

CENTRAL COUNCIL
FOR RESEARCH
IN
AYURVEDA AND SIDDHA

26



ANNUAL REPORT
1999-2000



(Department of Indian Systems of Medicine & Homoeopathy)
MINISTRY OF HEALTH AND FAMILY WELFARE
(Government of India) New Delhi

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CONTENTS

S. No.	Subject	Page No.
I.	Preface	5
II.	Administrative Report	8
III.	Technical Report	19
A.	AYURVEDA	
1.	Abbreviations used for Institutes/Centres/Units	19
2.	Clinical Research Programme	21
	(a) Clinical Therapeutic Trials	21
	(b) Statement showing disease groups, number of patients studied and participating projects during 1999-2000	31
	(c) Statement of the patients attended at OPD and admitted/discharged in the IPD during 1999-2000	32
	(d) Health Care Research Programme	33
3.	Medico-Ethno-Botanical Survey Programme	37
4.	Cultivation of Medicinal Plants	42
5.	Musk Deer Breeding Programme	46
6.	Pharmacognosy Research Studies	47
7.	Plant Tissue Culture	48
8.	Chemical Research Programme	51
9.	Pharmacological Research Programme	57
10.	Drug Standardisation Research Programme	60
11.	Literary Research Programme	65
12.	Amchi Medicine Research Unit	68

13. Family Welfare Research Programme	69
14. Publications and Participations	75

B. SIDHA

1. Abbreviations used for Institutes/Units	93
2. Clinical Research Programme	94
3. Health Care Research Programme	99
4. Medico-Botanical Research Programme	100
5. Pharmacognosy Research Programme	104
6. Chemical Research Programme	105
7. Pharmacology Research Programme	105
8. Pharmaceutical/Standardisation Research Programme	107
9. Pharmacy	109
10. Literary Research Programme	110
11. Publications and Participations	111

IV. Acknowledgement	113
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PREFACE

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

Clinical Research Programme

Clinical conditions studied in Ayurveda during the reporting period include Tamaka Swasa (Bronchial asthma), Parinamasula (Duodenal ulcer), Arsa (Piles), Bhagandara (Fistula-in-ano), Kitibha (Psoriasis), Mutrasamari (Urolithiasis), Vyanbalvaishamyā (Hypertension), Apasmara (Epilepsy), Mānodvega (Anxiety neurosis), Medoroga (Obesity and lipid disorders), Pakshavadha (Hemiplegia), Pangu (Paraplegia), Grahani (Malabsorption), Gridhrasi (Sciatica), Amavata (Rheumatoid arthritis), Slipada (Filariasis), Visamjwara (Malaria) etc.

Clinical conditions under Siddha System of Medicine studied during the reporting period include Kalanjaga Padai (Psoriasis), Putrunoi (Cancer), Gunmam (Intestinal disorders), Valligunmam (Peptic ulcer), Manjal kamalai (Infective hepatitis), Sandhivatha soolai (Rheumatoid arthritis), Yanaikkai Noi (Filariasis), Venkuttam (Leucoderma) etc.

During the execution of this programme, medical aid to 3,57,161 patients through Out Patient Departments and 1485 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 Programme, Community Health Care Research Programme, and Tribal Health Care Research. These programmes are modulated to have rural basis so that benefits of the research programmes carried out can reach to 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 food habits with regard to different seasons, socio-economic status, natural resources, the standard, the types of treatment available to the rural/tribal folk. During the period under report a population of 78,052 individuals pertaining to 63 villages including 27 tribal pockets have been covered under this programme and incidental medical aid provided to 33,303 patients.

Drug Research Programme

The Drug Research Programme consists of Medico-Botanical Survey, Cultivation of Medicinal Plants, Pharmacognostical, Phytochemical, Pharmacological/toxicological studies besides Drug Standardisation Research studies. Under Medico botanical Survey Programme over 58 survey tours were conducted and 2330 plant specimen, 207 raw drugs besides 58 museum samples were collected. 248 drug samples weighing more than 248 kg. were collected for supply to projects carrying out the work related to laying the Pharmacopoeial Standards under centrally sponsored scheme besides PLIM Ghaziabad. The Survey Units have also taken up maintenance work of their Herbariums and Museums. About 450 medicinal species are presently growing in different Gardens. Pharmacognostical studies of 17 drugs, Chemical studies of 16 drugs and Pharmacological and toxicological studies of 20 drugs used in Ayurveda and Siddha system of medicine have been carried out during the reporting period. The Council is also maintaining a Musk Deer Breeding Farm at Mehroori in Kumaon Hills and there are 17 adult as on date.

Under Drug Standardisation Research Programme, Pharmacognostical Phytochemical/TLC studies on 49 drugs were conducted. Analytical standards were laid down in respect of formulations used in Ayurveda and Siddha i.e. on 7 Bhasmas, 8 Oil samples and 38 other formulations used in Ayurveda and Siddha besides standardisation on 11 market samples and three formulations under RCH Programme.

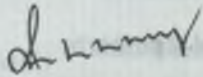
Literary Research Programme

Literary Research Programme broadly covers 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 continued further. The Council is bringing out "Journal of Research in Ayurveda and Siddha," (Bulletin of Medico-Ethno-Botanical Research) and "Bulletin of Indian Institute of History of Medicine" besides the "News Letter". During the reporting period backlog of JRAS and BMEBR has been cleared and 17 books/Monographs were published.

Family Welfare Research Programme

Clinical screening and Pharmacological studies of the oral contraceptive agents are being carried out under this programme. 350 new cases were studied besides 348 old cases carried forward from the previous year for clinical evaluation of oral contraceptive agents like Ayush-AC-IV, Pippalyadi Yoga, Neem oil and Vandhyavari (*Vicoa indica*). Pharmacological studies on 6 drugs have also been carried out.

Dated : 4.10.2001


(G.VELUCHAMY)
Director
and Member-Secretary,
Governing Body, CCRAS

II. ADMINISTRATIVE REPORT

The Central Council for Research in Ayurveda & Siddha is a Society registered on 30th March, 1978 under Societies

Registration Act XXI of 1860. During the period under report ending 31st March, 2000, the members of the Society and Governing Body of the Council were as under:

President

Shri Dalit Ezhilmalai
Minister of State for Health &
Family Welfare
(Independent Charge)
Shri N.T.Shanmugam

Vice-President

Vd.B.D.Triguna

Official Members:

1. Secretary(ISM&H)

1. Smt.Shanta Shastri

2. Smt.Shailaja Chandra,
Department of ISM&H
Ministry of Health & Family Welfare

2. Joint Secretary(ISM&H)

1. Shri Pradip Bhargava

2. Shri L.Prasad

3. Joint Secretary(FA)

1. Shri Vijay Singh

Non-Official Members

1. Prof.S.K.Changani

2. Dr.G.P.Dubey

3. Dr.Kulwant Singh

4. Vd.D.K.Triguna

5. Vd.Balendu Prakash

6. Shri Harinarayan Swami

7. Dr.Jaiprakash Narayan
(Expert in Pharmacology)

8. Prof.Dinesh Chandra
(Expert in Pharmacology)

9. Prof.S.Shantamma
(Expert in Botany)
10. Prof.S.K.Sarin
(Expert in Botany)
11. Dr.J.R.Krishnamoorthy
(Expert in Siddha)
12. Dr.V.Subba Laxmi
(Expert in Botany)

Director, NIA, Jaipur

Dr.C.H.S.Shastrri

Director, NIS, Chennai

Vacant

Member-Secretary

Dr.G.Veluchamy

During the period under report the Governing Body met once only.

14th Meeting of the Governing Body held on 27th January, 2000.

The important decisions taken in this Meeting are as follows:

1. The retirement age from 58 years to 60 years in respect of the employees of the Council has been enhanced as conveyed by the Ministry vide its letter No.V.27020/106/98-Ay.Desk dated 1st December, 1998.
2. Approved the implementation and revise scales of pay as per recommendation of 5th Central Pay Commission in respect of the Council's employees.
3. Approved the recruitment rules for the post of Private Secretary to Director, CCRAS.
4. Approved the constitution of Selection Committee for the post of Director, CCRAS.
5. Approved the relaxation of upper age limit in respect of departmental candidates for recruitment in Grade A & B posts under direct recruitment.
6. Approved the dissolution of the Executive Committee of CCRAS.
7. Approved the appointment of Director, CCRAS.
8. Approved the inclusion of the post of Accountant/Internal Audit in the feeder cadre for the post of Admn.Officer with eight years regular service in the grade of Rs.5500-9000.
9. Approved the formal recognition to the Research Employees Welfare Association.

10. Approved grant of fixed medical allowance at Rs.100/- per month to the pensioners/ family pensioners of the Council.
11. Approved the upgradation of pay scale of Director, CCRAS from Rs.14300-18300 to Rs.18400-22400.
12. Approved the implementation of the recommendations of the Committee on re-organisation and restructuring of CCRAS.
13. Approved the adoption of Assured Career Progression Scheme for Group A, B, C & D employees of the CCRAS.

Executive Committee

The Executive Committee was constituted on 14.5.1998 and consisted of the following:

- | | |
|--|------------------|
| 1. Vd.B.D.Triguna | Chairman |
| 2. Sh.Pradip Bhargava & Sh.L.Prasad
Joint Secretary(ISM&H)
Ministry of Health & F.W. | Member |
| 3. Sh.Vijay Singh
Joint Secretary(FA)
Ministry of Health & F.W. | Member |
| 4. Prof.S.K.Changani | Member |
| 5. Vd.Balendu Prakash | Member |
| 6. Dr.J.R.Krishnamoorthy | Member |
| 7. Director,CCRAS | Member-Secretary |

The Executive Committee was dissolved on 28th May, 1999.

Finance Committee

The Standing Finance Committee consisted of the following:

- | | |
|--|----------|
| 1. Sh.Pradip Bhargava
Joint Secretary(ISM&H)
Ministry of Health & F.W. | Chairman |
| 2. Sh.Vijay Singh
Joint Secretary(FA)
Ministry of Health & F.W. | Member |

3. Vd.D.K.Triguna (To represent Ayurveda) Member
4. Dr.V.Subba Laxmi (To represent Siddha) Member
5. Director, CCRAS Member-Secretary

During the period under report, the Standing Finance Committee met thrice on 12.4.1999, 5.7.1999 and 13.1.2000 and considered and approved proposals related to financial matters.

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

The Council is following the orders and guidelines issued from time to time by the Government 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 strength of employees in different groups on 1.1.2000 as under:

Group	Number of employees	SC	%age of total employees	ST	%age of total employees
A	140	17	12.14	6	4.29
B	149	11	7.38	2	1.34
C	680	84	12.35	25	3.68
D	588	239	40.65	52	8.84
TOTAL	1557	351	22.54	85	5.46

The Council is having one Tribal Health Care Research Project (Ay.) which has been specially located in tribal pockets. The programme launched by this project envisages great scope not only to understand the local health problems and interdependent 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 and through OPD/IPD of these Institutes/Centres and under Mobile Clinical Research Programme/Community Health Care Research Programme, medical relief and health benefit have been extended to a large number of SC/ST population. The budget of the Council stipulates specific allocations for SC/ST component plans.

Official Language Implementation Committee:

The Council is having an Official Language Implementation Committee under the Chairmanship of the Director, CCRAS to review the position regarding implementation of official language act/policy/rules, orders programmes etc. and to suggest measures for increasing the pace of Hindi in the Council. During the period under report, the Committee met on 8.2.2000.

Scientific Advisory Committee(Ayurveda)

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

1. Dr.Jaiprakash Narayan	Chairman
2. Dr.S.K.Mishra	Member
3. Vd.Balendu Prakash	Member
4. Dr.J.K.Ojha	Member
5. Vd.D.K.Triguna	Member
6. Dr.Ghanshyam Mishra	Member
7. Dr.P.K.Warrier	Member
8. Prof.Siddhinandan Mishra	Member
9. Dr.S.K.Upadhyaya	Member
10. Dr.Ram Kishan Sharma	Member
11. Dr.Raghunandan Sharma	Member
12. Dr.R.C.D.Nautiyal	Member
13. Dr.S.R.Vatsa	Member
14. Dr.S.K.Sharma	Member
15. Director, CCRAS	Member-Secretary

During the period under report, the Scientific Advisory Committee(Ay.) met on 27th-28th March, 2000 and evaluated the programmes and provided necessary guidance.

Scientific Advisory Committee (Siddha)

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

1. Dr.J.R.Krishnamoorthy	Chairman
2. Dr. Anand Kumar	Member
3. Dr.V.Subramanian	Member
4. Dr.Subba Laxmi	Member
5. Dr.K.Raghunathan	Member
6. Dr.Rajinder Gupta	Member
7. Dr.Kumardas	Member
8. Dr.Kumar	Member
9. Director, CCRAS	Member-Secretary

During the period under report, the Scientific Advisory Committee(Siddha) met on 23rd June, 1999 and evaluated the programmes and provided necessary guidance.

Organisational Network of CCRAS:

The Institutes/Centres/Units were re-organised by clubbing in small one with major ones.

There are 10 Central Research Institutes, 15 Regional Research Institutes, 1 Regional Research Centre, 1 Tribal Health Care Research Project, 1 Research Project on Tibetan Medicine, 1 Siddha Medical Plants Garden in Siddha System of Medicines at Mettur under direct supervision of Central Research Institute(Siddha), Chennai and Indian Institute of History of Medicine, ALRCA and CSMDRIA, Chennai and Ayurvedic Research Unit, Bangalore.

Budget Provision :

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

Scheme Expenditure	B.E. 1999-2000	Funds Released 1999-2000	Actual Expenditure 1999-2000
		(Rs. in lakhs)	
Plan	824.00	817.00	794.36
Non-Plan	1800.00	1825.00	1893.84

Audited Statement of Accounts :

The Accounts of the Council for the year 1999-2000 for the period from 1st April, 1999 to 31st March, 2000 has been audited by the DACR.

Seminar/Conferences :

The following Seminar/Conferences were organized by the Council:

1. Meeting of Core Group for Finalization of Clinical Research:

The Meeting of the Core Group for Finalization of Clinical Protocols was held on 17.4.1999 at Council's Hqrs., New Delhi under the Chairmanship of Dr.Jaya Prakash Narayan, Chairman, SAC(Ay). The Committee discussed the clinical protocols on Amavata, Madhumeha, Vyanabala vaishmya, Slipada, Kamala and approved the protocols with certain modifications in the existing protocols.

2. Indo-Russian Co-operation and Seminar on Ayurveda's place and significance in Modern Medicine.

The programme for cooperation was discussed by the Joint Secretary(ISM&H) Shri Pradip Bhargava with Russian Authorities in the month of April, 1999.

The proposal for holding a Seminar on "Ayurveda's place and significance in Modern Medicine" was finalized during his visit and topics/diseases were identified. The Seminar was organized from 3rd-7th June, 1999.

3. Workshop on Re-orientation of Ayurveda Physicians in HIV/AIDS and STDs.

A three days workshop on Re-orientation of Medical Officers' of Ayurveda in HIV/AIDS and STDs was held from 10.5.1999 to 12.5.1999 at Regional Research Centre(Ay.), Guwahati. The workshop was sponsored by the NACO and organized by the CCRAS with the aim to impart training to Ayurvedic Physicians of North-East Region in HIV/AIDS and STDs.

4. The Second International Seminar on Regional Co-operation on Traditional and Alternative Medicine Development in the Mekong-Asian-Indian Ocean(MAI) Region.

The Conference was held from 30.8.1999 to 2.9.1999 and 130 delegates from 16 countries participated.

The Director, CCRAS, discussed on the following topics:

- ❖ The history of traditional medicine and issues of colonialism affected in suppression and eventual rebirth after independence.
- ❖ Advances in the development and production of traditional medicine.
- ❖ Efforts of getting established medical communities and governments to accept traditional medicine.
- ❖ Treatment of the elderly using traditional methods.
- ❖ Holistic healing, looking at a variety of the life style and cultural issues.
- ❖ Mental health applications.
- ❖ Global trends turning to traditional medicine.

The Deputy General Secretary, Ministry of Public Health, Prof.Dr.Pakdee Photisiri inaugurated this Seminar.

5. Seminar on Research Achievements of Ayurveda and Siddha

The Council organized a two days Seminar on Research Achievements of Ayurveda and Siddha at Vigyan Bhawan, New Delhi from 25th to 26th October, 1999. This Seminar was organized with the aim to identify, scrutinize specific therapies and data and extensive application and the strategies for incorporation of the therapies developed by the Council in pharmacopoeia of Ayurveda and Siddha and Formularies of the CGHS Central and State Government Hospitals.

6. First International Meeting of RITAM

The first International Meeting of the Research Initiative on Traditional Anti-Malaria (RITAM) was held from 8th-11th December, 1999 at the Regional Dermatology Training Centre, Kiliminjaro Christian Medical Centre, Moshi, Tanzania. Dr.K.D.Sharma, Dy.Director(Tech.) participated in the meeting. He presented a paper on Ayush-64. The meeting was inaugurated by the Vice-Chancellor of Tumani University of Health Sciences; Dar-Eslam, Tanzania.

Exhibitions :

The Council participated in the following exhibitions:

1. Mystique India-99

The Council participated in the Mystique India-99 exhibition from 8th October to 12th October, 1999 organised at Pragati Maidan, New Delhi. The Council exhibited research activities and achievements of the Council. The exhibition was inaugurated on 8th October,

1999 at 11.00 a.m. by Mrs. Shailaja Chandra, Secretary, Department of ISM & H, Ministry of Health & Family Welfare, Government of India.

2. Therapeutica, 99 International Alternative Therapy Fair and Pronatura, 99 International Natural Products Fair.

The Council participated in Therapeutica, 99 International Alternative Therapy Fair and Pronatura, 99 International Natural Products Fair held at Sao Paulo, Brazil during 14th to 17th October, 1999. Video cassettes on Panchakarma and charts, exhibits on Panchakarma were displayed in the exhibition. A large number of visitors took interest in exhibits and expressed their eagerness to know about the Indian Systems of Medicine.

3. India International Trade Fair:

The Council participated in the India International Trade Fair started from 14th to 27th November, 1999 at Pragati Maidan, New Delhi.

The theme of the exhibition was Mother and Child Care. The exhibits depicting various aspects of child care including Ayurveda and Siddha treatment for the common ailments of the children were displayed.

Visits of Foreign Delegations/Dignitaries:

1. Myanmar delegations:

A delegation led by Prof. Mya Oo, Deputy Minister for Health, Government of Union of Myanmar along with Dr. Hila Pe, Deputy Director General, Department of Health and Dr. Than Zaw Myint, Assistant Director visited Central Research Institute for Ayurveda, New Delhi on 8th February, 2000. The dignitaries visited different Departments of the Institute and held discussion on ISM. They expressed keen interest in Ksharsutra treatment for fistula-in-ano and Panchakarma treatment for neuromuscular disorders.

2. Russian delegations:

The Department of Indian Systems of Medicine and Homoeopathy, Government of India signed an MOU with Government of Russian Federation on 7th June, 1999 for co-operation and collaboration in the field of Indian Systems of Medicine and Homoeopathy.

A team of five Russian delegates visited India from 2nd to 12th January, 2000 at the invitation of Gujarat Ayurveda University, Jamnagar to attend International Seminar on Ayurveda.

The delegates also visited Delhi from 10th to 12th January, 2000 and had detailed discussion on future collaborative studies. The delegates paid a visit to Central Research

Institute for Ayurveda, Punjabi Bagh, New Delhi and interacted with eminent Vaidyas of Ayurveda Mahasammelan and Ayurvedic Physicians and Scientists of the Institute.

Rajbhasha Hindi Week Celebration :

On the occasion of Swarna Jayanti of Rajbhasha Hindi the Council organized a Rajbhasha Hindi Week from 14th September to 20th September, 1999. During this period different programmes were organized. All staff members of the Council's Hqrs.Office actively participated in the programmes.

Medical Relief Camps :

1. Malaria Relief Camp in Assam :

The Council organized a Malaria Relief Camp in various Malaria affected districts of Assam for 21 days w.e.f. 21.6.1999 to 10.7.1999 to control the epidemic of Malaria. The medical team visited the affected areas and provided free medicines.

2. Medical Relief Camp at Mumbai :

A Medical Relief Camp was organized by the Council on 27th June, 1999 at R.F.Naik School, Koparkhairane, New Mumbai. 250 patients were examined by the team of expert Ayurvedic Physicians and free medicines were distributed to the needy patients.

3. Medical Relief in cyclone affected Orissa:

The Council actively participated in the medical relief work in cyclone affected areas of Orissa from 10.12.1999 to 7.1.2000. The medical team conducted medical relief work in the cyclone affected villages of Bharatpur, Patpur Chhak, Sathilo-Kaka Rudrapur of Khurda District. The team provided free medical check up and distributed free medicines to the affected villagers.

4. Medical Relief Camp at Patiala:

A medical relief camp was organized by the Council on 30.11.1999 at Village Mandor in Nabha Tehsil, Dist.Patiala with the collaboration of Lions Club, Sheesh Mahal Patiala. In this camp total 650 patients suffering from Tamaka Swasa (Bronchial asthma), Amavata (Rheumatoid arthritis), Madhumeha (Diabetes mellitus), Arsa (Haemorrhoids), Hridshool (Cardiac disorder) and Tvak Roga (Skin disorders) were examined by the team of expert Ayurvedic Physicians and free medicines were distributed to the needy patients.

5. Visit of the Secretary(ISM&H) to JNAMPG&H, Pune:

Smt.Shailaja Chandra, Secretary, Department of ISM&H, Ministry of Health & Family

Welfare, Government of India visited JNAMPG&H, Pune on 1st September, 1999. She was taken round the Garden, Herbarium, Museum and the Laboratories. She was happy to see the developments and activities of the Centre. The Secretary was highly impressed with the ongoing work related to development of Data Base on Medicinal Plants and desired that it should be brought out as early as possible.

During the period under report Council has actively participated in various activities for propagation of Indian Systems of Medicine besides conducting research in various areas of its activities.

III. TECHNICAL REPORT

A. AYURVEDA

1. 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	CRIB
3	Central Research Institute (Ay.), Mumbai	CRIM
4	Central Research Institute (Ay.), Patiala	CRIP
5	Central Research Institute (Ay.), Cheruthuruthy	CRIC _h
6	Central Research Institute (Ay.), Kolkata	CRIK
7	Central Research Institute (Ay.), Lucknow	CRIL
8	Central Research Institute (Ay.), Gwalior	CRIG
9	Central Research Institute (Ay.), Jaipur	CRIJ
10	Regional Research Institute (Ay.), Patna	RRIP
11	Regional Research Institute (Ay.), Junagarh	RRIJu
12	Regional Research Institute (Ay.), Trivandrum	RRIT
13	Regional Research Institute (Ay.), Itanagar	RRII
14	Regional Research Institute (Ay.), Guwahati	RRIG _u
15	Regional Research Institute (Ay.), Gangtok	RRIG
16	Regional Research Institute (Ay.), Mandi	RRIM
17	Regional Research Institute (Ay.), Jammu	RRIJ
18	Regional Research Institute (Ay.), Jhansi	RRIJ _h
19	Regional Research Institute (Ay.), Nagpur	RRIN
20	Regional Research Institute (Ay.), Vijayawada	RRIV
21	Regional Research Institute (Ay.), Bangalore	RRIB
22	Regional Research Institute (Ay.), Tarikhet	RRIT _{ar}
23	Regional Research Centre (Ay.), Hastinapur	RRCH
24	Dr.A. Laxmipathi Research Centre for Ayurveda, VHS, Chennai	ALRCAC
25	Captain Srinivasa Murty Drug Research Institute for Ayurveda, Chennai	CSMDRIAC

S.No	Institutes/Centres/Units	Abbreviations
26	Jawahar Lal Nehru Ayurvedic Medicinal Plant Garden, and Herbarium, Pune	JLNAMPG&HP
27	Mobile Clinical Research Unit, Lucknow	MCRUL
28	Mobile Clinical Research Unit, Jamnagar	MCRUJ
29	Ayurveda Research Unit, NIMHANS, Bangalore	ARUB
30	Ayurveda Chikitsa Kendra, Safdarjung Hospital, New Delhi	ACKD
31	Clinical Research Unit (Ay.), Kottakal	CRUK
32	Clinical Research Unit (Ay.), Varanasi	CRUV
33	Clinical Research Unit under F.W.R.P., Ahmedabad	CRUFA
34	Clinical Research Unit under F.W.R.P., Varanasi	CRUFV
35	Pharmacological Research Unit under FWRP, Jamnagar	PhRUFJ
36	Pharmacological Research Unit under FWRP, Kolkata	PhRUFK
37	Pharmacological Research Unit under FWRP, Trivandrum	PhRUFT
38	Pharmacological Research Unit, Kolkata	PhRUK
39	Pharmacological Research Unit, Patiala	PhRUP
40	Pharmacological Research Unit, Trivandrum	PhRUT
41	Toxicity Research Unit, Patiala	TRUP
42	Chemical Research Unit, Kolkata	ChRUK
43	Chemical Research Unit, Lucknow	ChRUL
44	Chemical Research Unit, Delhi	ChRUD
45	Pharmacognosy Research Unit, Kolkata	PcRUK
46	Indian Institute of History of Medicine, Hyderabad	IIMMH
47	Documentation & Publication Section, HQ New Delhi	DPSD
48	Tribal Health Care Research Project, Car Nicobar	THCRPCN
49	Tribal Health Care Research Project, Itanagar	THCRPI
50	Tribal Health Care Research Project, Patna	THCRPP
51	Tribal Health Care Research Project, Nagpur	THCRPN
52	Tribal Health Care Research Project, Gwalior	THCRPG
53	Tribal Health Care Research Project, Guwahati	THCRPGu
54	Drug Standardisation Research Project, Jamnagar	DSRPJ
55	Drug Standardisation Research Project, Varanasi	DSRPV
56	Amchi Research Unit, Leh	ARUL

2. CLINICAL RESEARCH PROGRAMME

The development of effective remedies for certain chronic diseases based on Ayurveda and to provide health care to remote village population are the main objective of the clinical Research

Programme. For therapeutic studies clinical trials on single drugs or compound formulation are carried out and for field studies relating to Health Care Services; Service Oriented Survey and Surveillance Research Programme, Community Health Care Research Programme and Tribal Health Care Research Programme are undertaken.

