CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA

ANNUAL REPORT

1995-1996

(Department of Indian System of Medicine & Homoeopathy)

MINISTRY OF HEALTH AND FAMILY WELFARE

(Government of India)
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CONTENTS

S.No.	Subject	Page No.
I.	**Preface**	V
II.	**Administrative Report**	1
III.	**Technical Report- Ayurveda**	4
1.	Abberviations used for Institutes/Centres/Units	4
2.	Clinical Research Programme	10
	(A) Clinical Therapeutic Trials	10
	(B) Disease groups, number of patients and participating projects under Clinical Research Programme during 1995-1996.	31
	(C) Statement showing number of patients attended at OPD and admitted/discharged in IPD during 1995-1996.	33
	(D) Health Care Research Programme	34
3.	Medico-Ethno-Botanical Survey Programme	42
4.	Cultivation of Medicinal Plants	47
5.	Pharmacognosy Research Studies	53
6.	Plant Tissue culture studies	55
7.	Musk Deer Breeding Programme	56
8.	Chemical Research Programme	57
9.	Pharmacological Research Programme	65
10.	Drug Standardization Research Studies	72
11.	Literary Research Programme	75
12.	Amchi Research Unit -Leh, Laddakh	80
13.	Family Welfare Research Programme	81
14.	Publications/Participations	86

IV. Technical Report- Siddha

1.	Abbreviations used for Institutes/Units	99
2.	Clinical Research Programme	100
3.	Health Care Research Programme	106
4.	Medico Botanical Research Programme	107
5.	Pharmacology Research Programme	109
6.	Drug Standardisation Research Studies	111
7.	Pharmacy	113
8.	Literary Research Programme	114
9.	Acknowledgement	115

PREFACE

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

Clinical Research Programme

Clinical conditions studied in Ayurveda during the reporting period include Amavata (rheumatoid arthritis), Paksvadha (hemiplegia), Gridhrasi (sciatica), Saisaviyavata (poliomyelitis), Amlapitta (hyperacidity), Parinamasula (duodenal ulcer), Annadravasula (gastric ulcer), Kamala (jaundice), Bhagandara (fistula-in-ano), Tamaka swasa (bronchial asthma), Madhumeha (diabetes mellitus), Medoroga (obesity), Mutrasmari (urolithiasis) Vyanbalvaismya (hypertension), Hridroga (ischaemic heart diseases), slipada (filariasis), Kalazar, Visamajwara (malaria), Kitibha (psoriasis), Svitra (leucoderma), Apasmara (epilepsy), Kuposan (malabsorption syndrome) and Swetapradara (leucorrhoea).

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

During the execution of this programme, medical aid to 2,80,289 patients through Out Patient Departments and 2,039 patients at In-door Patient Departments functioning at different Institutes/Centres/Units of the Council have been provided.

Health Care Research Programme

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

Health Care Research Programme and Tribal Health Care Research Programme. These programmes are modulated to have rural bais so that benefits of the research programme carried out can reach the grass root level. Under these programmes, teams of research personnel visit each and every house in the villages/tribal pockets selected/adopted and provide incidental medical aid besides collecting data pertaining to the nature and frequency of prevalent diseases, food habits with regard to different seasons, socio-economic status, natural resources, the standard and types of treatment available to the rural/tribal folk. During the period under report a population of 1,21,003 individuals pertaining to 81 villages including 33 tribal pockets with a population of 36,400 have been covered under this programme and incidental medical aid provided to 37,901 patients including 16,891 patients from tribal villages.

Drug Research Programme

The Drug research programme consists of Medico-botanical Survey, Cultivation of Medicinal Plants, inter-disciplinary research programme like Pharmacognostic, Chemical, Pharmacological and Toxicological studies besides Drug Standardisation studies. Under Medico-botanical Survey Programme. Local survey tours were conducted for collection of raw drug material for use in OPD/IPD and supply to other Institutes/Centres/Units and PLIM, Ghazibad for research purposes. The Survey Units have also taken up maintenance work of their Herbarium and Museum. About 450 medicinal species are presently growing in different Gardens. Pharmacognostical studies of 13 drugs, Chemical studies of 22 drugs and Pharmacological and Toxicological studies of 43 drugs used in Ayurveda and Siddha System of Medicine have been carried out during the reporting period. The Council is also maintaining a Musk Deer Breeding Farm at Mehrori in Kumaon Hills and there were 19 animals at the end of reporting period.

Under Drug Standardisation research studies 36 single drugs, 15 finished products and seven process of manufacture have been studied besides laying analytical standards for 3 formulations and Phyto-chemical analysis of 13 drugs and pharmacognosy of 14 drugs used in Ayurveda and Siddha.

The Council has organised a workshop on Rasa-shastra on 28th August, 1995 at Hastinapur (UP) and another on Twakroga at Trivandrum during 5th to 6th January, 1996.

Literary Research Programme

Literary Research Programme broadly covering 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", "Bulletin of Indian Institute of History of Medicine" besides the "News letter".

Family Welfare Research Programme

Clinical screening and Pharmacological studies of the oral contraceptive agents are being carried out under this programme. 323 new cases were studied besides old cases carried forward from the previous year for clinical evaluation of oral contraceptive agents like AYUSH-AC IV, K capsule, Pippalyadi yoga, Neem oil and Vandhyavari (Vicoa indica). Pharmacological studies on eight drugs have been carried out.

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

Dated: November, 1996

H.R. Goyal

(H.R. Goyal)
Director Incharge
and
Member-Secretary

ADMINISTRATIVE REPORT

The Central Council for Research in Ayurveda and Siddha is a society registered on 30th March, 1978 under the societies Registration, Act XXI of 1860. During the period under reporting ending 31st March, 1996. The Membership of the Society and Governing Body of the Council were as under:-

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

	9. Dr. Prof. P.K. Das
	10. Prof. A.N. Namjoshi
	11. Prof. C. Santhamma
Director NIA, Jaipur	Dr. C.H.S. Shastri
Director, NIS, Madras	Vacant
Member-Secretary	Director, CCRAS

During the period under report the Governing Body met once on 20.2.96 and the following important decision were taken.

1. Approved the trial of Ayush-64 an anti malarial drug and inclusion of the same in NMEP.

2. Adopted the Annual Report of the Council for the year 1994-95 and Audit Statement of Accounts for the Year 1990-91, 1991-92, 1992-93 & 1993-94.

3. Ratified the acceptance of donation of Rs. 15,000/- from Mrs. Shakti Khanna to C.R.I. (Ay), Bombay and Colour T.V. from French Delegation to I.I.P. Cheruthuruthy.

4. Ratified the implementation of Career Advancement Scheme in respect of C.C.R.A.S. employees.

5. Ratified the adoption of staff car rules for the CCRAS.

6. Approved the enhancement of delegation of power to the Director, CCRAS upto Rs. 2000/- p.m. in respect of appointment of part time worker subject to the condition that there is no increase in staff strength in the form of part time, casual and daily wages workers.

7. Authorised the President/Vice-President of the Council to reconstitute SAC (Ay) and SAC (Siddha).

8. Authorised Secretary (ISM&H) to constitute Review Committee to assess the Technical and Adminstrative performance of CCRAS.

9. Constituteted a Sub-Committee for identifying certain posts in various projects of Council.

10. Approved the upgradation of the post of Lab. Attd. in the pay scale of Rs. 800-1150, to Storekeeper (Jr) in the pay scale of Rs. 950-1500 in Chemical Research and Extraction Supply Unit, Calcutta.

11. Approved the enhancement of monthly rent C.R.I. (Ay), New Delhi.

12. Approved the amendments to Rules and Regulations to CCRAS to include the Secretary (ISM&H) and Joint Secretary (ISM&H) as official member in place of Secretary, Ministry of Health & F.W. and Joint Secretary (ISM).

13. Approved the grant-in-aid project for a period of 3 years on identification, validation and standardisation of raw material at Panwel.

14. Approved the grant-in-aid project for a period of 3 years on Aushadhi Nirman and their Clinical trial for treatment of Cancer.

Finance Committee

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

1.	Joint Secretary (ISM) Ministry of Health & F.W.	1. Sh. K. Chandramouli	- Chairman
2.	Deputy Secretary (IF) Ministry of Health & F.W.	1. Sh. V.S. Punni upto 21.12.95	Member
		2. Sh. K.P. Unikrishnan from 22nd Dec., 1995	Member
3.	One Technical member to represent Ayurveda	Vd. B.D. Triguna	Member
4.	One Technical member to represent Siddha	Dr. R. Kannan	Member
5.	Director, CCRAS		Member-Secretary

During the period under report the Standing Finance Committee met on 12.2.96.

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

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

in the services of the Council. The recruitment/promotion is done according to the roster points. The Council is having a total staff strength of 1575 employees and No. of SC/ST employees in different groups on 1.1.96 is as under: (upto 31.12.95).

Group	No. of employees	SC	Percentage of total employees	ST	Percentage of total employees
A	146	11	7.53	4	2.74
B	182	14	7.69	2	1.10
C	573	82	14.31	22	3.18
D	674	226	33.53	61	9.05
Total	1575	333	63.06	89	16.73

The Council is having nine Tribal Health Care Research Projects (Seven in Ayurveda and two in Siddha) which have been specially located in tribal pockets. These programmes envisage great scope not only to understand the local health problems and interdependent issues but also to identify and apply/advise the methods and measures suitable to surmount them. Besides some of the Research Centres are also located in rural area and through OPD/IPD of these Institutes, Centres and under Mobile Clinical Research Programmes and Community Health Care 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 7.4.95, 27.10.95 & 14.3.96.

Scientific Advisory Committee (Ayurveda)- 29th meeting on 27.8.95

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

1. Vd. B.D. Triguna — Chairman
2. Vd. S.S. Chhangani — Member

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

The Scientific Advisory Committee (Ay) met on 27.8.95 during the period under report and evaluated various Research Programmes/Schemes of the Council and provided necessary guidance and reviewed the on going programmes and suggested improvements wherever felt necessary.

Scientific Advisory Committee (Siddha)- 22nd meeting on 18.9.95

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

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

During the period under report, the Scientific Advisory Committee (Siddha) met on 18.9.95 and evaluated the programme and provided necessary guidance.

Organisational - Network of CCRAS

There are 5 Central Research Institutes, 7 Regional Research Institutes, 10 Regional Research Centres, 27 Research Units, 7 Tribal Health Care Research Projects, one Documentation and Publication Division, 12 Family Welfare Research Projects and one Research Project on Tibetan Medicines functioning under Ayurveda besides one Central Research Institute, one Regional Research Institute, 10 Research Units, two Tribal Health Care Research Projects and one Siddha Medicinal Plants Garden in Siddha system of Medicines.

Budget Provision

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

Scheme	Budget estimates 1995-96	Funds released 1995-96	Actual exp. 1995-96
Plan	330.00	350.00	
Non Plan	735.00	797.00	
F.W.R.S.	28.00	41.85	

Audited Statement of Accounts

The Accounts of the Council for the year 1995-96 for the period from Ist April, 1995 to 31st March, 1996 is being taken up by the D.A.C.R.

Workshops

The Council has organised a Workshop on Rasa-shastra on 28th August, 1995 at Hastinapur (UP) and another on Tvak Roga at Regional Research Institute (Ay), Trivandrum during 5th to 6th January, 1996.

TECHNICAL REPORT- AYURVEDA

Abbreviations used for Institutes/Centres/Units

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

29.	Clinical Research Unit (Ayurvedic and Modern Team under CDRS), Varanasi	CDRSV
30.	Indian Institute for Ayurvedic Drug Research, Tarikhet	IIADRT
31.	Captain Srinivasamurthy Drug Research Institute for Ayurveda, Madras	CSMDRIAM
32.	Jawahar Lal Nehru Ayurvedic Medicinal Plants Garden, Herbarium and Museum, Pune	JNAMPGHP
33.	Clinical Research Unit under FWRP, Patiala	CRUFP
34.	Clinical Research Unit under FWRP, Bombay	CRUFB
35.	Clinical Research Unit under FWRP, Lucknow	CRUFL
36.	Clinical Research Unit under FWRP, Jaipur	CRUFJ
37.	Clinical Research Unit under FWRP, Calcutta	CRUFC
38.	Clinical Research Unit under FWRP, Ahmedabad	CRUFA
39.	Clinical Research Unit under FWRP, Trivandrum	CRUFT
40.	Clinical Research Unit under FWRP, Varanasi	CRUFV
41.	Pharmacological Research Unit under FWRP, Jamnagar	PhRUFJ
42.	Pharmacological Research Unit under FWRP, Varanasi	PhRUFV
43.	Pharmacological Research Unit under FWRP, Bhubaneshwar	PhRUFBh
44.	Pharmacological Research Unit under FWRP, Trivandrum	PhRUFT
45.	Pharmacological Research Unit, Calcutta	PhRUC
46.	Pharmacological Research Unit, Lucknow	PhRUL
47.	Pharmacological Research Unit, Jodhpur	PhRUJ
48.	Pharmacological Research Unit, Varanasi	PhRUV
49.	Pharmacological Research Unit at CRI (Ay.), Delhi	PhRUD
50.	Pharmacological Research Unit, Trivandrum	PhRUT
51.	Toxicity Research Unit, Jhansi	TRUJh
52.	Chemical Research Unit, Calcutta	ChRUC
53.	Chemical Research Unit, Varanasi	ChRUV
54.	Chemical Research Unit, Hyderabad	ChRUH
55.	Chemical Research Enquiry, Lucknow	ChREL
56.	Pharmacognosy Research Unit, Calcutta	PcRUC
57.	Pharmacognosy Research Unit, Pune	PcRUP
58.	Indian Institute of History of Medicine, Hyderabad	IIHMH
59.	Literary Research Unit, Thanjavur	LRUT
60.	Documentation and Publication Division, New Delhi	DPDD

61.	Tribal Health Care Research Project (Ay.), Car-Nicobar	THCRPC
62.	Tribal Health Care Research Project (Ay.), Ziro	THCRPZ
63.	Tribal Health Care Research Project (Ay.), Palamau	THCRPP
64.	Tribal Health Care Research Project (Ay.), Jhabua	THCRPJ
65.	Tribal Health Care Research Project (Ay.), Chinchapada	THCRPCH
66.	Tribal Health Care Research Project (Ay.) Jagdalpur (M.P.)	THCRPJa
67.	Tribal Health Care Research Project (Ay.), Imphal (Manipur)	THCRPI
68.	Drug Standardization Research Project, Jamnagar	DSRPJ
69.	Drug Standardization Research Project, Varanasi	DSRPV
70.	Research Project in Tibetan System of Medicine, Leh	RPTSML
71.	Medicinal Plant Garden at RRC, Itanagar	MPGI

CLINICAL RESEARCH PROGRAMMES

Every bio-medical research keeps a priority for Clinical Research Programmes since it deals mainly with the human beings for the betterment of their health. Its improtance is further augmented and becomes more significant in reference to Ayurveda because the Science of Life is based mainly upon Clinical observations since time immemorial. The Clinical Research Programmes under the Council have been bifurcated into two catagories: i) Clinical Evaluation of Selected therapies in about 30 clinical conditions and ii) Community based Health Care Research Programmes. The Health Care Research Programmes include Survey, Surveillance, Community Health Care and Tribal Health Care Research Programmes.

A- Clinical Therapeutic Trials

The main objective of the Council through its Clinical Research Programmes is to evolve effective remedies for Chronic diseases from the treasure of Ayurveda. Few significant achievements in this direction during last quarter century may be enumerated as Ayush-64 for *Visama-Jwara* (Malaria), Ayush-56 for *Apasmara* (Epilepsy), Nimbatiktam for *Kitibha* (Psoriasis) and *Parinama-sula* (Duodenal Ulcer), Oil 777 for *Kitibha* (Psoriasis), *Ksara-Sutra* for *Bhagandara* (Fistula-in-ano), *Pancakarma* therapies for the management of *Vata-vyadhis* (Neurological disorders). Series of monographs on these studies have been compiled and published. Some of the drugs clinically studied have been patented and commercialised through N.R.D.C. About 45,82,000 patients have been treated in OPD and 35,500 patients have been admitted and extended medical assistance in IPD during the course of these studies.

