappa</i>) (DSRPV) |
| Manjistha | (<i>Rubia cordifolia</i>) (DSRPV) |
| Pippali | (<i>Piper longum</i>) (DSRPV) |
| Kampillaka | (<i>Mallotus philippinesis</i>) (DSRPJ) (<i>Furmoria parviflora</i>) (RRIT) |
| Nimba | (<i>Melia azadirachta</i>) (RRIT) |
| Vasa | (<i>Adhatoda vasika</i>) (RRIT) |
| Krishna Sariva | (<i>Cryptolepis buehanani</i>) (RRIT) |
| Shaliparni | (<i>Deshmodium gangeticum</i>) (RRIT) |
| Vata | (<i>Ficus bengalensis</i>) (RRIT) (<i>Ficus globosa</i>) (RRIT) |
| Ashwatha | (<i>Ficus religiosa</i>) (RRIT) |
| Kumari | (<i>Aloe barbedensis</i>) (RRCB) |
| Gambhari | (<i>Gmelina arborea</i>) (RRIT) |
| Shathi | (<i>Hydechium spicatum</i>) (RRIT) (<i>Pseudarthria visci i</i>) (RRIT) |

| | |
|----------------|--|
| Chandana | (<i>Santalum album</i>) (RRIT) |
| Tila | (<i>Sesamum indicum</i>) (RRIT) |
| Brihati | (<i>Solanum indicum</i>) (RRIT) (<i>Solanum suratense</i>) (RRIT) |
| Danti | (<i>Stereospermum suavaelens</i>) (RRIT) |
| Lodhra (Bheda) | (<i>Symplocos spicaota</i>) (RRIT) |
| Gokshura | (<i>Tribulus terrestris</i>) (RRIT) |
| Pashana bheda | (<i>Aerva lanata</i>) (RRCB) |
| Pippali | (<i>Piper longum</i>) (RRCB) |
| Dadima | (<i>Punica granatum</i>) (RRCB) |

Process of manufacture:

Vati (CSMDRIAM)

- Guggulu shodhana with vasakashaya (DSRPV)
- Guggulu shodhana with Nirgundi Kashaya (DSRPV)
- Guggulu shodhana with Guduchi Kashaya (DSRPV)
- Shodhana (RRIT)

Finished Products:

- Chandra Prabhavati (CSMDRIAM)
- Chandra Prabha Vati without Guggulu (CSMDRIAM)
- Chandra Prabha Vati without Shilajatu (CSMDRIAM)
- Chandra Prabha Vati (Commercial sample) (CSMDRIAM)
- Chaturbhadra kvatha (RRIT)
- Dashamulakatu traya kvatha (RRIT)
- Samangadi kvatha (RRIT)
- Kesari kalpa of Vaidyanath Pharmacy (RRCB)
- Marichadi gutika (RRCB)
- Marichadi gutika without Yavakshara (RRCB)
- Marichadi gutika without Pippali (RRCB)
- Marichadi gutika without Dadima (RRCB)

Rapid Analytical Values:

Jvarasani Rasa (CSMDRIAM)

Mukta Vidrumanjana Rasa (CSMDRIAM)

Sarva Jvara hara lauha (CSMDRIAM)

Lokanath Rasa (CSMDRIAM)

Neem oil (CSMDRIAM)

Shodhita Guggulu with Vasa (DSRPV)

Shodhita Guggulu with Nirgundi (DSRPV)

Shodhita Guggulu with Guduchi (DSRPV)

Hingvastaka Churna (DSRPV)

An aphrodisiac Tonic of Harbal sample (DSRPJ)

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 Programmes of the Council are being carried out at Indian Institute of History of Medicine, Hyderabad, Documentation and Publication Division, New Delhi, 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 medico historical events from the archives and museums 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 of manuscripts, old and rare books, editing and translation of valuable treatises, collection of information from archaeology, epigraphic material, hereditary physicians and such other sources.

An article on the biograph's of 20 Ayurveda physicians from R. Hikmat (Urdu) is in progress. Biographis of seven Ayurvedic and two Unani physicians of Hyderabad have been collected. Collected one rare Unani manuscript 'Quanooncha'. Procured a xerox copy of rare paper manuscript Sukla Yajurvediya Rudrasta Adhyaya and xerox copies of five rare books were also collected. Collection of information on Arjuna and Vicharchika are in progress. Bibliography on articles and books of Dr. D.V. Subbareddy and of IIHM bulletin from 1989-93 is in progress.

During the reporting period Volume No. 23, No. 1, 93 of the Bulletin of IIHM has been brought out and No. 2,93 is in the process printing. In the library of the Institute 20 books and 285 periodicals/international Journals were subscribed and acquired. Guidance, assistance and referral service also provided to the readers/scholars etc.

The research Officer Incharge, Dr. Momin Ali has presented a paper on "Ayurveda and Primary Health Care" at National Seminar organised by Natural health promoting association of india on 25.9.93 at Vishakhapatnam and a paper on "Rasayana and Vajikarana" has also been presented at "Greater Hyderabad Ayurveda Sammelana" held on 28.2.94 at Hyderabad.

Documentation and Publication Division, New Delhi

The references from classical and current information have been gathered on eight single drugs of vegetable and mineral origins viz: Kadamba, Apamarga, Shilajatu, Tankana, Kasisa, Tuttha Kharpara and Nimba. Additional information have been collected on Jambu, Karavellaka, Patola, and Vata for their antidiabetic activity.

Under the compilation of references on disease, additional references on "Vyanbalavaisamya" and Slipada have been collected from periodical literature including Samgrahagranthas. Under referral service eleven queries were replied and xerox copies of the articles were provided to Vaidyas, research scholars and scientists on their requisitions.

On the spot orientation-cum training information handling have been provided to Smt. S.S. Mandis, W.H.O. fellow of Sri Lanka.

The conjoined issues No. 3-4 in respect of J.R.A.S. for the year 1992 Vol. XIII were released and various issues of Documentation bulletin were processed for publication/release and copies sent to the Council Centres/ Institutes etc. and three monographs have been published. Efforts have been made to procure manuscripts and rare Ayurvedic works from oriental Institutes, archives, P.G. Instt. and Vaidyas besides acquiring information on the descriptive catalogues of old Sanskrit. Works on Ayurveda with a view to enrich the literary potential of the centre. 32 Books/reports were accessioned and 51 books were classified.

Photographic coverage of six seminars/workshops was done during the reporting period. Printing cell under took 78,850 impressions and duplicating work to the tune of 14,599 impressions.

The exhibits of the Council's Publications work was arranged on the eve of Health Care Festival, Talkatora garden, New Delhi (Dec. 12-19-1993) and 11th New Delhi World Book Fair, Pragati Maidan New Delhi (Feb. 5-13,1994). Periodicals/Books/Monographs worth Rs. 48,424.45 were sold during 1993-94.

During the period under report the Division was visited by Dr. Zin of Burma, Shri Gautam Mani of Japan, Smt. S.S. Mandis of Sri Lanka and Prof. (Dr.) Roy Chowdhary, NII, New Delhi.

Literary Research Unit, Madras

The Unit is having nearly 80 Palm-leaf manuscripts and the cataloguing work of the same is being done. The preservation work of Palm-leaf manuscripts is being done periodically. During this period 16 reference books have been added in the library of the Unit. The editing work of “Chikitsamrita Sagara” has been completed and the press copy is being prepared. The work on “Sarabhendra Vaidya Kosha” has been scrutinised and the press copy is prepared by the Unit.

FAMILY WELFARE RESEARCH PROGRAMME

The programme have two main aspects i.e. Clinical trials and Chemico-Pharmacological 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 anti-fertility potential. On the other hand Chemico-Pharmacological studies are designed for Phyto-chemical fractionation of plant durgs and study of their anti-fertility potential, anti-implantation, anti-ovulatory and oestrogenic 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 Institures/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 annexed.

Chemico-Pharmacological studies

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

1. Newar Patti (*Buddleia asiatica*)-Flower

PhRUFJ

During preliminary screening stem decoction was found to possess significant anti-fertility activity.

The test drug did not increase uterine weight in comparison to control group indicating lack of oestrogenic activity in it.

2. *Carum copticum*

PhRUFJ

Decoction of fruits given in the doses of 500 and 100. mg/kg orally prevented pregnancy in 2/6 rats, however, decrease in pup weight was observed.

3. Ghrit Kumari (*Aloe barbadensis*):

PhRUFJ

Water soluble fraction of dried juice was screened for antifertility activity in the dose of 100 mg/kg and found to prevent pregnancy in 2/6 rats. Litter size was not affected significantly. However, decrease in pup weight & in pup length was observed.

4. Nirgundi (*Vitex negundo*):

PhRUFT

Aqueous extract prepared from shade dried leaves and stem separately given orally in the doses of 100 mg to 100 gm/kg (crude drug wt.) did not exhibit any toxicity or mortality.