The Clinical Research studies on Tamaka Swasa (Bronchial Asthma), Parinamasula (Duodenal ulcer), Arsa (Piles), Bhagandara (Fistula-in-ano), Mutrasmari (Urinary calculi), Vyanabala Vaisamya (Hypertension), Medoroga (Obesity), Pakshavadha (Hemiplegia), Pangu (Paraplegia), Gridhrasi (Sciatica), Amavata (Rheumatoid arthritis), Apasmara (Epilepsy), Kitibha (Psoriasis), Visama-Jwara (Malaria), Slipada (Filariasis), Grahani Roga (Mal absorption), Manasa Mandata (Mental Retardation), Manodvega (Anxiety Neurosis) and Timira Roga (Error of Refraction) were carried out during the reporting period. 2,93,810 patients attended at O.P.D. level while 1150 patients were admitted in the I.P.D. during these studies. The effect of the therapies are discussed in Tabular form which include, the trial therapies participating Institutes/Centres/Units, total number of cases included in the trial and the results of the trial drugs.

(a) Clinical Therapeutic Trials

TAMAK SWASA (BRONCHIAL ASTHMA)

The Clinical trials on Tamak Swasa at R.R.I(Ay), Patna, Vijayawada and Junagarh were conducted. A total number of 90 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON -TAMAK SWASA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Pippali Vardhamana	RRIP	43	2	14	3	1	23
	Ksheera Paka, Samira Pannaga Rasa	RRIV	15	1	7	1		6
2	Shirisa twak kwatha	RRIJu	18	3	7	4	1	3
		RRIV	14	2	5		7	
TOTAL			90	8	33	8	2	39

PARINAMA SULA (DUODENAL ULCER)

The clinical trials on Parinamasula were conducted at C.R.I.(Ay), Kolkata, C.R.U. (Ay), Kottakkal and Hyderabad. A total number of 44 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - PARINAMA SHULA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Amalaki Rasayana	CRUH	18		17			1
2	Indukanta Ghrita	CRUK	12	1	5		1	5
	Snehana	CRUH	4	1		3		
3	Mohatikta Ghrita	CRUK	9	1	4	2	1	1
	Snehana	CRUK	1			1		
TOTAL			44	3	26	6	2	7

GRAHANI ROGA (MAL-ABSORPTION)

The clinical trials on Grahani Roga (Mal absorption syndrom) were conducted at C.R.I.(Ay), Kolkata and Gwalior. A total number of 29 cases have been studied adopting one drug group. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - GRAHANI ROGA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
3	Panchamrita Parpati	CRUK	25	2	4	2	1	16
	Kalpa with milk.	CRIG	4			2		2
TOTAL			29	2	4	4	1	18

ARSA (PILES)

The effect of Kshar-sutra and Taila Varti treatment has already been observed over 313 cases of Arsa(Piles), further studies on these therapies and combinations of Kankayanvati , Triphala churana, and Kasisadi Taila locally and Kankayanvati Kravyadi rasa, Abhyarishta and Pippalyadi Taila locally have been carried out at C.R.I. (Ay), Delhi, Mumbai, Kolkata and Gwalior , R.R.I.(Ay), Mandi, R.R.C.(Ay), Hastinapur. A total number of 372 cases have been studied adopting different therapeutic approach. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - ARSA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Kankayan vati, Triphala Churna at bed time + Kashi shadi taila locally	CRIM	27	12	4	2	-	9
		CRIK	28	10	14	2	-	2
		CRIG	5	-	-	-	-	5
		RRCH	46	-	20	8	-	18
		RRIM	44	15	9	4	2	14
		CRID	158	110	23		18	7
2	Kankayan vati + Kravyadi Rasa Abhyarishta and Pippalyadi Taila locally	CRIM	3	2	1	-	-	-
		CRIK	26	14	19	-	2	4
		CRIG	6	-	-	-	-	1
		RRCH	9	1	6	1	-	-
		RRIM	20	5	5	5	2	3
TOTAL			372	169	101	22	24	63

BHAGANDARA (FISTULA-IN-ANO)

The clinical trials on Bhagandara were conducted at CRI(Ay.), Delhi and Mumbai. A total number of 76 cases were studied adopting Kshar Sutra technique. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - BHAGANDARA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Kshara sutra karma	CRIM	2	1	1	-	-	-
		CRID	74	66	6			4
TOTAL			76	67	7	0	0	4

VYANABALA VAISAMYA (HYPERTENSION)

The clinical trials on Vyanbala Vaisamy (Hypertension) were conducted at C.R.I (Ay), Gwalior, Patiala, Mumbai, Kolkata, Delhi, R.R.I.(Ay), Nagpur, Vijayawada, and ALRCA, Chennai. A total Number of 107 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - VYANABALA VAISHAMYA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Combination of Vaca, Brahmi, Jatamansi and Arjuna equal parts	CRIM	10	5	-	4	-	1
		CRIK	10	2	2	-	6	
		CRIP	28	6	13	5	4	
		CRID	10	-	10	-	-	
		RRIN	2	2	-	-	-	
		RRIV	3	1	-	-	2	
2	Chandra Prabha Vati Sveta Parpati and Punra- nava Mandura with specific Ahar-Vihar	CRIK	12	2	3	-	-	7
		CRIG	21	-	-	8	5	8
		RRIV	7	-	1	4	2	
		ALRCAC	4	-	2	-	2	
TOTAL			107	18	31	21	7	30

MEDOROGA (LIPID DISORDERS)

The clinical trials on Medoroga (Lipid disorders) were conducted at C.R.I. (Ay), Mumbai, Patiala, ALRCA, Chennai. A total number of 63 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - Medoroga (Lipid disorders)								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Combination of Vaca & Katuki in equal parts-1gm.	CRIM	19	-	1	4	4	10
		CRIP	20	6	9	4	1	
		ALRCAC	4	-	-	-	4	
2	Triphala Siddha Guggulu	CRIP	20	6	6	4	-	4
TOTAL			63	12	16	12	4	19

PAKSHAVADHA (HEMIPLEGIA)

The clinical trial on Pakshavadha (Hemiplegia) were conducted at C.R.I. (Ay), Cheruthuruthy, Patiala, Delhi and R.R.I. (Ay), Nagpur. A total number of 98 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - PAKSHAVADHA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Group I							
	Snehapana (Ksheerbala	CRIP	8	-	4	1	-	3
	Taila, Svedana (Vashpa),	CRICH	17	2	7	5	-	3
	Virecana (Eranda Taila)	CRID	4	-	3		-	1
	Vastikarma (Yogavasti)	RRIN	29	3	13	2	-	11
	Dasmoola kwatha for							
	Nirooha and Ksheerabala							
	Taila for Anuvasana;							
	Nasya (Ksheerbala Taila)							
2	Group - II							
	Dhanadanayanadi kwatha							
	with Ksheerbala Taila;							
	Abhyanga (Ksheerbala	CRICH	16	2	9	2	2	1
	Taila); Patrapotala							
	sveda with Ksheerbala							
	Taila Virechana							
	(Eranda taila)							
3	Group - III							
	Maha Vatavidhwansana	CRIP	15	-	2	-	-	13
	rasa, Dhanyamla Seka	CRICH	9	3	2	4	-	-
	Virechana Nasya							
	(Ksheerbala Taila)							
	Sirovasti (Ksheerbala)							
TOTAL			98	10	40	14	2	32

PANGU (PARAPLEGIA)

The clinical trials on Pangu (Paraplegia) were conducted at the C.R.I (Ay), Cheruthuruthy, and R.R.I.(Ay), Nagpur. A total number of 31 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - PANGU								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Snehapana (Dashmoola bala taila), Svedana (Vashpa) Virechana (Eranda taila) Samsarjana and Yoga vasti (Nirooha-Dashmoola kwatha and Anuvasana-Dashmoola bala taila)	RRIN	7	0	1	4	-	2
		CRICH	12	2	6	3	1	-
2	Dashmoola bala kwatha alongwith Chandraprabha vati Abhyanga (Dashmoola bala taila), Matra vasti (Dashmoola bala taila) and Physiotherapy	CRICH	12	5	5	1	-	1
TOTAL			31	7	12	8	1	3

GRIDHRASI (SCIATICA)

The clinical trials on Gridhrashi were conducted at the C.R.I. (Ay), Cheruthuruthy and Delhi. A total number of 48 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - GRIDHRASI								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Hingu Triguna taila	CRICH	21	4	12	2	2	1
		CRID	4	-	1	2	-	1
2	Pancakarma Chikitsa: Snehapana (Dashmoola bala taila), Sveda (Vashpa) Virechana (Eranda Taila), Samsarjana and Vasti [Vaitharana]	CRICH	23	2	13	3	2	3
TOTAL			48	6	26	7	4	5

AMAVATA (RHEUMATOID ARTHRITIS)

The clinical trials on Amavata (Rheumatoid arthritis) were conducted at C.R.I.(Ay), Mumbai, Kolkata, Delhi, Gwalior, Cheruthuruthy, R.R.I.(Ay), Mandi, Patna, and Nagpur. A total number of 253 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases treated with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - Amavata (Rheumatoid arthritis)								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Pippali Vardhamana	CRIM	10	3	2		1	4
		CRID	29	5	12	4	3	5
	Ksheera Paka	CRICH	69	17	32	11	4	5
		CRIG	9		2	1	1	5
	Samira pannaga rasa	RRIM	16		3	8	3	2
		RRIP	6	1	1	2	2	
2	Combination of Shunthi Guggulu and Godanti	CRIK	5	-	-	-	-	5
		CRIG	11	-	-	2	4	5
		RRIM	18	-	1	7	3	7
3	Panchakarma Therapy	CRIK	18	3	9	3	2	1
	Group - I							
	Deepana-pacana (Balaguducyadi kwatha Snehapan with Indukanta Ghrita Svedana Vamana							
	Group - II							
	Snehapana with Indukanta ghrita Svedana Vamana Samsarjana	CRICH	22	4	10	4	2	2
	Group - III							
	The above course without Panchakarma using Pancha- kola churna as Prakshepa and Patra Pinde Sweda.	CRICH	9	1	6	1	1	-
		RRIN	14	2	5	4	-	3
4	Suranjana and Shallaki	RRIN	17	8	3	1	2	3
TOTAL			253	44	86	48	28	50

MANODVEGA (ANXIETY NEUROSIS)

The clinical trials on Manodvega were conducted at C.R.I.(Ay), Mumbai and Patiala. A total number of 32 cases have been studied adopting therapeutic approaches. The following studied Table summarises the details related to the line of approach and numbers of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - MANODVEGA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Medhya Rasayana (Vaca, Brahmi Ghana satwa in equal parts)	CRIP	13	3	4	5	-	1
		CRIM	6	1	2	1	1	1
2	Above with Counseling	CRIP	13	5	6	1	-	1
TOTAL			32	9	12	7	1	3

TIMIRA ROGA (ERRORS OF REFRACTION)

The clinical trials on the patients with errors of refraction like Myopia have been managed with Netra bindu , Saptamrit Lauha and exercises, so far 29 cases with these conditions have been attended.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - TIMIRA ROGA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Netra Bindu and Saptamrita lauha alongwith Eye Exercises	CRID	29	2	3	5	9	10
TOTAL			29	2	3	5	9	10

KITIBHA (PSORIASIS)

The clinical trials on Kitibha (Psoriasis) were conducted at the C.R.I.(Ay), Patiala, R.R.I. Trivandrum and R.R.C., Hastinapur. A total number of 150 cases have been studied adopting different therapeutic approaches. The following Table summaries the details related to the line of approach and the number of cases together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - KITIBHA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Arogyavardhini, Kaishore	CRIP	18	6	7	3	-	2
	Guggulu and Chakramarda	RRCH	21	-	7	3	-	11
	Taila local application	RRIT	76	7	39	13	6	11
2	Snehapana (Mohatikta ghrita) Svedana (Mridu)	CRIP	17	5	8	2	-	2
	Vamana (Mild) Samsarjana							
	Rasayana (Bhallataka)							
	Prayoga							
3	Panchanimba Lauha Churna Kamadudha Rasa and Haridra Khanda	CRIP	18	6	7	3	-	2
TOTAL			150	24	68	24	6	28

VISAMA JWARA (MALARIA)

The clinical trials on Visama-Jwara (Malaria) were conducted at A.L.R.C.A. Chennai, and R.R.C. (Ay), Hastinapur. A total number of 90 cases have been studied adopting two groups. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - VISAMA JWARA (MALARIA)								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Parijata Ghana vati	ALRCAC	2				2	
3	Ayush 64 Sphatika Bhasma	RRCH	88	13	7	13	1	5
TOTAL			90	13	7	13	3	54

SLIPADA [MICROFILARIAESES]

The clinical trials on Slipada were conducted at the R.R.I. (Ay), Patna and Vijayawada. A total number of 59 cases have been studied adopting one drug group. The following Table summarises the details related to the line of approaches and the number of cases studied together with results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - SLIPADA								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Kanchanar Guggulu with Gokshuradi Guggulu	RRIP RRIV	15		7	1	7	
			44	8	10	9	17	
TOTAL			59	8	17	10	7	17

MUTRASMARI (UROLITHIASIS)

The clinical trials on Mutrasmari were conducted at CRI(Ay.), Delhi and RRI(Ay.), Jammu. A total number of 35 cases have been studied adopting a therapeutic approach. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

RESULTS OF CLINICAL STUDIES OF AYURVEDIC PREPARATION ON - MUTRASMARI								
S.NO	THERAPY	INSTT/ CENTRE/ UNIT	TOTAL CASES	RESULTS				
				GOOD RESP.	FAIR RESP.	POOR RESP.	NO. RESP.	DROP OUT
1	Pashana bheda, Goksuru kwatha Ghana Satva	CRID RRIJ	25	6	10	2	4	3
			10	1	6	3		
TOTAL			35	7	16	2	7	3

**(b) Disease groups, number of patients and participating projects under
Clinical Research Programmes during 1999-2000**

S. No.	Disease Groupwise	Patients Nos.	Participating Projects
I.	Prana Vaha Srotas Vyadhi (a) Tamaka Swasa	90	RRIP, RRIV, RRIJu
II.	Annavaaha Srotas Vyadhi a) Parinamasula	44	CRIK, CRUK, CRUH
	b) Grahani Roga	29	CRIK, CRIG
III.	Pureesa Vaha Srotas Vyadhi (a) Arsa	372	CRIM, CRIK, CRIG, CRID, RRIM, RRCH
	(b) Bhagandara	76	CRID, CRIM
IV.	Mutra Vaha Srotas Vyadhi (a) Mutrasmari	35	CRID, RRIJ
V.	Rasa Rakta Vaha Rotas Vyadhi (a) Vyanbala Vaisamya	107	CRIM, CRIK, CRIP, RRIN, RRIV, RRIG, ALRCAC, CRID, CRIG
VI.	Medovaha Srotas Vyadhi (a) Medoroga	63	CRIP, CRIM, ALRCAC
VII.	Vatavayadhi (a) Paksavadha	98	CRICH, CRIP, CRID, RRIN
	(b) Pangu	31	CRICH, RRIN
	(c) Gridhrasi	48	CRICH, CRID
VIII.	Sandhigata Vyadhi (a) Amavata	253	CRID, CRIM, CRIK, CRIG, RRIM, RRIP, RRIN, CRICH
IX.	Manovaha Srotas Vyadhi (a) Manodvega	32	CRIP, CRIM
	(b) Apasmara	Study contd.	CRID, ARUV, CRICH
X.	Netragatayadhi (a) Timir Roga	29	CRID
XI.	Sarva Dehagata Vyadhi (a) Kitibha	150	CRIP, RRIT, RRCH
XII.	Agataja Vyadhi (a) Visamjwara	90	ALRCAC, RRCH
	(b) Slipada	59	RRIP, RRIV

**(c) Statement Showing Numbers of Patient Attended at OPD
and Admitted Discharge in I.P.D During 1999-2000**

S.NO	NAME OF INSTITUTE CENTRE/UNIT	O.P.D PATIENTS			I.P.D PATIENTS		% OF BED OCCUPANCY
		NEW	OLD	TOTAL	ADMIT- TED	DISCH- ARGED	
1	CRI, DELHI	13848	15301	29149	200	183	35
2	CRI, BHUBANESHWAR	8843	10392	19235	152	152	38
3	CRI, MUMBAI	4564	1801	6365	99	99	17.36
4	CRI, PATIALA	5579	5091	10670	119	133	29.15
5	CRI, CHERUTHURUTHY	11338	35545	46883	271	259	61.61
6	CRI, LUCKNOW	6622	8471	15093	17	17	2.13
7	CRI, KOLKATA	6096	13683	19779	104	97	
8	CRI, GWALIOR	3058	3580	6638	11	10	10.22
9	CRI, JAIPUR	8873	9457	18330	79	75	23.34
10	RRI, JUNAGADH	2564	3884	6448	14	14	0.39
11	RRI, PATNA	6950	8492	15442	56	57	34
12	RRI, TRIVANDRUM	3898	15854	19752	68	71	60
13	RRI, NAGPUR	2604	6602	9206			
14	RRI, BANGALORE	3590	10622	14212			
15	RRI, JAMMU	4966	5745	10711			
16	RRI, MANDI	7991	5441	13432			
17	RRI, GANGTOK	4546	2335	6881			
18	RRI, VIJAYAWADA	2885	4416	7301	28	29	19.37
19	RRI, ITA NAGAR	12233	8031	20264			
20	RRI, JHANSI	453	558	1011			
21	RRC, HASTINA PUR	8252	10793	19045	26	28	18.43
22	ALRCA, CHENNAI	353	726	1079			
23	ARU, BANGALORE	747	875	1622			
24	CRU, KOTTAKAL				78	80	41.1
25	CRU, HYDERABAD	267	414	681	28	27	
26	CRU (MT), VARANASI	3490		3490			
27	CRU (AT), VARANASI	240		240			
28	ACK, N. DELHI	10583	13206	23789			
	TOTAL	1,21,002	1,72,808	2,93,810	1150	1148	

(d) Health Care Research Programme

The Council has taken up three programmes i.e. Service Oriented Survey & Surveillance Research Programme, Community Health Care Research Programme and Tribal Health Care Research Programme for providing medical aid to the people at their door steps. The study of their health status, the incidence of diseases and local health care practices is being undertaken. About 43 villages, Tribal pockets with 78317 population have been studied and medical aid to about 28296 patients has been provided through these programmes.

(i) Service Oriented Survey and Surveillance Research Programme

The data regarding socioeconomic status, incidence of diseases and their relationship with various etiological factors are compiled in randomly selected villages. The folk lore medical practices are also noted. During the period 18 villages with a population of 40467 were surveyed and 8621 patients were also treated with Ayurvedic drugs.

(ii) Community Health Care Research Programme

Each of the Institute/Centre has been assigned a few villages in their vicinity under this programme. The knowledge about health care, prevention of diseases, health promotive measures and use of local herbs for treatment of common ailments is imparted to the people of selected villages. The details of socioeconomic status, environmental factors influencing the disease proneness are recorded. This programme has been executed in 17 villages with a population of 24273 and 9591 patients have also been provided medical aid.

(iii) Tribal Health Care Research Programme

This programme has been initiated with the aim to study living conditions of tribal people, folk medicines used by them, occurrence of medicinal plants 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 Islands), Jamune, Dist. Palamau (Bihar), Jagdalpur (Madhya Pradesh), Jhabua (M.P.), Imphal (Manipur) and Ziro (Arunachal Pradesh). Tribal Health Care Research Project, Chinchapada Distt. Dhule has been merged with RRC Nagpur. 8 Tribal Pockets/Villages consisting of a population of 13577 individuals have been covered and incidental medical aid extended to 10064 patients.