In order to extract precise data, the studies have been suitably planned. Such an exercise was initially executed during 1978 with the preparation of a Programme Projection. It was further intensified and modified suitably during 1983, 1986 and 1992. The present Ongoing Programme Projection 1992-97) had been finalised and executed after extensive discussion in the Co-ordination Sub-Committee of SAC(Ay.). There are about 30 diseases

selected for the extensive trial under the ongoing Programme Projection. The trial drugs selected for the studies preserve sound classical footing. Apart from it, more than one treatment has been taken into account for a comparative evaluation. Multicentral trials have been conducted simultaneously with a common plan of study. The trial drugs have been manufactured and supplied under the supervision of the Council through its various/Institutes selected for the purpose.

The Clinical studies on *Amavata* (Rheumatoid arthritis), *Anna dravasula* (Gastric Ulcer), *Apasmara* (Epilepsy), *Arbuda* (Cancer), *Bhagandara* (Fistula-in-ano), *Gridhrasi* (Sciatica), *Kampa-vata* (Parkinsonism), *Kitibha* (Psoriasis), *Kuposana* (Malnutrition), *Madhumeha* (Diabetes mellitus), *Medoroga* (Lipid disorders), *Mutrasmari* (Urolithiasis), *Paksavadha* (Hemiplegia), *Pangu* (Paraplegia), *Parinama sula* (Duodenal Ulcer), *Saisaviya-vata* (Post Polio-paralysis), *Slipada* (Filariasis), *Tamaka Swsas* (Bronchial Asthma), *Visama Jwara* (Malaria), *Vrikka-Sotha* (Nephrotic syndrome) and *Vyan Bala Vaisamya* (Hypertension) etc. had been carried out during the year 1995-96. The assessment of *Prakriti* through objective parameters and its relationship with incidence of various diseases has further been continued. The hospitals functioning under the Council provided medical assistance and aid to 237503 patients at OPD level and 1,681 patients were admitted in IPD. The progress of work on each of the diseases is discussed herewith separately. A background note regarding "Progress made earlier" is also given in regard to each disease for a ready reference.

Āmavāta (Rheumatoid Arthritis)

The studies on *Amavata* had been conducted since inception of the Council and a number of single and compound drugs have been tried. *Sunthi Guggulu* and *Nirgundi guggulu* combination have shown good effect. Now the studies on assessment of the effect of *Pippali Vardhamana* with *Samira Pannaga Rasa* and *Mahayogaraja guggulu* with *Simhanada gugglu* and *Vaisvanara curna* has been taken up. Another study on *Asvagandha curna* with *Eranda taila* and *Pancakarma* therapy has also been taken up. These studies have been continued during this year also alongwith some other drugs continued from previous Programme Projection. A total number of 154 patients have been studied at CRIs Bhubaneshwar and Bombay, Indian Institute of Kayachikitsa, Patiala, Indian Institute of Panchkarma, Cheruthuruthy, RRI Calcutta and RRCs Jammu and Itanagar.

Table I

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.a)	Pippali Vardhmana, Samira Pannaga Rasa	RRIC	07	-	-	01	04	02
b)	Maha Yoga	CRIBh	22	08	01	05	-	08
	Raja Guggulu,	CRIB	05	-	03	-	01	01
	Simhanada	RRIC	11	-	-	03	06	02
	Guggulu, Vaisvanara Curna	RRCI	14	06	04	-	01	03
2.	Maha Yoga Raja Guggulu, Vaisvanara Curna	IIKP	38	-	12	03	04	19
3.	Asvagandha	RRCI	08	02	03	-	-	03
	Curna	RRCJ	18	04	09	03	01	01
4. a)	Asvagandha Kwatha	IIPC	19	11	03	01	02	02
b)	Pancakarma therapy	IIPC	10	04	02	02	01	01
5.	Asvagandha Curna, Baluka Sweda	CRIB	02	01	-	-	01	-
	Total		154	36	37	18	21	42

Paksavadha (Hemiplegia)

The Clinical assessment of the effect of *Ekangavira Rasa* and *Samira Pannaga Rasa* with *Snehana* and *Sastika Sali Pinda Sweda* in one group and a course of *Pancakarma* procedures in another group of patients have further been continued during the reporting period in 129 patients of *Paksavadha* at CRIs Bhubneshwar, Bombay and Delhi; IIK- Patiala and IIP, Cheruthuruthy. The earlier studies on 581 patients had shown significant effect of *Ekangavira Rasa* and *Pancakarma* group of treatment.

Table II

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.a)	Samira Pannaga Rasa	CRIBh	03	-	01	-	-	02
b)	Ekangavira Rasa	CRIBh	04	01	01	-	-	02
2. a)	Samira Pannaga Rasa with Pancakarma therapy	CRIB	02	-	01	-	-	01
b)	Ekangavira Rasa with Panckkarma therapy	CRIB	05	-	01	-	-	04
3. a)	Samira Pannaga Rasa, Nirgundi Taila, Abhyanga & Sastika Sali Pinda Sweda	IIPC	33	01	03	1	06	06
b)	Ekangavira Rasa, Nirgundi Taila, abhyanga & Sastika Sali Pinda Sweda	IIKP	22	-	07	04	01	10
c)	Ekangavira Rasa, Mahamasha Taila, Abhyanga & Sastika Sali Pinda Sweda	IIPC	27	01	08	12	03	03

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
4.	Ekangavira Rasa, Samira Pannaga-Rasa, Moharasnadi Kwatha, along with Masa Taila Abhyanga and Swedana with Nirgundi Kwatha	CRID	02	-	01	01	-	-
5.	Exclusive course of Pancakarma therapy.	IIPC	31	-	05	19	03	04
	Total		129	03	28	53	13	32

Saisaviya Vata (Post-Polio Paralysis)

The studies on the role of combination of *Ekangavira Rasa* with *Snehana* and *Sastika Sali-Pinda Sweda* in *Saisaviya Vata* have further been continued on 14 patients at CRI, New Delhi and IIP, Cheruthuruthy. Earlier observations on 181 patients have already shown reasonably good response. The details of observations made during reporting period may be enumerated as below:

Table III

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Ekangavira Rasa. Masa Taila. Abhyanga with Sastika Sali Pinda Sweda	IIPC	03	-	-	02	01	-

S.No	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
2.	Ekangavira Rasa with Sastika Sali Pinda Sweda	CRID	11	-	05	05	-	01
	Total		14	-	05	07	01	01

Gridhrasi (Sciatica)

The studies for the assessment of the effect of *Sudha Bhallataka* and a combination of *Trayodasanga Guggulu* with *Visatinduka vati* had been conducted on 190 patients of *Gridhrasi* (Sciatica). Further studies on 48 patients have been taken up at CRIs Delhi and Bhubaneshwar and IIP, Cheruthuruthy during the reporting year.

Table IV

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

S.No	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Trayoda-sanga Guggulu,	CRIBh	10	04	-	01	-	05
	Visatinduka Vati	IIPC	11	02	02	02	03	02
2.	Maharasnadi Kwatha internally & Nirgundi taila externally	IIPC	12	04	03	04	-	01
3.	Trayodas-anga Guggulu, Visatinduka Vati,	CRID	15	04	02	03	01	05

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
	Maharasnadi kwatha + Mahanarayana taila for Abhyanga and Nirgundi kwatha for Swedana							
	Total		48	14	07	10	04	13

Pangu (Paraplegia)

The trial of combination of *Gorocanadi Vatika, Ashwagandha Kwatha* and *Bala-aswagandha Taila Abhyanga* in comparison to a course of *Pancakarma* therapies had been already completed in 80 cases of *Pangu* (Paraplegia) prior to reporting period. Further, 20 more cases have been added to the trial during reporting period being attempted at IIP, Cheruthuruthy.

Table V

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Pancakarma Therapy with Murchita taila	IIPC	10	01	01	03	04	01
2.	Ashwaga-ndha kwatha, Gorocanadi Vati & Bala-aswagandha taiia Abhyanga	IIPC	10	01	-	02	06	01
	Total		20	02	01	05	10	02

Kampavata (Parkinson's Disease)

This is a disease which mostly affects the elderly people and makes them cripples. *Kampavatari-Rasa* alongwith *Bala-aswagandhadi-kwatha* and *Maha-masa Taila Abhyanga* was initiated in such cases during 92-93 at CRI, Bombay and 4 cases were registed for the trial. But the trial could not be sustained during 93-94 and 94-95. However, the trials of above said drugs in one group and *Kaishore Guggulu* alongwith *Punarnava kwatha curna* in another group have once again started in *Kampavata* during reporting period at CRI, Bombay as a pilot study. 2 patients in each group have been registered for the trial and the details of observation made there, are enumerated as below:

Table VI

Results of Clinical Studies of Ayurvedic Preparations on Kampa Vata (Parkinson's Disease)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Kampavatari Rasa+Bala-shwagandhadi kwatha with Mahanarayana Taila Abhyanga	CRIB	02	-	01	01	-	-
2.	Kaishore Guggulu, Punarnava kwatha curna	CRIB	02	01	01	-	-	-
	Total		04	01	02	01	-	-

Parinamasula (Duodenal Ulcer)

This disease has been extensively investigated at many centres of the Council using the drugs like *Suta Sekhara Rasa* and its combinations, *Satavari, Indukanta ghrita, Mahatikta ghrita* and the *Amasaya Praksalana* either with *Varuna* or *Bilva patra* decoctions in over 1000 cases. Further studies on assessment of the effect of *Indukanta ghrita* and *Mahatikta ghrita* in ulcer cases duly supported by endoscopic examination alongwith *Nimbatiktam* and *Amasaya Praksalana* in symptomatic cases have been continued during the reporting period at CRI, Bhubaneshwar, IIP Cheruthuruthy, RRI Trivandrum and CRU Kottakal and 130 cases of *Parinamasula* were further included in the studies.

Table VII

Results of Clinical Studies of Ayurvedic Preparations on Parinamasula (Duodenal Ulcer)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1. a)	Mahatikta Ghrita (Sodhana with Saman)	CRUK (endoscopic proved cases)	03	-	01	02	-	-
		CRUK (Symptomatic cases)	54	20	26	08	-	-
b)	Indukanta ghrita (Sodhana with Saman)	CRUK (endoscopic proved cases)	04	03	01	-	-	-
		CRUK (Symptomatic cases)	33	13	16	04	-	-
2. a)	Indukanta ghrita with Vaspa sweda	RRIT	03	01	02	-	-	-
b)	Mahatikta ghrita with Vaspa sweda	RRIT	01	-	01	-	-	-
3	Nimbatiktam	CRIBh	08	03	-	02	-	03
4. a)	Mahatikta ghrita (Snehana)	IIPC CRUH	02 01	01 -	01 01	- -	- -	- -
b)	Indukanta ghrita (Shehana)	CRUH	01	-	01	-	-	-
5.	Amasaya Praksalan with Bilva patra decoction	CRUH	20	-	20	-	-	-
	Total		130	41	70	16	-	03

Annadravasula (Gastric Ulcer)

A combination of *Pravala Pisti, Mukta Pisti* and *Jahara Mohara Pisti* in comparison to *Eladi.curna* and *Amalaki curna* has been studied on 200 patients of *Annadrava sula*. The same has further been continued and 37 patients were included during the reporting period through the studies being carried out at RRC, Itanagar and CRU, Hyderabad.

Table VIII

Results of Clinical Studies of Ayurvedic Preparations on Annadravasula (Gastric Ulcer)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1. a)	Eladi curna & Amalaki curna	RRCI	06	01	01	-	-	04
		CRUH	11	02	08	-	-	01
b)	Muktasukti. Pravala Pisti.	RRCI	10	01	03	01	01	04
	Jaharamohara Pisti	CRUH	10	-	09	-	-	01
	Total		37	04	21	01	01	10

Arsa (Piles)

The trial of *Ksara-Sutra* and *Taila Varti* in the management of *Arsha* had already been completed in 313 patients prior to reporting period. The studies have further been continued during the reporting period and the observations on 142 patients have further been made at CRIs Bombay and Delhi which may be enumerated as here under:

Table IX

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Taila Varti	CRIB	02	-	02	-	-	-
2.	Ksara Sutra	CRID	140	60	41	10	02	27
	Total		142	60	43	10	02	27

Bhagandara (Fistula-In-Ano)

The *Ksara Sutra* application in 156 patients of *Bhagandara* had been conducted in past with excellent response. Further observations on 65 patients have been reported from CRIs Bombay and Delhi during the reporting period as reproduced below:

Table X

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

S.No	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Kshara Sutra, Apamarga	CRIB	02	02	-	-	-	-
2.	Kshara Sutra	CRID	63	56	05	-	-	02
	Total		65	58	05	-	-	02

Parikartika

Taila Varti treatment in 24 cases of *Parikartika* at CRI, Bombay had provided good response in all cases prior to reporting period. Further observations on 08 patients have further been reported from the said Institute with the response of 04 fair and 04 poor during the reporting period.

Guda- Vidara (Fissure-In-Ano)

The *Kshara-karma* treatment in *Guda-Vidara* (Fissure-in-Ano) had been studied upon 127 cases in the past at CRI, New Delhi. Further observations over 129 cases have been carried out during the reporting period which showed good response in 67 cases, fair response in 40 patients, poor response in 10 cases and no response in 12 cases. This study has also been carried out at CRI, New Delhi.

Nadi-Vrana (Sinus and Fistula-In-Ano)

The trial of *Ksara karma* treatment in the management of *Nadi vrana* has been introduced during the reporting period and 10 such cases have been studied at CRI, New Delhi. All the 10 cases have shown good result without any side effect.

Tamaka Swasa (Bronchial Asthma)

The studies conducted in past on *Tamaka Swasa* enabled the Council to standardize *Swasa Kesari,* a combination of *Nardiya-Lakshmi Vilas Rasa, Godanti Bhasma, Sirisa, Haridra* and *Sati* for its treatment.

The comparative effect of *SomalatadiYoga* and Bhagottara Gutika had also been studied on about 800 cases of *Tamaka Swas. Bhagottara gutika* had shown better effect. The studies on *Pippali-Vardhamana* with *Samira Pannaga Rasa* and *Sirisa Tvak kwatha* have been started since 92-93 and 347 cases were studied prior to reporting period. Further observations on these therapies have been continued and 168 patients of *Tamaka swasa* have been reported from CRI Bombay, IIK Patiala, IIP, Cheruthuruthy, RRIs Junagarh, Gwalior, Patna and RRC Vijaywada during the reporting year.

Table XI

Results of Clinical Studies of Ayurvedic Preparations on Tamaka Swasa (Bronchial Asthma)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Pippali Vardhman with Samira Pannaga Rasa	IIPC	02	01	-	01	-	-
		RRIJu	06	-	03	01	-	02
		RRCV	13	01	02	01	-	09
		RRIG	16	-	01	03	07	05
2.	Sirisa Tvak Kwatha	IIKP	38	-	10	10	05	13
		RRIJu	24	-	-	06	11	07
		RRCV	05	-	03	01	-	01
		RRIG	32	-	05	12	05	10
		RRIP	07	-	02	05	-	-
		CRIB	03	-	-	-	-	03
3.	Pippali Vardhaman	CRIB	09	01	02	01	03	02
4.	Haridra Khanda, Talisadi Curna & Arjunarishta	RRIP	13	-	07	06	-	-
	Total		168	03	35	47	31	52

Madhumeha (Diabetes Melilitus)

The anti-diabetic (Hypoglycaemic) effect of Ayurvedic drugs e.g. *Bimbi, Bilva-patra, Mamajjaka* and Ayush-82 have been studied with promising response since inception of the Council. The studies on Ayush-82, *Methika Curna* and a combination of *Chandra Prabha-vati, Trivanga Bhasma* alongwith *Vijaya Sara-Kwatha* have been taken up since 1992-93. 467 cases had been already studied before the commencement of reporting period. Further studies on 173 patients have been completed at CRIs Bombay and New Delhi, IIK Patiala, ALRCA, Madras and RRC, Jammu during the reporting period.