5. Banjuri (*Vicoa indica*):

PhRUFT

Anti-implantation study upto 2g/kg did not show any significant activity in rats.

5. Gunja (*Abrus precatorius*):

PhRUFB

On prolong treatment for 100 days, both the male and female rats of 400 to 420 mgs per 100 grams body weight daily, the drug has not shown any cumulative effect on breeding after the drug treatment stopped, and successful mating took place within two oestrus cycles (8 to 10 days) spermatogenesis in male, oestrus, gestation litter size in female were normal.

7. Kebuka (*Costus speciosus*):

PhRUFV

Antifertility effect of the drug:

The drug was administered in the form of fresh juice of the rhizome to five pregnant rats in each groups in two doses 1.5 ml and 2 ml daily for 7 days. All the rats during and after treatment upto delivery and after delivery were quite healthy. No abnormality was noted. Further studies using higher doses is in progress.

8. Gunja (*Abrus precatorius*):

PhRUFV

Antifertility effect of Gunja with the alcoholic extract in doses of 100 mg from 7 days (1st day to 7th day of pregnancy) was performed. Alcoholic extract showed no effect on pregnancy. Further studies with higher doses is in progress.

**Statement of the Cases Studies for Clinical Evaluation of Oral
Contraceptive Agents**

| Name of the drug | Center | Studes | | Number of cases | | | | |
|-----------------------|------------|--------|-----|-----------------|------|---------------------|---------------|----------------------|
| | | New | Old | Dropped out | | due to side effects | Other reasons | continuing the study |
| | | | | Pregnancy D.F. | D.O. | | | |
| Ayush-AC-IV | | | | | | | | |
| | Lucknow | 25 | 58 | - | - | - | 9 | 74 |
| | Trivandrum | 56 | 70 | - | 3 | - | 41 | 82 |
| | Madras | - | - | - | - | - | - | - |
| | Calcutta | 11 | 4 | - | 1 | - | 3 | 11 |
| | Patiala | 27 | 9 | - | 2 | - | 19 | 15 |
| | Bombay | 38 | 40 | 3 | - | - | 38 | 37 |
| | Jaipur | 9 | - | 1 | 2 | 2-1 | 4 | - |
| Pipplyadi yoga | | | | | | | | |
| | Calcutta | 17 | 15 | - | - | - | 13 | 19 |
| | Ahmedabad | 32 | 53 | - | - | - | 19 | 65 |
| Neem oil | | | | | | | | |
| | Delhi | 16 | 24 | 6 | 1 | - | 12 | 21 |
| Vandhyavari | | | | | | | | |
| | Trivandrum | - | 67 | - | - | - | - | - |
| | Bombay | 42 | 348 | 3 | - | - | - | 387 |
| | Ahmedabad | 27 | 13 | 6 | - | - | 18 | 16 |
| K-Capsule | | | | | | | | |
| | Varanasi | 25 | 76 | 9 | - | - | 15 | 77 |