SERVICE ORIENTED SURVEY AND SURVEILLANCE RESEARCH PROGRAMME (YEAR 1999-2000)

S.NO	NAME OF INSTITUTES/ CENTRES / UNITS	NAME OF VILLAGES COVERED	POPULATION COVERED	NO. OF PATIENTS TREATED	COMMON DISEASES
1	CRI, DELHI	RANIKHERA	2500	161	ATISARA, PRAVAHIKA, SANDHISULA, PRATISYAYA, PRADARA
2	MCRU. VARANASI	RANGOLI JLUDHIPUR	2000	880	PRATISYAYA, KASA, PRADARA, ATISARA, PRAMEHA
3	MCRU.JAMNAGAR	BEDI	1563	21	SWASA, KASA, TWAK ROGA, JWARA
4	CRI, MUMBAI	SANT DHYANESHWAR	2000	602	SANDHISULA, JWARA, KASA, TWAK ROGA, KRIMI
5	CRI, CHERUTHURUTHY	PULACHITIM	1609	1373	VATAVYADHI, KASA, KATISULA, TWAK ROGA, SANDHISULA
6	CRI, KOLKATA	THAKURWADI	2377	1552	AMLAPITTA, ATISARA
7	CRI, GWALIOR	BANDHA	1049	471	ATISARA, PRAVAHIKA, SANDHISULA, PRATISYAYA, PRADARA
8	RRI, JUNAGADH	VIRPUR, MEVAS	966	172	KRIMI, ATISARA, AMAVATA, AMLAPITTA
9	RRI, NAGPUR	DHAPEWADA	3402	463	VATAVYADI, KASA, KATISULA, JWARA
10	RRI, BANGALORE	KARANAHALLI	2065	956	VATAVYADI, VRANA, KASA, TWAK ROGA, JWARA
11	RRI, JAMMU	SANGSAMPUR	1700	253	PRATISYAYA, KASA, JWARA, TWAK ROGA
12	RRI, MANDI	DADUR	318	89	KRIMI, KASA, PRAVAHIKA, SVASA
13	RRI, VIJAYAWADA	MALKAPURAM	1040	265	TWAK ROGA, RATKTACHAPA, KATISULA, PRATISYAYA
14	RRI, ITA NAGAR	EMCHI VILLAGE	60	73	KASA, JWARA, UDARSULA, VRANA, ATISARA
15	RRI, GUWAHATI	BANGSAR	15000	974	TWAK ROGA, KASA, JWARA, AMALPITTA
16	RRI, JHANSI	SARMAN	2018	160	PRATISYAYA, SWETPRADARA, SANDHISULA, KRIMI
17	RRC, HASTINA PUR	BHIMKUND	800	156	KASA, VATAVYADHI, TWAKA ROGA
	TOTAL	18	40467	8621	

COMMUNITY HEALTH CARE RESEARCH PROGRAMME (YEAR 1999-2000)

S.NO	NAME OF INSTITUTES/ CENTRES / UNITS	NAME OF VILLAGES COVERED	POPULATION COVERED	NO. OF PATIENTS TREATED	COMMON DISEASES
1	MCRU, JAMNAGAR	BEDI	1671	32	SAVASA, KASA, TWAK ROGA, JWARA
2	CRI, MUMBAI	SANT GAJANAN	5000	497	SANDHI SULA, KASA, PRATISYAYA, DAURVALYA
3	CRI, CHERUTHURUTHY	TRANGALI KOTHAYUR		2749	KASA, KATISULA, TWAK ROGA, SANDHISULA, JWARA, VATAVYADHI
4	CRI, KOLKATTA	JETRAGANCHI	2760	1154	AMLAPITTA, ATISARA, KRIMI, VATAVYADHI
5	CRI, GWALIOR	UDAYPUR	137	30	KASA, PRATISYAYA, JWARA, ARSHA
6	RRI, JUNAGARH	ANIYARA, KHOKHARDA	958	286	KRIMI, AMAVATA, SWASA, TWAK ROGA
7	RRI, PATNA	VELIDTH VIGIDPUR	1888	1028	TWAK ROGA, KRIMI, VRANA, KASA, SANDHISULA
8	RRI, NAGPUR	GODHANI	2716	630	KASA, SVASA, JWARA, KATISULA
9	RRI, BANGALORE	LAKSHMIPURA	2001	1014	UDARSULA, TWAK ROGA, SVASA, VATAVYADHI
10	RRI, JAMMU	PATNIYAL	2000	398	PRATISYAYA, TWAK ROGA, JWARA YAKRITVIKARA
11	RRI, MANDI	PANDOH	162	33	KASA, SVASA, KRIMI, ATISARA PRADARA, PRAVAHIKA
12	RRI, VIJAYAWADA	GOLLAPUDI	680	241	JWARA, KATISULA, KASA, UDARSULA
13	RRI, ITA NAGAR	PAMA VILLAGE		124	KASA, JWARA, UDARSULA, VRANA, ATISARA
14	RRI, JHANSI	MAVAIGIDH	2300	119	SWETAPRADARA, KASA, UDARSULA, VATAVYADHI
15	RRC, HASTINA PUR	KAUL	2000	1256	VATAVYADHI, TWAK ROGA, KASA
	TOTAL	17	24273	9591	

TRIBAL HEALTH CARE RESEARCH PROJECT (YEAR 1999-2000)

S.NO.	UNIT'S NAME	NAME OF VILLAGE	POPULATION COVERED	NO.OF PATIENTS ATTENDED	COMMON DISEASES
1	THCRP CAR-NICOBAR	KINMUL KINUKA	7447	2890	RAKTACHAP, PRATISYAYA, SWASA, UDARSULA
2	THCRP IMPHAL	HQ		570	DAURBALYA, KASA, KATISULA, KRIMI
3	THCRP JAGDALPUR	HQ		1758	TWAK ROGA, UDARSULA, JWARA, PRATISYAYA
4	THCRP PALAMAU	ORIYA JHABAR	3505 1825	1724 1431	JWARA, AMALPITTA, KASA, PRAVAHIKA
5	THCRP ZIRO	MANI BAGSH	800	236	TWAKROGA, KRIMI, KASA, UDARSUL, ATISARA
6	ARU LEH-LADAKH	HQ		1455	VRIKKAROGA, AMAVATA, VATAVYADHI PRATISYAYA
	TOTAL	8	13577	10064	

3. MEDICO-ETHNO- BOTANICAL SURVEY PROGRAMME

Sixteen survey units located at Bangalore, Bhubaneshwar, Gangtok, Guwahati, Gwalior, Itanagar, Jaipur, Jammu, Jhansi, Mandi, Nagpur, Patna, Tarikhet, Trivandrum and Vijayawada have all together supplied over 384 samples to the identified 49 Institutions. Whereas, the ongoing survey

programme allotted to RRI (Ay), Junagadh could not be carried out due to re-organization programme of the Council and unavailability of proper staff in the unit. Medico-Ethno-Botanical Survey is an important component of drugs research, which provides basic information / data and authentic raw drug materials for initiating research studies like clinical / phytochemical / pharmacological / pharmacognostical / drug standardization etc. Various survey units functioning at the Regional Centres and Institutes have collected useful basic information on all aspects covering various important phytogeographic regions, states, districts including inaccessible rural and tribal areas. These data has been published in the medico-botanical monographs from time to time.

“Central Scheme for Evolving Pharmacopoeial Standards of I.S.M. Drugs” programme allotted by the Department of ISM&H, Ministry of Health and Family Welfare (Government of India) for collection and supply of genuine raw drugs to the various survey units of the Council is a priority programme. Under this programme, various Survey Units of the Council are required to supply the selected raw drugs of Ayurveda, Siddha, Unani and others to various Institutions all over the country, identified for the purpose.

Following is the work done at a glance during the year 1999-2000 by the Survey Units of the Council:

A. Raw Drug Supply :

No. of Survey Units	No. of plants species collected	Raw Drug Samples			No. of Institutions supplied
		Collected	Supplied	Weight	
16	2065	248	384	223 Kg.	49

Under “Central Scheme” Project total 47 plant species were collected and 89 raw drug samples were supplied to 10 various institutes.

B. Important Work carried out:

No. of Survey tours conducted	Specimens Collected	Raw Drugs collected / Supplied	No. of Plant Species collected / Supplied
Over 49 (+ local survey)	2281	207	2065

Herbarium sheets Mounted / Prepared (including back log)	Herbarium Sheets Identified (Including back log)	Herbarium Sheets Accessioned	Museum Specimen Collected
2884	3136	3328	58

Paper Published/ Communicated	Technical Know-how Imparted	Exhibition Arranged	Participation in Seminar / Workshop
16	3 organisations	5	26 National/ International

The details of the work carried out during the current year is as follows :

- 1. Regional Research Centre (Ay.), Bangalore (Karnataka) (RRCB).** The Survey Unit functioning under RRC, Bangalore has conducted three survey tours for collection of raw drugs for Central Scheme for evolving pharmacopoeial standards under the Department of ISM&H, Ministry of Health and Family Welfare, Government of India (Central Scheme). Total 8 raw drugs have been collected and 8 raw drugs comprising of 8 species have been supplied to the Institutions allotted for the purpose. During the 'three survey tours about 135 specimens have been collected. In the herbarium section 77 specimens have been prepared (mounted) and 77 specimens have been identified and 156 accessioned. The Research Officer (Botany) and his team of the Centre has imparted technical assistance to M.D. Students. The unit contributed to 2 publications, 2 papers sent for publication, 8 participation in Seminars.
- 2. Central Research Institute (Ay.), Bhubaneswar (Orissa) (CRIB) :** This unit is in the process of shifting to RRI (Ay), Guwahati under the reorganization programme of the Council.

3. Regional Research Centre (Ay.), Gangtok, (Sikkim) (RRCG)

The Survey Unit located at RRC (Ay), Gangtok, conducted two survey cum drug collection tours and collected 222 specimens during the reporting period. In the herbarium section 164 specimens were prepared, 108 identified and accessioned. Total 11 samples have been added in the Museum.

4. Regional Research Centre (Ay.), Guwahati (Assam) (RRCGu)

The Survey Unit located at RRC, Guwahati has undertaken eleven survey tours for collection of drugs and collected drugs weighing 73 kg. (fresh) and supplied 10 species (drugs) to the research organizations. Total 16 specimens and 2 museum samples collected and 22 herbarium specimens have been identified. Scientists of the unit participated in National Conference at Cotton College, Guwahati.

5. Regional Research Institute (Ay.), Gwalior (Madhya Pradesh) (RRIG) : The Survey Unit at RRI, Gwalior has undertaken two survey tours and also local tours in the surrounding areas for collection of raw drugs. Raw drugs weighing 3 kg. have been collected for supply to different Institutions under "Central Scheme". During the period under report 1439 specimens were identified in the herbarium section.

6. Regional Research Centre (Ay.), Itanagar (Arunachal Pradesh) (RRCI) : The Survey Unit functioning under the RRC at New Itanagar has undertaken seven survey tour and a few local survey tours for drug collection. A collection of 125 specimens & 331 plant species including some species of Ayurvedic importance have been collected. During the reporting period 77 specimens have been identified, 77 herbarium specimens mounted, 156 herbarium accessioned and 3 drug samples added to the Museum. Besides collection, the supply of 5.5 kg. of raw drugs comprising of 14 items to 3 big organizations have been carried out.

7. Regional Research Institute (Ay.), Jaipur (Rajasthan) (RRIJ)

The Survey Unit functioning under RRI, Jaipur has been shifted to RRI (Ay), Jhansi. But local survey tours in surrounding areas of Jaipur, were conducted. And 11 plant species & 12.4 kg raw drugs comprising of 3 important Ayurvedic species were collected. Supply of 14 raw drugs weighing 6 kg. & 5 live plants was done. One monograph was published and 2 research papers were communicated for publication.

8. Regional Research Centre (Ay.), Jammu (J&K) (RRCJ)

The Survey Unit located at RRC, Jammu has been shifted to RRI (Ay), Tarikhet under the re-organisation programme of the Council. Few local survey tours were undertaken and 212 plant species were collected.

9. Regional Research Centre (Ay.), Jhansi (Uttar Pradesh) (RRCJh)

The Survey Unit at RRC, Jhansi has undertaken 4 survey tours & collected 92 kg. of samples of raw drugs from the garden and local areas and supplied 133 samples to various organizations. Out of which 3 samples of raw drugs supplied under "Central Scheme." Besides this, during the reporting period one monograph has been prepared for the publication.

10. Regional Research Centre (Ay.), Mandi (Himachal Pradesh) (RRCM) : The Survey Unit located at RRC, Mandi has been shifted to RRI (Ay), Tarikhet. In herbarium section, 1200 specimens mounted, 2136 herbarium specimens accessioned and 600 herbariums were identified.

11. Regional Research Centre (Ay.), Nagpur (Maharashtra) (RRCN)

The Survey Unit located at RRC, Nagpur conducted 5 tours for collection of raw drugs in the surrounding forest areas. Total 35 plants species were collected & 25 drugs samples weighing 104 kg. for "Central Scheme" out of which 19 raw drugs weighing 30 kg. have been supplied to various allotted units. one monograph published during the year and 447 Proformae specimens were sent to Head Quarters, New Delhi.

12. Regional Research Institute (Ay.), Patna (Bihar) (RRIP)

The Survey Unit located at RRI, Patna has undertaken local drugs collection tours. 265 plant species & 1147 specimens have been collected and 12 samples have also been added to the Museum of the Institute. One drug weighing 400 gm was supplied to one Institute.

In herbarium section, 557 specimens mounted on herbarium sheets, 425 herbarium specimens accessioned and 257 herbarium sheets were identified.

13. Regional Research Institute (Ay.), Tarikhet (Uttar Pradesh) (RRI Tar)

The Survey Unit under RRI (Ay.), Tarikhet has undertaken 4 tours and collected 236 plant species. 32 raw drugs were supplied to 2 different organizations. In herbarium section, 134 specimens prepared / mounted on herbarium sheets, 274 herbarium specimens accessioned and 134 herbariums were identified and one museum sample was added to Museum Section.

14. Regional Research Institute (DR), Trivandrum (Kerala) (RRIT)

The survey unit functioning at RRI, Trivandrum has collected 302 plant specimens. Total 78 drugs weighing 104 kg. have been collected and supplied to different institutions. Identification of 134 specimens, accessioning of 274 specimens and mounting of 203 specimens was done in the herbarium section. One sample was

added to the museum. Scientists participated and presented 2 papers in seminar. 2 papers were published & 2 have been accepted for publication.

15. Regional Research Institute (Ay.), Vijayawada (Andhra Pradesh) (RRIV)

The Survey unit functioning at RRI, Vijayawada is under process of shifting to RRI (Ay), Bangalore under the reorganization programme of the Council. The Survey unit functioning at RRC, Vijayawada conducted 2 tours and collected 84 raw drugs. Total 66 raw drugs weighing 51.750 kg. have been supplied to various organizations. During the reporting period 50 specimens have been mounted identified and accessioned in the herbarium section. Two research papers have been published, 2 sent for publication & 2 papers were presented in the Seminar.

16. Central Herbarium and Museum of Medicinal Plants at CCRAS's HQRS. , New Delhi

A nucleus in the form of Central Herbarium and Museum was initiated at the Council's Hqrs. at Janakpuri, New Delhi, which is having representative specimens and raw drug samples from all the States of the country. During the reporting year, collection of specimens from different survey units were received for the Central Herbarium which have been maintained and is being further rearranged. The Museum section is also being reorganized and developed.

The Museum section is arranging exhibition in the capital from time to time and participated in the "Mystique India-1999" exhibition held at Pragati Maidan, New Delhi and "Swadeshi Vigyan Mela" held at Indian Institute of Technology, New Delhi in the month of February, 2000. It was very much appreciated by the visitors both from India and abroad.

4. CULTIVATION OF MEDICINAL PLANTS

The Council has under taken programme on cultivation of medicinal plants in different parts of the country. The main objective of this programme is to study adaptability, growth, flowering, fruiting and also to

assess the yield at different altitudinal levels and other ecological conditions etc., besides providing quality drug material in adequate quantity for various research programme of the council. These gardens also work out suitable agrochemical technique for the successful cultivation and growth of scarcely distributed / rare/threatened medicinal plants species. The Council has five herbal gardens located at Pune (Maharashtra), Mangliawas (Rajasthan), Jhansi & Tarikhet (Uttar Pradesh) and Itanagar (Arunachal Pradesh) for small scale, experimental and large scale cultivation of some important medicinal plants of Ayurveda and Siddha.

1. Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Kothrud, Pune (M.S.)

The institute has carried out its cultivation activities and maintenance of medicinal plants demonstrative garden in about 9 acres out of a total of 19 acres land available for cultivation purpose. More than 450 species, mostly of medicinal importance and a few of economic or ornamental value are presently being grown in the garden. Out of these 47 medicinal plants species are maintained in beds of different sizes for demonstrative/ experimental/ mass cultivation purposes, about 321 plant species consisting of annuals, biennials and perennials are growing at different places in the garden. About 140 species of the entire plantation are from amongst the list of the medicinal plants included in the Ayurvedic Formulary, Part-I.

Few medicinal species were newly introduced in the garden. Some of these were procured from subtemperate region of Kumaon Himalayas and desert area, planted in pot and kept under nursery conditions.

During the reporting period, the demonstrative garden was strengthened with development of beds of 3 x 3 meters and planting therein 15 medicinal species of Ayurvedic importance in a systematic way. These species include Paranabeeja (*Kalanchoe pinnata* Pers.), *Solanum khasianum* Cl., Saireyaka (*Barleria prionitis* Linn.), Gundra (*Typha angustata* Bory & Chaub), Gunja (*Abrus precatorius* L.), Shwasaghni (*Tylophora indica* (Burm.f.) Merr.), Brahmi (*Bacopa monnieri* (L.) Pennell), Mandookparni (*Centella asiatica* (L.) Urban), Putiha (*Mentha viridis* Linn.), Nagavalli (*Piper betel* L.), Ashwagandha (*Withania somnifera* Dun.), Parnayavani (*Coleus amboinicus* Lour.), Surpin (*Artemisia nilagirica* (Clarke) Pamp.), Chitraka (*Plumbago zeylanica* L.) and *Asclepias currasavica* Linn.

Experimental cultivation of another medicinal plants, Guduchi, [*Tinospora cordifolia* (Willd.) Miers] planted in 16 plots was also undertaken during the year to study the effect of cowdung manure & Gibbrelic Acid foliar spray treatment on its yield.

Apart from the above, sixteen Kg. dried crude drugs, collected from the garden during the reporting period are stored for further supplies. Among these Aamalaki (*Phyllanthus emblica* L.), Bibhitaka [*Terminalia bellirica* (Gaertn.) Roxb.] Latakaranja [*Caesalpinia bonduc* (L.) (Roxb.), Haritaki (*Terminalia chebula* Retz.) and Madana [*Catunaregum spinosa* (Thunb.) Tiruv.] etc. are worth mentioning.

Kumari (*Aloe barbadensis* Mill.), Ushira [*Vetiveria zizanioides* (L.) Nash]. Japa (*Hibiscus rosa-sinensis* L.), Nurgundi (*Vitex negundo* L.), Bilwa (*Aegle marmelos*, Corr.), Amalaki (*Phyllanthus emblica* L.), etc. are also planted in the garden on comparatively larger scale and being maintained to meet the requirements of different parts as and when requisitions are received.

For development of seed bank, seeds/fruits of about twenty species of medicinal plants were collected. Furthermore, guidance and technical knowhow in respect of cultivation of medicinal plants were imparted free of cost to a number of interested individuals and institutions. Some seeds and saplings were also spared free of cost to some colleges and Institutions for developing medicinal plants gardens.

Thirty six saplings of Guggulu [*Commiphora wightii* (Am.) Bhandari] were disposed off to the academic/research Institutions for plantation purpose @ Rs.20/- per sapling as approved by the Council. A sum of Rs.720/- was earned from the sale of the Guggulu saplings.

2. Guggulu Herbal Farm, Mangliawas (Rajasthan)

The Guggulu Herbal Farm, Mangliawas is situated about 26 Km. from Ajmer. The main activities of the Herbal Farm is the conservation, cultivation and propagation of Guggulu [*Commiphora wightii* (Am.) Bhand.] on large scale and observing its growth behavior under different experimental conditions. The entire farm consists of about 140 acres of land available for cultivation purpose, but the Guggulu plantation is presently being carried out in about 40 acres of land. At present there are about 14378 Guggulu plants growing on mass experimental scale in different blocks. Besides Guggulu, other 69 medicinal plants are also growing in the farm. This year, 520 plants of Kumari (*Aloe barbadensis*) were planted in different beds. During the reporting period, 4.5 kg. Guggulu gum was supplied and 3 other raw drugs / produce of the garden were procured. Total 5 kg. gum was collected and 20 rooted cuttings were sold and Rs 400/- was earned.

3. Regional Research Centre, Itanagar

The medicinal plant garden at the centre occupies about 17 acres of land consisting of steep slopes and ditches. About 10.5 acres of land is presently devoted to cultivation of medicinal plants. A total 181 species of plants of Ayurvedic importance are growing in the garden. The entire plantation also represents 77 species of medicinal plants mentioned in Ayurvedic Formulary, Part-1.

During the current year plants of 14 species were planted in the garden. 16 kg. of raw drugs for the uses in the O.P.D. of the Institute and other organizations were procured. Seeds of 8 species of medicinal plants were supplied to NBPGR, New Delhi under the National Plant Germplasm Collection Programme.

To develop general awareness amongst the local inhabitants, students and visitors the demonstrations related to medicinal plants and their uses of were made. Experimental studies using different fertilizers /phyto-hormones have been taken up. A number of visitors and students from colleges visited the Garden.

4. Regional Research Institute, Jhansi

The Regional Research Institute, Jhansi has undertaken cultivation of important Ayurvedic medicinal plants both on experimental, mass scale as well as for demonstrative purposes. Presently the cultivation of medicinal plants programme is confined to about 15 acres of land, out of a total 42 acres available with the institute. The garden has about 200 medicinal plants. The entire plantation include about 50 medicinal species mentioned in Ayurvedic Formulary, Part-I.

The mass cultivation under research programme has been carried out and plants like Guggulu, Sarpagandha, Ghrit Kumari, Kalmegh, Vasa, Shalparni etc. have successfully grown and are surviving . Apart from these some other plants like Arkapatri, Anantmul, Aparajita, Ashwagandha, Arni were introduced. Beds have been prepared for some single species of medicinal plants of Bundelkhand region as well as higher altitude for the cultivation programme, plants such as Chitrak, Tulsi and Tulsi-Bhed, Swet Gunja, Khas, Buch, Tejpatra, Chopchini, Jyotismati, Brahmi, Priyangu, etc.

Some creepers and climbers of important plants like *Argyria* species, Trivit, Prasarini, Patha, Guduchi, Bimbi, etc. were grown successfully

About 90 Kg. of dried and fresh material in the form of different parts of the plants, i.e. seed, flower fruit, stem, bark and whole plants have been collected as an output (yield) of garden which were supplied to the drug depot of the Centre for onwards supply.

5. Regional Research Institute (Ay.), Tarikhet (U.P.)

The Institute's herbal garden at Ranikhet is located on a hillock 1710 meter (M.S.L.) and is bounded by pine forest on its northern and western sites. It has also another small medicinal plants garden at Chamma about 400 K.M. away from Ranikhet. At both places cultivation of medicinal plants activities have been under taken with the main objectives to study the possibilities of cultivation of important medicinal plants drawn from wild sources as well as belonging to different climatic/geographical altitudinal conditions, by studying their adaptability and growth behaviour etc. in the climatic condition of Ranikhet and Chamma. At Ranikhet the cultivation project is confined to about 2.3 acres of the land out of a total 7.5 acres available for the purpose. It has about 150 medicinal plants species mostly of Ayurvedic importance cultivated mostly for demonstrative purposes besides other plants are taken up for experimental trial for their acclimatization and adaptability.

This year 25 germplasms were collected for Institute's use and some of them shared with NBPGR, New Delhi under National Programme of Germplasm Collection.

Total 27 new plant species introduced in the garden. 53 species are being maintained and 11 new plants have been introduced this year at "Ban Aushadi Batika, Chamma". 30 live plants were sent to Head Quarters for presenting them at "Mystique India" Exhibition-1999 at Pragati Maidan, New Delhi.

Experimental Cultivation of Saffron

In order to explore the possibilities of Saffron (*Crocus sativus* Linn.) cultivation in UP hills, CCRAS started experimental trial on propagation, multiplication and cultivation of Saffron at the garden of its research station. The Indian Institute of Ayurveda for Drug Research located at Ranikhet, has undertaken programme on about 1.5 acres of the land out of 2.5 acres of the land available for cultivation. The efforts made during the three decades have produced encouraging results suggesting that it can be successfully cultivated in the hilly region of Kumaon and Garhwal having soil and climatic conditions similar to that of Ranikhet.

There are 2.5 lakh corms of Saffron of 1-3 cm diameter have been reported. Reasonable blooming was observed with 2310 flowers and 72 gm stigma and style were collected during the reporting period.

5. MUSK DEER BREEDING PROGRAMME

The musk deer breeding farm in an area of 2 acres of land, was established at Mehroori, district- Almora at an altitude of 2250 meters. Climatically the area is alpine / sub-alpine, moderately humid and

covered with evergreen forest comprising of Oaks, Rhododendrons, Utilis and under cover of various shrubs and herbs. At present there are in all 17 animals being maintained in the farm.

During the period under report observations and data on seventeen animals pertaining to different life style, growth / development, food habit, behaviour, reproduction etc. were recorded. Scarcity of fodder plants in the area has been felt. Eight females were copulated with 3 males. Total 3 fawns were born on 25-6-99 , on 06-08-99 & on 10-7-99 and died due to infection or pneumonia and 1 female deer gave birth to a dead fawn. During winter breeding of 5 females was done. The animals were examined by a team of veterinary doctors from Mukteshwar and Berinag and suitable treatment has been given. To meet out the problem of inbreeding in the farm and improve growth of the musk deer an exchange of animals with State Government farm at Kachula Kharak has been proposed / finalized.

Chemical studies of Musk were carried out with the help of C.S.M.D.R.I.A., Chennai.