Table XII

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Methika curna	IIKP	18	01	09	04	-	04
		RRCJ	34	27	05	02	-	-
		ALRCAM	07	-	03	01	02	01
2.	Ayush-82	CRiD	71	07	-	10	06	48
		RRCJ	22	21	01	-	-	-
3.	Chandra-Prabha vati, Trivanga Bhasma, Vijaya sara kvatha	CRIB	21	01	01	02	04	13
	Total		173	57	19	19	12	66

Mutrasmari (Urolithiasis)

The lithotropic effect of *Varuna, Kulattha* and *Gokshuru* have been already studied and a monograph to this effect has also been published. Further trials of combination of *Sweta-Parpati*, alongwith *Kulattha, Pasana-Bheda* and *Gokshuru Kwatha* in comparison with *Palasa*-kshara has been initiated since 1992-93. The studies on 230 cases, completed prior to reporting period, have shown good response to both the groups of treatments. In response to further studies, the observations made on 64 patients of *Mutrasmari* during the reporting period at RRC, Jammu and CRI, New Delhi may be enumerated as below:

Table XIII

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Sweta Parpati+	RRCJ	44	38	04	-	02	-
	Pasana Bheda, Kulattha, Goksuru kwatha.	CRID	20	05	03	03	04	05
	Total		64	43	07	03	06	05

Vrikka- Sotha (Nephrotic Syndrome)

The studies on clinical evaluation of *Trina-Pancamoola-kwatha* in the management of *Vrikka-Sotha* (Nephrotic Syndrome) with and without azotemia have been initiated during reporting period at CRU (Ay. Team), CDRS, Varanasi. The study comprehends the trial on 42 diagnosed cases of *Vrikka-shotha* and has been concluded with the results of Fair Response in 08 cases, Poor Response in 16 cases, and No Response in 08 cases. 10 cases have been reported to be dropped out because of discontinuing the trial against Medical Advice. The study is further to be continued.

Medoroga (Lipid Disorders)

The Council has made extensive studies on the hypolipidemic and anti-obesity effect of *Guggulu.* The role of *Guggulu* in the management of Ischaemic Heart Diseases has also been studied with good results. The study of the effect of *Arogya -vardhini* has also shown good response but the studies on 81 patients with Ayush-55 did not show much effect. The trials of Ayush-55 and *Vyosadi Guggulu* were kept continued and 98 patients of *Medo-roga* had been already completed prior to reporting period. Further trial of *Vyosadi Guggulu* has been continued and the observations on 91 patients of *Medo-roga* have been reported from CRIs, Delhi and Bombay; and ALRCA, Madras and CDRS, Varanasi during the reporting period as enumerated below:

Table XIV

Results of Clinical Studies of Ayurvedic Preparations on Medoroga (Lipid Disorders)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Vyosadi Guggulu	CRID	22	-	04	03	04	11
		CRIB	03*	-	-	-	-	-
		ALRCAM	13	-	07	01	02	03
		CDRSV	53	06	15	20	04	08
	Total		91	06	26	24	10	22

* All the 3 cases are still continuing the treatment. The duration of trial is yet to complete.

Hridroga (Ischaemic Heart Diseases)

The efficacy of *Puskara-Guggulu* combination has been already studied on more than 325 cases of Angina-pectoris and in cases of post-infarct rehabilitation at CDRS, Varanasi. Apart from this, further studies on the trial of *Arjuna-Ghana Satwa* in 25 cases of *Hridroga* have also been made prior to reporting period. The observations made on 38 patients of Hridroga for the trial of *Arjuna Ghana Satwa and Puskara-Guggulu* respectively at IIK, Patiala and CDRS, Varanasi during the reporting period are indicated below:

Table XV

Results of Clinical Studies of Ayurvedic Preparations on Hridroga (Ischaemic Heart Diseases)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Arjuna Ghana Satwa	IIKP	06	-	02	03	-	01
2.	Puskara Guggulu	CDRSV	32	06	15	02	01	08
	Total		38	06	17	05	01	09

Vyana Bala Vaisamya (Hypertension)

A comparative study of the trials of *Tagaradi Curna* with *Arjuna* and *Jatamansi* in one group and *Usiradi curna* with *Arjuna* and *Jatamansi* in another group had been already completed on 381 patients of *Vyana-Bala-Vaisamya*, prior to reporting period. Further studies on same lines have been continued at CRIs Delhi and Bombay; IIK, Patiala; IIP, Cheruthuruthy; RRI Calcutta and RRCs Itanagar, Jammu and Mandi, during the reporting period. 215 patients have been reported from these Institutes/Centres to be included in the study for the period. The details of the report may be seen as below:

Table XVI

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Tagaradi Curna-Jata-mansi curna, Arjuna Tak kwatha	IIPC	08	01	01	01	01	04
		RRCI	14	01	04	01	01	07
		RRCM	41	11	13	07	04	06
2.	Usiradi curna-Jata-mansi curna, Arjuna twak kwatha	IIPC	13	03	-	01	04	05
		IIKP	04	01	02	01	-	-
		RRCI	09	02	03	-	-	04
		RRCM	29	09	11	07	-	02
		CRID	25	04	05	03	02	11
		CRIB	01	-	-	-	01	-
3.	Tagaradi curna	RRIC	05	01	01	-	01	02
4.	Usiradi curna	RRIC	18	05	06	-	02	05
5.	Usiradi Mishran	RRCJ	48	48	-	-	-	-
	Total		215	86	46	21	16	46

Visama Jvara (Malaria)

The studies on Clinical evaluation of Ayush-64 in *Visama-Jvara* have been already conducted over more than 5000 cases in past and a monograph

to this effect has also been published. Both types of patients i.e. with positive P. vivax and without positive smear on blood examination have been taken into account for studies then. Further studies on 55 symptomatic cases of *Visama Jvara* have been conducted at RRI, Jaipur and RRC, Hastinapur, during the reporting period. Effect on clinically diagnosed cases have been shown in the Table provided here under:

Table XVII

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Ayush-64	RRIJ	32	14	10	05	03	-
2.	Ayush-64	RRCH	23	-	13	01	09	-
	Total		55	14	23	06	12	

Slipada (Filariasis)

The studies on the effect of a combined therapy of *Sudarsana Ghana Vati, Arogyavardhini* and *Punarnavadi Arista* or *Kwatha* have been conducted on 239 chronic cases of swelling manifested filariasis. The study on the effect of *Saptaparna-Ghana-Vati* and Ayush-64 on microfilaremia cases had been already taken up on 19 cases prior to reporting period. Observations on another 72 cases of chronic manifested disease have been reported from CRI, Bhubaneswar, and RRCs Vijaywada and Nagpur during reporting period, as enumerated below:

Table XVIII

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Sudarsana Ghana vati, Arogyavardhini & Punarnava-rista	CRIBh	20	10	07	-	01	02
		RRCV	32	05	14	08	02	03
		RRCN	08	-	04	02	-	02

.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
	Ayush-64	RRCV	06	03	03	-	-	-
	Saptaparna ghana vati (Microfilaremia)	RRCV	06	-	01	03	02	-
	Total		72	18	29	13	05	07

.itibha (Psoriasis)

The comparative efficacy of *Arogyavardhini* and *Chakramarda kera* with *Nimbatiktam* and *Lajjalu kera* had been already conducted on 345 cases of *Kitibha* (Psoriasis) prior to reporting period. Further studies on 82 cases at CRI, Delhi; RRI Trivandrum and RRI, Junagarh have been conducted during the reporting period.

Table XIX

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

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Nimbadin cap., Lajjalu kera	RRIJu	08	-	01	04	01	02
2.	Nimbatiktam, Lajjalu kera	CRID	09	-	01	-	02	06
3. a)	Kaishora guggulu, Visvamitra Kapala Taila	RRIT	10	02	04	02	-	02
b)	Nimbatiktam, Lajjalu kera	RRIT	32	14	11	05	-	02
c)	Arogya-var-dhini, Cakra marda kera	RRIT	23	06	10	05	-	02
	Total		82	22	27	16	03	14

Switra (Vitiligo)

The effect of Ayush-57 in cases of *Switra* (Vitiligo) had been already studied in over 140 cases prior to reporting period. Further observations have been reported on 2 patients from RRC, Jammu during the reporting period. Out of these two, one has dropped out of the trial and remaining one is yet to complete the trial.

Apasmara (Epilepsy)

The effect of Ayush-56 in the treatment of *Apasmara* has been already conducted earlier over 400 cases and a monograph based on data collected is in the process of publication. Further studies on Ayush-56 had been already conducted on 107 cases, while another drug Ayushman-22 has been studied on 17 cases. The trial of Ayush-56 has been kept continued in 40 cases during reporting period at CRI, New Delhi. It includes 17 old cases and 23 new cases. Out of these 40 cases, 12 cases have dropped out, 1 case has expired and 27 cases are still continuing the trial drug.

Medhya Rasayana (Brain Tonic)

Studies on the *Rasayana* activity of a combination of *Shatavari, Punarnava, Bala, Guduchi,* and *Yasti* on 31 elderly human voluneteers had been carried out in the past. Further studies on another combination of *Jyotismati, Shankhapushpi, Brahmi* and *Granjana* was conducted on 13 volunteers at IIK, Patiala and ALRCA Madras during 1994-95. The study was kept continued during the reporting period at ALRCA Madras on 7 volunteers. The trial and observations are yet to mature for final conclusion.

Prakriti Pariksa

The assessment of *Prakriti* on objective parameters in healthy individuals as well as patients of selected psychosomatic diseases have been done at CRU (Ay. Team), CDRS, Varanasi. Earlier observation prior to reporting period include 2,585 cases of various clinical conditions and 320 healthy individuals of both sexes. 827 individuals have further been included in the study during the year under report. It includes 692 cases of various clinical conditions and 135 healthy individuals. The analysis of data collected is in progress.

Arbuda Visesa (Cancer)

The study on the effect of two phytochemical compounds Plumbagin and S.T.G. has been already carried out on 48 patients of different types of cancer. Further studies on 3 patients have been continued at CRI, Delhi,

during the reporting period. Out of these 3, two were tried with STG and one was tried with Plumbagin. The patient tried with Plumbagin expired. Out of those two, tried with STG, one expired and the other left against Medical Advise.

Kuposana (Mal-nutrition)

To assess the efficacy of a combination of *Aswagandha, Satavari* and *Amalaki* in cases of *Kuposana* (Mal-nutrition), a study on 14 malnourished young children had been already completed at RRCs, Nagpur and Mandi prior to reporting period. Further studies have been continued at RRCs Mandi, Nagpur and Bangalore during the reporting period and 104 patients have been reported to be studied at these Centres during this period. The details of observations made are as here under.

Table XX

Results of Clinical Studies of Ayurvedic Preparations on Kuposana (Mal-nutrition)

S.No.	Trial Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Aswagandha, Amalaki & Satavari	RRCM	59	14	30	11	04	-
		RRCN	19	01	01	03	02	12
2.	Aswagandha, Amalaki & Guduchi	RRCB	05	04	-	-	-	01
3.	Aswagandha,	RRCV	05	04	-	-	-	01
	Lehya	RRCN	16	09	02	-	-	05
	Total		104	32	33	14	06	19

Sirah Sula (Migraine)

A trial to adjudicate the efficacy of *Varunadi-Kseera Paka-Nasya* in cases of *Sirah sula* was launched at ALRCA and VHS, Madras during 1994-95 and 6 cases were studied then having the efficacy of marked relief in 3 cases. Further studies were continued with same regimen on 20 patients at ALRCA, Madras during the reporting period. 8 patients have been reported to have fair response, 1 has poor response and 3 have no response. 8 patients have been dropped out from the study.

Sveta Pradara (Leucorrhoea)

The combinations of *Swarna-Vanga, Kukkutanda-Twaka-Bhasma, Punarnava mandoora* and *Nirgundi-Taila Picu* in one group and *Pushyanuga-curna* alongwith *Patrangasava* in another group had been studied on 73 cases of *Sweta-pradara* at IIP, Cheruthuruthy; RRCs Nagpur and Vijaywada during 1994-95. Further studies on combination of *Patrangasava* and *Ashokarishta* have been carried out on 6 cases of *Sweta-Pradara* at RRC, Gangtok during the reporting period. 3 cases have shown good response while remaining 3 cases have shown fair response. 78 cases have also been included at CRI, Bombay, during reporting period under the trial included at CRI, Bombay, during reporting period under the trial of *Kukkutanda Twaka Bhasma*. However, the study is still in progress and no patient has been concluded.

B- Disease Groups, Number of Patients and Participating Projects Under Clinical Research Programmes During 1995-96

S.No.	Diseases Groupwise	Pts. Nos.	Participating Projects
1.	Vata vyadhi		
	i) Amavata	154	CRIBh, IIKP, IIPC, CRIB, RRIC, RRCJ, RRCI
	ii) Paksavadha	129	IIPC, IIKP, CRIBh, CRIB, CRID
	iii) Saisaviya Vata	14	IIPC, CRID
	iv) Gridhrasi	48	IIPC, CRIBh, CRID
	v) Pangu	20	IIPC
	vi) Kampavata	04	CRIB
2.	Anna-Vaha Srotas Vyadhi		
	i) Parinamsula	130	CRIBh, RRIT, CRUH, CRUK, IIPC
	ii) Annadravasula	37	RRCI, CRUH
	iii) Arsa	142	CRIB, CRID
	iv) Bhagandara	65	CRID, CRIB
	v) Parikartika	08	CRIB
	vi) Gudavidara	129	CRID
	vii) Nadi Vrana	10	CRID
3.	Tamaka Swasa	168	RRCV, IIKP, IIPC, CRIB RRIG, RRIP, RRIJu
4.	Mutra Roga		
	i) Madhumeha	173	IIKP, CRIB, ALRCAM, CRID, RRCJ
	ii) Mutrasmari	64	CRID, RRCJ
	iii) Vrikka Sotha	42	CDRSV
5.	Medoroga	91	CRID, ALRCAM, CRIB, CDRSV
6.	Hridroga	39	CDRSV, IIKP
7.	Vyana Bala Vaisamya	215	IIPC, CRID, CRIB, IIKP, RRIC, RRCI, RRCJ, RRCM
8.	Visama Jvara	55	RRIJ, RRCH
9.	Slipada	72	CRIBh, RRCV, RRCN
10	Tvak Roga		
	i) Kitibha	82	RRIT, RRIJu, CRID,
	ii) Svitra	02	RRCJ

S.No.	Diseases Groupwise	Pts. Nos.	Participating Projects
11.	Manasa Roga		
	i) Apasmara	40	CRID
12.	Medhya Rasayana	07	ALRCAM
13.	Prakriti Pariksha	827	CDRSV
14.	Other Diseases		
	i) Arbuda Visesa	03	CRID
	ii) Kuposana	104	RRCM, RRCB, RRCN
	iii) Sveta Pradara	84	RRCG, CRIB
	iv) Sirah Sula	20	ALRCAM

C- Statement Showing Number of Patients Attended at O.P.D. and Admitted in I.P.D. during 1995-96

S.No.	Institute/Centre	OPD Patients			IPD Patients		
		New	Old	Total	Admit-	Disch-arged	Bed occup ancy in%
1.	CRI, Delhi	13081	15388	28469	222	222	29.00
2.	CRI, Bhubaneshwar	5171	5787	10958	153	135	23.52
3.	CRI, Bombay	1657	4062	5719	95	85	10.12
4.	IIK, Patiala	5602	5602	11204	255	275	29.86
5.	IIP, Cheruthuruthy	7462	18848	26310	249	257	79.67
6.	RRI, Lucknow	5174	6556	11740	2	2	0.76
7.	RRI, Calcutta	3565	11521	15086	28	28	16.18
8.	RRC, Junagarh	2743	3512	6265	24	25	6.64
9.	RRI, Patna	4492	5133	9625	73	73	33.20
10.	RRI, Gwalior	1781	1927	3708	29	29	32.92
11.	RRI, Trivandrum	3626	13866	17492	82	80	72.00
12.	RRI, Jaipur	1802	847	2649	110	110	33.76
13.	RRC, Nagpur	2127	7119	9246	-	-	-
14.	RRC, Bangalore	818	2389	3277	-	-	-
15.	RRC, Jammu	5802	9793	15595	-	-	-
16.	RRC, Mandi	6182	4425	10607	67	63	29.75
17.	RRC, Hastinapur	5819	9245	15064	32	32	16.03
18.	RRC, Gangtok	4820	3525	8345	-	-	-
19.	RRC, Vijaywada	4391	4487	8378	60	61	39.15
20.	RRC, Itanagar	5285	8199	13484	28	26	26.49
21.	ALRCA, Madras	596	1024	1620	-	-	-
22.	ARU, Bangalore	540	573	1113	12	12	29.47
23.	CRU, Kottakac	-	-	-	131	133	38.04
24.	CRU, Hyderabad	-	-	1059	29	22	-
	Total	92536	143908	237503	1681	1670	-

D- Health Care Research Programme

The Council has undertaken three types of field oriented Clinical Research Programme viz. Survey and Surveillance Programme and Community Health Care Research Programme mostly attached with its CRIs, RRIs and RRCs and independent Tribal Health Care Research Programmes located in Tribal population dominated areas of the Country. These units provide medical aid at their doorstep and at the same time it takes up study of their health statistics the incidence of diseases and local health care practices which has been safe guarding their health for centuries traditionally. The units also impart knowledge about health and hygiene in the villages where it works. Attempts are made to collect folk medical practices and locate valuable manuscripts etc. if it comes to the knowledge of scientific workers while interacting with the village community.