PUBLICATIONS/PARTICIPATIONS

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|---------------------------------------|--|--|-----------------------------|---------------------|
| A. Clinical and Basic Research | | | | |
| 1. | Bikshapati, T. | Clinical Evaluation of <i>Picrorhiza kurroa</i> in the management of chronic obstructive airway disease. | JRAS | 1993 |
| 2. | Chopra, K.K. | A Scientific Paper entitled, "Treatment of Pre-auricular Sinus with Kshara Sutra" | Sachitra Ayurveda | Sept. 1993 |
| 3. | Kupparajan, K. Seshadri, C. Rajagopalan, V. Srinivasan Kanchan | Anti anxiety effect Compound Drug—A Cross Over Trial | JRAS Voll. XIII pp. 107-116 | 1993 |
| 4. | Mukherjee, G.D. | About a Cardiotonic Drug Part I | JIM | Oct., 1993 |
| 5. | Mukherjee, G.D. | The Study of a nutrient Supplement cum growth Promotor of Ayurvedic origin (Part I) | JIM | Nov., 1993 |
| 6. | Mukherjee, G.D. | The effect of Ayurvedic formulation on Diabetes mellitus | JIM | Jan., 1994 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|--|---|----------------------|
| 7. | Nair, R.B. Nair, K.V. Nair, A.R. Nair, C.P.R. | Antidiabetic activity of Aurithadi Churnam | Ancient Sc. of Life Vol. XII No. 1-2 pp. 280-285 | 1993 |
| 8. | Pillai, N.G.R. | ARDITA—Bell's Palsy-(Facial Paralysis)— A Clinical Study | JRAS Vol. XIII. No. 3-4 pp. 126-134 | Jan. 1994 |
| 9. | Rao, B. Rama | Case of Burn Cured by folk medicine | Sachitra Ayurveda | 1993 |
| 10. | Venkataram, B.S. | Mental Health in Ayurveda (Serialised articles) | Indian Psychiatric "Newsletter" | May, 1993 July, 1993 |
| 11. | Namoodiri, M.N.S. Pillai, N.G.R. | Survey and Surveillance Programme A Rural Village Enkakkadu in Trichur Dist. | JRAS Vol. XII pp. 145-151 | Jan., 1994 |
| 12. | Rao, B. Rama | Some aspects of Health care in Medieval India | Ancient Science of Life Vol. Xi No. 3-4 p. 137-142 | 1993 |
| 13. | Rao, B. Rama | Health for all—"A Historical review" Bharti | Souvenir of Pragna pp. 12-14 | 1993 |
| 14. | Hemdadri, K. | Tribals of A.P. their knowledge in Nutritional & Medicinal Herbs (Part II) | Indian Medicine 5 (1): 1-6 | 1993 |
| 15. | Singh, P.B. Aswal, B.S. Gaur, R.D. | New Records of Plant from Himachal Pradesh, India | Higher Plants of India Sub-Continent | 1993 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|--|--|---------------------|
| 16. | Singh, P.B. Aswal, B.S. | Medicinal Plants of Himachal Pradesh used in Indian Pharmaceutical Industry. | BMEBR | 1993 |
| 17. | Dey, D. Das, M.N. | Identification of the leaf and pericarp of the fruit of <i>Punica granatum</i> Linn used in the Indian System of Medicine. | BMEBR, Vol. XIII 3-4 pp. 144-153. | Dec., 1993 |
| 18. | Dey, D. Das, M.N. | Pharmacognostic evaluation of <i>Digitalis purpurea</i> L. leaves used in Indigenous medicine | Seminar on Medicinal plants, IADR Tarikhet | Feb., 1993 |
| 19. | Abid, M.M. Khan, M. Singh, N. | Occurance and partial characterization of a highly antiviral Sapepins Froglawsonia aob ex fruits. | National Academy Scs. letters | |
| 20. | Balakarshna, K Vasanth, Saradha Rao, R. Bhima Hisham, A. Schepens, P.C. | A—Alkanes and their derivatives of <i>Vicoa indica</i> —isolation by urea adduct method | Indian J. Pharm. Sc. 55 (5), 192 | 1993 |
| 21. | Sivaraman, I. Subramanian, K. Velmurugan, D. Subramanian, F. Balakrishna, K. | Structure of Vicogenin, a nor triterpene from " <i>Vicoa Indica</i> " | Acute crystallogr Sec. C, 49 (6), 1240 | 1993 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|--|---|---------------------|
| 22. | Pandey, S. Abid, M.M. Khan, Ali Shankar, K. Singh, N. | An Experimental Study on the antistress and antioxidant activity of <i>Selagenella bryopteris</i> (Sanjeevani) | J. Bio-Chem. Res. | 1994 |
| 23. | Pillai, N.R. Lilykutty, Z. | Hypoglycaemic potential of <i>Moringa oleifera</i> in Experimental animals. | Fitoterapia | 1994 |
| 24. | Rao, B. Rama | Transmission of Ayurveda in Medieval Period Purnathraya Sree Raviverma Sanskrita | Grandhavali Journal Vol. XVIII No. I | 1993 |
| 25. | Singh N. & Misra, N. | Experimental methods tool for assessment of antistress activity in medicinal plants. | J. Biol. Chem Res. 12:124-8 | 1993 |
| 26. | Singh, R.K. Gambhir, S.S. | Evaluation of Anti-inflammatory Activity of <i>Pongamia</i> <i>pinnata</i> Seeds. | Ind. Jour. of Pharmacology Vol. 26 (1) | March, 1994 |
| 27. | Venkataram, B.S. | Ayurvedas was thyshikshan (Serialised popular articles) | Ayurvijnana Vol. 16 pp 7-11 | July, Nov. 1993 |
| 28. | Venkataram, B.S. | A Jewel in the Crown | Ayurvijnana Vol. 16 No. 12 | Dec. 1993 |
| 29. | Arya, M.P.S. | Gridhrasi me Basti-Karm Chikitsa | National Workshop Panchkarma Cheruthuruthy | Feb., 1994 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|-------------------------------------|--|---|---------------------|
| 30. | Bhattathiri, P.P.N. Nair, C.N.B. | Theoretical and Clinical aspects of Sirodhara and Sirovasti | -do- | -do- |
| 31. | Bikshapati, T. | The effect of Kutiki in the management of Tamakswasa with special reference to Tamaketu Virechanam | -do- | -do- |
| 32. | Chopra, K.K. Malviya, N.K. | Panchkarma Panacca for Deha Chikitsa. | -do- | |
| 33. | Chopra, K.K. | A paper on Ano-Rectal diseases | II National Conference on Ano-Rectal diseases Assos.-of Medical Doctors for Asia (Nasik) | 19th Dec. 94 |
| 34. | Chopra, K.K. | A paper entitled, Rectal Technological development in Indian System of Medicine | World Trade Fair (International Conf. of Foreign Collaborations Industrial & Business opportunist held at Hotel Maurya Sherton, New Delhi | Feb. 94 |
| 35. | Dave, K.J. | Treatment of Snake poison by Vaman therapy | Workshop on Panchkarma IIP Cheruthuruthy | Feb., 94 |
| 36. | Dave, K.J. Dave, S.K. | Importance of Panchkama and its pupularisation in the country | -do- | |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|---|--|---------------------|
| 37. | Emmanuel, L.S. Gnanaveidhan, S.G. Balakrinshna, K. Rao, R. Bhima | Detection of Echis carinatus venom in post mortum tissues Experimental studies on mice | 14th Annual Conf. of Indian Assoc. of Biomedical Scientists Stanley medical College, Madras | 11-12th Sept., 94 |
| 38. | Jaya, N. Madhavika, Kutty P. | A study of Vamana Karma | Panchkarma Workshop IIP Cheruthuruthy | Feb., 1994 |
| 39. | Jadhav, A.D. | Madakdravya on Grasi Vyaktiome Sirovasti dwara chikitsa | -do- | -do- |
| 40. | Jha, S.D. | Jeerna Saisaveeya Viklangvata (Post Polio-lelitis), Roga par Panchakarma Parak chikitsa Ka Prabhav | -do- | -do- |
| 41. | Leena, K.B. Shenoy, K.T. Praseeda, I. Leela K. & Nari B.R. | Cario-vascular changes in Experimental model-fed Cassava based diet | IVth World Congress on Clinical Nutrition Cochin Kerala | 1993 |
| 42. | Mukherjee, G.D. | Identification of Newer areas of Panchkarma with special reference to Rokta | National Workshop on Panchkarma IIP Cheruthuruthy | 19-20th Feb. 1994 |
| 43. | Nambodiri, P.K.N. Pillai, N.G.K. Nair, P.K.S. Sethu, K.S. Prabhakran, V.A. Vijayan, N.P. | A Comparative Study of Classical Panchkarma therapy and Samana therapy in the management of Pakshaghata (Hemiplegia) | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|--|---------------------|---------------------|
| 44. | Nair, Ramachandran Vijayan, N.P. Madhavika Kutty, P. | The Role of Sodhana treatment in Khanja and Pangu. | -do- | -do- |
| 45. | Nair, P.K.S. Namboodiri, P.K.N. | Review on Vastikarma with special reference to its Standardisation techniques. | -do- | -do- |
| 46. | Nair, P.K.S. Jaya, N. | Effect of Nasya, A Panchkarma therapy, in the management of Sirasula (Headache) | -do- | -do- |
| 47. | Nair, P. Ramachandran Vijayan, N.P. Madhavi Kutty | Action of Aswagandha (<i>Withania somnifera</i>) and Gorochanadi pill internal and Balaswa-gandhalakshadi taila External in Khaja and Pangu. | -do- | -do- |
| 48. | Nair, P.K.S. Namboodiri, P.K.N. | Role of Panchkarma in the management of Pakshaghata (Hemiplegia) | -do- | -do- |
| 49. | Nair, P. Ramachandran Vijayan, N.P. Madhavi kutty. P. | Role of Sodhan treatment in Gridhrasi (Sciatica) | -do- | -do- |
| 50. | Nair, P. Ramachandran | Importance of Snehana (oleation) and Sevadana (sudation) in Panchkarma process (Five-fole purification therapy) | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|---|---|---------------------|
| 51. | Nair, P. Ramachandran Vijayan, N.P. Madhavi Kutty. P. | Amavata (Rheumatoid arthritis) and its management by certain Ayurvedic formulations. | -do- | -do- |
| 52. | Nair, P. Ramachandran Vijayan. N.P. Madhavi Kutty | Management of Saisaveeyavata (Poliomyelitis) by Ayurvedic line of treatment. | -do- | -do- |
| 53. | Namboodiri, P.K.N. Pillai, N.G.K. Nair, P.K.S. Prabhakaran, V.H. Vijayan, P. | A comparative study of classical Panchkarma therapy and Samana Therapy in the management of Pakshaghata | -do- | -do- |
| 54. | Namboodiri, P.K.N. Pillai, N.G.K. | A comparative study of classical Sodhana therapy in the management of Pakshavadha. | -do- | -do- |
| 55. | Narayan, A. | Management of Udarsula with various medicated ghrita | -do- | -do- |
| 56. | Narayana, A. | Posters on Medicinal Plants | National Seminar on Environmental protection held at Osmania University Hyderabad | 26th Dec.. 1993 |
| 57. | Narayana, A. | Posters on Medicinal Plants | -do- | -do- |
| 58. | Nesamany. S. Joshi, M.C. Nair. Vasudevan | Virechana drugs their classification and their specific uses in different diseases. | National Workshop on Panchkarma IIP Cheruthuruthy | 19th-20th Feb. 1994 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|---|--|----------------------|
| 59. | Pillai, N.G.K. Nair, C.P.R. | Snehapana in Exfoliative Dermatitis | -do- | -do- |
| 60. | Pillai, N.G.K. Gopakumar, K. Nair, G.P.R. | Immunological mechanism in Psoriasis from Ayurvedic view | Presented in National Seminar on Immunological Effect of Ayurvedic Drugs Govt. Ay. College, Trivandrum | 29th 30th March 1994 |
| 61. | Rao, B. Rama | Contributions of Mahuka to Ayurveda | National Prakrit Conference | 15-17th June, 1993 |
| 62. | Rao, B. Rama | Health for All—A historical Review | Pragna Bharat A.P. Seminar on Health for all contribution of Indian System of Medicine. | 5th June, 1993 |
| 63. | Rao, T. Tripath | Ability and Nobility of Nasya Karma | Workshop on Panchkarma IIP, Cheruthuruthy | 19th-20th Feb., 1994 |
| 64. | Rao, T. Sripathi | Panchkarma in Cognito in the management of Parinamsula | -do- | -do- |
| 65. | Reddy, K. Pralap | Amasaya Sodhan as a modified Vamana Karma in peptic ulcer Gastritis syndrome. | -do- | -do- |
| 66. | Sachchidanand Gupta, O.P. | Panchkarma Therapy in the treatment of Amvata | -do- | -do- |
| 67. | Sanand, B.N. | Role of Vaman in the treatment of Tamak swas | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|---|--|---------------------|
| 68. | Sandhya Kumari, K. Prabhakaran, V.A. | A study of Raktamaksha in different diseases | -do- | -do- |
| 69. | Sethu, K.S. Terica, T.L. | Standardisation of Uttarabasti | -do- | -do- |