6. PHARMACOGNOSY RESEARCH STUDIES

The Pharmacognostical investigations play an important role in the Drug Research Programmes. The objects of the pharmacognostic study is to evolve standards for single drugs so that genuine and authentic drug material can be made available for research and pharmaceutical industry. Study in

these areas cover elaboration of details in respect of their origin, botanical identification and correct determination of Ayurvedic nomenclature including synonyms together with properties, botanical description and key characters. The study includes the detailed structural examination of the plant together with changes in the content of the active principles depending on ecological variations. This comprehensive task includes study of different criteria viz. morphology of crude drugs including the sensory characters, cell and tissue structures, cell contents both qualitative and quantitative, preliminary phytochemical analysis, chromatographic studies, identification of the chemical constituents like alkaloids, steroids, terpenoids, phenols, tannins, saponins, flavonoids and proteins etc., fluorescence behaviour of the drug materials, physical constant values including ash and extractive values, dry matter and moisture content, pH, specific gravity, swelling factors, estimation of sugar, nitrogen, protein, fats and oils, etc. The analysis of powdered drugs which is of immense value to check adulterations, is yet another significant feature of this study.

The Pharmacognostical Research Units of CCRAS have taken up the pharmacognostical investigations on the followings drugs widely used in Ayurveda.

1. Ankol [*Alangium salvifolium* (Linn. f.) Wang.]: Leaf
2. Asmantaka (*Ficus rumphii* Blume) : Stem Bark
3. Kajuput [*Melaleuca leucadendron* (Linn.) R.Br. ex DC.] : Leaf & Seed
4. Matsyakshi [*Alternanthera sessilis* (L.) R.Br. ex DC.]: Whole plant
5. Paranka (*Garuga pinnata* Roxb.): Stem Bark
6. Riddhi (*Habenaria intermedia* D. Don) : Root tuber
7. Rudraksha [*Elaeocarpus sphaericus* (Gaertn.) Schurn.]: Fruit

Units of the Council located at Calcutta, Delhi (Head Quarter), Chennai and Pune have also laid down pharmacopoeial standards for about 30 single drugs under Central Scheme for Evolving Pharmacopoeial Standard of ISM drugs allotted by Department of ISM&H, Ministry of health & Family Welfare, Govt. of India.

7. PLANT TISSUE CULTURE

Aim of the Plant Tissue Culture studies are to propagate, multiply and conserve rare/ vulnerable/ endangered and important Ayurvedic medicinal plant. The Plant Tissue Culture Laboratory at JNAMPG&H, Pune, continued experiments on *in vitro* propagation, rapid multiplication,

seed germination and chemical studies like TLC studies on the following six drugs:

1. Shalparni (*Desmodium gangeticum* DC.)
2. Banafsha (*Viola serpens* Wall.)
3. Prasarini (*Paederia foetida* L.)
4. Brahmi [*Bacopa monnieri* (L.) Pennell]
5. Guggulu [*Commiphora wightii* (Arn.) Bhandari]
6. Sariva (*Hemidesmus indicus* R. Br.)

Guggulu and Sariva are reported to be threatened plants in some parts of India, where as Brahmi is being over-exploited by pharmaceutical companies and its annual requirements is reported to be 0.1 million quintal per year.

1. Shalparni (*Desmodium gangeticum* DC.)

Nodal explants from seedlings and mature plants were taken for *in vitro* regeneration. After inoculation on MS medium supplemented with Kn & BAP, singly or in varying concentrations (0.5-2.5 mg/l) showed single shoot & callus development. Explants inoculated on MS medium supplemented with Kn, BAP, IAA & NAA in different combinations showed positive response for growth of callus and shoots. On MS medium supplemented with BAP & IAA (2.5 mg/l each) callus as well as multiple shoots were developed. Development of callus, single shoot and rooting was observed from nodal explant inoculated on MS medium supplemented with Kn & IAA (2.5 mg/l), but percentage of root formation was low. The shoots when transferred on MS + 2 mg/l IBA developed roots. In another experiment cotyledon, hypocotyle and roots were also inoculated on MS + 2,4-D (1.5 mg/l). After eleven days callusing was observed.

2) Guggulu [*Commiphora wightii* (Arn.) Bhandari]

The following experiments were conducted on Guggulu:

- i) Seed Germination : Seeds collected in different months and at different stages of growth were treated with 500 ppm Gibberlic acid for 24 hrs. and incubated at 30°C

temp. and 100% humidity. No response was observed. ii) Spines and axillary bud culture: Nodal sectors and spines collected in different months, of different stage were inoculated on MS medium supplemented with Kn & 2,4-D (2.5 mg/l each); leaching of phenolics was observed. Experiments conducted by using MS + BAP (18 mg/l) medium; callus was developed after 30 days and after subculturing on the same medium, it showed increase in size in next 20 days.

3. Banafsha (*Viola serpens* Wall.)

Following experiments were carried out on Banafsha:

i) Petiole Culture : Trial were made for *in vitro* propagation by using petioles as explant and MS medium supplemented with Kn, BAP, IAA, NAA, singly and in combinations (0.5-5.0 mg/l) without any positive result. ii) Callus Culture: Petiole callus developed on MS + 2,4-D (1.5mg/l) was subcultured on MS medium supplemented with growth regulators in various combination and concentration. Fibrous rooting was developed in all the combinations, but the fibrous roots and multiple shoot initiation was observed on MS + BAP (2.5 mg/l). iii) Thin Layer Chromatography : T.L.C. studies of methanol extract of petiole callus and natural leaf were carried out to compare their chemical constituents. The callus showed seven and the natural leaf showed five spots respectively with different Rf values.

4. Prasarini (*Paederia foetida* L.)

Effect of GA₃, 2,4 - D on callus, phytochemical investigations and TLC studies were carried out during reporting year. In case of callus culture, 2,4 D showed positive response on growth of callus. Phytochemical investigations confirmed the presence of glycosides and sugars. The comparative TLC of leaf and callus (on pet.-ether extract) developed 5 identical spots on both the plates after subjecting to Iodine fumes.

5. Brahmi [*Bacopa monnieri* (L.) Pennell]

Complete protocol for *in vitro* propagation of Brahmi was developed and reported in the earlier years. During the reporting period 115.5 gms callus was collected for phytochemical investigations and trials for root culture were made.

6. Sariva (*Hemidesmus indicus* R.Br.)

Following experiments were conducted on Sariva:

i) Rooting : Trial for rooting was made on half strength of MS medium supplemented with IBA (1 mg/l); positive response was observed and roots were developed after 14 days

ii) Root callus culture : Roots obtained from above experiments were inoculated on MS supplemented with 2mg/l BAP & MS supplemented with 1 mg/l, 2,4-D. Green callus was developed.

iii) Leaf callus culture : Leaf explants obtained from nodal sector culture were inoculated on MS medium supplemented with 2.5 mg/l BAP & 2.5 mg/l IAA. The callus was obtained and through continuous subculturing on the same medium it was collected for further experiments.

8. CHEMICAL RESEARCH PROGRAMME

A number of bioactive constituents used in modern medicine are derived from the herbal kingdom and many of them are still being used in Ayurveda. Phytochemical studies including isolation and characterisation of chemical constituents

play an important role in the development of new drugs. The Chemical Research Units located at Kolkata, Chennai, Delhi & Trivandrum have isolated different active principles from 13 medicinal plants to carry out further studies. A brief resume of the work carried out during the reporting year is as under.

1. Aralu (*Ailanthus malabarica* DC.)

ChRUT

Stem bark was extracted with petroleum - ether, acetone and ethyl acetate in succession. The former was concentrated and a yellow solid was obtained. T.L.C. studies showed that it was a mixture of two steroidal compounds. By chemical and chromatographic studies they were identified as α - amyirin and β - sitosterol. Studies on other extracts are in progress.

2. Arhar (*Cajanus cajan* Linn.)

ChRUK

The roots of the plant were extracted with ethyl acetate and concentrated. This extract on chromatography, afforded three compounds melting at 284-85°C, 247-48°C & 270°C respectively. Further study is in progress.

3. Chirata (*Swertia chirata* Wall)

ChRUK

This plant is one of the 4 plant materials of the well-known coded drug, Ayush-64. Eleven compounds, designated as SC-1 to SC-11 have been isolated from the hexane extract of the plant. SC-2 was found to be a new xanthone (Fig. 1)

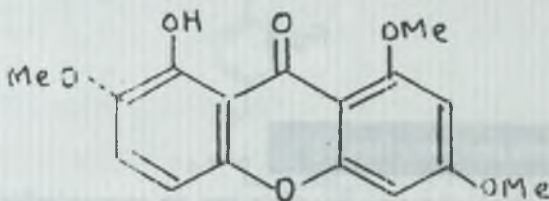


Fig. 1

The tentative structure for SC-4 is given below (Fig. 2). Further studies are in progress.

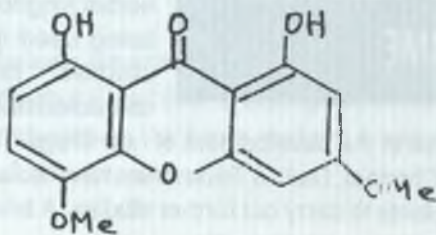


Fig. 2

The three xanthone derivatives viz. SC-1 to SC-3 exhibited pronounced anti-inflammatory activity against various inflammogens representing acute, sub-acute and chronic models of inflammation. The most active compound being 1,5, 8-trihydroxy-3-methoxyxanthone (SC-2). Activity of the compound is comparable to that of standard anti-inflammatory drugs viz. Phenyl-butazone and betamethasone.

4. *Cipadessa fruticosa* Bl.

ChRUK

The ethereal fractions of the ethanol extracts of fruits and seeds were used. The tentative structure of a compound designated as 'CF₃', m.p.130°C (Fig.3) was concluded on the basis of different spectral data & physical constants. Confirmation of the above structure is in progress.

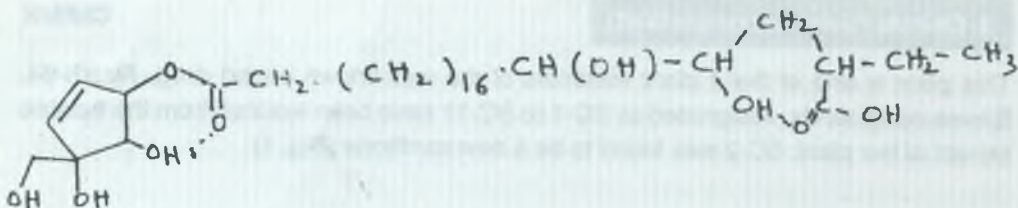


Fig. 3

5. Karchur (*Curcuma zedoaria* Rosc.)

ChRUT

The petroleum-ether extract of the air dried rhizome on concentration yielded a yellow crystalline solid. It was identified as curcumin by chemical and chromatographic studies. Volatile oil was also extracted from the rhizomes.

6. Krishnajiraka (*Nigella sativa* Linn.)

ChRUK

The crude methanol extract of *Nigella sativa* was evaporated to remove most of the methanol and then partitioned between ethyl acetate and water. The aqueous extract

after various physico-chemical processes afforded a neurotransmitter, Acetyl choline (Fig. 4) based on various spectral data.

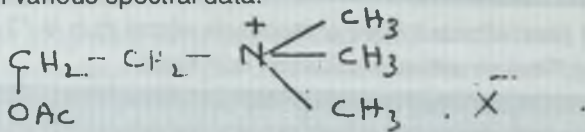


Fig. 4

7. Lavanga [*Syzygium aromaticum* (L.) Merr. & Per.]

ChRUK

Chloroform extract of the dried flower buds after a repeated column chromatography over silica gel afforded a triterpenoid, m.p. 225°C (d) which was identified as 2 α -hydroxyoleanolic acid (Fig. 5) on the basis of various spectra.

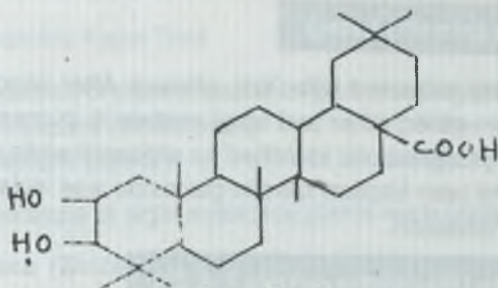


Fig. 5

8. Parijata (*Nyctanthes arbor-tristis* Linn.)

ChRUK

Two isomeric iridoid glycosides (I & II) were isolated from the seeds besides Arbortristoside A. I is the known iridoid, 7-O—trans-p-hydroxycinnamoyl-6 β -hydroxyloganin while II is the corresponding new isomeric constituent, 6-O-trans-p-hydroxy cinnamoyl-6 β -hydroxyloganin (Fig. 6). Various physico-chemical techniques were used for the structure determination.

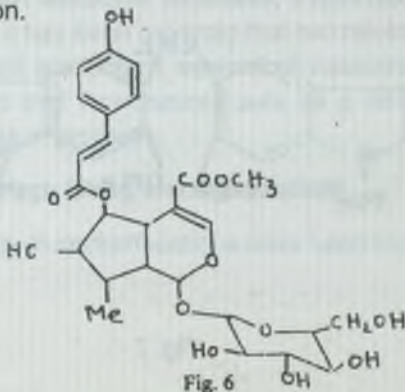


Fig. 6

9. Pitabala (*Sida rhombifolia* Linn.)

ChRUK

Petrol extract of the plant afforded three compounds whose m.p. is 73-75°C, 98-100°C & 65°C respectively. Final structural elucidation is in hand.

10. *Pseudelephantopus spicatus* Juss. syn. *Elephantopus spicatus* Juss.

ChRUK

Finely crushed whole plant was percolated with ethanol. The concentrated ethanol extract was then fractionated with petroleum - ether (60-80°), methylene chloride, ethyl acetate and methanol. From the methanol fraction, three compounds having m.p. 75-80°, 198-200° & 179-80°C while methylene chloride fraction yielded the compounds whose m.p. are 73-74°, 74-76° & 79-81°C. Characterisation of all the compounds with the aid of modern spectroscopic tools is underway.

11. Saireyaka (*Barleria prionitis* Linn.)

ChRUT

The roots of the drug were extracted with 90% ethanol. After concentration, it was fractionated with petroleum-ether, ether and ethyl acetate in succession. The former fraction yielded a white crystalline solid identified as sitosterol while the ether fraction furnished luteolin. From the later fraction luteolin glucoside was isolated. UV and TLC studies were used for identification.

12. Sarpagandha Bheda (*Rauwolfia reflexa* T. & B.)

ChRUK

From the ethanol extract of the leaves, a new alkaloid designated as 'Raureflexine', m.p. 217-18°C (Fig. 7) was isolated. The structure elucidation was carried out with ¹H-NMR and ¹³C-NMR (including coupled and APT spectra) data. A known dimeric indole, Flexicorine was also detected.

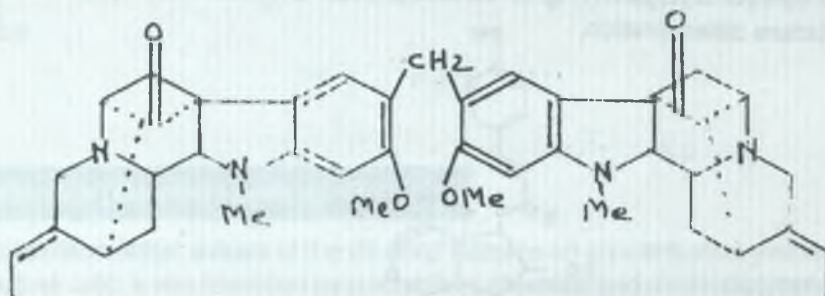


Fig. 7

13. *Strobilanthes heyneanus* Nees.

ChRUT

The roots of the drug were extracted with aq. ethyl alcohol and it was concentrated. Further, it was fractionated with petroleum-ether, ether and ethyl acetate. The former fraction yielded sitosterol while the ether fraction furnished a pale yellow solid which was found to be a mixture of two flavanoides. On characterisation, these two were identified as apigenin and luteolin.

14. Miscellaneous work

ChRUT

- (i) Qty. of Nimbathiktham isolated - 4.850 Kg.
- (ii) Qty. of Psoralin oil isolated - 5.2 L.
- (ii) Qty. of Viswamitra Kapal Taila - 12.5 L.
- (iv) Ethanol extraction of plant material for pharmacological studies
 - Achyranthes aspera (whole plant) - 1.5 Kg
 - Apium graveolens (seeds) - 2 Kg.
- (v) Chemical literature of eight medicinal plants were compiled.

ChRUK

(i) **Shobhanjana (*Moringa oleifera* Lam.)** : The concentrated ethanolic extract alongwith its fractionated parts viz. petroleum-ether, methylene chloride and ethyl acetate were sent to the Pharmacological Research Unit to assess their activity.

(ii) **Jamki Bel [*Cocculus hirsutus* (L.) Diels]** : Alcoholic extract of this plant has been prepared and sent to the Pharmacological Section for assessment of its activity. TLC studies have also been carried out.

(iii) **Work on a Potent Neurotransmitter Drug** : The leaves of *Premna integrifolia* and *Gmelina arborea* yielded an isoxazole derivative, Premnazole which showed anti-inflammatory activity. Now, it has been reported that two neutral 3-hydroxy isoxazoles, ibotenic acid and muscinol are potent against of neurotransmitters. Preliminary investigation has revealed that Premnazole acts as a neurotransmitter. Detailed Pharmacological studies are in progress.

(iv) T.L.C. profile of the Drugs (Drug standardization)

T.L.C. profile of the following drugs/formulations have been studied.

1. Aswagandha & Motha
2. Nimbadi churna
3. Zirakadi Modai

(i) Pashanabhed (*Bergenia ligulata* Wall & *B. ciliata* Sternb.)

Benzene and ethanol extracts of the above mentioned both drugs were prepared. Further work is in progress.

(ii) Virataru (*Dichrostachys cineria*)

Repeated column chromatography of the benzene extract yielded three compounds giving positive L.B.test. Further identification of these compounds is in progress.

(iii) Musali (*Chlorophytum tuberosum*)

Phytochemical screening and standardization of the different samples is in progress.

(iv) Raktachandan (*Pterocarpus santalinus*)

Benzene and ethanolic extracts of the powdered wood were prepared

CSMDRIAC

(i) HPTLC comparison of Chinni (*Acalypha fruticosa*), Karutan Kilanku (*Corallocarpus epigaeus*) and Ciruceruppattai (*Glinus lotoides*) and Sitopaladi Churna were carried out.

(ii) Literature survey of the Shami (*Prosopis spicigera* L.), Kodrava (*Paspalum scrobiculatum* L.), Asvakarna (*Dipterocarpus alatus* Roxb.) and Tugaraka (*Hydnocarpus wightiana* Blume) were also carried out.

9. PHARMACOLOGICAL RESEARCH PROGRAMME

Pharmacological and Toxicological studies constitute a very vital part in Drug Research Programme. These studies are based on experimental models carried out in different species of animals. The results obtained

provide vital information for pursuing clinical studies. The studies are presently being carried out by various Pharmacological and Toxicological Research Units located at Kolkata, Cheruthuruthy, Jhansi, Mumbai & Trivandrum. During the reporting period 10 single drugs, coded drugs and compound formulations have been investigated and a brief resume of these studies is as under.

1. Anti-Stress Drug (coded)

PhRUK

The anti-stress drug shows significant potentiation of swim stress and inhibition of gastric ulcer in comparison to control group. Significant potentiation of pentobarbitone hypnosis observed. No mortality upto 3 mg/kg orally was noted.

2. Jambira [*Citrus limon* (Linn.) Burm. f.]

PhRUT

Aqueous extract of the rind of *Citrus limon* was screened for CNS and CVS activities in rats and dogs. But the drug exhibited no significant effect.

3. Jamti Ki Bel; Chilahinta [*Cocculus hirsutus* (Linn.) Diels]

PhRUK

The root extracts of the drug were used for pharmacological screening. However, no significant effect on sleeping time and anti-inflammatory activity was observed in comparison to control group.

4. Jeerkadi Modak

PhRUK

The drug, Jeerkadi Modak showed significant anti-inflammatory activity against carragenin induced oedema. No potentiation of pentobarbitone sodium hypnosis was observed. Further, no analgesic activity was observed with Tail immersion method in albino mice.

5. Neem Oil

CRIM

Sub-acute toxicity study of Neem oil was observed by administering 0.4 gm/kg doses orally. The parameters studied include-general behaviour and mortality, body weight, water and food intake, urine analysis and organ weight etc. The study is in progress.

The toxicity studies on Neem oil were undertaken in experimental animals and microbes. The drug in doses of 0.02, 0.06 and 0.2 ml/kg was administered to rats daily orally for 15 days but did not have any untoward effect on their general behaviour and physiological activities. Their haematological and biochemical parameters were not significantly altered. There were no gross changes in the vital viscera of rats. Further, histopathological findings did not reveal any changes in the histology of these organs.

Acute toxicity studies conducted on rabbits showed that the drug was safe upto 0.6 ml/kg orally. No alternation in gross behaviour was noted. The haematological, biochemical and histopathological investigations during sub-acute toxicity studies in rabbits after 15 days post treatment remained within normal range and without any significant change. The body weight also remained unchanged. No mortality took place either in rats or rabbits treated with the drug during and in post treatment period. Food and water intake were found to be normal.

The drug did not exhibit any anti-bacterial and antifungal activity during *in vitro* studies. Thus, the drug may not disturb the gastro-intestinal track and hence, may be used safely for human beings.

6. Nimbadi Churna

PhRUK

The drug did not exhibit any significant anti-inflammatory effect with carragenin induced hind paw oedema. No effect in sleeping time and analgesic activity was observed in albino rats and mice

7. Pippalyadi Yoga

CRIM

The drug was administered orally to rats in doses of 0.4 gm/kg, 0.8 gm/kg. and 1.6 gm/kg for 13 weeks on 6 days a week basis. No toxicity or untoward effect of the drug was observed during the period of treatment. All the animals were alive and in good condition during the period of treatment and no toxic manifestation observed.

8. Talisa (*Abies webbiana* Lind.)

CRICH

Aqueous and ethanol extracts were prepared as per conventional methods and used for this study. During acute toxicity and gross behavioural study, no mortality or gross behaviour changes were observed. No potentiation of pentobarbitone hypnosis was observed. Hence, sedative effect may not be present in the decoction. No analgesic

effect seen with the aqueous extract. This extract failed to exhibit any significant anti-inflammatory activity

9. Vidanga (*Embelia ribes* Burm.f.)

CRICH

Ethanol and aqueous extracts of the drug were prepared by conventional methods. During the gross behavioural studies both extracts upto 10 g/kg did not show any toxicity in mice. Both extracts 1g/kg (*p.o.*) failed to show antipsychotic activity in mice. No significant CNS sedative effect was noted with both the extracts. The drug failed to exhibit any significant anti-inflammatory activity.

10. Vishnugandhi (*Evolvulus alsinoides* Linn.)

PhRUT

The methanol extract of the whole plant showed positive inotropic effect on frog's heart and sedative effect in mice with 560 mg/kg dose during CVS and CNS studies respectively.

10. DRUG STANDARDISATION RESEARCH PROGRAMME

Standardization of raw drugs, manufacturing processes and finished products play an important role in the Research programme efficacy of Ayurveda & Siddha drugs/formulations.

Standardization of compound formulations comprising of multi herbal drugs/herbomineral components and various classes of drugs/formulations like Bhasma, Asava & Arista and Rasa yogas etc. is very difficult tasks. The Council has taken up the task of lying down standardization of single drugs as well as compound formulations and the method of preparation through its Drug Standardization Units located at Chennai, Bangalore, Trivandrum, Tarikhet, Varanasi and Jamnagar. Efforts are also being made to undertake studies on safety of herbal drugs and their compound formulations as per WHO guidelines. For the purpose some of the important parameters incorporated in the formats are TLC profile, HPLC finger printing, determination of microbial load and heavy metal contents. The above testing have already being initiated at CSMDRI, Chennai.

The Department of ISM&H, Ministry of Health & Family Welfare, Govt. of India, has also sanctioned five research projects under Central Scheme for Evolving Pharmacopoeial Standards of ISM drugs to Council's, Pharmacognosy and Drug Standardization Units located at Chennai, Delhi, Pune, Calcutta and Varanasi. In all 30 single drugs/ compound formulations have been standardized as per format of the Ayurvedic Pharmacopoeia by the above units of the Council.