Service Oriented Survey & Surveillance Research Programme

The data regarding socio-economic status, incidence of diseases and their relationship with various etiological factors are compiled in randomly selected villages. The folklore medical practices are also noted. During the period of report 26 villages with a population of 51,598 were surveyed and 13,294 patients were also treated with Ayurvedic drugs.

Community Health Care Research Programme

Each of the Institutes/Centres has been assigned a few villages in their vicinity under this programme. The knowledge about health care, prevention of diseases, health promotive measures and use of local herbs for treatment of common ailments is imparted to the people of selected villages. The details of socio-economic status, environmental factors influencing the disease proneness are recorded. This programme has been executed in 22 villages with a population of 33,205 and 7,716 patients have also been provided medical aid.

Tribal Health Care Research Programme

This programme has been initiated with the aim to study living conditions of tribal people, folk medicines used by them, occurence of medicinal plants of the area, propagation of knowledge about oral hygiene, prevention of diseases, use of common medicinal plants of the area and to extend medical aid at their door steps. This programme has been continued further by the Tribal Health Care Research Projects functioning at Car Nicobar (Andaman Nicobar islands), Jamune, Distt. Palamau (Bihar), Chinchapada, Distt. Dhule (Maharashtra), Jagdalpur (Madhya Pradesh), Jhabua (M.P.), Imphal (Manipur), Ziro (Arunachal Pradesh). 23 villages consisting of a population of 29,850 individuals have been covered and incidental medical aid extended to 15,302 patients.

Service Oriented Survey & Surveillance Screening Research Programme

S.No.	Institute/ Centre/Unit	Name of the Villages	population	No. of Patients attended	Common Diseases
1.	CRI Bhubaneshwar	Barilo Garedi-panchan Kunjara	1000	385	Twakroga, Krimi Sandhisula, Sandhivata, Udarsula, Pratisyaya, Netraroga, Katisula.
2.	IIP Cheruthuruthy	Mayanur	2221	1207	Vatavikar, Twakroga, Sandhisula, Kasa, Sirahsula, Katisula, Sandhivata.
3.	RRI Calcutta	Parkharibari	1960	1307	Amlapitta, Vatavyadhi, Kasa, Jwara, Krimi, Kosthabaddhata
4.	RRI Junagadh	Valasimadi	953	100	Amavata, Vatavyadhi, Swasa, Jwara, Ajirna, Pandu. Mukhroga.
5.	RRI Gwalior	Jigsoli	1700	315	Amavata, Pratisaya, Kasa, Jwara Udar-roga, Vrana
6.	RRC Vijayawada	Gudavalli	3000	883	Kosthabab-dhata, Kandu, Pradara, Katisula, Kasa, Jwara, Mukharoga Twakroga, Swasa.
7.	RRC Jammu	Chak Bathial	471	222	Pratisyaya, Amlapitta, Kasa, Pradara, Jwara, Katisula.

S.No.	Institute/ Centre/Unit	Name of the Villages	population	No. of Patients attended	Common Diseases
8.	RRC Mandi	Bijani	651	211	Kuposhan, Kasa, Krimi, Jwara, Pradara, Atisara, Swasa.
9.	RRC Bangalore	Malegalu	1510	668	Vatavyadhi, Vrana, Udarsula, Jwara, Kasa, Pratisyaya, Twakroga, Pandu.
10.	RRC Nagpur	Pota	9094	833	Kasa, Pratisyaya, Visam Jwara, Atisara, Vatavyadhi, Udarsula,Jwara. Kuposan, Swasa.
11.	MCRU Varanasi	Mannapur Parorawan	10000	4943	Striroga, Pravahika, Pratisyaya, Atisara, Kuposan, Krimi
12.	RRC Hastinapur	Bastora	1000	195	Jwara, Kasa, Udarsula, Vatavyadhi, Pratisyaya, Pravahika, Karnaroga Kosthabaddhata.
13.	RRC Jhansi	Behata	1200	58	Jwara, Swetapradara, Vatavyadhi, Sandhisula, Twakroga, Atisara.
14.	RRC Gangtok	Rumtek Mave Penlong Tsalumthong	5400	452	Kosthabaddhata, Jwara, Kasa. Udarsula, Urahsula, Sirhasula, Vrana, Krimi, Vatvyadhi.

S.No.	Institute/ Centre/Unit	Name of the Villages	population	No. of Patients attended	Common Diseases
15.	RRI Patna	Mohanpur Ishar said-pur Ganoh	1938	1091	Atisara, Vrana, Twakroga, Kasa, Jwara, Krimi, Katisula.
16.	CRI Delhi	Mubaakpur	3000	150	Not indicated
17.	CRI Bombay	Kukshet Sambhaji Chikhalwadi	6500	354	Jwara, Twakroga, Sandhisula, Kasa, Pratisyaya, Katisula, Udarsula.
	Total	26	51598	13294	

Community Health Care Research Programme

S.No.	Institute/ Centre/Unit	Name of the Villages covered	Population covered	No. of Patients attended	Common Diseases
1.	CRI Bhubaneshwar	Kakrudrapur Sathilo	1186	401	Katisula, Twakroga, Vatvyadhi, Pratisyaya, Karnaroga, Mukhroga, Sandhisula
2.	IIP Cheruthuruthy	Kulukallur	-	468	-
3.	RRI Calcutta	Kharibari	1350	955	Amlapitta, Jwara, Kasa, Krimi, Pratisyaya, Kandu, Vatavyadhi

S.No.	Institute/ Centre/Unit	Name of the Villages covered	Population covered	No. of Patients attended	Common Diseases
4.	RRI Junagadh	Patrapasar	1784	144	Vatavyadhi, Twakroga, Shirahsula, Ajirna, Mukhroga, Katisula, Amavata.
5.	RRI Gwalior	Bitholi Milawali Rampura	2150	409	Jwara. Pratisyaya, Kandu, Kasa, Vrana, Karnaroga.
6.	RRC Itanagar	Pama	1600	215	Kasa, Amlapitta, Atisara, Jwara, Vatavyadhi, Udarsula, Krimi
7.	RRC Vijayawada	Velpuru	3500	912	Raktavikara, Swasa, Sandhi vata. Pratisyaya, Kandu, Kasa, Jwara, Rajodosa, Twakroga
8.	RRC Jammu	Karen	891	305	Pratisyaya, Amlapitta, Pradara, Udarvikara, Sandhisula, Jwara, Kasa.
9.	RRC Mandi	Dadour	245	50	Kuposana, Krimi, Mukhroga, Pratisyaya.
10.	RRC Bangalore	Obichudanahalli	2000	1276	Vrana, Vatavyadhi, Kasa, Jwara, Pandu, Twakroga, Udarsula, Swetapradara, Grahanidosha

S.No.	Institute/ Centre/Unit	Name of the Villages covered	Population covered	No. of Patients attended	Common Diseases
11.	RRC Nagpur	Walni	5830	399	Kasa, Swasa, Twakroga, Kati, sula, Prati-syaya, Krimi-Udarsula, Vata-vyadhi, Kuposan, Swetapradara.
12.	RRC. Gangtok	Bojoghari (Upper Primary School)	200	90	Udarsula, Prati-syaya, Atisara, Kandu, Vatavyadhi, Sirahsula.
13.	ALRCA Madras	Thorapakkam	688	225	Vatavyadhi, Kasa, Amlapitta, Sirahsula, Swasa, Swetapradara.
14.	RRI Patna	Faridpur Chakmahboob	2955	1015	Kasa,Twakroga, Katisula, Pravahika, Krimi, Arsa.
15.	CRI Bombay	Jivalapada	1500	298	Sandhisula, Pratisyaya, Jwara, Twakroga, Vatavyadhi, Karna-roga, Krimi.
16.	RRI Lucknow	Diguria	2000	281	Kasa, Jwara, Amavata, Sirah sula, Pradara, Pandu.
17.	IIADR, Tarikhet	Dabharghatti	5326	273	Jwara, Twakvikar, Kasa, Pradara.
	Total	22	33205	7716	

Tribal Health Care Research Programme

S.No.	Unit location	Tribal Villages/ pockets covered	Population covered	No. of Patients treated	Common Diseases
1.	THCRP Imphal	Khunjav	1250	377	Amavata, Swetapradara, Sandhivata, Arsa, Ajirna Pravahika, Kasa.
2.	THCRP Jagdalpur	Tamakoni Kachora Agahanpur	7000	2663	Krimi, Katisula, Vatavyadhi, Twakroga. Pradara. Sandhisula. Vrana.
3.	THCRP Jhabua	OPD at Project H.Q.		383	Jwara, Amlapitta. Krimi, Sandhisula. Kamala, Madhumeha.
4.	THCRP Chinchapada	Haldani (10 cluster villages) Dapur (2 villages) Kukaron, Pipran Sone Khadke	9573	4367	Jwara, Pandu. Katisula, Kasa, Udarsula, Visham-Jwara, Kandu, Amlapitta. Atisara.
5.	THCRP Car-Nicobar	OPD at projct HQ Tribal Pockets of Car-Nicobar	2878	2832	Twakroga, Raktachapa, Mutra-roga. Vatavyadhi, Sotha, Visam-Jwara, Vrana.
6.	THCRP Palamau	Chhipadohar (11 Villages) Kechaki (5 Villages)	6249	1323	Jwara, Kasa, Pradar, Visam-Jwara, Slipada, Prameha, Swasa, Arsa, Katisula, Netraroga.

S.No.	Unit location	Tribal Villages/ pockets covered	Population covered	No. of Patients treated	Common Diseases
7.	THCRP Ziro	Hong	2900	3357	Udarsula, Vatavyadhi, Twakroga, Swasa, Kasa, Pradara Jwara.
	Total	23	29850	15302	

* Figures include patients attending at Project Headquarters O.P.D. from neighbouring Tribal Villages/Pockets.

MEDICO-ETHNO BOTANICAL SURVEY PROGRAMME 1995-96

The Council aims at carrying out research on scientific lines in Ayurveda and Siddha through a planned research programme in various fields and one such programme is the medico-ethno-botanical survey of different areas of the country. The exploration of medicinal flora of the country is of paramount importance to procure authentic drugs (Dravyas) for on going research programmes as well as to meet the demand of the growing Ayurvedic Pharmaceutical Industry. The estimation of medico-botanical potential of the country extending from Alpine Himalayan ranges to the Coastal areas and penetrating to the arid zones helps to determine the areas where a particular plant grows in abundance or it is scarce in a particular region. This shall ultimately lead to form an estimate of commercial availability of several Ayurvedic drugs which are currently in demand for research work and pharmaceutical industry.

The 17 Ayurvedic Survey Units of the Council located at different parts of the country have undertaken scientific study to assess and identify the potential areas of their availability and to enrich the Ayurvedic Pharmacopoeia during the past 25 years.

Some achievements of the Medico-Botanical Survey Programmes

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

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

3. More than 400 forest areas in the different states have been surveyed. The Council has more than 1,20,000 herbarium specimens in different regional herbaria and have more than 3000 different drug samples belonging to animal, mineral and vegetable Kingdom in the various regional museums of the country.

4. The Council has made a start to establish Central Medicinal Plants-Herbarium and Museum at Council's Headquarters office, New Delhi. This shall be a unique centre to meet the demand of research workers and the pharmaceutical industry as a whole.

Resume of Medico-botanical Survey work done

The seventeen survey units of the Council are spread over in 16 states, located at Bangalore, Bhubaneshwar, Calcutta, Gangtok, Gaughati, Itanagar, Jaipur, Jammu-Tawi, Jhansi, Junagadh, Mandi, Nagpur, Patna, Tarikhet, Trivandrum and Vijayawada and have carried out some of the following programmes during the year 1995-96.

The survey unit located at RRC (Ay.) Bangalore (Karnataka) has undertaken survey work in Western Ghat-forestery project in Uttarkannada district. 71 medicinal plant species belonging to 71 genera and 38 families were collected. One local survey tour was also undertaken to collect raw drug material for research work for D.S.R.U. of Bangalore. 750 index cards were also written during the reporting period. Routine upkeep of the herbarium specimens and Museum samples was continued.

The survey unit located at CRIA Bhubaneshwar could not undertake survey work in absence of survey staff during the reporting period. About 13 Kg. of raw drug material was collected for supply. Maintenance of Herbarium specimens and Museum samples was continued.

The survey Unit located at RRI (Ay.) Calcutta (West Bengal) has undertaken the survey work in Howrah and parts of 24 Pargnah district. Collected 117 medicinal plant specimens belonging to 102 genera and 49 families and 15 raw drugs sample for supply during the reporting period. Maintenance work of Herbarium and Museum was continued.

The survey unit located at RRC (Ay.) Gangtok (Sikkim) has collected 4804 plant species belonging to 854 species, 487 genera and 106 families for Herbarium since inception. 74 drug samples of plant origin, one mineral origin and two of animal origin have been included in the museum of the centre.

Survey unit located at RRC (Ay.) Guwahati (Assam) has undertaken survey cum collection work in Shivsagar and Kamrup reserve forest and recorded medicinal flora of these areas. 35 Kg. of raw drug material was collected during the reporting period. Routine upkeep of Herbarium and Museum was continued. Compilation work on the monograph of Garo hills and the Garos of Megalaya is continued.

Survey unit located at RRI (Ay.) Gwalior (Madhya Pradesh) has undertaken the survey work in Jalaun and Hamirpur forest division in U.P. under the joint survey programme with RRC (Ay.) Jhansi. Quantitative assessment of 27 Ayurvedic drugs on the basis of records/reports of the Institute have been made. Compilation work on the monograph of Sarguja have been completed.

The survey unit located at RRC (Ay.) Itanagar (Arunachal Pradesh) has undertaken survey work in Lohit and Namsai forest division of Lohit district and periodical survey in adjacent areas of the centre. 342 plant specimens belonging to 300 species, 190 genera and 95 families and 8 museum samples were collected during the reporting period. 2 Kg. of raw drug was collected for supply purposes. Maintenance of Herbarium and Museum was continued.

The survey unit located at RRI (Ay.) Jaipur (Rajasthan) has not undertaken any survey tour. 18 plant specimens belonging to 18 genera and 15 families from Jaipur, Bhikampura and Himalayan areas and 12 folk claims were collected during the reporting period. 200 Kg. of Aloe barbadensis (Lv.) was collected for supply. 5 monographs/reports on special tours (1) Desert areas of Rajasthan (2) Panchmarhi (3) Amarkantak (4) Chitrakoot and (5) Mount Abu were taken up for revision and submitted to Council.

The survey unit located at RRC (Ay.) Jammu (J&K) has undertaken survey work in Katra hills, Chak, Bahilali and Keran areas. 89 Plant specimens belonging to 83 genera and 57 families, 3 folk claims and about 92 Kg. of raw drugs were collected during the reporting period. Maintenance work of Herbarium specimens and Museum samples was continued.