| 70. | Sharma, B.B. Sharma, H.B. | Trial of Ekangveer Ras/Sameer Pannag Ras along with Pinda Sweda on Pakshavadha | -do- | -do- |
| 71. | Shenoy, K.T. Leena, K.B. Praseeda, I. Leela, K. Nair, R.B. | Histo-morphological and Ultra structural studies of pancreas and Liver in chronically Cassava fed animals | IVth World Congress on Clinical Nutrition, Cochin, Kerala. | 1993 |
| 72. | Srinivasulu, M. | Role of virechana Karma in Amavata by Gandhaarva Hastadi Kwathei | Workshop on Panchkarma IIP> Cheruthuruthy | Feb., 94 |
| 73. | Sethu and K.S. Tersia, T.L. | Standardisation of Udarbasti | -do- | -do- |
| 74. | Tripathi K. | International Symposium on Diabetic Nephropathy | Paper presented in China | |
| 75. | Trivedi, V.P. Singh, S.K. Singh, U.S. Singh, S.N. | Some observations with Nasya Karma in cases of Jeerna Pratishyay (Chronic Rhinitis) | National Work shop on Panchkarma IIP, Cheruthuruthy | Feb., 1994 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|--|---|-----------------------|
| 76. | Tyagi, M.K. Prasad, R.D. | Clinical Evaluation of Herbal/ Herbomineral compound drugs in the management of Gridhrasi supported with Panchkarma therapy | -do- | -do- |
| 77. | Venkratarm, B.S. Mukundan Hemalata Shankara, M.R. | Role of Virechana in Schizophrenia (Unmada) and Ksheeradhara in Anxiety neurosis (Chittodvega) | -do- | -do- |
| 78. | Venkataram, B.S. Shankara, M.R. | Role of Abhyanga in degenerative neuromuscular disorders (Mamsagatavata) | -do- | -do- |
| 79. | Trivedi, V.P. Pandey, K.K. Singh, S.K. | Clinical trials of Arjuna Twak Churna in cases of Cardio vascular diseases | Seminar on medicinal plants of Silver Jubille, IIADR Tarikhet | 27th & 28th Oct. 1993 |
| 80. | Audichya, K.C. Billore, K.V. Joseph, T.G. | Some promising Folk medicines from Rajasthan | Workshop on Drug Research Itanagar | 24th & 25th May, 1993 |
| 81. | Pandhe, P.D. Pandey, V.K. | Novel medicinal use of few plants used by Korku Tribes of Melghat | -do- | -do- |
| 82. | Bhat, A.V. Rajasekharan | Ethno-biological investigation of Lakshadweep Island. | -do- | -do- |
| 83. | Billore, K.V. Audichya, K.C. Joseph, T.G. | Dwirdling resources of medicinal plants in Rajasthan and their conservation. | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|---|---------------------|---------------------|
| 84. | Chandra Kailash Pandey, P | Social Forestry afforestation medicinal plants and their importance with special reference to Bihar. | -do- | -do- |
| 85. | Das, S.R. Naskar, D. | The spectrum of medicinal plants South Western West Bengal | -do- | -do- |
| 86. | Dixit, R.S. Pandey, S.N. Jain, J.P. | Glympsers of some important Ayurvedic Medicinal Plants of Bundelkhand (Jhansi Division) | -do- | -do- |
| 87. | Hakim, A.K. Badola, D.P. | The forest types of Udhampur forest division (J & K) with special reference to Ladhadhar Forest Tract. | -do- | -do- |
| 88. | Hakim, Ashok Kumar, Anil Kumar, Naresh Sannd, B.N. | An enquiry and some of the folklore medicines used by Gujjar and Bakarwal Communities of Jammu Region. | -do- | -do- |
| 89. | Hemadrik Rao, S.S. Bhushana | Quantitative assessment of medicinal plants found in Visakhapatnam (A.P.) | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|---|--|---------------------|
| 90. | Issar, R.K. | Analysis of the medico botanical Exploration data with special reference to the important drugs used in Ayurvedic System of Medicine. | -do- | -do- |
| 91. | Issar, R.K. | Applicability of Pharmacognostical practices, with special reference to Ayurvedic drug. | Seminar on Medicinal Plants, IADR Tarikhet | 27 & 28 Octo, 1993 |
| 92. | Joshi, M.C. | A Bird's Eye view on the Medicinal Plants of Gujarat | Work shop on Drug Research Itanagar | 24 & 25 May, 1993 |
| 93. | Kumar, Anil Kumar, Naresh Sannd, B.N. | An enquiry into some of the folklore medicines used by Gujjar and Bakarwal Tribes | -do- | -do- |
| 94. | Majumdar, R. Murthy, K.S. Newari, N.S. | Survey of medicinal Plants of Ayurvedic importance available in Orissa. | -do- | -do- |
| 95. | Mishra, O.P. | Evaluation of the therapeutuc statrs MP Flora | -do- | -do- |
| 96. | Ramashankar Rawat, M.S. Singh, V.K. | Medicinal Plants from Dibang velley Distt. of Arunachal Pradesh Social Forestry and Afforestation. | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|----------------------|------------------------------|---|--|---------------------|
| 97. | Sacchidanand | Survey of Medicinal Plants in Assam | -do- | -do- |
| 98. | Singh, P.B. | Medicinal Plants of Ayurvedic importance from Mandi Distt. of Himachal Pradesh. | -do- | -do- |
| 99. | Tewari, K.C. Tewari, V.P. | Some important Medicinal Plants of tropical, sub-tropical and temperate areas in districts Siang, sub-ansiro and tirap of Arunachal Pradesh | -do- | -do- |
| 100. | Yoganasimhan, S.N. | Medico-Botanical Survey studies in Karnataka. | -do- | -do- |
| 101. | Uniyal, M.R. | Lok Paramparagat Ayurvedic Aushadhi Dravyo ki Pehchan & Aushadhiya Padapo Ka Dravyagun Shastra mein Samavesh. | -do- | -do- |
| Pharmacognosy | | | | |
| 102. | Day, D. Das, M.N. | Identification of Black cumin seeds (<i>Nigella sativa</i> L.) a traditional medicine in India. | National Symposium of Medicinal values of Indian species. Spice India. | 1993 |
| 103. | Day, D. Das, M.N. | Black Mustard (<i>Brassica nigra</i> (L.) Kock) its identification and medicinal values. | National Symposium of medicinal values of Indian species. Spice India Vol. 6 (4) P-11. | 1993 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-----------------|---|--|---|--------------------------|
| 104. | Dey, Dipali | Morphological & Anatomical charactersitics of the leaf of <i>Digitalis purpurea</i> Linn. an indigenous medicinal plants. | XV International Botanical Congress Yokohama. Japan Abst. No. 3165 (poster) p. 357. | 28th Aug.-3rd Sept. 1993 |
| 105. | Das, M.N. Dey, D. | Pharmacognostic studies on <i>Nordostachys jatamansi</i> DC. | Seminar on Medicinal Plants, IADR Tarikhet. | 27 & 28 Oct., 93 |
| 106. | Joseph, T.G. | Seed Anatomical and Spermoderm studies in <i>Antirrhinum</i> L. and <i>Chaenorrlinum</i> (DC) B. <i>Ichb</i> spp. | Indian Science Congress, Jaipur | 1994 |
| 87 107. | Joseph, T.G. | Sem and seed morphological studies in <i>striga</i> Lour. | -do- | |
| 108. | Yelne, M.B. | Pharmacognosy of "Bala (<i>Sida cordifolia</i>) L." | Seminar on Medicinal Plants, IADR Tarikhet | 27th & 28th Oct. 1993 |
| Litarary | | | | |
| 109. | Kohli, Suraksha Nair, Sharada | Kasturi an important Ayurvedic drug material—Literary Retrospective | -do- | -do- |
| 110. | Pandey, V.N. Uniyal, M.R. Gupta, O.P. | Rasshastra main Varnit Khanijon ka Atihasik Mahatav Avam Laddakh Himalaya ki paramparagat Amchi Chikitsa main Khanijon ka Mahatav. | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|------------------------|--|--|---|------------------------|
| 111. | Sharma, K.D. | “Kasturi—A drug of Choice for the management of Acute condition—An Ayurvedic view” | -do- | -do- |
| 112. | Sharma, K.D. | Ayurvedic Bhaishaja Anusandhan ka Shastriya Paksha | Workshop on Drug Research New Itanagar | 24th & 25th May, 1993 |
| 113. | Venkataram, B.S. | Role of herbs in Pharmaceutics | Symposium organised by Industries products pormotion (SEPPPO) Madras. | Jan.. 1994 |
| Standardisation | | | | |
| 114. | Dutta. S.K. | Standardisation of Ayurvedic Formulations. | Seminar on Medicinal Plant, IADR Tarikhet | 27th & 28th Oct., 1993 |
| 115. | Alam. Muzaffar | Standardisation of fermentation in Asavas and Arishtas | -do- | -do- |
| Cultivation | | | | |
| 116. | Mehendala, V.V. Yelne, M.B. Sharma, P.C. | Observation on Experimental cultivation of Kalmegha (<i>Andrographis paniculata</i> Nees) | -do- | -do- |
| 117. | Rao.. S. Venugopal | Conservation of Musk deer by artificial insemination. | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|---|---|-----------------------|
| 118. | Rao, S. Venugopal. S. Singh, N. Uniyal, M.R. Ghosh, D. | Some experiences on extraction of musk deer | -do- | -do- |
| 119. | Rawat, M.S. Singh, V.K. Ramashankar | Cultivation of Medicinal Plants in Social Forestry programme in Arunachal Pradesh. | -do- | -do- |
| 120. | Sharma, P.C. | A Scientific approach for conservation of depleting medicinal taxa. | -do- | -do- |
| 121. | Tiwari, K.C. Pandey, N.R. Joshi, G.C. | On the introduction of valuable plants from North Eastern to Western Himalaya Region of India | Workshop on Drug Research, New Itanagar | 24th & 25th May, 1993 |
| 122. | Tiwari, K.C. Pandey, V.N. | Three decades of Agro technical studies with med. plants | Seminar on Med. Plants IIADR, Tarikhet | 27th & 28th Oct., 93 |
| 123. | Yadav, B.B.L. Joseph, T.G. Billore, K.V. Chaturvedi, D.D. | Tapping trials in <i>Commiphora wightii</i> (Arn.) Bhand with Ethophon some observation. | -do- | -do- |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-----------------------|---|---|---|---------------------|
| Pharmacology | | | | |
| 124. | Alam, Muzaffar Jay, S. Susan, T. Dasan, K.K.S. | Anti-inflammatory potential of Maharasanadi and Gandha Vahastadi Kvatha | -do- | -do- |
| 125. | Mauriya, D.P.S. Kulssresta, V.K. | Acute and Sub-acute toxicity studies of Nimbatiktam | -do- | -do- |
| 126. | Pillai, N.R. Shanta Kumari, G. Balakrishna, V. | Pharmacological and clinical evaluation of an antiulcer principle from <i>Azadirachta indica</i> A. Juss. | -do- | -do- |
| 127. | Shenoy, K.T. Leena, K.B. Nair, R.B. | Pancreatic changes (enzymes and histological) in an experimental model fed with Cassava based diet. | International symposium on tropical tuber-crops, Tvm. Kerala | 1993 |
| 128. | Shenoy, K.T. Leena, K.B. Nair, R.B. | Pancreatic and Cardiovascular changes in Experimental fed Cassava & Protein diet. | Vth Science Congress Tvm. Kerala | 1994 |
| Phytochemistry | | | | |
| 129. | Acharya, B.M. | Phytochemical studies on <i>Glossacardia boswellia</i> (L.F.) D.C. | Silver Jubilee Celebration of IIADR, Tarikhet | Oct., 94 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|---|--|--|-----------------------|
| 130. | Das, P.C. Joshi, P.C. Mandal, S. Banerji, A. Chatterjee, A. | Chemistry and Pharmacology of Anantamul (<i>Hemidesmus indicus</i> R. Br.) | -do- | -do- |
| 131. | Dennis, T.J. | Plant Drugs—Past, Present and Future an overview | -do- | -do- |
| 132. | Emmanuel, S. Gnanvendhan, S.K. Balakrishna, K. Rao, R. Bhima Sivaraman, K. Subramanian Puri, R.K. Pickup, S. | Ehretianone a novel guinonoid Xanthone from <i>Ehretia buxifolia</i> Roxb-elucidation of its structure and anti snake venom activity | 14th Conf. of Indian of Bio medical Scientists Stanley Medical College, Madras | 11 & 12th Sept., 1993 |
| 133. | Mandal, Suvra Das, Prabhash Joshi, Pooran C. | Naturally occurring xanthenes from Terrestrial Flora | J. Ind. Chem. Soc. 69 | 1993 |
| 134. | Mandal, Suvra Joshi, P.C. Sikdar, A.K. Mukherjee, K. Chatterjee, A. | A new xanthone glycoside from <i>Lasioside eriocephalus</i> P.ene. | Indian. J. Chem. 338. | 1994 |