Details of work done during the year 1999-2000 is as follow :

Standardisation of Single Drugs :

Draksha	- <i>Vitis vinifera</i> Linn. (Dry fruits)	DSRU, Bangalore
Dhataki	- <i>Woodfordia fruticosa</i> Kurz (Flowers)	-do-
Kal ambaka	- <i>Coscinium fenestratum</i> (Gaertn.) (wood)	-do-
Takkola	- <i>Vitex altissima</i> (fruit)	-do-
Arjuna	- <i>Terminalia arjuna</i> W. & A. (Bark)	-do-
Agaru	- <i>Aquilaria agallocha</i> Roxb. (Wood)	-do-
Kusumba	- <i>Carthamus tinctorius</i> L. (seed)	CSMDRIA, Chennai
Asvakarna	- <i>Dipterocarpus alatus</i> Roxb.	-do-
Canak	- <i>Cicer arietinum</i> Linn. (Whole plant)	-do-
Jala pippali	- <i>Lippia nodifolia</i> Mich. (Whole plant)	-do-
Sweta Punarnava	- <i>Boerhavia verticillata</i> Poir (Roots)	DSRP, Varanasi
Odimaram	- <i>Odina woodier</i> Roxb. (Stem Bark)	-do-
Puliyaral	- <i>Oxalis corniculata</i> Linn. (Whole plant)	-do-
Mulam	- <i>Citrullus vulgaris</i> Schrad. (Seeds)	-do-
Elavoo	- <i>Bombax pentadrum</i> (Leaves & Flowers)	-do-
Uppiloonkondi	- <i>Pentropis microphylla</i> W. & A. (Whole plant)	-do-
Manalkeeraj	- <i>Gisekia pharnoceoides</i> Linn. (Whole Plant)	-do-
Nilavangi	- <i>Cassia tora</i> Linn. (leaves)	-do-
Nilvanagi	- <i>Cassia auriculata</i> Linn. (Leaves)	-do-
Pontagarai	- <i>Cassia occidentalis</i> Linn. (Leaves)	-do-
Illavoo	- <i>Eriodendron enfractuosum</i> DC. (Stem Bark)	RRI, Trivandrum
Krishna Beeja Bheda-	<i>Ipomoea henderacea</i> Jacq. (seeds)	-do-
Kakanasa	- <i>Pentatropis carpensis</i> (L.f) Bullock (Aerial Part)	-do-
Kadali	- <i>Musa paradisiaca</i> Linn. (Rhizomes)	-do-
Madayantika	- <i>Lawsomia inernis</i> Linn. (Leaves)	-do-

Standardisation of Formulations

Bhasma - Parpam

Nandukkal Parpam	DSRU, Bangalore
Kalnar Parpam	-do-
Annabedi Parpam	-do-
Apperaka Parpam	-do-
Padikara Parpam	-do-
Thaka Parpam	R.R.I., Trivandrum
Kharadanta Bhasma	DSRU, Bangalore

Taila

<i>Chukku Thailam</i>	R.R.I., Trivandrum
<i>Karappan Thailaro</i>	-do-
<i>Puga Tbailam</i>	-do-
<i>Valakesari Thailam</i>	-do-
<i>Wirana Sanjeevi Thailam</i>	-do-
<i>Mayana Thailam</i>	-do-
<i>Arakku Thailam</i>	-do-
<i>Ullunthu Thailam</i>	-do-

Other Formulations

<i>Purna chandrodayam</i>	R.R.I., Trivandrum
<i>Anandha bhairvam</i>	-do-
<i>Ashta bhairavam</i>	-do-
<i>Sulai kudaram</i>	-do-
<i>Paccha karpooora mathirai</i>	-do-
<i>Kungumppo mathirai</i>	-do-
<i>Visha Kuzhambli</i>	-do-
<i>Omatheeneer</i>	-do-
<i>Pirami Ney</i>	-do-
<i>Idivallathi</i>	-do-
<i>Nandi mezhugu</i>	-do-
<i>Triphala guggulu</i>	CSMDRIA, Chennai
<i>Panchakola curna</i>	-do-
<i>Ajamodarka</i>	DSRP, Varanasi
<i>Jatamansyarka</i>	-do-
<i>Satapuspaka</i>	-do-

Asava/Arista

<i>Arjunarista</i>	D.S.R.U, Bangalore
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Pharmacognostical studies

(Siddha Drugs) :

<i>Kattkattan</i>	- Ipomoea hederacea Jacq. (seeds)	R.R.I., Trivandrum
<i>Tuduvalai</i>	- Solanum trilobatum Linn. (Stem, petiole, leaves)	- do -

<i>Puliyaral</i>	-	<i>Oxalis corniculata</i> Linn. (Leaves)	- do -
<i>Adadodai</i>	-	<i>Adhatoda vasica</i> Nees (Leaves)	- do -
<i>Odimaram</i>	-	<i>Odina woodier</i> Roxb. (Stam Bark)	D.S.R.U., Bangalore
<i>Manalkeeraj</i>	-	<i>Giesekia pharnacodies</i> Linn. (Root, Stem, leaf, Seed)	- do -
<i>Illavoo</i>	-	<i>Eriodendron enfractuosum</i> DC. (Leaf, flowers)	- do -
<i>Uppilankondi</i>	-	<i>Pentatropis carpensis</i> (Root, Stem)	- do -
<i>Aya</i>	-	<i>Holoptelea integrifolia</i> Planch. (Stem Bark)	- do -
<i>Perungoli</i>	-	<i>Salvadora persica</i> Linn. (Leaf)	- do -

Ayurvedic Drugs

Van-Haridra	-	<i>Curcuma aromatica</i> Salisb. (Rhizome)	D.S.R.U., Bangalore
Anisphal	-	<i>Illicium verum</i> Hook f. (Fruits)	- do -
Trapusha	-	<i>Cucumis sativus</i> Linn. (Fruits)	- do -
Draksha	-	<i>Vitis vinifera</i> Linn. (Dry fruits)	- do -
Changeri	-	<i>Oxalis corniculata</i> Linn.	- do -

TLC/HPTLC STUDIES

Single Drugs :

Keshar	-	<i>Crocus sativus</i> Linn	C.S.M.D.R.I.A, Chennai
Kusumba	-	<i>Carthamus tinctorius</i> Linn.	D.S.R.U., Bangalore
Kodrav	-	<i>Paspalum scrobiculatum</i> Linn	- do -
Chakramarda	-	<i>Cassia tora</i> Linn.	- do -
Kasamarda	-	<i>Cassia occidentalis</i> Linn.	- do -
Manalkeerj	-	<i>Gisekia pharnaceoides</i> Linn	- do -
Indravaruni Bhed	-	<i>Citrullus lanatus</i> (Thumb.) Mats & Nakai	- do -
Changeri	-	<i>Oxalis corniculata</i> Linn.	- do -
Odimaran	-	<i>Odina woodier</i> Roxb.	- do -
Chinnivar	-	<i>Acalypha fruticosa</i> Linn.	- do -
Patal-garuri	-	<i>Corallocarpus epigaeus</i> (Rottlex Wild)	- do -
		Benth ex. H.K.f.	
Gandhibuti	-	<i>Glinus lotoides</i> Linn.	- do -
Kasturi (Musk)	-		C.S.M.D.R.I.A., Chennai

Compound Formulations

777 Oil C.S.M.D.R.I.A., Chennai

Sitopaladi Curna - do -

Market Samples studied

Pusparaja D.S.R.U., Varanasi

Rajavartta - do -

Vimala - do -

Vaikranta (Ratna) - do -

Vaikranta (Dhatu) - do -

Vaidurya - do -

Silajatu - do -

Srotanjan - do -

Tamra - do -

Swarna makshika - do -

Rajat makshika - do -

Physico Chemical studies

Talisadi churna D.S.R.P., Jamnagar

Amalkyadi churna - do -

Mukta shukti - do -

Shukti - do -

Godanti - do -

Drug/Extract prepared and supplied

R.R.I. Trivandrum

Extract of *Apium graveolens* Linn. (seeds)] Sent for Pharmacological studies

Extracts of *Achyranthes aspera* Linn. (Whole Plant)]

Under RCH programme of Ministry following Drugs/Formulations studied :

Bala Rasayana DSRU, V & CSMDRI, Chennai

Bala Gutti - do -

Pippalayadi Yoga CSMDRIA, Chennai

11. LITERARY RESEARCH PROGRAMME

The Literary and Medico-Historical Research Programmes of the Council have been in operation at the Indian Institute of History of Medicine, Hyderabad, Literary Research Unit for Ayurveda (LRUA),

Chennai and Council's Documentation and Publication Division (DPD), New Delhi. Two of these Units namely the DPD and LRUA however were merged with Council's Hqrs. Office, New Delhi during August, 1999 as per recommendations of the Committee for Restructuring of the Institutes/Units of the Central Council for Research in Ayurveda and Siddha, New Delhi with the aim of setting-up of a Literary Research Unit at New Delhi.

Indian Institute of History of Medicine, Hyderabad :

The Institute which is only of its kind in the whole of South- East Asia carried out following research programmes during the period under report:-

- i) The Institute has been collecting Medico-historical manuscripts on ISM and is now in possession of some of the antique and rare manuscripts on Indian Medicine. Under its programme of survey and collection of manuscripts on ISM of archival value, the Institute during the reporting period collected some 24 old and rare works on Indian medicine.
- ii) In regard to programme for Translation and Publication of unpublished medical manuscripts, the Institute finalized the translation of "*Rasapradipika*" in Sanskrit/Hindi from Telugu version.

Another translation relating to 12th chapter of "*Uyoonul Anba*", an Arabic Book of 13th century A.D. has also been completed.

- iii) As far as preparation of biographies of Ayurvedic and Unani Physicians/Authors and Commentators is concerned, the Institute compiled medico-historical materials on Indu, a renowned commentator of Vagabhatta and also an Abdul Latif Bagdadi, a commentator of several Unani classics.
- iv) Apart from classics on Indian medicine, the source materials on allied science also form the basis of medico-historical investigations. Arthashastra of Kautilya has been taken up during the period under report for publishing research material relating to "Medical evidences in Kautilya's Arthashastra".
- v) Study of historical development of ISM and evolution of concepts of diseases, therapeutics and materia medica also forms one of the allotted literary research programmes of the Institute. Research information from medico-historical angle

has been compiled on the drug "Lakshmana" besides initiating work on "Panduroga" disease.

A plan project relating to revision and enlargement of checklist of medical manuscripts in India taken up earlier is nearing completion with the intensive efforts put-in during the period under report.

Publication :

During the reporting period 16 articles (8 articles in issue No. 2, Vol. 28, 1998 and 8 articles in issue No. 1 of Vol. 29, 1999) of medico-historical importance have been edited and published in the Institute's bulletin entitled "Bulletin of the Indian Institute of History of Medicine".

Library and Referral Services

As many as 169 new books besides 24 rare books relating to Institute's medico-historical research programmes were acquired by the Library. As many as 127 new research scholars were enrolled for Library, Information and referral services.

Exhibition :

The Institute organized an exhibition during Vth International Convention of Islamic Medicine of Jubilee Hall, Public Garden, Hyderabad during January, 13-17, 2000.

DOCUMENTATION AND PUBLICATION DIVISION, NEW DELHI

The division which was functioning as decentralized Unit upto 31st August, 1999 came to be amalgamated with the Council's Hqrs. Office w.e.f. 1st September, 1999. Books on Ayurveda, Siddha & Allied science were acquired by the Library. At the instance of the Deptt. of ISM&H, Govt. of India, New Delhi, Sh. R.S. Yadav, Asstt. Director (Doc.) prepared an action plan for organizing the Library of the Deptt. of ISM&H, located at Red Cross Bhawan, New Delhi.

The Publication Wing brought out journals, monographs and classical texts as per details hereunder :

1. Ayurvedic Drugs in the management of Cancer.
2. Ayurvedic management of Arsa (Haemorrhoids).
3. Ayurvedic management of Unmada (Schizophrenia).
4. Management of Khanja & Pangu.
5. Dhanvantari Saranidhi
6. Netra Prakashika

7. Netra Roga Nidanam
8. Nanavidh Vaidyam
9. Pathyapathya Vinishchaya
10. An appraisal of Tribal Folk medicine.
11. Cumulative Index of Journal of Research in Ayurved & Siddha (1980-1999).
12. Research in Ayurveda and Siddha - Bibliography of CCRAS Contributions (1969-1997).
13. Standard Nomenclature of Ayurvedic Medicinal plants.
14. Sadi Mittar Dungar Deeyan Jaidiyan Butiyan.
15. Medicinal plants of Nagpur & Wardha Forest Divisions (Maharashtra)
16. Cultivation of Guggulu
17. Pharmacognosy of Indigenous Drugs, Vol. I & II, 2nd Edition.

Periodicals :

- a) J.R.A.S., Vol. XIX (No. 3-4), 1998; Vol. XX (No. 1-2 & 3-4), 1999; Vol. XXI (No. 1-2), 2000.
- b) B.M.E.B.R. Vol. XIX (No. 1-2), 1998
- c) Newsletter Vol. XXII (No. 3-4, 5-6, 7-8, 9-10, 11-12) 1999.

3. LITERARY RESEARCH UNIT (AY.) CHENNAI

An inventory of 32 Manuscripts relating to Indian Medicines, as held in the Ambedkar Library, Anna Hospital Campus, Chennai was prepared during the period under report.

12. AMCHI MEDICINE RESEARCH UNIT

A unit of Amchi System of Medicine functioning under the Council at leh-Ladakh is carrying out research under three headings viz. (a) Clinical Research (b) Medicinal Plant and Mineral Research and

(c) Literary Research.

- a) **CLINICAL RESEARCH:** A preliminary study on 70 patients of hypertension have been treated with different Amchi medicines. Out of which two drugs viz. (1) Skuru Nerna and (2) Koohe 5 thang were found to be more effective. It was decided to take these drugs for regular trial.

Similarly preliminary study on indigestion was also carried out with Amchi drugs like Sedu-5 Sedu dan nas, Rusta-6 Za Shele etc. At the OPD level patients were diagnosed and treated with Amchi medicine. Out of 1455 patients which attended OPD, 1148 were new patients and 307 were old patients.

- b) **MEDICINAL PLANTS AND MINERAL RESEARCH:** Under this, Amchi medico-botanical tours were conducted along the area of Indu river to collect the details of available Amchi plants. The details of 21 available plants have been presented in a research paper "Less known Ethno Medical Plants growing along Indus river of Ladakh-Himalaya", for publication in Bulletin of Medico-Ethno Botanical Research.

- c) **LITERARY RESEARCH :** During the reporting year Amchi Research Unit conducted Literary Research and Survey Tour at Tiksay, Spituk monasteries and library of Central Institute of Buddhist Studies, Choglamsar, Leh-Ladakh. Out of the 22 different texts of medicine, found in stan-gur, 5 texts of Nagarjuna, 2 texts of Vagbhatta, 3 texts of Chandra Nanda, 2 texts of Vyadipada and 10 texts of other ten authors have been recorded. Apart from this J.C.Aschoff's annotated bibliography of Tibetan medicine is being explored on internet.

13. FAMILY WELFARE RESEARCH PROGRAMME

Till now, CCRAS was concentrating specifically on research studies related with Drug Research, Clinical Research and Literary Research.

Under MCH Programme, drugs related with Family Welfare programme were being studied clinically and pharmacologically to see their effectivity as abortifacient, anti-ovulatory, anti-implantation and estrogenic activities and also to testify them for toxicity and teratogenicity. The studies were being financed by Department of Family Welfare. Now under new programme projection the Council has taken up the Reproductive Child Health (RCH) Programme as its one of the main component. Under RCH Programme various research studies viz. (i) Garbhini Paricharya (Management of Antenatal Period), (ii) Prasava Paricharya (Management of Labour), (iii) Prasuta Paricharya (Management of Post Natal Period), (iv) Sadyojat Shishu Paricharya (Neonatal Care), (v) Balatisara (Infantile and neonatal diarrhoea), (vi) Dantodbheda (Teething problems), (vii) Daurbalya (General debility and malnutrition), (viii) Oral and local Ayurvedic Contraceptives, (ix) Phytochemical studies on Contraceptive plant drugs and (x) Toxicological, Teratogenic and Genotoxic studies on Ayurvedic contraceptive drugs have been taken up.

Clinical Studies :

I. CRIA, Delhi :

Neem Oil : Total no. of cases studied during the reporting period were 100. Out of them 54 were newly registered while 46 were carried forward from previous year. Out of these 100 cases, 19 women completed the study of 36 cycles. 27 cases discontinued from the study due to a) drug failure 1, b) drug omission 5 and c) other reasons 21.

II. CRIA, Mumbai :

Ayush AC-4: Total No. of 78 women were subjected to Ayush AC-4 clinical trial. 18 women discontinued. Among these 18 women, 12 discontinued due to conception while others discontinued due to other reasons (1 side effects, 5 other reasons).

Pippalyadi Yoga : A total no. of 35 cases were registered for the trial of Pippalyadi Yoga. All are continuing. No drug failure is reported.

Banjauri : A total No. of 207 cases were registered for clinical trial of Banjauri. Six cases conceived due to drug failure. No side effect is reported.

Chemico-Pharmaceutical studies :

Sub-acute toxicity study of Pippalyadi Yoga in rats by oral route in 3 groups was completed in this reporting period at CRIA, Mumbai. In this study, 10 male and 10 female rats in each group were administered Pippalyadi Yoga in a dose of 0.4gm./kg., 0.8gm./kg. and 1.6gm/kg. respectively for 13 weeks on 6 days a week basis. No toxicity or untoward effects of the drug was observed during the period of treatment. All the animals were alive and in good condition during the period of treatment. No toxicity was detected through the tests conducted so far.

Subacute toxicity study of Neem Oil in rats by oral route in 2 groups is being conducted at CRIA, Mumbai. 20 rats of either sex (10 males and 10 females) weighing between 80-100gms. in each group were administered with Neem oil at the dose level of 0.4 gm./kg. (1/10th of LD50 of Neem oil in rats by oral route) and 0.8gm./kg. respectively for a period of 13 weeks on 6 days a week basis. Animals were sacrificed and studies are in progress. Therefore, results can not be given during this current period of reporting.

III. CRIA, Patiala :

Ayush AC-IV : During the reporting period, the total no. of 793 volunteers were approached. Out of them 40 cases were selected for trial study of Ayush AC-IV. 17 old cases were also carried forward. 40 cases were dropped out and only 17 cases are still continuing. Details of the no. of cycles completed by these cases are mentioned below

1. 1 case completed 134 cycles
2. 1 case completed 41 cycles
3. 1 case completed 30 cycles
4. 1 case completed 23 cycles
5. 1 case completed 17 cycles
6. 1 case completed 12 cycles
7. 1 case completed 9 cycles
8. 3 cases completed 6 cycles
9. 1 case completed 5 cycles
10. 1 case completed 4 cycles

11. 1 case completed 3 cycles

12. 4 cases completed 2 cycles

Total 17 cases under Trial.

IV. CRIA, Lucknow:

In the RCH Programme, 137 cases of Balakasa, 98 cases of Balatisara and 33 cases of Bala-daurbalya were treated. The results were as under:

S.No.	Disease	Marked	Moderate	Fair	No change	Total
1.	Balakasa	13	31	42	51	137
2.	Balatisara	41	42	08	07	98
3.	Bala-daurbalya	0	11	12	10	33
Grand Total		54	84	62	68	268

V. CRIA, Kolkata :

Neem Oil : Total no. of 16 women were registered for the Clinical trial of local contraceptive 'Neem Oil'. There was no drug failure or side effect. 3 women discontinued at the level of 3rd cycle due to other reasons.

Pippalyadi Yoga : 19 cases were studied during this reporting period. 9 cases were continued. Out of which 2 cases discontinued due to drug omission and 7 cases discontinued due to other reasons.

VI. CRIA, Jaipur:

Ayush AC-4: A total no. of 49 cases were registered during the reporting period. Out of them 32 discontinued due to drug omission and 16 due to side effects upto the level of 4th cycle.

VII. Research Scheme on Screening of Contraceptive Agents (RSSCA) Unit, Post Partum Unit, New Civil Hospital, Ahmedabad:

Under Family Welfare Clinical Research Programme, the Unit was allotted to see the contraceptive effect of Pippalyadi Yoga. During this reporting period 28 new subjects were enrolled and total 78 subjects were followed up. Since inception total 758 subjects were studied and total 14789 Women Cycles were treated. Only 5 women (0.40%

HWY) reported under drug failure. No side effect, adverse effect on lactation or suppression on ovulation were found. Return of fertility after discontinuation of the drug is very immediate i.e. within 1 or 2 months.

Under RCH programme the Unit was allotted with the studies on Management of Antenatal period, Labour, Post natal period, Neo-natal care, Infantile and Neonatal diarrhoea, Teething problems; Balakasa and local and oral Ayurvedic contraceptive but due to want of protocols, proformae and trial drugs for these new studies the programme could not achieved any progress.

VIII. RSSCA, Clinical Unit, Poojapura, Trivandrum:

Ayush AC-4: During the reporting period 31 cases were selected for the study of Ayush AC-4 in which there was only 1 failure.

IX. RSSCA, Clinical Unit, Varanasi:

Clinical Protocol and Proforma for Ayurvedic Management of Prasavastha and for Clinical trial of Ayush Ghutti and Bala Rasayana were prepared. Clinical trials on Ayush Ghutti and Bala Rasayana were also started.

X. RSSCA, Jamnagar:

During the reporting year (i) studies on Eranda Mula and Kapikacchu Beeja and (ii) studies on Shatavari were conducted to see their effects on spermatogenesis and sexual activity in male rats and limited toxicity studies were also conducted.

a) Erandamula and Kapikacchu Beeja:

Study was carried out in 3 stages to evaluate the following activities:

- (i) Effects on mating behaviour in male rats
- (ii) The drug did not affect the potency of onset and duration of sexual activity significantly.
- (iii) Better body weight was gained by treated group. The drug did not affect the sperm count significantly. Significant decrease in weight of testes and ventral prostate and significant increase in the weight of liver was observed with Eranda mula, while there was increase in the weight of liver, kidney and spleen in Kapikacchu treated rats. Diffused necrotic and fatty degenerative changes were observed in Erandamula group. In Kapikacchu treated group moderate degenerative changes were observed in liver. Features of stimulation were also observed in testes of treated group.

b) Shatavari:

Moderate but statistically non-significant increase in the proportion of rapidly moving sperms and decrease in the proportion of immobile sperms were observed with Shatavari powder with the dose of 10mg./kg. b.w. while Shatavari granules produced only a marginal effect. There was increase in the rate of b.w. with both Shatavari powder and Shatavari granules. The test drug did not affect the weight of testes, seminal vesicles, heart, liver, spleen and kidney significantly. However, insignificant increase in weight of ventral prostate was observed. There were mild fatty degenerative changes in heart and moderate fatty changes in liver with Shatavari powder. While seminal vesicles showed proliferation of epithelial layer with Shatavari Granules. Elevated Hb concentration, increased total leucocyte count and decreased blood urea level were observed with Shatavari granules.

XI. RSSCA Veterinary College, Bhubaneswar:

During the period *Caraca papaya*, *Vitex negundo*, *Embelia ribes* and *Abrus precatorius* were subjected for the toxicity test. The following observations were made with all four drugs:

1. Upto 72 hours there was no toxic effect with 2 gm. single dose in mice and 5gm. single dose in rats.
2. Blood parameters were in normal range on 15 days treatment of 3 doses schedule in rats i.e. 1000, 1500 and 2000 mg./kg. body weight.
3. No gross lesion was seen in vital organs.

SPECIAL RESEARCH PROGRAMME :

Department of Family Welfare under Ministry of Health and Family Welfare has taken up 'Pippalyadi Yoga' an Ayurvedic oral contraceptive drug, for multicentric clinical trials at AIIMS, New Delhi; PGI Chandigarh; JIPMER, Pondicherry; and KEM Hospital, Mumbai; for evaluating its anti fertility potential to introduce it in National Antifertility Programme. This programme is being conducted under the supervision and guidance of "Expert Group for antifertility Research in Indian Systems of Medicine" under the Chairmanship of Prof. Ranjit Roy Chaudhury. After proving its non-toxic and non-teratogenic studies Phase I Clinical Trial on Pippalyadi Yoga has been started for evaluation of its safety through hormone assay, other biochemical, haematological investigations, transvaginal sonography etc. besides clinical examination. Phase-II Clinical trial will also be conducted for evaluation of antifertility efficacy of Pippalyadi Yoga after completion of Phase I Clinical trial.