The survey unit located at RRC (Ay.) Jhansi (U.P.) has undertaken the survey work in Jalaun and Hamirpur forest division in collaboration of RRI (Ay.) Gwalior. 150 plant species belonging to 132 genera and 61 families and 67 Kg. of raw drug material were collected during the reporting period. 33. Kg of raw drugs material was supplied to other centres of the Council for research purposes. Compilation work on monograph on Bundelkhand have been completed.

The survey unit located at RRI (Ay.) Junagadh (Gujarat) has undertaken local survey tour. Selected medicinal plants specimens were collected. 5 drug samples were collected and 6 Kg. of crude drug was supplied. Monograph on medicinal plants of Rajpipla is submitted for publication and compilation work on Junagadh monograph is completed.

The survey unit located at RRC (Ay.) Mandi (H.P.) could not undertake the survey work in absence of survey officer. 6 Museum samples and 8 folk claims were collected locally during the reporting period. 40 colour photographs/transparencies of important medicinal plants were prepared. Maintenance of Herbarium and Museum was continued.

The survey unit located at RRC (Ay.) Nagpur (Maharahtra) could not undertake survey work as no tour was sanctioned during the current year. The unit has continued compilation work on medico-ethno-botanical exploration of Yavatmal and Pusad forest divisions, Yavatmal circle and completed. A medicinal plants garden having 103 medicinal plants is being maintained. Routine upkeep of the Herbarium specimens and Museum samples was continued.

The survey unit located at RRI (Ay.) Patna (Bihar) has undertaken survey work in Dhanbad forest division. 92 plant species belonging to 85 genera and 49 families, 4 folk claims and 7 samples for museum were collected during the reporting period. 120 Kg. of raw drug powder of Vandhyavari was supplied for screening of contraceptive agents. Commercial availability of 279 medicinal plant used in Ayurveda and Siddha system of medicine have been compiled.

The unit located at IIADR Tarikhet (U.P.) has undertaken the survey work in Lower Kalivalley and Tarai-Bhabar areas. Collected 109 plant specimens for herbarium, 4 folk claims and 21.5 Kg. of raw drugs for supply during the reporting period. Katra hills in J& K was also surveyed under the Joint Survey Programme of Jammu and Tarikhet Units. 42 types of market sample were collected from Tanakpur and Haldwani markets. Commercial availability of 14 Ayurvedic drugs from the areas surveyed is also reported. Maintenance of Herbarium specimen and Museum samples was continued.

The survey unit located at RRI (Ay.) Trivandrum (Kerala) has not undertaken any survey tour during current year. Enumeration of the medicinal plants earlier collected from Nilambur forest division was undertaken. 42 drug samples were supplied to other units/centres/institutes. Maintenance of Herbarium and Museum was continued.

The survey unit located at RRC (Ay.) Vijayawada (A.P.) has completed the compilation work on quantitative survey and study of commercial source of Ayurvedic drugs in Gunturu, Prakasham, Kurnool, Mahboobnagar, Cuddapa and Chitoor districts. A tour of Hindiol-Nandinia forest, Dhenkanal district (Orissa) was undertaken to find out feasibility of establishing an institute of medicinal plants. Preliminary report on quantification and cultivation of medicinal plants at Srisailam and its surroundings was prepared. 950 plant specimens were indexed during the reporting period. 4 Kg. of raw drug was supplied to other Units/Centres/Institutes of the Council.

The Medico-botanical survey tour programmes have covered most of the forest areas of the country, through regular survey tour as well as special intensive survey tour programme undertaken in selected areas. The programmes have been designed to identify the specific areas for survey work in each state of the country. The information gathered and the plant specimens collected during the last 25 years are being utilized for compilation of information for preparation of Monographs of particular areas. Some of the monograph compiled on the Medico-ethno-botanical information have already been published and several others are under preparation at different centres. Zonal Survey Tour programmes in the proposed 8 zones identified, have also been initiated to overcome the financial constrains and absence of survey staff. It has further been initiated to make efforts for collection of information on the commercial availability of different drug material in the different commercial drug markets. The collection and supply of drug material for Council's various other research programmes is also entrusted to these survey units.

Central Herbarium and Museum of Medicinal Plants at New Delhi

The 17 Survey Units of the Council located in 16 states of the country are maintaining their collection in their own respective Headquarter level herbaria. The Goverining Body of the Council has approved the establishment of a Central Herbarium & Museum at New Delhi which may have representative specimens and raw drug samples from all the states of the country. A nucleus in the form of Central Herbarium and Museum was initiated at the new building of Council in Janakpuri at New Delhi. During the past year collection of specimens from different survey units were received for the Central Herbarium which have been maintained.

CULTIVATION OF MEDICINAL PLANTS

The main objective of this programme is to study adaptability and growth behaviour of important medicinal plants of Ayurveda and Siddha Systems of Medicines. The authentic plant materials cultivated are for the purpose of various research activities of the Council. The programme is also devoted to the development of suitable agro-techniques for cultivation of scarcely distributed and threatened medicinal plants of importance.

The Council is maintaining 5 herbal gardens, located at Pune (Maharashtra), Jhansi and Tarikhet (U.P.), Mangaliawas (Rajasthan) and Itanagar (Arunachal Pradesh) for cultivation of plants of different climatic conditions of the country. Successful preparation of Kumkum at Ranikhet and adjoining areas and Guggulu at Mangaliawas has provided adequate informations for the mass scale cultivation of these two important drug plants of Ayurveda.

The Council's garden, Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, located at Pune had been recognised by World Health Organisation for imparting training to its fellows in the field of cultivation of medicinal plants and propagation by tissue culture techniques. The garden has also been recognised as Post Graduate Research Centre for research activities in the field of Medico-botany and Pharmacognosy by the University of Pune.

A brief review of cultivation programme carried out at each of the centre is as under:

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune (Maharashtra)

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune is located in about 19 acres of land, out of which about 10 acres are presently being utilised for cultivation studies and maintenance of a demonstrative garden of medicinal plants. The remaining part of 9 acres which is largely rocky & hilly has been taken up for development during the reporting period with the help of the grant given by the Ministry of Health and Family Welfare, Govt. of India under the Central Scheme for development & cultivation of medicinal plants.

During the reporting period the garden was maintained with about 400 species of medicinal, economic and ornamental importance, out of which 139 taxas are from among the medicinal plants included in Ayurvedic Formulary, part-I. Under the Central scheme sanctioned by the Ministry, measures were taken to deveop large number of seedlings and to undertake mass scale plantation of the scarce medicinal species, recommended for development and cultivation. A total number of 602 plants of Satavari (*Asparagus racemosus* Willd.); Guduchi (*Tinospora cordifolia* Willd.) and Sariva (*Hemidesmus indicus* R.Br.) were planted in the garden and 699 seedlings belonging to Shalaparni (*Desmodium gangeticum* DC.), Bilva (*Aegle marmelos* Corr.), Arjuna (*Terminalia arjuna* W.&.A.); Jyotishmati (*Celastrus paniculatus* Willd.), Gambhari (*Gmelina arborea* Linn.), Ashoka (*Saraca asoca* (Rosc.) De Wilde), Banafsha (*Viola serpens* Wall.), Tagara (*Valeriana wallichii* DC.); and aforesaid species developed during the period are being maintained under nursery conditions for plantation during the coming season. Apart from this, seeds of two more species out of the Ministry's list viz. Shyonaka (*Oroxylum indicum* Vent.) and Patala (*Stereospermum suaveolens* DC.) were procured to develop seedlings.

Under experimental cultivation Atmagupta (*Mucuna pruriens* DC.) and Trivrita (*Operculina turpethum* (L.) Silva Manso) were undertaken to study the optimum requirement of manure for a better yield.

Out of the gardens' produce, 122.8 Kg. dried crude drugs belonging to eleven species viz., Amalaki (*Phyllanthus emblica* Linn.), Japa (*Hibiscus rosa-sinensis* Linn.), Nirgundi (*Vitexnegundo* Linn.), Karmarda (*Carissa carandas* Linn.), Krishna-sariva (*Cryptolepis buchanani* Roem. & Schult) Patala (*Stereospermum suaveolens* DC.), Kola (*Zizyphus mauritiana* Lamk.) Musta (*Cyperus rotundus* Linn.),Shyonaka (*Oroxylum indicum* Vent.), Shalmali (*Bombax ceiba* L.), and Paribhadra (*Erythrina indica* Linn.) were supplied to various research units of the Council & Pharmacopoeia Laboratory for Indian Medicine, Ghaziabad.

Apart from the above, about 110 Kg. dried crude drugs collected from the garden during the reporting period was stored for future supplies. Among these Amalaki (*Phyllanthus emblica* Linn.), Bilva (*Aegle marmelos* Corr.), Haritaki (*Terminalia chebula* Retz.), Bibhitaka (*Terminalia belerica* Roxb.), Madana (*Catunaregum spinosum* Thunb.), Bhallataka (*Semeçarpus anacardium* Linn.f.) are worth mentioning. Moreover, Kumari (*Aloe barbadensis* Mill.), Ushira (*Vetiveria zizaniodesc* Linn.), Nash.), Japa (*Hibiscus rosa-sinensis* Linn.), Amalaki (*Phyllanthus emblica* Linn.), Bilva (*Aegle marmelos* Corr.) and Nirgundi (*Vitex negundo* L.) are planted in the garden on comparatively larger scale and being maintained to meet the requirements of different parts, as and when requisitions are received.

A sum of Rs. 2,966/- was earned from the sales of fruits and firewoods etc. during the year.

Regional Research Centre, Jhansi (Uttar Pradesh)

Regional Research Centre, Jhansi has about 40 acres of land out of which about 15 acres are devoted to cultivation of medicinal plants on experimental, semi-large scale as well as for demonstration purposes. The garden is maintaining more than 200 medicinal plants at different places including Green House.

Some of the important Ayurvedic plant drugs under semi-large scale cultivation are Guggulu (*Commiphora wightii* (Arn) Bhandari) Satavari (*Asparagus racemosus* Willd), Kumari (*Aloe barbadensis* Mill.), Shalparni (*Desmodium gangeticum* DC.), Prishniparni (*Uraria picta* Desv.), Sarpgandha (*Rauwolfia serpentina* Benth.) and Rasna (*Pluchea lanceolala* Diuer). Besides above some other important drugs under experimental cultivation, for their adaptability, growth behaviours studies are Gunja (*Abrus precatorius* Linn.) Bhunimba (*Andrographis paniculata* Nees), Danti (*Baliospermum montanum* Muell.), Aparajita (*Clitoria ternacea* Linn.) Meshasringi (*Gymnema sylvestre* R.Br.). Chitrak (*Plumbago zeylanica* Linn.), and Dhataki (*Woodfordia fruticosa* Kurz.).

About 135 medicinal plants species are being maintained in Green House Pot cultivation programme for demonstration purpose. Some of them are Ulatkambal (*Abroma augusta* Linn.), Harit-manjati (*Acalypha indica* Linn.), Vacha (*Acorus calamus* Linn.), Ishwari (*Aristolochia indica* Linn.), Sahachar (*Barleria prionitis* Linn.) Priyangu (*Callicarpa macrophylla* Vahl.), Jyotishmati (*Celastrus paniculatus* Wall.), Asthisanhari (*Cissus quardangularis* (Linn.) Patha (*Cissampelos pareira* Linn.), Patalgarudi (*Cocculus hirsutus* (Linn). Diels), Marorphali (*Helicteres isora* Linn.) Tumbru (*Zanthoxylum alatum* Roxb.), Vidarikand (*Pueraria tuberosa* DC.) and Nirgundi (*Vitex negundo* Linn.).

Under experimental cultivation studies some of the plants of higher altitude were introduced into the garden. Their growth behaviours and acclimatization and survival rates are under observation. Some of them are Chopchini (*Smilax aspera* Linn.), Jyotishmati (*Celastrus paniculatus* Willd.), Pashanbheda (*Bergenis ligulata* Wall), Nagdamani (*Artemisia vulgaris* Linn.), Briskali (*Urtica dioica* Linn.) and Chukra (*Rumex dentatus* Linn.).

Total produce of the garden during the reporting year was about 50 Kg. from 47 plant species. The produce has been deposited in the Central Drug Depot of the Centre.

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

The research garden is located at an altitude of 1710 m.a.s.l., in a temperate area of Kumaon hills at Ranikhet. The soil is sandy and moderately acidic. The area is covered with pine dominated forests.

Out of 8 acre area 5.5 acre is allocated to grow and conduct relevent technical and research studies with medicinal plants. 1.5 acre is covered with saffron beds and office sheds, roads, farm structures etc are located in rest of the areas.

In the medicinal plants garden 150 types of medicinal plants are being maintained and observation on growth and development data was recorded. Many of these plants belong to tropical and subtropical climates.

Acclimatization trials are being continued with some more plants like Trivrit, Aparajita, Brihati, Ulatkambal and Latakaranj in the field and glass house. Seeds of medicinal plants received by the courtesy of ICAR, Regional Centre, Banwali showing good growth and development and out of them the important is *Anacyclus pyrethrum* (Akarkara).

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

The Institute has a peripheral small garden at Chamma (Distt. Tehri) which is about 2.5 acres in the area. In this nearly 40 medicinal plants are being maintained. The garden is equipped with a farm house and a small tank. Institute is planning to develop it as germ plasm collection centre.

Saffron Experimental Cultivation

Saffron cultivation project is carried out on about 1.5 acres of the land at Ranikhet and is spread out in about 560 beds of different sizes. About 3.8 lakh of corms of large, medium and small sizes were maintained in 2300 square meter of land. During the year sprouting was observed from the last week of August, and by the end of October. The plants attained good height and vigorous vegetative growth, flowering was observed from the second week of September and continued till second week of November. During the reporting period a total of 7795 flowers were collected, yielding approximate 73 gms. of Saffron consisting of dry stigma and little part of style.

A. Guggulu Herbal Farm, Mangallawas (Rajasthan)

The Guggulu Herbal Farm has 142 acres of land for cultivation of Guggulu and other medicinal plants. Guggulu cultivation is confined to 42 acres of land. There are about 14, 600 Guggulu plants in the farm. During the period planting of 8, 417 stem cuttings and 757 plants was done. Studies have been initiated to standardize tapping techniques for collecting maximum yield of gum-resin. Studies on air layering and drip irrigation techniques for propagation of Guggulu plants; vegetative propagation of two other Guggulu species viz., *Commiphora roxburghii* & *C. agallocha* and on extraction of gum-resin from some common adulterants of Guggulu like *Boswellia serrata. Acacia senegal, Acacia nilotica, Acacia leucopholea, Prosopsis juliflora* and *Anogeissus pendula* are in progress.

Besides Guggulu, the farm is also maintaining about 65 plants of medicinal importance in different beds. Some of them are Sallaki (*Boswelia serrata* Roxb.) Langli (*Gloriosa superba* Linn.), Shatavar (*Asparagus racemosus* Willd.), Amalaki (*Emblica officinalis* Gaertn.), Karira (*Capparis decidua* Edgew.), Parpat (*Barleria prionitis* Linn.), Aragvadh (*Cassis fistula* Linn.), Vanpalandu (*Urginea indica* Kunth.), Ashwagandha (*Withania somnifera* Dunal), and Bakuchi (*Psoralea corylifolia* Linn.).

The natural vegetation in rest of the land also comprise several plant species of medicinal importance. Some of them are Gokhsru (*Tribulus terrestris* Linn.), Badar (*Ziziphus jujuba* Lam.) Ingudi (*Balanites roxburghii* Planch), Nimb (*Azadirachta indica* A. Juss), Apamarg (*Achyranthes aspera* Linn.), Darbha (*Desmostachya bipinnata* Stapf.). Sweta Khadira (*Acacia senegal* Willd.), Patrasnuni (*Euphorbia nivulia* Buch.Ham.) and Punarnava (*Boerhaavia diffusa* Linn.).

During the year the farm has also intorduced 22 exotic plants which include Kumari (*Aloe vera* Tourn. ex. Linn.), Sadabahar (*Vinca rosea* Linn.), Karvira (*Nerium odorum* Soland), Shirish (*Albizia lebbeck* Benth.), Anantmoola (*Tylophora asthmatica* W.&.A). and Surabhinimba (*Murraya koenigii* Spreng).