| S.No. | Name of the Author | Title of the Paper | Name of the Journal | Date of Publication |
|-------|--|--|--|------------------------|
| 135. | Mandal, Surva Joshi, P.C. Chatterjee, A. | A new dimeric flavone from <i>Sida cordifolia</i> Linn. | Abstract, 81st Session of Indian Science Congress (Jaipur) | 1994 |
| 136. | Nair, G.A. | Chemical investigations on the flavonoids of <i>Zanthoxylum</i> species | Seminar on Medicinal plants IIADR, Tarikhet | 27th & 28th Oct., 1993 |
| 137. | Rao, P. Padma Ramayya, N. | Structure development and taxonomic significance of uniseriate macroform Septate conical hair in <i>Clerodendrum</i> <i>viscosum</i> vent. | -do- | -do- |
| 138. | Rao, R. Bhima Bindra, P. | Significance of chemical constituents in standardisation. | -do- | -do- |

TECHNICAL REPORT-SIDDHA

Abbreviations used for Institutes/Units.

| S.No. | Name of Institute/Units | Abbreviations |
|-------|---|---------------|
| 1. | Central Research Institute (Siddha), Madras | CRISM |
| 2. | Regional Research Institute (Siddha), Pondicherry | RRISP |
| 3. | Clinical Research Institute (Siddha), Palayamkottai | CRUSP |
| 4. | Clinical Research Unit (Siddha), New Delhi | CRUSD |
| 5. | Clinical Research Unit (Siddha), Trivandrum | CRUST |
| 6. | Mobile Clinical Research Unit (Siddha), Madras | MCRUSM |
| 7. | Drug Research Scheme (Multi-Disciplinary), Madras | DRS (MD) M |
| 8. | Drug Standardisation Research Unit (Siddha), Madras | DSRUSM |
| 9. | Drug Standardisation Research Unit (Siddha), Bangalore | DSRUSB |
| 10. | Drug Standardisation Research Unit (Siddha), Trivandrum | DSRUST |
| 11. | Tribal Health Care Research Project (Siddha), Tirupathur North Arcot District. | THCRPST |
| 12. | Tribal Health Care Research Project, (Siddha), Kalasa, Chikamagalore District | THCRPSK |
| 13. | Survey of Medicinal Plants Unit (Siddha), Palayamkottai | SMPUSP |
| 14. | Literary Research and Doc. Deptt. (Siddha), Madras | LRDDSM |

CLINICAL RESEARCH PROGRAMME

Clinical Research in Siddha System of Medicine is being carried out on selected clinical conditions by the Institutes, Units, of the Siddha System of medicine functioning under the Council. The clinical conditions studied during the reporting year include Kalan jagapadai (Psoriasis), Putrunoi (Cancer), Manjal Kamalai (Infective hepatitis), Sandhu Vatha Soolai (Rheumatoid arthritis), Gunmam (Interestinal disorders), Venkuttam (Leucoderma), Velluppunoi (Anaemia) etc. Brief resume of work carried out on each of the disease condition is reported hereunder.

Kalanjagapadai (Psoriasis)

Kalanjagapadai (Psoriasis) has been taken up for study using the coded drug '777' oil formulated by the Central Research Institute (Siddha), Madras. Clinical trials were conducted at CRIS, Madras, CRU (S), Palayamkottai. 10ml. of oil with milk was administered in two divided doses internally to all the cases selected for study. The patients were also advised to apply oil externally on the affected parts of the body. The details of results of the treatment are reported hereunder:

Results of Clinical/Therapeutic Trial of Siddha preparations on Kalanjagapadai (Psoriasis)

| S.No. | Therapy | Instt./ Centre/Unit | Total Cases | Results | | | | |
|--------------|---------|------------------------|----------------|---------------|--------------|---------------|--------------|--------------|
| | | | | Comp. rel. | Mark rel. | Mode. ref. | Lim. rel. | LAMA rel. |
| 1. | 777 oil | CRI SM | 112 | 15 | 20 | 47 | 21 | 9 |
| 2. | 777 oil | CRUSP | 2 | - | 1 | - | 1 | - |
| Total | | | 114 | 15 | 21 | 47 | 21 | 10 |

2. Putrunoi (Cancer)

Putru is described in Siddha texts under the head of Virananoical. Thus described Putru were named after the affected organ i.e. if the uterus is affected it is called Yoniputrunoi. The study was undertaken at Central Research Institute (Siddha), Madras to determine the efficacy of the Siddha drugs in the cases of Putrunoi using the coded drugs RGX, VK2 and SKX. These drugs were administered alongwith honey in two divided doses of 500 mg. each. Ulcers and tumors were dressed with Nithiyakalayani Kalkam and Panchaiennai with thurusu. 14 cases of Putrunoi were studied during the reporting year. Reduction in the size and growth of the ulcer/tumors, reduction or arrest of the discharge and also reduction in pain was noticed in all the cases.

3. Manjal Kamalai (Infective hepatitis)

The study on Manjal Kamalai was carried out at Central Research Institute (Siddha), Madras. The choornam made of Athimathuram was administered in the dose of 1 gm. twice a day with water in all the 10 cases selected for the trial. Salt and fat free diet was advised to all the cases. No side/toxic effect was noticed. The study showed complete relief in two cases and marked relief in two cases. Two cases got moderate relief and remaining four cases discontinued the study.

4. Sandhu Vath Soolai (Rheumatoid arthritis)

A study to evaluate the effect of Vanga chunnam in the management of Sandhu Vatha Soolai was carried out at Central Research Institute (Siddha), Madras. 200mg. of the trial drug was administered twice a day with milk in all 17 cases admitted during the period. Tamarind and chilli free diet with less salt was advised during treatment. Mynathylam was advised for external use on the affected parts.

The study showed marked relief in four cases and moderate relief in eight cases while remaining five cases discontinued the study.