STATEMENT OF THE CASES STUDIED FOR CLINICAL EVALUATION OF THE CONTRACEPTIVE AGENTS DURING 1999-2000

Name of the Drug	Centre	Cases Studied			Number of Drop Out Cases				
		New	Old	Total	Drug Failure	Durg Omission	Side effect	Other research	Total
Neem Oil	CRI, Delhi	54	46	100	1	5	—	21	27
	CRI, Kolkata	16	—	16	—	—	—	3	3
Ayush AC-4	Mumbai	78	—	78	—	—	12	6	18
	Patiala	40	17	57	—	—	—	40	40
	Jaipur	49	—	49	—	—	32	16	48
	Trivandrum	31	—	31	—	—	—	1	1
	Mumbai	35	—	35	—	—	—	—	—
Pippalyadi Yoga	Kolkata	19	—	19	—	2	7	9	18
	Ahmedabad	28	78	106	—	—	—	5	5
	Mumbai	0	207	207	6	—	—	—	6
TOTAL		350	348	698	7	7	51	101	166

14. PUBLICATIONS AND PARTICIPATIONS

(I). PUBLICATIONS

S. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
A. CLINICAL AND BASIC RESEARCH				
1.	Agarwal, A. et al.	Neuropsychophysiological assessments of a compound formulation of <i>Bacopa monniera</i> and <i>Acorus calamus</i> as a potent Medhya Rasayan agent.	Sangyahan Shodh Vol.3, (No. 1):35-42	2000
2.	Bharti, et al.	The effect of Arjuna Vacadi Yoga in Vyanabala vaishamya-A clinical study.	JRAS, Vol XX(No 3&4): 148-157	1999
3.	Bikshapathi, T.	Clinical observations of Lakshana Samuchchaya in Slipada.	JRAS, Vol. XIX(No 3&4): 145-49,1998	1999
4.	Bikshapathi, T.	Clinical evaluation of Ashwagandha in the management of Amavata.	JRAS, Vol. XX(No 1&2): 46-53	1999
5.	Chowdhary, D.P. et al.	Hypoglycaemic effect of a coded formulation: Ayush-82.	JRAS, Vol. XIX (No.3 &-4):107-115, 1998	1999
6.	Choudhary, D.P. et al.	Drishiti Doha and its management with Ayurvedic drugs.	JRAS, Vol XX(No. 3&4):141-47	1999
7.	Das, B. et al.	Management of chronic pancreatic duct calculi by common Ayurvedic preparation.	Ayurmedline, (Vol-II):93-95	2000
8.	Devidas, K.V. et al.	Effect of Indu Kant Ghritam and Mahatiktaka Ghritam in Parinamsula(Duodenal ulcer).	JRAS, Vol XIX (No3&4):98-106, 1998	1999
9.	Devidas, K.V. et al.	Effect of Nimbadin in the treatment of Parinamsula.	JRAS, Vol XX(No3&4):187-190	1999
10.	Ghosh, S. et al.	Treatment of Bhagandara (Fistula-in-ano) with Kshara Sutra.	JRAS, Vol XX (No 3&4):158-165	1999

11.	Ghosh, S. <i>et al.</i>	Management of Guda Roga.	Ay. Mahasammelan Patrika Vol. 86(9): 54	1999
12.	Kar, A.C. <i>et al.</i>	Management of Amavata (Rheumatoid arthritis) with Ayurvedic drug combination-a Clinical trial.	JRAS, Vol. XX(No3&4): 166-172	1999
13.	Kumar, N. <i>et al.</i>	Clinical evaluation of single and herbo-mineral compounds drugs in the management of Madhumeha.	JRAS, Vol. XX (No1&2): 1-9	1999
14.	Maity, S.K.	Gastric ulcer Svabhabik Jeevan Japane Mukti	Swasthya	2000
15.	Namboodiri, P.K.N. <i>et al.</i>	Classical Pancakarma therapy vis-à-vis Samana therapy in the management of Pakshaghata (Hemiplegia)-A comparative study	JRAS, Vol. XX (1&2): 54-71	1999
16.	Nanda, G.C.	Effect of Trayodasanga Guggulu and Vishatunduka vati alongwith Abhyanga and Swedan on the management of Gridharasi (Sciatica).	JRAS, Vol XIX (No 3-4): 116-121 1998	1999
17.	Nanda, G.C.	Sandhivata & Amavata Visheshanatakm Nidan-O-Chikitsa(Oriya).	Swasthbilsash	1999
18.	Padhi, M.M. <i>et al.</i>	Ayurvedic Management of Sexual Disorders- An appraisal of some clinical experiences.	Ayurmedline, Vol. II 85-90	2000
19.	Prasad, G.C. <i>et al.</i>	Anti-tumour studies on a new herbo mineral: Copper (II) complexes with Prieurianin isolated from <i>Amoora rohituka</i> W.&A.	JRAS, Vol. XX (No 1&2):10-19	1999
20.	Prasad, R.D and Tyagi, M.K.	Clinical evaluation of Drug therapy associated with Panchkarma in the management of Gridhrasi (Sciatica).	JRAS, Vol XX (No. 1&2):78-82	1999
21.	Rajagopalan, V. <i>et al.</i>	Effect of Ayushman-8 in Manasa Mandata(Mental retardation).	JRAS, Vol. XIX (No 3&4):89-97, 1998	1999
22.	Sharma, R.K. <i>et al.</i>	Role of Ayurvedic formulation in the management of Amavata (Rheumatoid arthritis)-A preliminary study.	JRAS, Vol. XX (No.1&2):72-77	1999

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| 23. | Singh, S. <i>et al.</i> | Effect of Siravedh in Gridhrasi(Sciatica). | JRAS, Vol XX (No 3&4): 173-177 | 1999 |
| 24. | Srikanth, N. | Ancient ocular therapeutics - An integrated approach. | AyurMedline, (Vol-I) 93-104 | 1999 |
| 25. | Srikanth, N. | Management of open angle Glaucoma. | AyurMedline,(Vol -II) 96-99 | 2000 |
| 26. | Swamy, G.K. <i>et al.</i> | Clinical evaluation of Haridra Khanda in the management of Sitta Pitta. | JRAS, Vol. XX (No-1&2): 20-28 | 1999 |
| 27. | Tewari, V.P. & Joshi, G.C. | Vasant Kusumakar Rasa -Ek Adhyayan (Hindi). | Sachitra Ayurveda Vol 52(No. 1); 73-74 | 1999 |

B. HEALTH CARE RESEARCH AND ETHNO-MEDICINE

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| 28. | Bikshapathi, T. <i>et al.</i> | Role of Medicinal Plants in the management of Udavega & Vishada. | Sachitra Ayurveda, Vol. 52 (No. 5), 569-575 | 1999 |
| 29. | Billore, K.V. <i>et al.</i> | Prospects of Ethno-Botanical lores is Birth Control | B..M.E.B.R Vol. XVIII (No 3-4) : 97-103, 1997 | 1999 |
| 30. | Murty, K.S. <i>et al.</i> | Some plants used as anti-fertility agents by Khonds of Orissa | B.M.E.B.R, Vol. XVIII (No.3-4) : 164-166, 1997 | 1999 |
| 31. | Nanda, G.C. | Ayurvedare Aushadha Bhakhyanara Kala Maryada (Oriya). | Swasthbilsash | 1999 |
| 32. | Pathak, S.R. & Dubey G.P. | Scope of Ayurvedic Herbal Medhya Drugs as Natural Agents Facilitating Learning & Memory-A scientific view. | Sangyahanan Shodh Vol. 3 (No.1) : 45-57 | 2000 |
| 33. | Rao, S.V <i>et al.</i> | Effect of Feeding Neem (<i>Azadirachta indica</i> A. juss) oil on reproductive organs of male rats | JRAS, Vol XX (1&2):89-92 | 1999 |
| 34. | Srikanth, N. <i>et al.</i> | A Bird's eye view on single metal & mineral ophthalmic drugs. - An Ayurvedic pharmacological basis. | Sachitra Ayurveda Vol. 52 (No.1), 272-74 | 1999 |

35.	Tiwari, R.K. <i>et al.</i>	Ethnomedicinal plants <i>Sauria paharia</i> .	Vasundhara Vol 4.	1999
36.	Trivedi, V.P.	Vanaushadi Mahatmya.	Vishwa Ayurveda Parishad Patrika Lucknow 43-46	1999
37.	Uniyal, M.R.	Medicinal Plants of Mauri- tius Islands	B.M.E.B.R Vol. XVIII (No. 3-4):123-128, 1997	1999
C DRAVYA-GUNA, MEDICO-BOTANICAL SURVEY & CULTIVATION				
38.	Billore, K.V.	Dwindling state of Medicinal Plants in Rajasthan (India)and their conservation.	B.M.E.B.R, Vol. XIX (No 1-2):1-11, 1998	1999
39.	Borkar, G.B. <i>et al.</i>	Cultivation of Gambhari (<i>Gmelina arborea</i> Linn) on degraded rocky soil.	B.M.E.B.R, Vol XIX (No 1-2): 56-61, 1998	1999
40.	Chandra, K. <i>et al.</i>	Medicinal Plants of Giridih Forest Division, Bihar State.	B.M.E.B.R. Vol XVIII (No 3-4) :129-144, 1997	1999
41.	Kumar, A &Kumar, N.	Tribal folk medicines of the Hilly Regions of Jammu & Kashmir.	B.M.E.B.R, Vol XVIII (No 3-4): 104-116, 1997	1999
42.	Kumar, A.	Durlabha Hoti Chamatkarika Vanausadhi-Kuth	Vishwa Ayurveda Parishad Patrika (Luck.)	1999
43.	Rawat, M.S. <i>et al.</i>	Wild Edible plants of Arunachal Pradesh.	B.M.E.B.R, Vol XIX (No 1-2):23-33, 1998	1999
44.	Shankar, R. <i>et al.</i>	Some Medicinal Plants from Dist. Tirap (Aruna- chal Pradesh) with a note on Ethnobotany of Nocte Tribe.	B.M.E.B.R Vol XIX (No 1-2): 12-22, 1998	1999
45.	Srikanth, N. <i>et al.</i>	The Traditional Medicinal Plants- Kadali (<i>Musa paradisiaca</i>) -A profile.	Ayurveda Mahasammelan Patrika Vol. 11, 67-71	1999
46.	Tewari, V.P. <i>et al.</i>	Medicinal Plants of Punaygiri Distt. Nainital (U.P).	Sachitra Ayurveda Vol. 51 (No. 11): 860 - 862	1999
47.	Tewari, V.P. & Saxena, R.B.	Granthi Roga Nasak Vanosadhiyan.	Dhanwantari	2000
48.	Yelne, M.B. <i>et al.</i>	In vitro propagation of Brahmi (<i>Bacopa monnieri</i> L.) Pennell.	B.M.E.B.R, Vol XVIII (No 3-4): 145-150, 1997	1999
49.	Uniyal, M.R.,	Identification of Traditionl Ayurvedic Drugs and inclusion of Medicinal Plants in the Science of Dravya Guna.	B.M.E.B.R, Vol XIX (No.1-2) : 34-48, 1998	1999

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50. Alam, M. *et al.* Comparative analytical studies on Brahat Masa Taila. B.M.E.B.R, Vol XIX (No 1-2):71-75, 1998 1999
51. Barik, B.R. *et al.* Triterpene acids from the gum-Resin of *Shorea robusta*. J. Indian Chem. Soc., 76, 319 1999
52. Chatterjee, A. *et al.* Raureflexine, an unusual Bis(indole) alkaloid from *Rauwolfia reflexa* Tejm. J. Indian Chem. Soc., 75, 695, 1998 1999
53. Dave, K.K. *et al.* Studies on *Corchorus litorius*-seeds. Ayu, Vol-11 1999
54. Joshi, P.C *et al.* Steroidal constituents of *Ailanthus excelsa* . J.Indian Chem. Soc. 76:509-510 1999
55. Murthy, K.S. *et al.* Bio-diversity of Babagera deserts forests of Orissa. J. Econ. Tax. Bot. 1999
56. Murthy, K.S.& Pursty, A.B. Endangered Indian medicinal Plants of Orissa. Indian Bot. Soc., Orissa 1999
57. Murthy, K.S. & Pursty, A.B. Habitat study of Indian medicinal plants in Orissa. Indian Bot. Soc., Orissa 1999
58. Nair, K.V. *et al.* Standardization of Ayurvedic Drugs. B.M.E.B.R, Vol.XVIII (No 3-4) : 151-156, 1997 1999
59. Nanda, G.C. Quality control and Standardisation of Rasaushadhis-An Urgent need. Sachitra Ayurveda, Vol. 52 (No. 1) : 249-252 1999
60. Pant, P. & Jain, C.L. Effect of Shodhan on Narcotic content of Vijaya (*Cannabis sativa*.) B.M.E.B.R, Vol XIX (No 1-2): 86-90, 1998 1999
61. Saraswathy, A. Standardization of some Rasau-shadis. Sachitra Ayurveda, Vol-52 (No-1) : 240-245 1999
62. Saraswathy, A. *et al.* Isolation of Miliacin from *Panicum miliare* Lamk. Indian drugs, 36 (8): 531 1999
63. Saxena, R.B. Til seed-A Review. Sachitra Ayurved Vol 52 (No. 6): 641-646 1999
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- E. PHARMACOLOGY**
68. Dennis, T.J. *et al.* Juvenomimetic activity of gumoleoresin of *Boswellia serrata*. Fitoterapia, 70,308-310 1999
69. Vasanth, S. *et al.* Antifeedant activity of vicolides from *Pentanema indicum* Fitoterapia Vol. 70:618-20/ 1999
- F. LITERARY & MISCELLANEOUS**
70. Ali, Momin Rasayana therapy in classical literature of Ayurveda-A review. Bull. of IIHM, Vol.28 (No 2): 95-110, 1998 1999
71. Ali, Momin News and Notes of Medico-historical activities in India and abroad. Bull. of IIHM, Vol 28 (No. 2):167-187, 1998 1999
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74. Bhatnagar, V.K. & Rama Raju, K.V Sown a seed of Ayurveda in the Nizam dominion. Bull. of IIHM. Vol 28 (No. 2):147-150, 1998 1999
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76. Dwivedi, G.N. Rasashastra Ka Vangamaya Avam Iihas. Sachitra Ayurveda (Ras-Aushadhi Ank), Vol. 52 (No.1), 122-132, 1999
77. Hussian, S.A. *et al.* Ayurvedic Literature in Urdu. Bull. of IIHM , Vol 28 (No. 2) : 151-158, 1998 1999
78. Gupta, S. *et al.* Yuvavastha and Upastam bhatrayas. Ay. Mahasammelan Patrika, Vol. 86 (9):47-53 1999
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| 80. | Kumar, N. and Kumar A. | Dogra Shasan Kal Mein
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| 81. | Padhi M.M. <i>et al.</i> | Pathyapathya Vinischaya : 16 th
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| 82. | Pathak, N.N. | Etihasic Paripeksha Mein
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| 83. | Subhaktha, P.K.J.P | Medicine in the Holy Bible. | Bull. of IIHM, Vol 28 (No. 2)
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| 84. | Subhaktha, P.K.J.P | Gleaning from the travelogue
of the traveller Nicholas Senn. | Bull. of IIHM, Vol 29 (No 1)
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| 85. | Uniyal, M.R. | Rasashastra Mein Varnit Khanijon
Par Anusandhan Avam Rasanjan
Ki Pahachan. | Sachitra Ayurveda Vol. 52
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II. PARTICIPATION

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
A. CLINICAL AND BASIC RESEARCH			
1.	Acharya, V. <i>et al.</i>	Clinical effect of herbal and herbomineral compounds on bronchial asthma (Tamak swasa).	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999.
2.	Bajwa, R.M.S. & Bansal, P.	Criteria for selection of Anti Diabetic drug with multipurpose pharmacological action.	International Conference on Alternative Systems of Medicine held at Anandpur Sahib 23-26/3/2000
3.	Bajwa, R.M.S.	The clinical effect of the Ayush-82 on non-insulin dependent Diabetes mellitus	-do-
4.	Chopra, K.K.	(i) Management of Urinary Disorder with Ayurvedic Medicines: A comprehensive review. (ii) Respiratory diseases treated by Ayurvedic Medicines	First Indo-Russian Seminar on Ayurveda held in Moscow (Russia), 3-7/6/1999.
5.	Chopra, K.K. <i>et al.</i>	Medicated Ayurvedic Thread (Ksharsutra) treatment for fistula (Bhagandara)	National Seminar 2000 on Panchakarma held at State Ayurvedic College, Lucknow, 18-20/2/2000
6.	Das, B. <i>et al.</i>	Panchakarma as an O.P.D. procedure : A clinical appraisal	-do-
7.	Das, B. <i>et al.</i>	Clinical trial on Sudarsana Ghanvati Arogyavardhini Vati and Punarnavarista in manifest cases of Slipada (Filariasis)	National Seminar on the Role of Ayurveda in the management of Slipada (Filariasis) held at GAM, Puri, 20-22/5/99
8.	Dave, K.J. <i>et al.</i>	Role of Chandraprabha vati for the management of Mutrakriccha with special reference to the BPH vis-a-vis mutrasthanila - A single case study	International Congress Ayurveda 2000, Chennai, 28-30/1/2000
9.	Hazra, J. <i>et al.</i>	Effect of Bala (<i>Sida cordifolia</i>) in Diabetic neuropathy	-do-
10.	Hazra, J and Srikanth, N.	Holistic approach to the management of Diabetes mellitus.	National meeting on alternative approach to Healthcare organized by I.S.H.A, Bangalore, 2-7/9/99

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
11.	Hazra, J. <i>et al.</i>	A conceptual study on the role of medicinal plants in the management of Slipada	National Seminar on the Role of Ayurveda in the management of Slipada (Filariasis) held at GAM., Puri, 20-22/5/99
12.	Kumar, A	Studies of herbo-mineral drugs in the treatment of Mutrashmari	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/99.
13.	Kumar, N.	The role of herbo-mineral drugs in the management of Madhumeha	-do-
14.	Kar, A.C.	A study on Pippalyadi Yoga as an Ayurvedic contraceptive agent	International Seminar on Ayurveda & Traditional Medicine, Scope & Challenges in the 21 st century at Gujarat Ayurveda University, Jamnagar 5-7 /1/2000
15.	Kar. A.C.	Management of diabetes mellitus by an indigenous drug compound	International Congress Ayurveda 2000, held at Chennai, 28-30/1/ 2000
16.	Kar, A.C.	Preventive & curative measures of Sleepada (Filariasis) on the basis of kriya kala	National Seminar on Role of Ayurveda in the management of Slipada (Filariasis), held at GAM, Puri, 20-22 May, 99.
17.	Kusum Kumari, K. <i>et al.</i>	Clinical study of Sudarsana Ghanavati Ayush-55 and Punarnavarista on Slipada (Manifest)	-do-
18.	Madhavkutty, P. <i>et al.</i>	Samana therapy vis-a-vis Panchakarma therapy in the management of Pangu (Paraplegia)	National Seminar 2000 on Panchakarma held at Lucknow, 18-20/ 2/ 2000
19.	Nair, P.K.S.	Therapeutic of Viathargna vasti(Vangasena) in intervertebral disc prolapse with sciatica and related problems	International Congress on Ayurveda 2000 held at Chennai, 28-30 Jan. 2000
20.	Nanda, G.C. <i>et al.</i>	Trial on Slipada (Filariasis)-A comprehensive review	National Seminar on the Role of Ayurveda in the management of Slipada (Filariasis) held at GAM Puri, 20-22/5/99
21.	Nanda, G.C. <i>et al.</i>	Effect of Masyakarma with special reference to Marichadi taila	National Seminar 2000 on Panchakarma held at State Ayurvedic College, Lucknow. 18-20/2/2000

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/Seminar/Workshop and date of participation
22.	Padhi, M.M. <i>et al.</i>	Clinical trial of various sets of herbal and Herbomineral medicines in different stages of Filariasis (Slipada)	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/99
23.	Pillai, N.G.K	Achievements of Research on Tvak roga	-do-
24.	Rao, M.M.	A study on the effect of Pippali vardhamana ksheerapakayoga and Sameer pannaga rasa on Amavata (Rheumatoid arthritis)	International Seminar on Ayurveda & Traditional Medicine Scope & Challenges in the 21 st century at Gujarat University, Jamnagar. 5-7 January 2000
25.	Sahu, D.P. <i>et al.</i>	Current approach to the aetiopathogenesis of Slipada (Filariasis)	National Seminar on the Role of Ayurveda in the management of Slipada (Filariasis) held at GAM, Puri 20-22/5/99
26.	Sharma, B.N.	Management of Arsa (Haemorrhoids) on Ayurvedic lines	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
27.	Sharma, K.D.	Ayurvedic treatment and research on Vishma jvara (Malaria)	-do-
28.	Sharma, S.K. <i>et al.</i>	Role of Uttar basti in the management of Yonivyapad.	National Seminar 2000 on Panchakarma held at Lucknow, 18-20/2/2000
29.	Sharma, S. K. & Trivedi, V.P.	Certain observations on the management of female urogenital problems metorrhagia and prolaps uterus with herbo-mineral formulations	International Congress Ayurveda 2000, held at Chennai, 28-30/1/2000
30.	Srikanth, N. and Chopra, K.K.	The parasurgical approach leech application in glaucoma	-do-
31.	Srikanth, N. <i>et al.</i>	Effect of Manjistha in painful ophthalmic conditions	-do-
32.	Srikanth, N. <i>et al.</i>	Role of single metal and mineral ophthalmic drugs in eye care and cure	Ist National Seminar on Rasaushadhis conducted by Sachitra Ayurveda at Patna, 27-28/11/99
33.	Srikanth, N. <i>et al.</i>	Study on Ardhavabedhaka (Migrains)- A shiro Marmagata roga and its management	National Seminar on Marmachikitsa and Navavigyan held at Trivandrum, 22-24/10/99

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
34.	Srikanth, N. <i>et al.</i>	Filariasis (Slipada): A medico-historical & clinico-epidemiological view	National Seminar on the Role of Ayurveda in the management of Slipada (Filariasis) held at GAM, Puri, 20-25/5/99
35.	Swamy, G.K. <i>et al.</i>	Trial of Ayush 64 and Saptaparna ghanavati on Microfilaremia-A clinical study	-do-
36.	Swamy, G.K. <i>et al.</i>	The therapeutic effect of Sameera pannaga rasa and Ekangaveera rasa in the treatment of Pakshavadha (Hemiplegia)	National Seminar conducted by Ayurveda Sastrajna Parishad Vijaywada, 14.11.99
37.	Tewari, N.S. & Nair, P.K.S.	Vasti-karma-principles and practice	National Seminar on Pancakarma 2000 held at Lucknow, 18-20 Feb. 2000
38.	Venkataram, B.S. <i>et al.</i>	Three controlled clinical studies on Unmada(Schizophrenia)	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26th Oct, 1999.
39.	Yadav, R.K.	Psychosomatic approach to the management of GERD vis-a-vis Amlapitta -A clinical study	International Congress Ayurveda 2000 held at Chennai, 28-30/1/2000
40.	Yadav, R.K.	Scope of traditional and Keraliya Panchkarma therapy in the management of Manasroga	National Seminar on Panchakarma 2000 held at Lucknow, 18-20/2/2000