Studies have also been initiated on propagation, growth behaviours and survivability of some important plant drugs by stem cuttings, splitted rhizomes and divided tubers.

Suitable and effective measures have also been taken up to prevent bacterial/fungal growth and attacks of insects/pests and termites.

The farm has collected seeds of Kat-karanj (3.7 Kg.), Ingudi (20.00 Kg.), Satavari (4.5 Kg.) and Sirish (1.5 Kg.) for research purposes. 10.00 Kg. of Guggulu and 20 stem cuttings were supplied to Councils' institutes/centres and other Government Organisations.

Regional Research Centre, Itanagar (Arunachal Pradesh)

The centre has about 17 acres of land for cultivation of medicinal plants programme. Over 9 acres of land is being utilised for cultivation of plants of Ayurvedic importance, mostly of North Eastern regions. On small experimental and semi-large level as well as for demonstration purposes. At present 163 plants are being properly maintained. Out of these 94 plant species are mentioned in Ayurvedic Formulary Part- I.

Some of important plants under cultivation are Arjuna (*Terminalia arjuna* W.& A.), Vibhitak (*Terminalia belerica* Roxb.), Bakul (*Mimusops elengi* Linn.), Chitrak (*Plumbago zeylanica* Linn.), Guduchi (*Tinospora cordifolia* (Willd.) Miers.) Haritaki (*Terminalia chebula* Retz.), Hanspadi (*Adiantum lunulatum* Burm.), Manjistha (*Rubia cordifolia* Linn.), Nagkesar (*Mesua ferrea* Linn.), Prasarni (*Paederia foetida* Linn.), Prishniparni (*Uraria picta* Desv.), Saptaparna (*Alstonia scholaris* R.Br.), Satavari (*Asparagus racemosus* Willd.) and Trivrit (*Operculina turpethum* R.Br.)

The garden has also introduced some plants of higher elevation for acclimatization studies. The plants include Manjistha (*Rubia cordifolia* Linn.), Mamiri (*Thalictrum foliolosum* DC.), Pashanbheda (*Bergenia ciliata*) and Tagar (*Valeriana wallichii* DC.)

About 45 Kg. of crude drugs were collected from the garden for supply to various Centres/Institutes of the Council and other Government Organisations.

PHARMACOGNOSY RESEARCH STUDIES

Pharmacognostical studies play an important role in the entire gemut of drug research studies with the objectives to help overcome the controversy and confusion that exists regarding their proper identity due to synonym and use of one and the same name for more than one drug and to evolve standards for single drugs so that genuine and authentic drug material can be made available for research and pharmaceutical industry.

Brief resume of work carried out during the year 1995-96 by the five Pharmacognostical Research Units of CCRAS located at Calcutta, Delhi, Jammu, Lucknow and Pune is presented below, which includes the study of source, collection, identification, correct determination of Ayurvedic nomenclature including synonyms, morphological and histological characters (both quantitative and qualitative), identification of diagnostic characters, test for purity, preliminary phyto-chemical studies, chromotographic studies, identification of chemical constituents like alkaloids, steroids and terpenoids, phenols, tannins, saponins and flavonoids etc. and fluroscence analysis of the various plant parts.

Pharmacognosy Research Unit, Calcutta (West Bengal)

1. Asphota (*Vallaris solanacea* (Roth.) Kutze: (Apocynaceae) Leaf and Stem bark.
2. Kuberakshi (*Caesalpinia bonduc* (Linn.) Roxb. (Caesalpiniaceae): Root bark and seed.
3. Kukuraunda (*Blumea lacera* DC.) (*Asteraceae):* Whole plant.
4. Rohini (*Soymida febrifuga* A. Juss.) (Meliaceae): Stem bark.
5. Swarnapatri (*Cassia angustifolia* Vahl.) (*Caesalpiniaceae*): Leaf

Pharmaconosy Research Unit, Headquarters office, New Delhi.

1. Bhanga (*Cannabis sativa*) (Linn.): (*Canabinaceae*): Leaf.
2. Bilva (*Aegle marmelos* Corr.) (*Rutaceae*): Pelicle of the leaf
3. Nimba (*Azadiracta indica* A. Juss.) (Meliaceae): Leaf

Under the programme TLC profile and development of 'Finger prints' of the some important Ayurvedic plant drugs, the "Finger Print" of leaf of Bhanga (*Cannabis sativa* Linn.) has been developed for the purpose of identification and assessment of quality of the drug.

Pharmacognosy Research Unit, Jammu, (J&K)

1. Aswattha (*Ficus religiosa* Linn.) (Moraceae): Stem bark.
2. Jatamansi (*Nardostachys grandiflora* DC.) (*Valerianaceae*): Rhizome.
3. Parpata (*Fumaria parviflora* Lamk.) (Fumariaceae): Whole plant
4. Vata (*Ficus bengalensis* Linn.) Moraceae: Stem bark.

Pharmacognosy Research Unit, Pune (Maharashtra)

Nagbala (*Sida veronicaefolia* Lamk.) (Malvaceae): Root, stem and bark.

PLANT TISSUE CULTURE STUDIES

Plant Tissue Culture Laboratory at JNAMP&G,Pune continued studies on Sariva and Brahmi (*Bacopa monnieri*) (L.) Pennell were taken up for in vitro propagation, multiplication and chemical investigations.

In the previous year, propagation techniques for multiplication of *Sariva* were standardised. During the reporting year established plantlets (through PTC) were subjected to chemical investigation. The TLC studies revealed that *Sariva* plantlets grown through PTC showed identical spots in Pet-ether extracts, when compared with garden plant extract, thus showing presence of chemical components even at the early development stages.

Brahmi: Excised apical buds and nodal segments of Brahmi were inoculated on MS basal medium supplemented with different concentration of growth hormones either or in combination. Out of the above combinations IAA 2.5 mg./litre and BAP 2.5 mg./litre showed profused multiple shooting from nodal segment. These shoots were further transferred to MS full strength and 1/2 strength medium. Roots were developed in these medium after about 35 days.

Thus it would be possible that thousands of plantlets can be raised within period of 4 months. These plantlets were further transferred to soil for hardening. The survival rate was about 95% in the field.

MUSK DEER BREEDING PROGRAMME

The programme commenced from 1977 after establishing a Farm at Mehroori District Almora at an altitude of 2250 meters. The area of the Farm is 2 acres only. The area is cold, moderately humid and covered with ever green forest of Oaks, Rhododendrons, Utish with undercover of various shrubs and herbs. This year in the farm 19 animals were reared which include 8 males and 11 females. Six females were subjected to copulation out of which only three conceived. Prior to this three fawns were delivered out of five females subjected to copulation in the year 1994-95.

The data regarding routine growth, development and reproduction etc. were duly recorded and observations on different aspects of life cycle continued.

During the year one adult male and one adult female died in the farm inspite of best possible treatment and medicare. The postmortum and pathological analysis indicated pulmonary infection and liverfluke infestation as the possible cause of mortality. Possible precautionary measures are being taken according to the advice of the experts. 15.395 gm. wet musk was collected during the year.

CHEMICAL RESEARCH PROGRAMME

Chemical studies of plant drugs have an important role in the development of drug research. These studies comprise of extraction and isolation of active principles and ingredients responsible for their medicinal value. The Council is engaged in such studies through Phytochemical Research Units/ Centres located at Calcutta, Delhi, Hyderabad, Lucknow, Madras, Trivandrum and Varanasi. A brief resume of the work carried out on 22 drugs during the year 1995-96 is reported as under:

1. **Ajmoda (*Aplum graveolens* Linn.)** **ChRUC**

Hexane extract of the seeds afforded a solid, m.p. 89-90. Further work with this solid is in progress.

2. **Amerbela (*Cuscuta chinensis* Lam.)** **ChRUC**

Specific compounds have been isolated from this drugs which are awaiting characterisation.

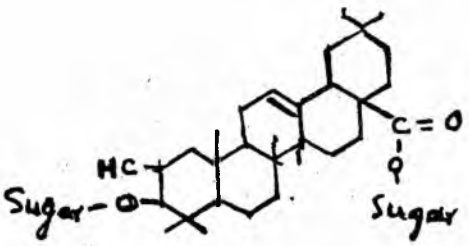
3. **Anjani (*Memecylon edule* Roxb.)** **ChREL**

Ethanolic extract was fractionated into hexane, chloroform, butanol soluble, aqueous and insoluble fractions. All these six fractions on repeat testing did not show any activity. However chemical investigation of chloroform fraction yielded oleanolic acid.

95% Ethanolic extract of this plant has shown CNS depressant activity at 232 mg./kg. in mice.

4. **Arjuna (*Terminalia arjuna* W.&.A.)** **ChRUV**

Chemical investigation of this drug resulted in the isolation of four compounds two of them have been characterised as afrormosin and 23-deoxyajunolitin (Fig-1.) The later is a new compound not earlier reported in literature. The former is the first report from this plant. Characterisation of the other two compounds are in progress.



(Fig. 1

5. Atavi-jambira Bheda (*Atalantia wightii* Tanaka) **ChREL**

Ethanolic extract of this plant have shown hypoglycaemic activity which was fractionated into hexane, chloroform, butanol and aqueous fractions, Chloroform fraction on chromatography yielded a coumarin (auraptene) and acridone alkaloid atalaphylldine.

Butanol fraction which showed 12.7% hypoglycaemic activity was also chromatographed. Several fractions were collected and analysed by TLC. These are highly polar, phenolic, photosensitive components. Further attempts to isolate them are in progress.

6. Bhuchampaka (*Kaempferia rotunda* Linn.) **ChRUT**

The drug rhizomes were repeatedly extracted with pet-ether and ethyl alcohol. Studies are being carried out to isolate and identify the chemical constituents present in it.

7. Brihatgoksura (*Pedalium murex* Linn.) **ChRUV**

Chemical investigation of this drug resulted in the isolation of three compounds whose characterisation are in progress.

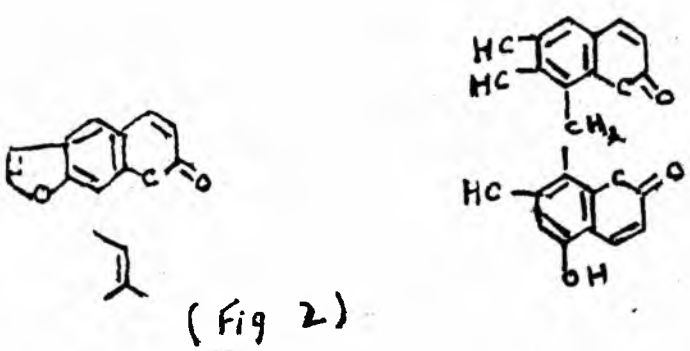
8. Karamadika (*Carissa spinarum* Linn.) **CSMDRIAM**

A flavonone naringin was isolated from methanol extract of the drug and its structure elucidated by spectral methods. It exhibited diuretic, antipyretic,

anti- inflammatory activities, but did not show any direct effect on guinea pig ileum but inhibited the effect of acetylcholine on smooth and skeletal muscle preparations. It showed anti-bacterial activity against *Psuedomonas aeruginosa*.

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

Two more coumarin derivatives-imperatorin (Fig.2) and a new dimeric coumarin (Fig.3) have been reported from this plant.



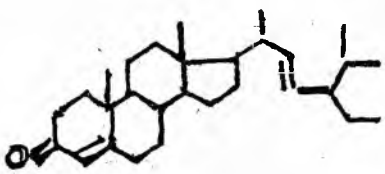
(Fig 2)

10. **Lavanga (*Syzygium aromaticum* Linn.)** **ChRUC**

Ethylacetate extract of the drug was chromatographed over silica gel and the column was eluted with the solvents of increasing polarity. Five pure compounds were isolated from different eluates. Chloroform extract yielded two compounds while ether extract furnished oleanolic acid.

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

Chemical examination of the drug resulted in the isolation and characterisation of an uncommon steroid, stigmasta-4, 22-dien-3-one (Fig.4).



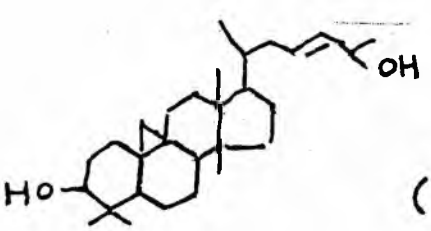
(Fig 4.)

12. Pala (*Ehretia buxifolia* Roxb.) **CSMDRIAM**

The GC-MS analysis of the steroid mixture from this drug was shown to be a mixture of stigmasterol, stigmastanol, sitosterol, campesterol, pinasterol and cholesterol. A new xanthone, ehretianone was isolated and its structure elucidated by spectral data.

13. Panasa (*Artocarpus heterophyllus* Lam.) **ChRUC**

Work on the latex of the drug resulted in the isolation and characterisation of another cycloartenol derivative, 9, 19 cyclolanost -23-ene-3, 25-diol (Fig. 5) for the first time from this plant.



(Fig. 5)

14. Parpata (*Fumaria parviflora* Lamk.) **ChRUT**

The aerial parts of the drug were extracted with hot 90% ethyl alcohol under reflux. The ethanol extract was concentrated to a small volume and shaken successively with pet-ether, ether and ethyl acetate was worked up or flavonoides. Two flavonoids were isolated and were identified as quercetin and rutin on the basis of Rf. Value (Paper chromatography) and spectral data.

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

The highly volatile essential oil isolated by steam distillation from this plant was found to possess about 86 components by GLC analysis. They were identified by comparison with an authentic sample in GLC. Methanolic extract on column chromatography yielded two impure compounds which could not be purified further.

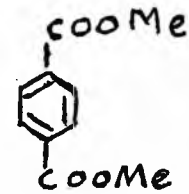
This plant has been grown through tissue culture techniques in different media. In *Vitro* studies of the bulk growth of callus were successfully grown in M.B. media. The large scale production of callus is done in 5000 ml. glass jar bottles instead of culture tubes.

16. Suryavarta (*Cleome gynandra* Linn.) **ChRUC**

Petroleum-ether extract of the whole plant on concentration and chromatography afforded a solid, m.p. 108-110. Structural determination is in progress.

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

Chromatographic resolution of the extracts of leaves resulted in the isolation of five compounds. These compounds were characterised as terephthalic acid dimethylester, apigenin, quercetin, quercitrin and (+)-pinitol by a detailed chemical and spectral studies and also by direct comparison with authentic samples. These compounds have not earlier been reported in this group. This is the first natural occurrence of terephthalic acid dimethyl ester (Fig. 6)



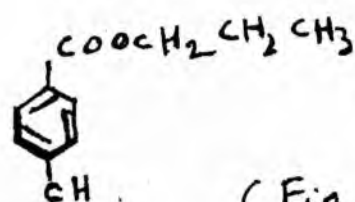
(Fig. 6)

18. Upakuncika (*Nigella sativa* Linn.) **ChRUC**

The concentrated alcoholic extract of the seeds was subjected to column chromatography over neutral alumina which afforded six fractions of alkaloidal constituents. Further studies with these light yellow liquid alkaloids are in progress.

19. Vijaya (*Cannabis sativa* Linn.) **ChRUC**

Whole plant on chemical examination yielded a benzoic acid derivative namely propyl ester of p-hydroxybenzoic acid (Fig. 7), structure of which was settled from spectral data (UV, IR, NMR and CMR).



(Fig. 7)

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

Petrol extract of the whole plant was subjected to column chromatography over silica gel. The yield of bright spot in TLC was very less. Chloroform extract did not yield any single compound in pure form. Neutral fraction yielded sitosterol.

21. Standardization of Ayush-64 and Pippaliyadi Vati ChRUC

Methods have been developed for the standardization of the anti-malarial drug Ayush-64 and the anti-fertility drug Pippaliyadi Vati. Further a number of samples of Ayush-64 received from the Council have also been standardised.