5. Vatha Soolai

Vatha Soolai is one among the 80 Vatha diseases described in Siddha texts. The RRI (S), Pondicherry is engaged in determining the efficacy of Chanda marutham and Vatha kesari thailam. 35 cases of Vatha Soolai were registered during the reporting year. Details of the result treatment are reported hereunder:

Results of Clinical Therapeutic trial of Siddha preparations on Vatha Soolai

| S.No. | Therapy | Instt./ Centre/Unit | Total Cases | Results | | | | |
|-------|--|------------------------|----------------|---------------|--------------|---------------|--------------|--------------|
| | | | | Comp. rel. | Mark rel. | Mode. rel. | Lim. rel. | LAMA rel. |
| 1. | Vatha kesdari thailam external use. | RRISP | 33 | 9 | 16 | - | - | 8 |
| 2. | Combination of Chandamarutham & Vatha Kesari thailam (Ext.) | RRISP | 2 | 1 | 1 | - | - | - |
| Total | | | 35 | 10 | 17 | - | - | 8 |

6. Valligunmam (Peptic ulcer)

The study was taken up at Central Research Institute (Siddha), Madras to determine the effect of Nagarpam in the cases of Valligunmam. The cases having pain in the abdomen in relation to food, discomfort in the epigastric region, nausea, vomiting, eructation and haematamesis etc. were selected for trial. The diagnosis was confirmed by FTM and Barium meal X-ray reports. The trial drug was administered at the dose level of 200 mg. filled in gelatin capsules twice a day for 21 days. Omam bath was given to all the 16 cases admitted for the study. The study showed marked relief in 2 cases and moderate relief in 6 cases while 8 cases discontinued the study.

7. Velluppunoi (Anaemia)

Clinical studies were conducted in 14 cases of Velluppunoi (Anaemia) at Regional Research Institute (Siddha), Pondicherry using Aya Bringaraja karpam in the dose of 260 mg. with honey thrice a day. The result of study showed complete relief in 11 cases. Remaining 3 cases discontinued the study against medical advice. No side effects/toxic effects were noticed during or after the treatment.

8. Gunmam (Intestinal disorder)

The study was undertaken at Regional Research Institute (Siddha), Pondicherry and Clinical Research Unit (Siddha), Trivandrum and Palayamkottai using Uppu chendooram, Gunmagudori Mezhugu and Kavikkal choornam in the selected cases. The details of results of the treatment are shown hereunder:

Results of Clinical Therapeutic trial of Siddha preparations on Gunmam (Intestinal disorder)

| S.No. | Drugs | Total cases | Results | | | | |
|-------|--|-------------|---------|----|-----|-----|------|
| | | | CR | MR | MOR | MIR | LAMA |
| 1. | Uppu chendooram (130mg. TDS) | 6 | 3 | - | 1 | - | 2 |
| 2. | Kavikkal choornam (one gm. both B.D.) | 1 | - | 1 | - | - | - |
| 3. | Gunmagudori Mezhugu (1gm. TDS) | 1 | 1 | - | - | - | - |
| Total | | 8 | 4 | 1 | 1 | - | 2 |

9. Neerazhivu (Diabetes mellitus)

Neerazhivu is described as one of the Seruneernoigal in Siddha literature. The study on this clinical condition using Abraga chendooram, and Keezhanelli choornam was carried out by Clinical Research Unit (Siddha) at Safdarjung Hospital, New Delhi and Clinical Wing of Drug Research Scheme (MD), Madras. Mild and moderate case of Neerazhivu were taken up for study. The following Table provides details of result of treatment.

**Result of Clinical Therapeutic Trial of Siddha preparations on
Neerazhivu (Diabetes mellitus)**

| S.No. | Drugs | Total cases | Results | | | | |
|-------|---|-------------|---------|----|-----|----|------|
| | | | CR | MR | MOR | MR | LAMA |
| 1. | Abraga Chendooram (200 mg. B.D.) | 55 | - | 24 | - | 17 | 14 |
| 2. | Keezhanelli chooranam (500 mg. B.D.) | 14 | - | - | 4 | 2 | 8 |
| Total | | 69 | - | 24 | 4 | 19 | 22 |

10. Venkuttam (Leucoderma)

Venkuttam is one of the 18 Kutta noigal described in Siddha texts. Response of certain selected Siddha drugs were studied at Clinical Wing of Drug Research Scheme (MD), Madras. No toxic/side effects were noticed during or after the treatment. The details of results of the treatment are tabulated hereunder:—

**Results of Clinical Therapeutic Trial of Siddha preparations on
Venkuttam (Leucoderma)**

| S.No. | Drugs | Total cases | Results | | | | |
|-------|---|-------------|---------|----|-----|----|------|
| | | | CR | MR | MOR | MR | LAMA |
| 1. | Thamira chendooram | 10 | - | - | - | 2 | 8 |
| 2. | Ponnimilai chendooram Chirattai Thylam | 10 | - | - | - | 1 | 9 |
| Total | | 20 | - | - | - | 3 | 17 |

11. Vellai noi (Leucorrhoea)

Vellai noi (Leucorrhoea) as described in Siddha texts, is one of the magalir noigal. The CRU (S), Trivandrum using Chemparuthi Kudineer and Kukkil parpam studied 10 cases of Vellai noi admitted during the period. The results of study showed complete relief in five cases and marked relief in two cases while three cases discontinued the study.

12. Eraippu noi (Bronchial asthma)

Eraippu noi is one of the respiratory diseases described in Siddha literature. The efficacy of Iruneli karpam and Swasa kudori mathirai was studied by CRU (S), Trivāndrum in 10 cases of Eraippu noi. The results of study showed completed relief in five cases and marked relief in two cases, while remaining three cases discontinued the study.

13. Yanaikkal noi (Filariasis)

Yanaikkal noi is one of the diseases widely described in Siddha literature under the heading of Vatha diseases. The efficacy of Linga chendooram, Thazhampoo mathirai, Nilavembu kudineer and Kakkattan ver Karkam was studied by CRU (S), Trivandrum. The study was initiated as pilot project on the available cases of both carrier and manifested in OPD. Results are being analysed.

14. Sarumanoigal (Skin Disorders)

The study on this clinical condition was carried out at Clinical Research Unit (Siddha), Trivandrum using Irunelli Karpam and Gandhaga rasayanam at the dose levels of 130 mg. and 1 gm. respectively in two divided doses followed by milk. The following Table provides the details of the result of treatment.

Result of Clinical Therapeutic Trial of Siddha preparations on Sarumanoigal (Skin disorders)

| S.No. | Drugs | Total cases | Results | | | | |
|-------|---|-------------|---------|----|-----|----|------|
| | | | CR | MR | MOR | MR | LAMA |
| 1. | Irunelli Karpam (130 mg. B.D.) | 4 | 2 | 1 | - | - | 1 |
| 2. | Gandhaga rasayanam (2 gm. B.D.) Arugan thailam externally | 4 | 3 | 1 | - | - | - |
| 3. | Combination of 1 & 2 | 3 | 2 | 1 | - | - | - |
| Total | | 11 | 7 | 3 | - | - | 1 |

Out Patients/In-Patients Attendance

| S.No. | Institute/Units | No. of patients attended at OPD | | | Patient admitted at IPD |
|-------|------------------------|---------------------------------|--------|--------|-------------------------|
| | | New | Old | Total | |
| 1. | CRI (S), Madras | 6,330 | 11,783 | 18,113 | 169 |
| 2. | RRI (S), Pondicherry | 3,827 | 7,550 | 11,377 | 53 |
| 3. | CRU (S), Palayamkottai | 568 | 1,633 | 2,201 | 5 |
| 4. | CRU (S), New Delhi | 101 | 665 | 766 | - |
| 5. | CRU (S), Trivandrum | 2,043 | 4,545 | 6,588 | - |
| 6. | DRS (MD), Madras | 34 | 90 | 124 | - |
| Total | | 12,903 | 26,266 | 39,169 | 227 |

HEALTH CARE RESEARCH PROGRAMME

Health Care Research Programme has been taken up through Mobile Clinical Research Units attached to Central Research Institute, Madras and Regional Research Institute, Pondicherry and Tribal Health Care Research Projects functioning at Tirupathur N.A. District (Tamil Nadu) and Kalasa, Chikamagalore (Karnataka). Brief resume of the work carried out by these projects is reported hereunder:

Tribal Health Care Research Programme

THCRPST

The team conducted 25 periodical tours in the 10 tribal pockets of Jawatha Hills i.e. Padur, Mozhalai, Vazhuthalampattu, Nadukuppam, Vilankappam, Arumalpattu, Chittoor, Melur, Kizhur and Kombai. Having total populations of 5,973 individuals and collected health statistics of about 598 individuals. Incidental medical aid was provided to 1,336 patients. Suram, pungal, Irumal Nalpattapun, Sandhuvatham Tholnoigal, Kudarpuzhun oigal are some of the diseases found prevalent in the area.

Mobile Clinical Research Programme

MCRUSM

The team conducted 29 visits in one village i.e. Puthogaram during the reporting year and collected information on 1,820 individuals. The data of the study carried out showed most of the population covered are suffering from one or the other diseases like Irumal, Eraippunoi, Pun, Prumkazhichal, Vellai, Vaeruvai, Muttuvali, Thalaivali, Tholongical, suram etc. Incidental medical aid to 897 cases was provided during this study comprising 84 new cases and 813 old cases.