B. HEALTH CARE RESEARCH AND ETHNO-MEDICINE

41.	Alam, M.M. <i>et al.</i>	Determination of Bio-chemical parameters in the treatment of Pakshavadha with Panchakarma	-do-
42.	Babu, G.	Role of Acharya Rasayana in stress management	International Congress Ayurveda 2000 held at Chennai, 28-30 th January, 2000
43.	Babu, G.	The importance of Acharya Rasayana in human life in the present metaphysical society.	International Seminar organized by GAU, Jamnagar, 5-7th Jan, 2000
44.	Bharti, <i>et al.</i>	Medoroga and Medodosha (Obesity and lipid disorders)	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
45.	Bharti, <i>et al.</i>	Vyanabala Vaishamiya- Hypertension	-do-
46.	Bharti, <i>et al.</i>	Management of heart diseases (cardiac disorders) achievements of CCRAS- A review	-do-
47.	Bhattathiri, P.P.N. <i>et al.</i>	The role of Ayurvedic drugs as Health promoters	-do-
48.	Dubey, G.P.	The Ayurvedic approach of prevention and management of acquired immuno deficiency syndrome	Proceedings of National Academy of Ayurveda, New Delhi, March 2000
49.	Hazra, J. <i>et al.</i>	A critical note on medicinal plants employed in Prameha	National Seminar 2000 on Panchakarma held at State Ayurvedic College, Lucknow, 18/2/2000
50.	Jukar, S.R.	Family planning clinical research programme	Podar Ayurvedic College, Mumbai, 30 th Oct.. to 5 th Nov.,99
51.	Maity, S.K.	Raktapata and Ayurvedic cikitsa	All India Radio, Calcutta, 15/10/99
52.	Majumdar, R.	Ethno-medico botanical aspects of some plant available in N.E. region of India	National Conference on Safeguarding the ethno botanical resources of N.E. Region of India held in the Deptt. of Botany Cotton College, Guw., 27-28/3/ 2000
53.	Mishra, D.K. & Prem Kishore	Effect of Ayush AC-IV as an antifertility drug	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/99
54.	Mishra D.K., & Prem Kishore	Pippalyadi Yoga -A drug of choice for contraception	-do-
55.	Nanda, G.C. <i>et al.</i>	Rasayana in relation to life decade declination - A comprehensive view	International Seminar on Ayurveda Scope and Challenges in 21 st century held at GAU, Jamnagar, 5-7/1/2000
56.	Nanda, G.C. <i>et al.</i>	A comprehensive note on anti-diabetic medicinal plants and their conservation aspects.	National Seminar on Medicinal Plants in our environment organized by UGC & U.N. College, Orissa, 6/2/2000
57.	Narayana, A	Concept of Agni (Digestive enzymes) - A scientific analysis	International Congress Ayurveda 2000, held at Chennai, 28-30/1/ 2000

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/Seminar/Workshop and date of participation
58.	Narayana, A & Swamy,G.K.	A review of clinical trials of Ayurvedic formula on Slipada	National Seminar on role of Ayurveda in the management of Slipada (Filariasis) held at GAM, Puri (Orissa), 20-22 May 1999
59.	Padhi, M.M	Revaluation of various Panchakarma procedure: Some suggestive models	National Seminar on Panchakarma 2000 held at State Ayurveda College, Lucknow, 18-20/2/2000
60.	Pathak, N.N.	Rasayana and Rasayana Aushadhi	International Seminar on Ayurveda Scope and Challenges in 21 st century held at GAU, Jamnagar, 5-7/1/2000
61.	Pathak, N.N. <i>et al.</i>	Slipada rog ki chikista mein pathya-pathya vivechan (Hindi)	National Seminar on the Role of Ayurveda in the management of Slipada (Filariasis) held at GAM, Puri, 20-22/5/99
62.	Pathak , N.N. <i>et al.</i>	Paryavaraniya Pradushan ki raksha mein Ayurveda ka yogadan(Hindi)	Proceedings of National Conference on Healthcare & development of Herbal Medicines held at Patna, Aug. 99
63.	Sannd, R.	A comparative study of different methods of Kshar Sutra	International Conference on Alternative System of Medicine held at Anandpur Sahib, 24-26/3/2000.
64.	Sehrawat, D. <i>et al.</i>	The clinical studies on contraceptive effect of Nimba taila	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
65.	Sharma, M.L.& Kumari, K	Rasayana Karma -A unique therapy in cure of chronic & stubborn diseases like AIDS and cancer	International Seminar on Ayurveda Scope and Challenges in 21 st century held at GAU, Jamnagar, 5-7/1/2000
66.	Shetty, B.R. <i>et al.</i>	Role of Rasayana drugs in mental health	Seminar on Research Achievements of Ayurveda & Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
67.	Singh, D.N.	Swas-kas Aur Ayurveda (Hindi)	Talk on All India Radio, Gangtok on 20.12.99
68.	Singh, D.N	Swasthya ke liye Labhadayak Jaributiyan	Talk on All India Radio, Gangtok on 13.10.99
69.	Singh, U.S. <i>et al.</i>	Certain observations on the role of Panchakarma in Rasayan therapy	National Seminar 2000 on Panchakarma, State Ayurvedic College, Lucknow, 18-20/2/2000

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
70.	Singh, U.S. <i>et al.</i>	Achara Rasayan-An unique concept of attaining Yuktikrita Bala for Total Health by Panchakarma therapy.	-do-
71.	Srikanth, N. <i>et al.</i>	Practical orientation of ocular therapies- Netra Kriyakarlaps	-do-
72.	Srikanth, N. <i>et al.</i>	Scientific basis and practical adaptability of Ayurvedic ocular therapeutics-A inter disciplinary approach.	National meeting on Alternative approach to health care organized by ISHA Bangalore 2-7/9/99 National Seminar on Marmachikitsa and Nadivigyan organised by Bhagvhat Sarain Trivandrum, Kerala, 22-24/10/99
73.	Srikanth, N. <i>et al.</i>	Anatomical concept of shrogata marmas- Basic clinical aspects	National Seminar on Marmachikitsa and Nadivigyan organised by Bhagvhat Sarain, Trivandrum, Kerala, 22-24/10/99 International seminar on Ayurveda Scope and challenges in 21 st century held at GAU Jamnagar, 5-7/1/2000
74.	Srikanth, N. <i>et al.</i>	Role of Rasayana therapy in immunological neuroendocrine and psychosomatic disorders	International Seminar on Ayurveda Scope and Challenges in 21 st century held at GAU, Jamnagar, 5-7/1/2000
75.	Subhose, V.	Mucosal protecteieue and antacid action of Kadalipaneeya kshara (An experimental study)	Third National Congress on Medicinal Plants organized by Oushadhi, Trichur, 7-12-99
76.	Trivedi, V.P. Tripathy, B. & Nanda, G.C.	Importance of Sharir	National Seminar on Hridaya Sharir and Raktavah srotas organized by Akhil Bhartiya Shareer Shodh Sansthan, Lucknow, 28-29/3/2000
77.	Tripathy, B. & Nanda, G.C.	Therapeutic principles of management of Slipada (filariasis)	National Seminar on the role of Ayurveda in the management of Slipada (Filariasis) held at GAM, Puri 20-22/1/99

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
C. DRAVYA-GUNA, MEDICO-BOTANICAL SURVEY & CULTIVATION			
78	Pathak, N.N,	Chikitsakiya upayog mein anewala ausadiya avum sugandha Sandigada Vanaspatiyon ki pehchan	Pro. of National Conference on Health care & Development of Herbal Medicines held at Patna, Aug 99
79.	Rawat, M. S. & Rama Shankar	Medicinal plants and their potential in the economic development of Arunchal Pradesh	National Workshop on Arunachal Pradesh environmental planning & sustainable development opportunities and challenges, Itanagar, 16-19 Dec. 1999
80.	Sharma, B. N. & Singhal, R. K.	A brief on tribal health care research programmes and ethno-medico-botanical survey of tribal areas	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
81.	Sharma, P.C.	Propagation and cultivation of Ayurvedic medicinal plants at JNAMPG&M, Pune	-do-
82.	Srikanth, N. <i>et al.</i>	Conservation and cultivation of indigenous ophthalmic plant drugs –An urgent need	National Seminar on Medicinal plants in our environment organized by UGC & UN College, Orissa, 6/2/2000
83.	Yelne, M.B. <i>et al.</i>	In vitro propagation of some important Ayurvedic medicinal plants	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
84.	Yoganarsimhan, S.N. & Billore, K. V.	Glimpses of medico-ethno-botanical survey studies	-do-
D. PHARMACEUTICAL, PHARMACOGNOSTICAL AND CHEMICAL RESEARCH			
85.	Bikshapathi, T. <i>et al.</i>	Chromatographic technique to identify the Bhasma from Ayurvedic preparations	International Congress Ayurveda 2000 held at Chennai, 28-30/11/2000
86.	Chaudhari, B.G. <i>et al.</i>	Identification of the ingredients in the Ayurvedic formulations Trikatuurna and Caturjata churna	International Seminar on Ayurveda & other traditional medicines scope and chalallenges in 21 st century held at GAU, Jamnagar 5-7/1/2000
87.	Dhar, B. P. <i>et al.</i>	Pharmacognostical studies on drugs of Ayurveda & Siddha	Seminar on Research Achievement s of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
88.	Hazra, J. and Chopra, K.K.	Some controversial drugs in Brihattryee	National Seminar on Siddha System of Medicine, Coimbatore, 9-10/5/1999
89.	Hazra, <i>et al.</i>	Scientific insight into classical methodology of collection and preservation of plant drugs	International Seminar on Ayurveda Scope and Challenges in 21 st century held at GAU, Jamnagar, 5-7/1/2000
90.	Joseph, G.V.R <i>et al.</i>	Determination of microbial load in some medicinally important plants (Market samples)	National symposium on basic and applied aspects of plants and microbial biotechnology held at Pune, 4-5/2/2000
91.	Murthy, K.S. and Chopra, K.K.	Standardisation of herbal drugs –Role of taxonomy	National Seminar sponsored by AICTE, New Delhi 1999
92.	Nair, K.V.	Substitute drugs and their importance and certain code for collection, storage and expiry of Ayurvedic drugs/medicines	International Congress-Ayurveda 2000 held at Chennai, 28-30/1/2000
93.	Nair, G.A. <i>et al.</i>	Clinical comparison of two controversial medicinal plants- <i>Strobilanthes heyneanus</i> and <i>Barleria prionitis</i>	Proceedings of the 9 th Sudeshi Science Congress held at Kollan, 1999
94.	Nanda, G.C. <i>et al.</i>	Necessity of quality control and standardization of Rasaushadhis –A scientific insight	1st National Seminar on Rasaushadhis conducted by Sachitra Ayurveda, Patna 27-28/11/99
95.	Pant, Pramila <i>et al.</i>	Ayurvedic plants: A repository of Biology active compounds	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
96.	Rawat, M. S. & Ramashankar	Ethno medico botanical claims from Arunchal Pradesh	National Workshop on Arunchal Pradesh environmental planning & sustainable development opportunities and challenges Itanagar, 16-19 Dec. 1999
97.	Sharma, B.N. <i>et al.</i>	Standardization of drugs of Ayurveda	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
98.	Sharma, P.C.	Status of conservation of diversity of medicinal plants of Western Maharashtra	Conference on Biodiversity assessment and capacity building in western ghats held at Pune, 23-25/3/2000

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
99.	Tamboli , F. A. <i>et al.</i>	Comparative phytochemical evaluation and pharmacological studies of natural & micro propagated plants of <i>Bacopa monnieri</i> (L)	National Symposium on basic and applied aspects of plant and microbial biotechnology held at Pune, 4-5/2/2000
100.	Tewari, N.S. & Alam, M.M.	Chemical and Bio-chemical parameters to study Asavas and arishtas and chemical and biochemical studies on <i>Dhatakpushpa</i> (<i>Woodfordia fruticosa</i> Kurz.)	National Symposium on Role of Chemistry in Ayurveda held at BHU, Varanasi, 16-18 Dec. 99
101.	Yoganarasimhan, S.N.	Role of seed structure in the identification of medicinal plants	Symposium of seed science Technology held at Mysore Aug. 99
102.	Yoganarasimhan.	Some aspects of medicinal plants studies in Karnataka	Millennium seminar on Medical Plants held at St. Xaviers College, Palayakottai, Feb. 2000

E. Pharmacology

103	Gurmet, P.	Fundamental of Tibetan medicine & its pharmacology	Souvenir 5 th International Congress on Ethnopharmacology held at NBRI, Lucknow 17/11/99
104	Sharma, D.P. <i>et al.</i>	Pharmacological/Toxicological studies on drugs of Ayurveda & Siddha	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999

F. Literacy & Miscellaneous

105.	Ali, Momin	Literacy Research Achievements at Indian Institute of History of Medicine	Seminar on Research achievements of Ayurveda & Siddha organised by CCRAS held at New Delhi 25 th -26 th Oct. 99
106.	Chopra, K.K. <i>et al.</i>	Ayurvedic approach to proctology	-do-
107.	Chopra, K.K. <i>et al.</i>	Medicinal plants used in urinary disorders	National Seminar on Medicinal plants in our environment organized by UGC & UN College Orissa, 6/2/2000
108.	Hazra, J. <i>et al.</i>	Medicinal plants with hypotensive activity-A profile	-do-
109.	Hota, N. & Padhi M.M.	Ayurvedic manuscripts of Orissa unexplored	National Seminar on Slipada GAM, Puri, May 1999

S.No.	Name of the Author(s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and date of participation
110.	Jaya, N. <i>et al.</i>	A review of Vamanakarma-a therapeutic component of Pancakarma cikitsa	National Seminar on Pancakarma-2000 organised by State Ayurvedic College, & Hospital, Lucknow, 18-20 th Feb, 2000
111.	Sharma, K.D.	Some important Achievements of Literary Research	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
112.	Subhose, V. <i>et al.</i>	Free Radical Concept in Ayurveda and its management	National Seminar on Pancakarmas-2000, at Lucknow, 18-20 th Feb., 2000
113.	Swamy, G.K.	Significance of Nasya in Migraine	International Congress Ayurveda 2000, Chennai, 28-30 th Jan., 2000
114.	Yadava, R.S.	Contributions of R & D information in Promoting Ayurveda & Siddha	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999

B. TECHNICAL REPORT - SIDDHA

1. Abbreviations Used for Institutes / Units

S.No.	Year of Estt.	Institute/Unit	Abbreviation
1.	1970	Central Research Institute, Chennai	CRISC
2.	1979	Regional Research Institute, Pondicherry	RRISP
3.	1979	Mobile Clinical Research Unit, Chennai	MCRUSC
4.	1980	Clinical Research Unit, Palayamkottai	CRUSP
5.	1986	Clinical Research Unit, Trivandrum	CRUST
6.	1979	Drug Research Scheme (MD), Chennai	DRS (MD) SC
7.	1979	Drug Stanadardisation Research Unit, Chennai	DSRUSC
8.	1982	Drug Stanadardisation Research Unit, Bangalore	DSRUSB
9.	1981	Drug Stanadardisation Research Unit, Trivandrum	DSRUST
10.	1971	Survey of Medicinal Plants Unit, Palayamkottai	SMPUSP
11.	1979	Literary Research and Docu- mentation Department, Chennai	LR & DDSC
12.	1986	Tribal Health Care Research Project, Tirupathur, North Arcot Dist.	THCRPST
13.	1986	Tribal Health Care Research Project, Kalasa	THCRPSK

2. CLINICAL RESEARCH PROGRAMME

The Clinical Research Programme in Siddha medicine is being carried out on selected clinical condition by the Institutes/ Units of Siddha Medicine functioning under the Council. During the reporting year, the

clinical conditions like Kalanjagapadai (Psoriasis), Putrunoi (Cancer), Gunman (Intestinal disorders), Manjal Kamalai (Infective hepatitis), Sandhu vathasoolai (Rheumatoid arthritis), Venluppunoi (Anaemia), Venkuttam (Leucoderma) etc. were studied.

Kalanjaga Padai (Psoriasis)

Kalanjaga padai has been taken up for study by the Central Research Institute, Chennai. The coded drug 777 oil was administered at the dose of 10 ml. with milk two times a day, to all the cases selected for trial. The patients were also advised to apply the oil externally on the affected parts of the body. The results of the treatment are as under:

Result of Clinical /Therapeutic Trial of 777 Oil on Kalanjaga Padai (Psoriasis)

Drug	Total Cases	Results of the trial			
		Comp. Relief	Marked Relief	Moder. Relief	LAMA
777 oil	140	21	61	39	19

Vatha Soolai

This disease condition has been described in the Siddha texts under Vatharogangal". The study to evaluate the efficacy of Ayaveera Chendooram and perchangan charu in the cases of Vathasoolai has been taken up by the Regional Research Institute, Pondicherry. The trial drug Ayaveerachendooram at the dose of 120 mg. alongwith honey was administered in two divided doses. Seventy five (75) cases were taken up for study during the reporting year. Out of the 75 cases, 48 cases got complete relief, 20 cases got market relief and 7 cases did not respond to the treatment.

Karappan

The study on this clinical condition was carried out at the Clinical Research Unit, Trivandrum. The efficacy of the drugs Parangipattai choornam, Sangu Parpam, Idivallathi Mezhu, Punga Thailam were studied in two groups of patients at doses of 500 mg., 130 mg. and 3 gm. respectively two times a day. The results of the treatment are given in the following Table :

S.No.	Drugs	Total Cases	Results of the trial			
			Comp. Relief	Marked Relief	Moder. Relief	LAMA
1	Parangipattai Chooram (500 mg.) Sangu Parpam 130 mg. BD	4	1	1	1	1
2	Idivallathi Mezhugu 130 mg. BD Punga Thailam (External application)	4	2	1	1	-
	Total	8	3	2	2	1

Yanaikkal Noi (Filariasis)

The effect of Linga Chendooram, Thalampoo Mathirai Nilvembu Kudineer and Kakkattanver Karkam and their combinations were studied on the clinical condition of Yanaikkalnoi at the Clinical Research Unit, Trivandrum. The study was carried out in three groups, in both carrier and manifested cases of Yanaikkal noi at OPD level. 32 cases were studied during the reporting year. The following Table shows the results of the study.

Results of Clinical/Therapeutic Trial of Siddha Preparations on Yauaikkalnoi Filariasis

S.No.	Drugs	Total Cases	Results of the trial			
			Comp. Relief	Marked Relief	Moder. Relief	LAMA
1	Linga Chooram	21	12	4	3	2
2	Kakkattan Ver Karkam	11	6	2	2	1
	Total	32	18	6	5	3

Sandhu Vatha Soolai (Rheumatoid arthritis)

Sandhu Vata Soolai is described in Siddha literature, as one of the 80 Vatharoganal. A study to evaluate the effect of Chandmarutha chendooram in the management of Sandhu Vatha Soolai has been taken up at CRI, Chennai. The drug was administered at the dose of 200 mg. twice a day along with honey. Tamarind and chilli free diet with less salt was advised to all the 59 cases selected for the trial. Out of 59 cases, 4 cases showed complete relief, 20 cases showed marked relief, 17 moderate relief and remaining 18 cases did not respond to the treatment.

Manjal Kamalai (Infective hepatitis)

The study on this clinical condition has been carried out at the Central Research Institute, Chennai. The trial drug Arunelli Karkam was administered at the doses level of 1gm. in two divided does alongwith water. 5 cases were selected for the trial during the reporting year. Out of the 5 cases, 1 showed complete relief, 1 case showed marked relief and remaining did not respond to the treatment.

Gunmam (Intestinal disorders)

The study on the efficacy of Siddha drugs in above condition was undertaken at the CRU(S) Palayamkottai. The trial drugs kavikkal chooram was administered at the dose level of 1 gm. in two divided doses with water to all the 22 cases selected for trial. Out of the 22 cases, 11 cases got complete relief, 5 cases showed marked relief and the remaining did not show any response.

Vali Gunman (Peptic ulcer)

This disease condition is one of the eight varieties of the Gunmarogangal found in the Siddha texts. The Central Research Institute, Chennai has taken up clinical trial on this disease condition to determine the effectiveness of Suyamagni Chendooram. The patients suffering with severe pain in the epigastric region, nausea, vomiting with both eruption and haematosi s etc. were selected for the trial. The diagnosis was further confirmed on modern parameters such as FTM, Barium meal, X-ray etc. The trial drug administered at the dose of 100 ml. filled in the gelatine capsules, twice a day for five days. Omam bath and gengeli oil bath have been advised on 6th and 7th day. The course was repeated for two more times. 15 cases were taken up for study during reporting period. Out of the 15 cases, 5 cases showed marked relief, 6 cases moderate relief and 4 cases were discharged against medical advise.

Murai Jwaram (Malaria)

The study has been taken up by Clinical Research Unit (Siddha), Palayamkottai to determine the efficacy of the drug Linga Chendooram on the cases of Murai jwaram. The drug at the dose level of 130 mg. along with Nilavembu kudineer was administered two times a day. All the 46 cases undertaken for trials were well responded and relieved of all signs and symptoms found at the end of the treatment.

Putru Noi (Cancer)

This disease condition has been described in the Siddha text under the head "Verananoigal". The study was undertaken in Central Research Institute, Chennai. The coded drugs RGX, VK2 and SKX formulated by the Institute were taken up for the trial. The drugs at the dose of 250 mg. each filled in gelatine capsules were administered, twice daily along with milk. Ulcers and tumors were dressed with Nithiyakalayani karkam and Pachaiennai with Thurusu. It is noted that all the cases showed considerable reduction in the size/growth of ulcer/tumours, reduction/or arrest of the discharge and also reduction of pain. 12 cases were studied during the reporting year. Out of which one case showed marked and 3 cases moderate relief, 3 cases showed mild relief and 5 cases were discharged at request.

Eraippu Noi (Bronchial asthma)

Eraippu Noi is one of the respiratory disease described in Siddha literature. The efficacy of the drugs Irunelli Karpam, Swasakudori Mathirai were studied at the Clinical Research Unit, Trivandrum. 10 cases of Eraippu Noi were selected for trial during the period. Out of 10 cases, 5 cases showed complete relief, 5 cases showed marked relief.

Venkuttam (Leucoderma)

Venkuttam is one of the eighteen varieties of Kutta Noigal described under skin diseases in Siddha texts. The efficacy of the drugs Karunthaulasicharil, Pathapaduthappata, Parangi pattai choornam, Ponnimillai Chendooram and Chirattai Thailam (external use), Annabedi chendooram, Poovarsampattai choornam and Kavelamapattai choornam were studied in the Clinical Wing of Drug Research Scheme (MD), Chennai and Central Research Unit (Siddha), Trivandrum.

The details of the results of the treatment are Tabled below. The study revealed that the trial drugs did not show any toxic/side effects even on prolong administration.

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

S.No.	Drugs	Total Cases	Results of the trial			
			Comp. Relief	Marked Relief	Moder. Relief	LAMA
1	Parangi pattai Chooram Karbogi Thailam	13	-	2	4	7
2	Aya Chendooram Karbogi thailam	8	-	1	1	6
3	Annabedi Chend- ooram	6	3	1	1	1
4	Poovarasam pattai choornam	5	2	1	1	1
5	Karuvelem choornam	5	1	2	1	1
	Total	37	6	7	8	16

Out Patients/In Patients Attendance at a Glance

S.No.	Instt./ Unit	No. of Patients Attended OPD			No. of patients Attended IPD
		New	Old	Total	
1.	CRI, Chennai	8315	19782	28133	260
2.	RRI, Pondicherry	5211	14561	19772	75
3.	CRU, Palayamkottai	357	2753	3110	-
4.	CRU, Trivandram	837	10044	10881	-
	Total	14,720	47,140	61,896	335

3. HEALTH CARE RESEARCH PROGRAMME

Health Care Research Programme has been carried out by the Mobile Clinical Research Units attached with Central Research Institute, Chennai and Regional Research Institute, Pondicherry and also

two Tribal Health Care Research Projects at Kalasa (Karnataka) and Tirupathur (Tamil Nadu).

Tribal Health Care Research Projects, Tirupathur

The team conducted periodical study tours in the 19 pockets such as Kumarannagar, Sowde Kuppam, Karuppanur, Guddur, Thiriyaram, Malai rediyur, Paarundappalli, Bommikuppam, China Udayamuthur, Eariyur, Pugalaikaranur, Pallalapalli, Kizhakku Medu, Kahirampatti Pallavalli, Srirangapatti, Nethaji Nagar, Jayapuram, Melguddur also nearby villages of Tirupathur Block. The team conducted 21 trips and covered 22,115 individuals from the total population 3013 patients were provided incidental medical aid for the treatment of Erigunman, Itaippunoi, Kudarpuzhunoi, Neerkkovai Moolam, Palnoigal, Sirangu, Peenasam, Soothaganoi etc.