22. Miscellaneous work

a) Extraction Supply Unit

The following extracts (two-i & ii) have been supplied to the Regional Research Institute (Ay.) Calcutta for preparation of Ayush-56.

i). Alcoholic extract of Jatamansi - 5.00 Kg. ChRUC

ii). Alcoholic extract of Sunni sannaka -10 Kg. ChRUC

iii) Shigru (*Moringa oleifera* Linn.) ChRUH

Stem bark of this drug powdered and extracted with petroleum-ether, chloroform and methanol in soxhlet extractor. Three extracts are ready for Pharmacological screening.

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

About 2 Kg. of plant material was extracted successively with petrol, chloroform and methanol in soxhlet extractor. These three extracts are ready for pharmacological testing.

v) Plant materials and oils (500 gms- 3Kgs lots) were extracted with different solvents for the preparation of derivatives of active components for pharmacological and clinical trials.

A) Quantity of Neem oil worked out: 170 lit.

B) Quantity of Nimbathiktham isolated/supplied to the Clinical/ Pharmacological unit: 6.3 Kg.

C) Quantity of Psoralin oil supplied for clinical section: 3.2 lit.

D) Quantity of Pamarin ointment: 100 ml.

vi) Virataru (*Dichrostachys cinerea* W.&A.) **CRID**

Benzene & ethanol extracts of the roots were prepared. Further work is in progress.

vii) Musali (*Chlorophytum tuberosum* Baker) **CRID**

Benzene & ethanol extracts of the tuber were prepared. Further work is in progress.

viii) Tagar (*Valeriana wallichii* DC.) **CRID**

Benzene & ethanol extracts of the roots were prepared. Further work is in progress.

b) Others: **CSMDRIAM**

2500 capsules of STG (100 mg. strength) were prepared and sent to the CRIA, New Delhi for clinical trials on cancer patients.

PHARMACOLOGICAL RESEARCH PROGRAMME

Pharmacological and Toxicological studies constitute a very vital part in Drug Research Programme. These studies are based on experimental models in different species of animals. This provides vital information for pursuing clinical studies. These studies are carried out by various Pharmacological/Toxicological Research Units located at Bombay, Calcutta, Cheruthuruthy, Delhi, Jaipur, Jhansi, Lucknow, Patiala, Trivandrum and Varanasi. During this period a number of single drugs and compound formulations were investigated by these units for routine Pharmacological screening/special effects such as analgesic, anti-pyretic, anti-inflammatory, anti-histaminic, C.N.S., cardiovascular, hypolipidaemic, anti-ulcer and adaptogenic effects etc. Toxicological studies comprising of acute, sub-acute and chronic toxicity studies were also carried out. A brief resume of the work carried out on 33 drugs is reported below:

1. Ardraka (*Zingiber officinale* Rosc.) **PhRUC**

Rhizome of Plant emulsified in gum acacia was orally administered in 100 mg./Kg. for 14 days on groups of albino rats and one hour after the last dose the portion of intestine collected. The biochemical data as collected showed no change in serum Bilirubin. Alkaline phosphatase, Amylase and SGOT level except slight decrease in SGPT level only. The intestinal enzymes (Lipase and Amylase) showed increase which was statistically significant.

2. Badara (*Ziziphus jujuba* Lam.) **PhRUC**

The pet-ether extract of the root exhibited definite antispasmodic effect against Barium chloride induced contractions on isolated smooth muscle (Guinea pig ileum), suggesting musculotropic antispasmodic effect.

The pet-ether extract of leaf produced antispasmodic effect against Barium chloride induced contractions on isolated smooth muscles (Gulnea pig ileum), suggesting that musculotropic antispasmodic effect is present. But the effect was less than that of pet.-ether extract of root.

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

The pet-ether extract of root exhibited significant analgesic effect on rat-tail method by analgesiometer.

It produced dose related reduction of spontaneous motility of rabbit jejunum.

The extract produced significant dose related musculotropic antispasmodic effect against Barium chloride induced contractions.

The pet-ether extract of aerial part of this plant produced musculotropic antispasmodic effect against Barium chloride induced contractions.

The extract produced reduction of spontaneous motility.

The extract produced definite and more potent musculotropic antispasmodic effect against $BaCl_2$ induced contractions.

4. Bimbi (*Coccinia indica* W.&A.) **IIPC**

Petroleum-ether (60-80), chloroform and ethanol extracts and a decoction of the leaves were prepared and studied for their Pharmacological actions. The extracts were administered in a dose of 100 mg./Kg. *p.o.* and the decoction 1 gm./Kg. *p.o.* Ethanol extract and decoction produced significant potentiation of pentobarbitone induced hypnosis and ethanol induced hypnosis as well as anti-inflammatory activity (Paw oedema). Petroleum-ether and chloroform extracts showed no such activity. All these extracts and decoction failed to produce analgesic activity (radiant heat method) and to influence the rectal temperature of mice.

5. Brahmi (*Centella asiatica* (Linn.) Urban) **PhRUL**

Brahmi was found to possess properties of medicinal value. It is a memory enhancer.

6. Chorak (*Angelica glauca* Edgew.) **CRIB**

Chorak in a dose of 1 gm./Kg. orally failed to protect indomethacin induced ulcer in rats.

7. Gandhamarjara Virya (Civet Cat Semen) **IIPC**

No. of animal in captivity -1
No. of animal secreting virya -1

Virya collected -17.14 g

8. Ikshumul (*Saccharum officinarum* Linn.) **CRIB**

Ikshumul in a dose of 1 gm./kg. orally failed to show anti-inflammatory activity when compared with hydrocortizoine in a dose of 40 mg/kg.

9. Indravaruni (*Citrullus colocynthis* Sch.) **CRIB**

Indravaruni in mice in a dose of 500 mg./kg. failed to exhibit anti-pyretic effect as compared to paracetamol.

Indravaruni in a dose of 250 and 500 mg./kg. orally failed to protect against indomethacin induced ulcer in rats.

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

50% Aqueous alcoholic extract of the seeds of the drug was investigated for cathartic activity, effect on GI motility, effect on smooth muscle in *Vitro* and acute toxicity in mice. However, the drug exhibited significant cathartic activity in albino rats.

11. Jvarasani Rasa **TRUJH**

Sub-acute toxicological studies on the above drug was continued in rabbits. It was observed that the drug in doses ranging from 10-200 mg./kg. body weight did not show any adverse effects, since all the general parameters were found to be normal, food and water intake were normal. No significant changes in the body weight taken weekly could be noticed. Thus, it could be inferred that the drug is deovid of toxic manifestations as no untoward signs and symptoms were seen in the treated animals.

12. Karanja (*Pongamia pinnata* Pierre) **PhRUV**

Effect of Karanja (root) extract (Petrol, benzene, chloroform, acetone and ethanol) on carrageenin induced paw oedema in albino rats was studied. Graded doses of root extracts (50, 100 and 200 mg./kg.) were given by i.p. route. The data showed significant anti-inflammatory effect with all the extracts. The degree of anti-inflammatory property is comparable to phenylbutazone except that with petrol extract.

Effect of roots extracts on analgesic activity by Tail Flick method was studied. All the extracts (50 mg./kg. i.p) showed a tendency to increase the reaction time but it was statistically significant only with petrol, benzene and ethanol exctracts after 45-90 min. of administration.

The data suggested that all the fraction of the roots (50 mg/kg, i.p) reduced pentobarbitone sleeping time significantly except that with petrol extract.

The different fractions of root i.p. showed a tendency to reduce the ulcer index by statistically significant reduction was present with benzene and acetone extracts.

All the fractions of Karanja (root and seeds) were tested against both gram positive and gram negative bacteria and were found to have no antibacterial activity.

13. Kustha (*Saussurea lappa* C.B. Clarke) **CRIB**

Kustha in a doses of 250 and 500 mg./kg. orally in mice failed to show analgesic effect by hot water method as compared to aspirin.

Kustha in a dose of 1 gm/kg. failed to show antipyretic effect when compared with paracetamol.

14. Kutaki (*Picrorhiza kurroa* Royle ex Benth.) **PhRUL**

70% Alcoholic extract residue studies indicate physical endurance, anoxia tolerance and intestinal transit showed that the plant may be useful in various stress diseases.

15. Lajjalu (*Mimosa pudica* Linn.) **PhRUD**

Aqueous extracts of the leaves and roots of the drug did not exhibit any significant analgesic activity, anti-inflammatory effect and on pentobarbitone sleeping time.

16. Lokanatha Rasa **TRUJH**

Sub-acute toxicological studies on the above drug was continued in rabbits. It was observed that the drug in doses ranging from 10-200 mg./kg. bodyweight did not show any adverse effects since all the general parameters were found to be normal, food and water intake were normal. No significant changes in the body weight taken weekly could be noticed. Thus, it could be inferred that the drug is devoid of any severe toxicity and even on delayed observations, no untowards signs and symptoms were seen in the treated animals.

17. Madhuka (*Madhuca longifolia* Linn.) **PhRUD**

Aqueous and alcoholic extracts of the flowers and stem with bark exhibited significant analgesic activity using tail immersion and hot plate techniques.

18. Mustak (*Cyperus rotundus* Linn.) **PhRUL**

Roots powder in large prolonged clinical trials in rheumatoid and osteoarthrities has been proved as definite useful remedy which is non-toxic and had great patient preference.

19. Mukta Vidrumanjana Rasa **TRUJH**

Sub-acute toxicological studies on the above drug were continued in rabbits. It was observed that the drug in doses ranging from 10-200 mg/kg. body weight did not show any adverse effects since all the gereral parameters were found to be normal , food and water intake were normal. No significant changes in the body weight taken weekly could be noticed. Thus, it could be inferred that the drug under study in general is devoid of toxic manifestations as no untoward signs and symptoms were seen in the treated animals.

20. Pippali (*Piper longum* Linn.) **PhRUC**

2% CNC emulsified *Piper longum* seed powder was administered orally on overnight fasted groups of albino mice in doses of 1 to 5 gm/kg. It produced nolethality observed for 72 hours to one week. But the animals were found hyperkinetic for 10-15 minutes just after oral administration.

The drug emulsion exhibited antispasmadic effect against Acetylcholine induced contractions.

21. Pippalyadi Vati **CRIB**

The LD 50 value in mice and rats by oral route is more than 4 gm/kg. which indicates that Pippallyadi vati is not toxic orally.

22. Pushkarmula (*Inula recemosa* Hook.f) **PhRUL**

Pushkarmula in large prolonged clinical trial of asthma patient even reslstant to modern therapy is very useful drug and should be produced in large scale for country wise usage by the Council. Further studies are in progress.

23. Sandhaniya Ghan Vati **PhRUJ**

Preliminary analgesic and anti-inflammatory studies were carried out on this compound, which consists of ten ingredients, administered in the form of extract for reunion of bones as described in Charak Samhita. Four of its ingredients viz. *Myrica nagi, Uraria picta*, *Cissasmpelos pareira* and *Callicarpa macrophylla* showed significant analgesic activity, the former being the most effective. The compounds itself and all the ten ingredients showed highly significant anti-inflammatory activity. Ibuprofen and dexamethasone were used as standard drugs for comparison in both the studies.

24. Sanjeevani (*Selaginella bryopteris Linn.*) Bak **PhRUJ**

Drug increased the endurence and survival time of mice in swimming test and was similar to Panax ginseng. It also showed the effect on the

motility of G.I. tract. The plant is useful for various diseases. The further study is required.

25. Sarvajvarahara Lauha **TRUJH**

Sub-acute toxicological studies on the drug was continued in rabbits. It was observed that the drug in doses ranging from 10-200 mg/kg. body weight did not show any adverse effect since all the general parameters were found to be normal, food and water intake were normal. No significant change in the body weight taken weekly could be noticed. Thus it could be inferred that the drug in general is devoid of toxic manifestations as no untoward signs and symptoms were seen in the treated animals.

26. Shigru (*Moringa oleifera* Lam.) **PhRUT**

Methanol extract of root bark was screened to detect analgesic anti-inflammatory and anthelmintic activities. effect of C.V.S. and autonomic pharmacology (*in vitro*). Both the acute and sub-acute toxicity tests were also carried out in mice and rats. The extract exhibited significant analgesic anti-inflammatory and anthelmintic effects in experimental models. No toxic effects were noticed and further studies are in progress.

27. Sthoreyaka (*Taxus baccata* Linn.) **CRIB**

Talisa in a dose of 1 gm/kg. orally failed to protect rats against indomenthacin induced ulcers.

28. Tagaradi Churna **CRIB**

Tagaradi churna in dose of 1 gm/kg. orally failed to exhibit anti-inflammatory activity when compared with hydrocortizone in a dose of 40 mg/kg.

29. Talisa *(Abies pindrow* Spac.) **PhRUV**

Effect of *A. pindrow* (leaves) extracts (petroleum-ether, benzene, chloroform, acetone and ethanol) on carrageenin induces paw oedema in albino rats was studied. All the extracts of leaves were administered i.p. at uniform dose of 200 mg/kg, 30 min. prior to the carrageenin injection. All the extract of the leaves showed significant anti-inflammatory effect. The degree of anti-inflammatory property is comparable to phenylbutazone.

Effect of leaves extract on analgesic activity by the Tail Flick method was studies. All the extract (20 mg/kg, i.p.) showed a tendency to increase the reaction time but it was statistically significant only with benzene, chloroform, acetone and ethanol extracts after 45-90 min. of administration.

There was no gross behavioral change in any of the groups of mice treated with 10, 25, 50, 100, 200, mg/kg. i.p. dose of all the extracts. All the animals survived 24 h. time at all dose level.

All the fractions of the leaves were tested against both gram positive and gram negative bacteria and were found to have no anti-bacterial activity.

30. Tankana (*Ore borax*) **PhRUC**

2% CNC emulsified samples administered orally in 1-5 gm/kg. on overnight fasted groups of albino mice caused no lethallity in 72 hours to one week observation. The animals showed hyperkinetic activity just after drug administration for about an hour.

The drug emulsion produced contraction of the tissue and also potentiated Ach induced contractions.

31. Vidang (*Embelia ribes* Burm. f.) **PhRUC**

2% CNC emulsified *Embelia ribes* seed on oral administration to overnight fasted groups of albino mice in doses of 1-5 gm/kg. caused no lethality in 72 hours to one week's observation. Initially after drug administration, the animals showed hyperkinetic for shorter period only.

The drug emulsion produced visible effect on tissue, neither itself nor against Ach induced contractions.

32. Visamusti (*Strychnos nux-vomica* Linn.) **IIPC**

Petroleum-ether (60-80), chloroform and ethanol extracts and a decoction of the seeds were prepared and studied for their pharmacological actions. In doses of 100 mg/kg. (extracts) and one gm/kg. of decoction all the animals died. Hence, it has to be repeated with lower dose.

33. Mixture of *Piper longum* (Seed), *Embelia ribes* (Seed) and Ore borax (Dried Fried Podr) (1.1:1) **PhRUC**

The mixture administered orally on overnight fasted groups of albino mice in doses of 1-5 gm/kg. showed sedation for 1-1.5 hours. The mixture caused no lethality in 72 hours to one week's observation.

The mixture produced no visible effect on the tissue, but appeared to potentiate Ach induced contractions. The mixture appeared to produce delayed inhibitory effect on Ach which revived to normal after rest and a few washes. Further studies are in progress.

DRUG STANDARDIZATION RESEARCH STUDIES

Standardization of Ayurvedic formulations consisting of herbal, herbo-mineral and also having constituents of animal origin is a difficult task. The Council evolved analytical standards for the formulations of part I & II of Ayurvedic Formulary of India. A compilation of 431 formulations of Part- I has already been published by the Council and standardization of part II of Formulary is under progress and 311 formulations have been standardized. The study assumes importance as analytical datas are based on the textual formulations prepared by the Research Project itself. This approach ensures quality control of formulations which are used in the clinical research studies and other medicare programmes undertaken by the Council.