CHEMICAL RESEARCH PROGRAMME

The Chemical Research Programme has been carried out by the Chemistry wing of DRS (MD), Madras. The drug Impooral (*Oldenlandia umbellata*) was studied during the reporting period. The study on extraction with petroleum-ether, isolation of sterol is in progress. The data collected are being analysed.

PHARMACOGNOSY RESEARCH PROGRAMME

The Pharmacognosy Research Programme are being carried out at Pharmacognosy Research wing of DRS (MD), Madras. During the reporting period pharmacognostic anatomy of the following two drugs were conducted:—

1. Naval
2. Kudasapalai (*Holarrhena anti-dysentirca* Wall.)

The study includes macro and microscopic characters (both qualitative and quantitative), extractive values, inorganic qualitative test and preliminary phyto-chemical screening for the presence of different group of chemical compounds besides reporting description, distribution and medicinal values of the drugs taken up for study.

MEDICO BOTANICAL RESEARCH PROGRAMME

It is a well known fact that the drug (Marunthu) is the primary tool of entire research programme. Survey of forest areas for procuring drugs and arranging supply of material required for research purposes occupies an important place. Medico-botanical survey unit functioning at Govt. Siddha Medical College, Palayamkottai has taken up this task in 1971. For the last 22 years, the Unit is engaged in studying the availability of the medicinal plants used in Siddha medicine in the forest areas of Tamil Nadu, identification, availability of genuine drugs, including their substitute/adulterants etc.

During the reporting year, the survey unit has conducted 10 collection tours in and around Tirunelveli and Kanyakumari forest divisions. 89 herbarium specimens having importance in Siddha medicine belonging to 51 families, 115 genera and 120 species were collected and reported, 76 index cards were prepared during the reporting year and reported.

Out of the total collection, 240 plants were identified, 180 plant specimens were mounted and botanical identity of 41 Siddha medicinal plants has been reported by the Unit.

180 Plant specimens were added to the herbarium making the total to 5,797 herbarium sheets. Some of the medicinal plant specimens, which are considered very important in the field of Siddha Medicine, added to the herbarium are Kolama (*Schleichera obosa* o. Ken); Amal pori (*Rauvolfia serpentina* (L) Benth ex Kurx); Sivanar Vembu (*Indigofera uniflora* Buch Ham); Samdrapalai (*Banringtonia racemosa* (L) Sprang); Manjanathi (*Morinda pubescens* JE Smith); Ayyama (*Careya arborea* Roxb); Veruvettai (*Dalbergia sympathetica* Nimmo); Poolanchi (*Seeringa leucopyrus* (Wild) Mull. Ars.); Ponkoranti (*Salacia oblonga* wall); Uroma vengai (*Bischofia javanica* Blome.); Kan veezhi (*Cadapa trifoliata* Wight & Arn.); Nignoochi (*Vitex leucoxylo* L.F.); Kapila (*Mallotus phillippensis* (Lam) Mreth. Arg.); Ponmusuttai (*Cissampelos pareira* L. Van. *hissuta* foram.); Nilappan Kizhangu (*Cusculigo orchioides* Gestn.); Palvalli (*Adenia hondala* wilde.); Kozhimunnai (*Caralluma bhupinderena* sarkaria); Neermal Neruppu (*Biophytum sensitivum* DC.); Nagapoo (*Mesua ferrea* L.); Vekkali (*Anogeissus latifolia* wall); Vellarugu (*Enicostema axillara* (ham.) Raynel); Sanakki poondu (*Basilicum polystachyon* (L) Moench); Thazhai (*Ipomaea sppiaria* Koem ex. Roxb.); Thooyal (*Sophubia delphinifolia* G. Don.);

Nanjaruppan (*Tylophora indica* Burm. f. Merr.); Uppilankodi (*Peontatropies capensis* (L.F.) Ponnlock); Minnikizhangu (*Dolichos trilobus* L.) etc.

18 Different parts of the plants samples were collected and preserved and added to the museum making the total to 723 samples of different origins like Karujeeragem (*Nigella sativa*); Boomisarkari (*Maerava aphylla*); Mizhachathaiyam (*Bischofia javanica* BL); Vengai (*Pterocarpas marsupium*); Nila sedaichi (*Polycarpaea corymba*); Nirnoochi (*Vitex lancoxylo*); Narivengayam (*Urignea indica*); Iruvikizhangu (*Therio-phorum fixcherii*) etc.

2.050 Kg. of fresh different parts of the plants collected and shade dried were supplied to P.L.I.M., Ghaziabad during the reporting year.

PHARMACEUTICAL/STANDARDISATION RESEARCH PROGRAMME

The Drugs Standardisation Research Programme covering formulations enlisted in Siddha Formulary Part-I of Govt. of India and single drugs entering into them was carried out at the following standardisation research units:—

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

The Standardisation plays an important role for obtaining genuine drugs and medicinal preparations for therapeutic purposes. It also occupy an important place in both drug and clinical applied research since it provides approach data for obtaining genuine drug and authentically prepared compound medicines. The programme aims at study of single drugs. Pharmaceutical process involved in the manufacture of formulations and finished products and laying down their analytical values.

List of plant drugs on which phyto-chemical studies have been carried out (analytical studies)

| S.No. | Name of the drugs | Parts analysed | Name of the Institute/Unit |
|-------|---|----------------|----------------------------|
| 1. | Oositagarai (Cassia tora L.) | Aerial root | DSRUSM |
| 2. | Karisalai (white variety) (<i>Eclipta alba</i> Hassk) | Whole plant | -do- |
| 3. | Karisalai (yellow variety) (<i>Wedelia calendulacea</i> Less.) | Whole plant | -do- |
| 4. | Poochandra pattai (<i>Plectranthus urticifolius</i> Hook f.) | Bark | -do- |
| 5. | Chukku (<i>Zingiber officinale</i> L.) | Rhizome | DSRUSB |
| 6. | Talicam (<i>Flacourtia Jangmas</i>) | Leaves | -do- |

| S.No. | Name of the drugs | Parts analysed | Name of the Institute/Unit |
|-------|--|----------------|----------------------------|
| 7. | Korai Kizhangu (<i>Cyperus rotundus</i> L.) | Root | -do- |
| 8. | Devadaru (<i>Cedrus deodara</i>) | Wood | -do- |
| 9. | Cherupeelai (<i>Aerva lanata</i>) | Whole plant | DSRUST |
| 10. | Sanninayakam (<i>Aloe vera</i>) | Exudata | -do- |
| 11. | Omam (<i>Trachyspermum ammi</i>) | Seeds | -do- |
| 12. | Palasa (<i>Butea frondosa</i>) | Stem bark | -do- |
| 13. | Mulam (<i>Cyperus rotundus</i>) | Rhizome | DSRUST |
| 14. | Ezhathalai (<i>Plymeria rubra</i>) | Leaves | -do- |
| 15. | Peikumatti (<i>Citrullus colocynthes</i>) | Fruit | -do- |
| 16. | Kumizhamaram (<i>Gmelina asiatica</i>) | Root | -do- |
| 17. | Konnai (<i>Cassia fistula</i>) | Flower | -do- |
| 18. | Kattu Krambu (<i>Jussiaea suffruticosa</i> L.) | Whole plant | -do- |
| 19. | Umathai (<i>Daemia extensa</i>) | Whole plant | -do- |
| 20. | Kakkanam (<i>Clitoria ternatea</i>) | Seeds | -do- |

Pharmacopoeial Standards (Analytical standards) of the finished products:

| | | |
|-----|----------------------------|--------|
| 1. | Onam cudar tailam | DSRUSM |
| 2. | Maha Vallathi Ilekkiyam | -do- |
| 3. | Ledi Vallti meluku | -do- |
| 4. | Tamiraparpam | -do- |
| 5. | Peranda parpam No. 2 | DSRUST |
| 6. | Uppu chendooram No. 1 | -do- |
| 7. | Muthu chippi parpam | -do- |
| 8. | Ayakantha chendooram No. 1 | -do- |
| 9. | Naga parpam | -do- |
| 10. | Nathai parpam | -do- |

| S.No. | Name of the drugs | Parts analysed | Name of the Institute/Unit |
|-------|-------------------|----------------|----------------------------|
|-------|-------------------|----------------|----------------------------|

Phyto-Chemistry:

| | | | |
|----|---|-------------|--------|
| 1. | Sirupeelai (Variety) (<i>Nothosaerva brachlata</i> Wight) | Whole plant | DSRUSM |
| 2. | Odankodi (<i>Pristimera grahamii</i>) | Leaves | -do- |
| 3. | Elathalari (<i>Plumeria acuminata</i> R.Br.) | Leaves | -do- |
| 4. | Pulippanchedi (<i>Cipadessa fruticosa</i> Blume) | Leave | -do- |
| 5. | Kakkatan (<i>Clitoria ternatea</i> L.) | whole plant | -do- |

Pharmacognosy:

The pharmacognostical identification of the following plant drugs which enter into the Formulary of Siddha Part-I.