Tribal Health Care Research Projects, Kalasa

The team conducted 33 visits and about 28,880 individuals were covered and health statistics were recorded. 1,302 cases were provided incidental medical aid. Erappunoi, Erumal, Gunmam, Valigunmam, Karappan, Keelvayu Suramoothalnoi, Peenasam etc. were found common in the area. Out of 1302 cases 394 cases are new and 908 cases are old.

Mobile Clinical Research Programme :

The team conducted 30 visits to the village patients during the reporting year and collected information on 1600 individuals. Incidental medical aid were provided to 712 patients. It was also noted that most of the villagers were suffering from one or more diseases. Irumal, Eraippunoi, Vaeruvai Vellai, Muttuvai, Thalivalli, Surangoigni, Tholnoigal, Pun, Naalpattpun etc. were commonly found in the areas covered under the study. Out of 712 cases treated during visits, 108 cases are new and 604 are old.

4. MEDICO-BOTANICAL RESEARCH PROGRAMME

Survey of forest areas for procuring drugs and arranging the supply of required materials for Research purposes occupies an important place. Medico-Botanical Survey Unit functioning at the Govt. Siddha

Medical College, Palayamkottai has taken up this task. This Unit was established in 1971. During the past three decades, the Unit is engaged in exploring the availability of medicinal plants especially used in Siddha medicine, in the forest areas of Tamil Nadu. The study includes identifications, quantitative and qualitative analysis of the genuine drugs, their substitute/adulterants etc.

During the reporting year, the Survey Unit conducted 9 tours in and around Tirunelveli and Kanyakumari forest areas and also Ramanathapuram forest areas and also for collecting the medicinal plants to supply to other Units. 265 specimens were collected during these drugs collection tours (Field booth No. 6701 to 6966) and these belong to 79 families, 223 genera and 237 species were collected and reported. 321 specimens were also collected during such tours for herbarium.

From the total collection, 368 herbarium specimens were identified and mounted on the, sheets. Out of the plant specimens added to the herbarium the following are some of the important and widely used in Siddha medicine.

Siddha Name	Botanical Name
Thiratchal	Vitis vinifera L
Sirupayir	Vigna radints L.
Moovilai	Uraria Lagopoides (L.)
Mulmurungal	Erythrina variegata L.
Tirukalli	Euphorbia tiruchalli L.
Siruthelkoduksi	Heliotropium zeylanicum
Thulukkapayir	Teramnus labialis spreng.
Orithal thamarali	Hybanthes emauseprmus (L).
Konji	Glycosmis macrocarpa Wight.
Maravetti	Hydnocarpus laurifolia
Alam Panei	Arenga wightii Griff.
Vazhanthi	Legendendru ovata (L.) Thw.
Nattu Koshtani	Costus speciosus (Koen.)
Mulsenai	Amorphohallus sytvaticus
Venkat	Vateria India L.
Chembaravalli	Ampelocissus arnotiana Hook.

Perumkarudakodi	<i>Aristolochia tagala</i> Cham,
Pazhupagal	<i>Momordica dioica</i> Roxb.
Periyangai	<i>Polygala javana</i> DC
Karuvilanji Kadam	<i>Smilax zeylanica</i> L.
Kodimanjal	<i>Cosciniun fenestratum</i> Colebr
Nilappanaikidangu	<i>Curuligo orchoides</i> Gaertn
Karuva	<i>Cinnamomum verum</i> Presl.
Kolinji	<i>Alpinia galanga</i> Sw.
Sikappu ulli	<i>Eleutherine palmifolia</i>
Karuomathithai	<i>Datura metel</i> L.
Poonkurunthu	<i>Biophytum sensitivum</i>
Thulasi	<i>Ocimum tenuiflorum</i> L.
Nithyakalyani	<i>Catharanthus roseus</i> (L.)
Muthiyar koonthal	<i>Merremis tridentate</i> (L.)
Vetpalai	<i>Wrightia tinctoria</i>
Manjal	<i>Curcuma longa</i> L.
Nuna	<i>Morinda pubescens</i>
Neeli	<i>Indigofera tinctoria</i> L.
Puli	<i>Tamarindus indicus</i> L.
Kuppaikerrai	<i>Amaranthus roxburghianus</i>
Maruthu	<i>Terminalia paniculata</i> Roth.
Thodikki	<i>Zizyphus glabrata</i> Heyne
Mottai	<i>Xanthophyllum flavescens</i>
Malati	<i>Aganosma cynosa</i>
Gnarai	<i>Syzygium caryophyllum</i>
Karuvilangikoodam	<i>Smilax zeylanica</i> L.
Nilappangakilangu	<i>Glycosmis macrocarpa</i> Wight.
Karumaruthu	<i>Diospyros enenum</i> Koen
Sirukurinjan	<i>Gymnema sylvestre</i>
Siruthumbai	<i>Leucas biflora</i> (Vahl.) R. Br.
Salappanai	<i>Cycas circinalis</i> L.
Pasalai	<i>Portulacae oloracea</i> L.
Kanavazhai	<i>Commelina benefalensis</i> L.
Paruppukeerai	<i>Talinum cuneifolium</i> Willd.
Vellaikuntrimani	<i>Abrus precaborius</i> L.
Perumpeelai	<i>Aerva persica</i> Merr.
Karu nocchi	<i>Gendarussa vulgaris</i> Nees.
Poovarasu	<i>Sida acuta</i> Burm. f.

Poosani	<i>Cucurbita maxima</i> Due.
Siruthelkoduikki	<i>Heliotropium zeylanicum</i>
Thorraisurungi	<i>Mimosa pudica</i> L.
Peypirkku	<i>Luffa acutangula</i>
Paruppu Keeral	<i>Talinum cumeiforium</i>
Kadugu	<i>Brassica juncea</i>
Periyapoonai Kanchi	<i>Mucuna atropurpurea</i> DC.
Salappanai	<i>Cycas circinalis</i> L.
Kattukoyya	<i>Eugenia chatcadensis</i> Bedd.
Kalthanki	<i>Cissampelos pareira</i> L.
Kuruvankanda Mooli	<i>Thottea siliquosa</i>
Nellakuravam	<i>Hedyotis purpurascens</i> Hook. f.
Athalai	<i>Jatropha glandulifera</i> L.
Korandi	<i>Cassia nigricans</i> Vanl.
Naithulasi	<i>Ocimum americanum</i> L.
Kozhunji	<i>Tephrosia pumila</i>
Kanjira pulu	<i>Eragrostis japonica</i>
Muttapasi	<i>Sargassum</i> Spe.
Kadarpasi	<i>Gelidium</i> Spe.
Oonchai	<i>Albizia amara</i>
Eluthanipoondu	<i>Launea sarmentosa</i>
Adambu	<i>Ipomoea pescaprae</i>
Parpadagam	<i>Mollguo distincha</i> Ser.
Pasumunnai	<i>Premna servatifolia</i> L.
Seenthil	<i>Tinospora cordifolia</i>
Virali	<i>Dodonaea viscosa</i>
Milagaranai	<i>Toddalin asiatica</i>

11 Different part of the plants were collected and added to the Museum collection maintained by the Unit raising the total of 785 drug samples.

15.00 kg of plant parts were collected and supplied to Institutes/Units/Centres of the Council and also outside Institutions like National Institute (Ay.) Jaipur, Institute of Himalayan Bio-resources Technology, Simla (H.P.), NBRI, Lucknow, Indian Institute of Chemical Technology, Hyderabad (A.P), Institute of Pharmacological Science, Chandigarh, PLIM, Ghaziabad, TBGRI, Trivandrum (Kerala). Ayurveda Mahavidyalaya, Nagpur, ITRC Lucknow, Institutes functioning at Hyderabad and Chennai of CCRUM etc. The Unit is also meeting the raw drug requirement for standardization of single drugs allotted to Council Pharmacognostical Laboratories functioning under the Councils and also certain NGOs (established and separately funded by the Ministry).

37 Folk-medical claims were listed in the report, collected from Kannia tribes of Kanya Kumari forest division for treating/managing certain disease like jaundice, migraine, poisonous sting, diarrhoea, cough, scabies, ulcers/tumours due to STD infection, fever with rigor, instestinal worms, wounds, ulcers, snakebite, piles, fissure, measles, bronchitis, dogbite, scorpionsting, etc. apart from certain common ailments such as diseases connected with eyes, ear, teeth etc.

S. No.	Name of the Disease	Local Name	Local Treatment
1	Jaundice	...	...
2	Migraine	...	...
3	Poisonous sting	...	...
4	Diarrhoea	...	...
5	Cough	...	...
6	Scabies	...	...
7	Ulcers/tumours due to STD infection	...	...
8	Fever with rigor	...	...
9	Instestinal worms	...	...
10	Wounds	...	...
11	Ulcers	...	...
12	Snakebite	...	...
13	Piles	...	...
14	Fissure	...	...
15	Measles	...	...
16	Bronchitis	...	...
17	Dogbite	...	...
18	Scorpionsting	...	...

The following folk medicines were collected from the tribes of Kanya Kumari forest division for treating/managing certain disease like jaundice, migraine, poisonous sting, diarrhoea, cough, scabies, ulcers/tumours due to STD infection, fever with rigor, instestinal worms, wounds, ulcers, snakebite, piles, fissure, measles, bronchitis, dogbite, scorpionsting, etc. apart from certain common ailments such as diseases connected with eyes, ear, teeth etc.

S. No.	Name of the Medicine	Local Name	Local Treatment
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5. PHARMACOGNOSY RESEARCH PROGRAMME

The Pharmacognosy Research Programme is being undertaken at Pharmacognosy Research Wing functioning in Drug Research Scheme (MD) Chennai. During the reporting year

pharmacognostic study on the following drugs were reported.

- | | | |
|--------------------|---|---|
| 1. Karuten Kilanku | - | <i>Corallocarpus epigaues</i> C.B. Clarke - Tuber |
| 2. Perunkancori | - | <i>Laportea crenulata</i> Gaudich - Root |
| 3. Puliynamapattai | - | <i>Tamarindus indicus</i> L. - Bark |
| 4. Sarkarai Vembu | - | <i>Scoparia dulcis</i> L. - Whole plant |
| 5. Nagamalli | - | <i>Rhinacanthus nasutus kurz</i> - Leaves |
| 6. Iluppai | - | <i>Madhuca longifolia</i> - Leaves |
| 7. Agathi | - | <i>Sesbania grandiflora</i> -Aerial portion |
| 8. Semmulli | - | <i>Barleria prionitis</i> - Whole plant |
| 9. Ammanpacharisi | - | <i>Euphorbia hirta</i> L. - Whole plant |
| 10. Thuthi | - | <i>Abutilon indicum</i> L. - Whole plant |

The study includes medicinal uses of the drug, its distribution, qualitative availability and description beside macro and microscopical characters, Physico-Chemical constants and phyto-chemical screening for the presence of active principles.

6. CHEMICAL RESEARCH PROGRAMME

The Chemical Research Programme has been carried out by the Chemistry Wing of Drug Research Scheme (MD), Chennai. The following drugs were studied during the reporting year.

1. Thumbai (*Leucas aspera* (Wild.) Link.)
2. Pancha vaika choornam
3. Parangi chakkai choornam

The study includes the isolation of active compounds from the above drugs.

7. PHARMACOLOGY RESEARCH PROGRAMME

The Pharmacology Research Programme has been carried out by the Pharmacology Section of the Central Research Institute, Chennai and Pharmacology Wing to Drug Research Scheme (MD), Chennai. The

study has been conducted on the pre-determined experimental models in the laboratory attached to the Institute. The following single/compound drugs were studied for their efficacy and also to determine their effect as anti-inflammatory, antitoxic and analgesic.

1. Thalaka Mathirai
2. Thazhamu Mathirai
3. Swasagudori pills
4. Kuppaimeni Thilam
5. Pavalamali vithai
6. Vathakesari Thailam
7. Idivallathi Mezhugu
8. Sivanar Amirtham
9. Single Drugs
 - a) Tuvarai-roots
 - b) Vallarai

Acute Toxicity Study

The drug Thalaga Mathirai is non toxic upto 8000mg per kg and showed mortality of 33.33% in the doses of 9000 & 10000 mg per kg body weight on albino mice. Swasa Kuddoori pills found to be nontoxic upto 5000 mg/kg on both the species of albino rats and mice and showed mortality of 33.33 from 6000-9000 mg/kg and 50% in 10000 mg/kg body weight. Mudakkatan thailam is found to be non toxic upto 20 ml/kg on both the species of rats and mice. Kuppaimeni thailam found to be toxic showing mortality of 33.33% on albino rats and 50% on albino mice respectively in the doses of 15 and 20ml/kg body weight. Mudakkattan choornam is non-toxic upto 8000 mg/kg and 5000 mg/kg on albino mice and rats respectively. Thazhambu Mathirai showed 50% mortality on albino mice in the dose level of 10000 mg/kg body weight. Indivallathi choornam is nontoxic upto 9000 mg/kg on both the species of albino mice and rats. Vatha Kesari thailam is non-toxic upto 20 ml./kg and showed 16.66% mortality in 30 ml./kg body weight dose level. Pavalamalli seed alcoholic and hexane extract is non-toxic upto 5000 mg/kg on both the species of rats and mice. Uthamani choornam is non-toxic upto 5000 mg/kg on albino mice and rats. Naval stem bark choornam is nontoxic upto 500mg/kg on both the species of albino rats & mice and showed 16.66% mortality in the dose level of 5000mg/kg body weight on albino rats.

Anti-Inflammatory Study :

Carrageenin induced paw odema study with the drug Kuppaimeni thailam 5ml/kg, Mudakkatran Thailam 2 and 5 ml./kg, Pavala Malli seed alcoholic extract 50,100,200 & 500 mg/kg, Uthamani choornam 50 and 100mg/kg and Naval seeds 50,500 and 5000mg/kg body weight were carried out. The data are to be analysed statistically and the results will be communicated.

Analgesic Studies :

Acetic acid induced writhing episode on albino mice 25 mg / kg with the drug Sivanar amrutham showed significant activity. Eddy's hot plate thermal stimulus study on albino mice with the drug Sivanar amrutham in the dose level of 25 mg showed significant activity and with the drug Thuvarai root choornam in the doses of 50,500 and 3000 mg/kg. body weight and Vallarai choornam in the doses of 50,500 and 3000 mg/kg were carried out. The data are to be analysed statistically and the results will be communicated in due course of time.

8. PHARMACEUTICAL/ STANDARDISATION RESEARCH PROGRAMME

The drug standardization plays an important role for obtaining authentic medicinal preparations and genuine single drugs for the therapeutic efficacy. It also occupies important place in both drug and applied clinical research because this provides approach data for obtaining

genuine single drugs and authentically prepared compound medicines. The standardization work has been taken up by the Council to study Siddha Formulary (Part-I) and also the single drugs which are entering into those formulations. The study was entrusted with Drug Standardisation Research Unit at 1) CSMDRIA, Chennai 2) Drug Standardisation Research Unit at RRI (DR), Trivandrum and 3) Drug Standardisation Unit at RRC (Ay.), Bangalore.

The Programme aims at the study of single drugs, pharmaceutical process involved in the manufacture of the formulations and finished products including laying down analytical standards.

List of single drugs on which phyto-chemical studies have been done (Analytical studies)

S. No.	Name of the Drug	Parts Analysed
1.	Odimarm (<i>Ocimum sanctum</i>)	Stem bark
2.	Puliyarani (<i>Ocimum sanctum</i>)	Whole plant
3.	Mulam (<i>Citrus vulgaris</i>)	Seeds
4.	Elavoo (<i>Bombax pentadrum</i>)	leaves
5.	Elavoo (<i>Bombax pentadrum</i>)	flower
6.	Uppilonkondi (<i>Pentropis microphylla</i>)	whole plant
7.	Manalieerai (<i>Ginelia pharnoceoides</i>)	whole plant
8.	Nilavagai (<i>Cassia tora</i>)	leaves
9.	Nilavagai (<i>Cassia auriculata</i>)	leaves
10.	Pontagarai (<i>Cassia occidentalis</i>)	leaves
11.	<i>Lowsonia inermis</i> L.	leaves
12.	<i>Eriodendron anfractuosum</i>	stem bark
13.	<i>Ipomoea hederacea</i>	seed
14.	<i>Pentatropis capensis</i>	aerial root
15.	Muck paradisiacal	Rhizome

Pharmacopoeial standards (analytical standards) of finished products :

1. Nandukkal parpam
2. Kalnar parpara
3. Annabedi chenduram
4. Appiraka chenduram,
5. Padikara parapam
6. Nandhi Mezhugu
7. Thanga parpam
8. Purnachendrodayam
9. Ashta Bhairavaram
10. Sulai Kuderm
11. Paccha Karpoora Mathirai
12. Kunnumappoo Mathirai
13. Visha kuzhambu
14. Chukku thailam
15. Kerappam thailam
16. Virena sanjeevi thailam
17. Punga thailam
18. Mayana thailam
19. Arakku thailam
20. Omatheenew
21. Piraminey
22. Indivallathi

Pharmacognosy

The pharmacognostical identification of the following drugs/plants which enter into the Siddha Formulary, Part-I have been done and reported.

1. Odimaram (*Lannea grandis*)
2. Ilavoo (*Eridendron anfractuoxum*)
3. Manali Keerai (*Giesekia pharnacodies*)
4. Uppilankodi (*Pentatropis capensis*)
5. Ayil (*Holoptelia integrifolia*)
6. Perungoli (*Salvadora persica*)
7. Kakkatan (*Ipomoea hederacea*)
8. Thuthuvlai (*Solanam trilobatum*)
9. Puliyal (*Oxalis corniculata*)

9. PHARMACY

The pharmacy attached to Central Research Institute (Siddha), Chennai is engaged in the preparation of classical preparations found in the Siddha literature and also chosen trial drugs for the Institutes/Units of Siddha medicine under the Council.

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

The prepared medicines based on the method given in the literature are strictly followed in the Pharmacy. Varieties of preparations both required for research and general use are being prepared in the pharmacy such as Parpam, Chendooram, Choornam, Thailam, Nei, Parpam, Ennai, Kalkam etc. During the reporting period 800 kg. of Chendooram, Choornam, Parpam, etc. and 1105.3 litres of oil based preparations were prepared.

10. LITERARY RESEARCH PROGRAMME

Literary Research Programme has been carried out by the Literary Research and Documentation Department, Chennai. The works carried out during the reporting year are as given under:-

1. Konganar Muthal Kandam-1000. First edition was prepared, compared and corrected with original text. The Preface, Index and Classification, proof correction works were carried out and the printing work was completed and published on 26.11.1999.
2. Konganar Idai Kandam-1000 was prepared, compared and corrected with original manuscript as well as copied text. The proof correction work is being done; nearly 250 poems were corrected and printing is in progress.
3. Siddhar Kaya Karpam II (Revised edition) was prepared by adding Therayar Vithi. The copy compared, corrected with original text and ready for printing. Therayar Karpa Vithi is also included in the revised II edition.
4. Revised Edition of Cancer Workshop Book was taken up for Re-printing, for which the experts were requested to furnish the updated information about the cancer and treatments.
5. The Monograph of Psoriasis on 777 oil is also taken for revised edition for adding latest data alongwith photograph.
6. The translation work of Siddha Maruthuva Eliya Vazhakky Muraigal in Hindi was translated by our department and published.
7. The following books will be taken for the English and Hindi Translation work and awaiting for the Council's permission:
"Agathiyar Vaidhya Vallathi-600, Machaumun Perunool
Theriyar Sekarappa, Konganar Muthal Kandam-1000"
8. During this year the Council's publications were sold out worth Rs.10866/- (Rupees Ten thousand eight hundred and sixty six only).
9. The Printing Works in connection with "Seminar on Venpadai" is being prepared. After getting the approval from the Hqrs. this work will be taken for printing.
10. "Rate Herbs for Using Kayakarpam according to Siddha Literature" and "Method of Kaya Karp in Siddha Medicine" sent for Presentation in the Seminar at Coimbatore.

11. PUBLICATIONS AND PARTICIPATIONS IN THE SIDDHA MEDICINE

I. PUBLICATIONS

Sl No.	Name of the Author(s)	Title of the Paper	Name of the Journal	Date of Publication
1.	Ganapathiraman, K.	A Clinical Study on Aya Bringaraja Karpam in Vahuppu Noi	J.R.A.S., Vol. XX (No. 1-2) : 83-88	1999
2.	Masilamani, G.	Some of the Useful Herbs for Snake-bite Practiced by Gounda Tribes of Tamil Nadu	B.M.E.B.R., Vol. XVIII (No. 3-4) : 117-122, 1997	1999
3.	Rajalakshmi S. and Veluchamy, G.	Yugi's Pramegam and Diabetes mellitus - An Analogue	Bull IIHM, Vol XXIX (No. 1) : 83-88	1999
4.	Saraswathy, A. et al.	High Performance Thin Layer Chromatographic Finger Print Parameters of Trikatukuc Curanam	B.M.E.B.R., Vol. XIX (No. 1-2) 76-85, 1998	1999
5.	Saraswathy, A. et al.	Analysis of Tamirapparpam	Ay. Mahasammelan Patrika Vol. 86 (9) : 57-60	1999
6.	Saraswathy, A. & Girija Rani, M.	Development of High Performance Thin Layer Chromatographic Method for Maka Elatik Kulikai	Indian Drugs, 37 (1) : 44-50	2000
7.	Saroja, P.R. <i>et al.</i>	Role of Chundaivatral Churnam in the Management of (non-specific diarrhoea) Athisaram	J.R.A.S., Vol. XIX (No. 3-4) 128-131, 1998	1999

II. PARTICIPATION

S. No.	Name of the Author(s)	Title of the Paper	Name of the Conference/Seminar Workshop and Date of Participation
1.	Chelladurai, V.	Export Potential of Medicinal Plants through Tuticorin Harbour.	Millennium Seminar on Medicinal Plants held at Xt. Xaviers College, Palayam Kottai, 3-5/2/2000
2.	Ganapathy V. & Chelladurai, V.	Siddha Kayakalpa Plants cultivation and their importance.	-do-
3.	Gayathri Devi, V. <i>et al.</i>	Chemico-botanical differentiation of the two sources of Kodikka-kkattan used in Siddha System of Medicine.	Proceeding of the National Seminar on Conservation of Medicinal Plants, held at Trivandrum, 1999
4.	Gayathri, Devi, V. <i>et al.</i>	Assurance of the quality of prepared Siddha medicines.	Proceeding of the 9th Swadeshi Science Congress, held at Kollam, 1999
5.	Ghosh D. <i>et al.</i>	Pharmacological Research Studies carried out in CRI (S) Chennai since inception-A summary review.	Seminar on Research Achievements of Ayurveda and Siddha organized by CCRAS held at New Delhi, 25-26/10/1999
6.	Ghosh D. <i>et al.</i>	Anti-inflammatory, analgesic and toxicity studies of Sivanaramirtham	International Congress on Ayurveda 2000, held at Chennai 28-30 Jan., 2000
7.	Jothi Pandian, S.J. <i>et al.</i>	Rare herbs for using Kaya Karpam according to Siddha literature	National Seminar on Siddha System of Medicine held at Coimbatore, 9-10th May, 1999
8.	Padma Sorna & Subramanian, M.	Lesser known Potent herbs from the rural folks of Tirunelveli.	Millennium Seminar on Medicinal Plants held at St. Xaviers College, Palayam Kottai, 3-5/2/2000
9.	Rao, K. K. & Veluchamy, G.	Research of Skin Diseases with Siddha drugs	Seminar on Research Achievements of Ayurveda & Siddha organized by CCRAS held at New Delhi, 25-26th Oct., 1999
10.	Ravishankar, V. & Singhal, R. K.	Effect of Siddha Herbo-mineral and herbal drugs in the management of Diabetes mellitus (Neerazhivu).	-do-
11.	Veluchamy, G.	Clinical evaluation of Siddha Drugs on Putri Noi (Cancer) at CRI(S), Chennai.	-do-

IV. ACKNOWLEDGEMENT

The Director of the Council places on record its deep appreciation for the services 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 conducting 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 & 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 (Technical), Programme Officers, Statistical Officer and Assistant Research Officers (Ay.) for bringing out the Annual Report in the present form.

26