| | | | |
|-----|---|--|--------|
| 1. | Sirupeelai (<i>Aerva lanata</i> A. Juss) | | DSRUSM |
| 2. | Kattamanakku (<i>Jatropha curcas</i> L.) | | -do- |
| 3. | Erisalai (<i>Ammania baccifera</i> L.) | | -do- |
| 4. | Kattamanakku (<i>Ricinus communis</i>) | | DSRUB |
| 5. | Kampila (<i>Mallotus philippinensis</i>) | | -do- |
| 6. | Umathai (<i>Datura stramonium</i>) | | -do- |
| 7. | Vellumattai (<i>Datura alba</i> L.) | | -do- |
| 8. | Elumicham Thulasi (<i>Ocimum gratissimum</i>) | | -do- |
| 9. | Palasu (<i>Butea monosperma</i>) | | -do- |
| 10. | Kakkanum (<i>Clitoria ternatea</i> L.) | | DSRUST |
| 11. | Kattu Krambu (<i>Jussieua suffruticosa</i> L.) | | -do- |
| 12. | Chen chandhanam (<i>Pterocarpus santalinus</i> L.S.) | | -do- |
| 13. | Akasathamarai (<i>Pistia stratiotes</i> L.) | | -do- |

PHARMACOLOGICAL RESEARCH PROGRAMME

The pharmacological study on Siddha drugs has been carried out by the pharmacology section of Central Research Institute (Siddha), Madras and Pharmacology wing of DRS (MD), Madras. The study has been conducted in the laboratory attached to the Institute on the pre-determined experimental models to assess efficacy of the following drugs:

I. Acute-Toxicity Studies:

- (a) Naga parpam
- (b) Kadukkai choornam
- (c) Pavala parpam
- (d) Chundai vattral choornam
- (e) Athimathura choornam
- (f) Vanga churnam

II. Anti-inflammatory studies:

- (a) Athimathura choornam
- (b) Kappaimani thailam

I. Acute toxicity:

a. (i) Naga parpam on albino mice:

The drug Naga parpam administered in the dose level of 300 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. Almost all animals were depressed for more than 48 hrs. and showed 50% mortality. The study with further higher doses is in progress.

(ii) Naga parpam on albino rats:

The drug Naga parpam administered in the dose level of 7000, 8000 and 9000 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects upto the dose level of 9000 mg. per kg. body weight.

b. (i) Kadukkai choornam on albino mice:

The drug Kadukkai choornam administered in the dose level of 8000 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects in the employed dose level of 8000 mg. per kg. body weight.

(ii) Kadukkai choornam on albino rats:

The drug Kadukkai choornam administered in the dose level of 8000 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects in the dose level of 8000 mg. per kg. body weight.

c. Pavala parpam on albino mice:

The drug Pavala parpam administered in the dose level of 6000 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects upto the dose level of 6000 mg. per kg. body weight.

d. Chundai vatral choornam on albino mice:

The drug Chundai vatral choornam administered in the dose level of 6000 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects in the dose level of 6000 mg. per kg. body weight.

e. Athimathuram choornam on albino mice:

The drug Athimathuram administered in the dose level of 4000 mg and 5000 mg. per kg. body weight. One group received vehicle only which served as untreated control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects upto the dose level of 4000 and 5000 mg. per kg. body weight.

f. Vanga chunnam on albino mice:

The drug Vanga chunnam administered in the dose level of 5000 mg. per kg. body weight. One group received vehicle only which served as untreated

control. The animals were observed for 72 hrs. for any toxic manifestations. The drug did not show any toxic effects in the dose level of 5000 mg. per kg. body weight.

II. Anti-inflammatory study: (Carrageenin induced paw odema method)

(a) Athimathuram choornam on albino rats:

The drug Athimathuram (*Glycyrrhiza glabra*) administered in the dose level of 2000 mg/kg. body weight. One group received Phenylbutazone in the dose level of 100 mg. per kg. body weight which served as standard control. Another group received vehicle only which 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 each animal after 1 hour of drug administration. The final volume of right hind paw was measured plethysmographically after 3 hours of carrageenin injection. The data analysed statistically will be communicated in due course of time.

(b) Kupaimeni thailam on albino rats:

The drug Kupaimeni thailam (*Acalypha indica*) was administered in the dose level of 2 ml. per kg. body weight. One group received vehicle only which served as untreated control. Another group received phenylbutazone in the dose level of 100 mg. per kg. body weight which served as standard control. The paw odema was induced after 1 hour of drug administration by injecting 0.1 ml. of 1% Carrageenin suspended in 0.5% Carboxy Methyle cellulose in the plantar aponeurosis of right hind paw of each animal. The final right hind paw volume of each rat was measured plethysmographically after 3 hours of Carrageenin injection. The data analysed statistically will be communicated in due course of time.

PHARMACY

Realising the importance of the Pharmacy, the Council has established a Pharmacy to prepare Siddha medicine in the CRI (S), Madras.

The Pharmacy is engaged in the preparation of classical preparations mentioned in the Siddha literature and that are chosen for clinical trials in the Institutes/Units of Siddha under the Council.

The drug requirement of the Pharmacy are met by the medico-ethno-botanical survey projects and through the purchases from the local market.

The preparations of the medicines is according to the method given in the classical literature.

The pharmacy has prepared varieties of preparation both for research and general use. The Pharmacy is engaged in preparations mentioned in the classical literatures such as choornam, thailam, parpam, chendooram, nei, ennai and kalkam etc.

During the reporting year, the pharmacy has prepared about 222.600 kg. of choornam, parpam, chendooram and 598.350 litres of oil based preparations.

The Pharmacy has also supplied medicines to the following Siddha Units under the Council. The list of Unit and quantity of medicine supplied is as detailed below:—

| S.No. | Name of the Unit | Quantity | |
|-------|------------------------------|--------------|------------------|
| | | Solid in Kg. | Liquid in litres |
| 1. | DRS(MD), Madras | - | - |
| 2. | MCRU(S), Madras | 8.5 | 15.0 |
| 3. | CRU(S), New Delhi | - | - |
| 4. | CRU(S), Trivandrum | 4.5 | - |
| 5. | RRI(S), Pondicherry | - | - |
| 6. | THCRP, Tirupathur, NA Distt. | - | - |
| 7. | CRU(S), Palayamkottai | 2.0 | 2.5 |
| 8. | Headquarters | - | - |
| 9. | Pharmacology Lab. at CRI(S) | - | - |
| 10. | DSRU(S), Madras | - | - |

LITERARY RESEARCH PROGRAMME

Literary Research programme has been carried out by the Literary Reserch and Documentatıon Department, Madras. The work carried out during the reporting period are given hereunder:

(1) Study group meeting of the role of Siddha experts in the diseases of National importance-Proceedings.

Press copy completed in all respect including preface, index, forward etc. has been completed and work is in progress printing the same and 30 pages are printed.

(2) Press Copy:- (1) Thariyar Kudineer, IInd edition-Revised.

The press copy of the IInd edition of the revised Theriyar Kudineer was completed in respect of comparision, correction and editing etc. The press copy is ready for printing.

(3) Siddha Marathuva Eliya Vazhakku Muraigal-IVth Edition (Revised and enlarged):

The press copy of the IVth edition of the revised and enlarged Siddha Marathuva Eliya Vazhakku Muraigal was completed in respect of comparision, correction and editing etc. The press copy is ready for printing.

(4) Catalogue:

The Unit is engaged in preparing Catalogue of Siddha Manuscripts collected by its during the collection survey work. So far 800 such manuscripts have been listed in the Catalogue on subjectwise/authorwise.

(5) Publications ready for printing and publication:

The press copies in respect of the following Siddha Medicinal manuscripts have been completed in all respect and copies are ready for printing:

| | |
|-----------------------------|-------|
| 1. Bogar Karakkadai Nig. | -1200 |
| 2. Bogar Karukkadai Nigandu | -500 |
| 3. Konganar Mudal Kadam | -1000 |

| | | |
|-----|---------------------------------|-------|
| 4. | Konganar Idai Kandam | -1000 |
| 5. | Konganar Kadai Kandam | -1000 |
| 6. | Rama devar | -1000 |
| 7. | Agathiyar poornam | -205 |
| 8. | Agathiyar pancha Kaviya Nigandu | -800 |
| 9. | Agathiyar Vaidhya Kaviyam | -1500 |
| 10. | Agathiyar Sommiya Sagaram | -1200 |

(6) Rs. 4,478.60 has been collected on account of sale of Council's publications and deposited to the Headquarters Office.

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.

The Council places on record the efforts of Deputy Director (Tech.), all Programme Officers, Asstt. Director (Coordn.), Accounts Officer especially Dr. Prem Kishore, Asstt. Director (Ay.), Dr. K.D. Sharma, Research Officer (Ay.), Dr. P. Taneja, Asstt. Res. Officer (Ay), Sh. R.K. Singhal, Senior Scientific Asstt. (Stat.) and Publication section staff member Dr. D.P. Sharma for bringing out the Annual Report in the present form.