Having regard to this, the Council has undertaken the task of laying down physico-chemical values of the single drugs that are entering as ingredients in the particular formulations on the process of manufacture like Asava, Arista, Avaleha, Bhasma etc. in addition to self life etc. Standardization studies on single drugs, process of manufacture and finished products (formulations) are carried out at Captain Srinivas Murthy Drug Research Institute for Ayurveda, Madras (CSMDRIA), Regional Research Institute, Trivandrum (RRI-T), Indian Institute of Ayurveda for Drug Research Tarikhet (IIADR) and Drug Standardization Research, Project, Gujarat Ayurveda University, Jamnagar (DSRP-J). While rapid analytical values were laid down to CSMDRIAM, DSRP-J, and Drug Standardization Research Project, IMS, BHU, Varanasi (DSRP-V) and the studies on single drugs as well as finished products were taken up at Regional Research Centre Bangalore (RRC-B).

Based on the experience gained by the studies carried out as a second phase of study the Council has worked out a plan to lay down analytical values and to identify main and other costly ingredients, and by preparing different proportionate ingredients, in different quantity or deleting some of them other than the Standard Formulary and to establish whether there is any change in the analytical value other than, the Standard formularly already workded out. This study has indicated good encouraging results, and it is presumed that in time to come genuine, authentic and quality control formulations will be available for clinical armamentarium.

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

The details of the Standardization studies carried out during the year 1995-96 are as follows.

Standardization of Single Drugs

Mash parni	(*Teramnus labialis*)	(DSRP-V)
Mudga parni	(*Phaseolus trilobatus*)	(DSRP-V)
Lavanga	(*Syzygium aromaticum*)	(RRI-T)
Kulanjan-bheda	(*Alpina calcarata*) Rhizome	(RRI-T)
Gokşura	(*Tribulus terrestris*) Fruit	(RRI-T)
Ashwagandha	(*Withania somnifera*) Root	(RRI-T)
Kaktikta	(*Cardiospermum helicacabum*) Wh.pl.	(RRI-T)
Prasarini bheda	(*Merremia tidentata*)Wh.pl.	(RRI-T)
Ushir	(*Vetiveria zizanoides*) Root	(RRI-T)
Pippali	(*Piper longum*) Root	(RRI-T)
Twak	(*Cinnamomum zeylanicum*) St. bark	(RRI-T)
Maricha	(*Piper nigrum*) Fruit	(RRI-T)
Pippali	(*Piper longum*) Fruit	(RRI-T)
-----	(*Pogostemone leyneanna*) Leaves	(RRI-T)
Kamal Bheba	(*Nelumbo speciosum*) Stem	(RRI-T)
-----	(*Cyclea peltata*) Root	(RRI-T)
Bilva	(*Aegle marmelos*) Root	(RRI-T)
Mustaka	(*Cyperus rotundus* Linn.) Rhizome	(IIADR)

2. Standardization of Finished Products

a)	Rajanyadi Churna	(RRC-B)
b)	Talisadi Churna	(CSMDRIA)
c)	Pancha tikta kwath	(RRC-B)
d)	Ashwagandha Lehya	(RRC-B)
e)	Kantakari Avaleha	(DSRP-V)
f)	Kalyanak Guda	(CSMDRIA)
g)	Gagan Sunder Rasa	(DSRP-V)
h)	Manmatabhra rasa	(DSRP-V)
i)	Pranada Gutika	(RRI-T)
j)	Ayush 64	(DSRP-V)

k)	Balarishta	(CSMDRIA)
l)	Ashwagandharishta	(DSRP-V)
m)	Changeri Ghritam	(RRI-T)
n)	Laghu vishgarbha Taila	(CSMDRIA)
o)	Narayan Taila	(DSRP-V)

3. Physico-Chemical Analysis

-Priyangu	(*Agalaea roxburghianamia*) Leaves	CSMDRIA
-Ayush 64		CSMDRIA
-Shankhapushpi	(*Convolvulus microphyllus*) Whole plant	DSRP-J
-Varshabhu	(*Trianthema portulacastrum*) Whole plant	DSRP-J
-Madayantika	(*Lawsonia inermis*) Leaf	DSRP-J
-Sahadevi	(*Vernonia cinerea*) Whole plant	DSRP-J
-Neem Oil	(*Azadirachta indica*) Seed oil	DSRP-J
-Parpat	(*Fumaria parviflora*) Arial parts (*Raemferia rotunda* Rhizome	RRI-T PRI-T

4. Process of Manufacture

-Guggulu shodhan with Vasapatra kwath	(DSRP-J)
-Guggulu shodhan with Nirgundi patra kwath, Haridra	(DSRP-J)
-Guggulu shodhan with Gomutra (cow's urine)	(DSRP-J)
-Guggulu shodhan with Triphala kwath	(DSRP-J)
-Guggulu shodhan with Godugdha (Cow milk)	(DSRP-J)

5. Pharmacognosy

-Rasna	(*Alpinia galanga* Sw.)	RRC-B
-Goksuru	(*Tribulus terrestris* Linn.)	RRC-B
-Akarkara	(*Spilanthes acmella* Cl.)	RRC-B
-Kantakari	(*Solanum surattense* Brum f.) Root	DSRP-V
-Ashwagandha	(*Withania somnifera* Dunal) Root	DSRP-V
Kanchnar bheda	(*Bauhinia recemosa* Lamk.) Stem bark	
-do-	(*Bauhinia variegata* Linn.) Stem bark	DSRP-J

LITERARY RESEARCH PROGRAMME

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

Indian Institute of History of Medicine, Hyderabad

The Indian Institute of History of Medicine, Hyderabad is devoted for study, resarch and publication in the field of History of all systems of medicine, particularly Indian systems of medicine. The main stress is on the collection of source material pertaining to the History of Medicine in general and Ayurveda in particular. This includes collection and study of manuscripts old and rare books, editing and translation of important treatises, collection of information from non-medical sources, archaeological, epigraphical material, hereditary physicians and other such related sources. This Institute maintains a Library & Museum of Medico-historical importance and also publishes a biannual magazine viz., Bulletin of Indian Institute of History of 'Medicine'.

Research Activities

Compilation work on the biographies of three commentators and an article on Hk. Abul Fatah Gilani have been completed. Searched & collected 10- rare books/manuscripts. Five medico-historical articles and three descriptive catalogue of medical manuscripts available in A.P. have been written and submitted for publication in Institute's Bulletin. The following

works are under progress. Translation of a persian book' Dasturui Hunood' into English, an article on disease Vicharchika, Biographies of Ayurvedic Physicians from urdu book 'Rumuz-e-Hikmat,' Ayurveda in Abbasid period, History of Unani Medical Institute in Hyderabad (Monographic work), compilation of information with to four medical institutions, Ayurvedic literature in urdu books, study on a traveler Nicholos Senn.

Publication

During the reporting period the articles contributed by the staff as well as from the outsiders were edited and Volume No. 24, No.2, 1994 has been brought out. Volume No. 25 No. 1&2, 1995 'Silver Jubilee Issue' is under printing. The International Journals on History of Medicine were perused and important and significant notes on medico-historical activities were compiled and published in these issues under the heading 'News and Notes'.

Library & Referral Services

With regard to the additions to the Institute's library about 62 new book, 9 rare book, 270 periodicals on medicine and allied sciences have been acquired and 92 new registerations have been made for referral services.

Museum & Photography

For the development of new Museum and Conference Hall in room No. 427, 5- new sections were added. As usual the Museum & Photographic section with the facilities of Plain Paper Copier helped scholars and the research staff of the Institute and enriched the material of the Institute by taking copies of paper manuscripts, books and articles from journals etc. Completed 107 lebels for bottles containing specimen drugs and kept in the Museum.

Documentation and Publication Division, New Delhi.

1. *Ausadh Pralekhan*

Classical Ayurvedic references on *Kantapashan* and *Vanga* have been

gathered from *Rasagranthas* and *Nighantus* -Textual information has been gathered on 7 drugs of plant origin i.e. *Cirbilva, Elavaiukam, Madhuyasti Pilu, Sprakka, Ulatkambal, Variparni* from *Samhita granthas, Sangraha granthas* and *Nighantus* as well as gathering current information from journals and allied sciences texts besides updating further references on *Nimba.*

2. *Vyadhi Pralekhana* (Documentation on Disease Conditions)

During the period under report, textual references have been collected on *Kitibha and Vicarcika* and *Cikitsa/Nidana granthas* besides updating references on *Andhatva* from *Susruta Samhita.*

3. Research Information Storage and Retrieval

Information on cards relating to abstracts of articles published in the scientfic journals, technical reports and conference proceedings on Ayurveda and Siddha and allied sciences has been compiled with a view to develop data base of Research Information on Ayurveda and Siddha and replying to technical Parliament questions as well as technical queries on demand the research scholars/Res. Instts/organisations in the field of ISM.

4. Documentation Bulletin

During the period under report finalised conjoined issues No. 1-2 of the CCRAS Documentation Bulletin relating to its 16th volumes for mailing it to Instts/Centres/Units under the Council.

5. Bibliographical series of Clinical Drug and Literary Research

Index cards relating to retrospective research work done during 1971-1980 have been arranged subject wise for various bibliographical series encompassing Drug, Literary and Ethno medicinal Researches with special references to Council's Research Programmes.

6. Library Collection Development & Reader Services Programme

During the period under report the library made efforts to complete the sets of the non-receipted issues of the journals received on subscription/and exchange besides procuring books requisitioned by Vaidyas, Research

Scholars and Doctors. Information has been gathered regarding 3 rare works i.e. *Vaidya rahasya* of Vidyapati, *Raj Nighantu* and Ayurvedic Mss. held in Oriental Division, India Office Library (U.K.); The library acquired new Library stacks and procured some 31 new books on Ayurveda, Siddha and allied sciences as per recommendations of the Library Committee.

7. Photo, Microfilming, Video filming & Reprographic Services

The Reprographic Wing comprising photo and printing sections undertook the Photographic coverage of the Korean delegation at Hqrs./DPD office on 14th August, 1995 and Dhanwantri Jayanti celebrations at New Delhi besides of chinese delegations at CRI (Yoga) New Delhi. The Wing provided xerox copying services (36079 impressions), page make up service (520 jobs), duplicating services (96990), reproducting proforma (18, 632) impressions relating to Hqrs./DPD totaling one lakh fifteen thousand six hundred twenty two impressions despite several constraints besides viewing 393 photo of drugs etc. and attending to video filming programme relating to *Shilajatu* and *Guggulu.*

8. Publication Programme

The issue of News Letter for the period March 1995 to October 1995 were released during the period under report. The Publication wing also brought out the conjoined issues No. 1-2 of the 15th volumes of the JRAS for the year 1994 and finalised conjoined issues No. 3-4 (1994). One conjoined issues of BMEBR (Bulletin of Medico Ethno Botanical Research) for the year 1993 volume 14th No. 3-4 and prepared, Press copies of the Monographs as under.

i) Ayush-56

ii) Medicinal Plants of Kachchha

iii) Medico-Ethno-Botanical Survey of Koraput and Phulbani Distt. of Orissa State.

One paper co-authored by Dr. D.P. Sharma, R.A. (Chem) entitled "Studies in Hetero cyclic compound series XLV was communicated to Journal Instt. Chemists (Calcutta).

Periodicals subscription to the tune of Rs. 8,700.00 was received besides sales of monographs of Rs. 35,613.90 for the period under report.

Literary Research Unit, Madras

The Unit has conducted Survey tours to Vidya Peeth, Sholinghur, Srikanchi Kamakoti Pctham Library, Kancheepuram and Deptt. of Indian Medicine, Govt. of Tamil Nadu to obtain the information regarding manuscripts/rare books related to Ayurveda and Siddha. Under this survey it was observed that 30 Tamil granthas/manuscripts and 20 Sanskrit/ Ayurvedic Manuscripts in the Palm leaf farm are preserved at Vidyapeeth, Sholingur.

At Kanchipuram it was noticed that the catalogue of manuscripts is being prepared and they can permit to study the manuscripts after compilation of this work. The unit has collected the informations of manuscripts from the library of the department of Indian Medicine, Tamil Nadu and the same is forwarded to Hqrs. office for further directions. Under this programme steps are being taken to collect the information of rare works/manuscripts from different sources related to Ayurveda and Siddha systems.

The unit is having 80 Palm leaf manuscripts, their catalogueing work is in progress. The preservation of palm leaf manuscripts is being done periodically. Certain reference books have been published for the library of the unit.

AMCHI RESEARCH UNIT- LEH, LADDAKH

The Council runs a unit of Tibetan/Amchi Medical System at Leh-Laddakh. The unit is entrusted with the task of revival and revalidation of Amchi Systems by conducting clinical trials, survey of the occurrence, availability and collection of raw drugs (for self use) used in Amchi system. The unit also carry-outs compilation work on the rare manuscripts of Tibetan Medicine. A book on "Amchi Pharmaco-therapeutics" has already been published by the unit.

This year the team conducted a tour to Nubra Valley and south Pullu at a hieght of 1500 ft. for a week in August, 1995 and provided incidental medical aid to local people using Amchi Medicines and collected six important herbal plants used in Amchi preparations. It also collected other six herbal samples form Khardongla which is at a height of 18500 ft. It collected three important minerals used in Amchi preparations from Panamic Area of Northern Nubra Valley. During the tour the team treated 236 pts.

Another tour was conducted towards Sham Block of Laddakh during 3rd week of october, 1995 covering Dha and Bid Area. Here also the team collected about 11 important Medicinal Plants and Minerals e.g. Shillajeet, Dozo, Charpindon, Waloka etc. The team provided incidental medical aid to about 80 pts. during the tour.

The unit participated in a Seminar-cum-Health Development Meeting on Tibetan/Amchi Medicine Organised by Autonomous Hill Development Council in June, 1995. The unit has treated about 1104 (new & old pts. through its Headquarter O.P.D. during the reporting period.

FAMILY WELFARE RESEARCH PROGRAMME

The programme has two main aspects namely clinical trials and chemico-pharmacological studies including toxicological studies. The clinical trials of herbal, herbo-mineral formulations and single plant drugs are conducted on women of child-bearing age group (15-45 years) for their antifertility potential. On the other hand chemo-pharmacological Research Programmes are designed to study the effect of soft extracts of plant drugs for their anti fertility, anti-implantation, anti-ovulatory and estrogenic activities. The toxicological studies cover acute, sub-acute and chronic toxicity of the drugs.

Clinical Studies

Clinical evaluation of five drugs and drug combinations have been taken up at the Institutes/Units functioning at Ahmedabad, Bombay, Calcutta, Delhi. Jaipur, Lucknow, Madras, Patiala, Trivandrum and Varanasi.The details about the number of new cases included into the study during the reporting period, number of old cases carried forward from previous year number of drop outs and number of cases continuing at the end of reporting period (separately for each drug) are reported in table No. 1. The clinical evaluation of the drugs based on the studies of yester years is given in table No. 2.

Chemico-Pharmacological Studies

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

1. Banjauri (*Vicoa indica*) - PhURFT

Whole extract Anti-implantation study.

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

The extract was further tested using 5,10 and 25gm./kg. orally. The extracts at 5gm. and 10gm./kg. did not show any significant Anti-implantation effect in rats.

2. Arka (*Calotropis procera*) Acute Toxicity study- PhRUFT

Aqueous extracts of leaves and root were used for acute toxicity studies in the doses of 100 mg/kg. They are found to be non-toxic.

Arka (Calotropis procera) Anti- implantation study PhRUFT

Leaf and root decoctions were given in doses of 10 and 25gm./kg. The extract showed significant anti-implantation effect at 10mg./kg. in female rats.

3. Nirgundi (*Vitex negundo*) PhRUFT

(a) Anti-implantation activity-carried out by using Holtzman rats.

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

Vitex negundo stem extract in 10 gm and 25gm./kg. and leaf extract in 5, 10, 25 gm./kg. was administered to rats. In control group, water was given orally. The extract at 10 gm and 25 gm./kg. showed significant anti-implantation effect in female rats.

(b) Anti-fertility.

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

(c) Acute toxicity

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

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

4. Gunja (*Abrus precatorius*) Antifertility effect- PhRUFV

Ethanolic extract of Gunja showed 50% antifertility effect at the dose of 150 mg/ rat/day/ for 7 days of pregnancy. While the Pet. ether extract at the dose of 50mg./rat/day for seven days of pregnancy showed 60% antifertility

effect. Water extract of the same plant showed no effect on pregnancy.

Water as well as ethanolic extract of the plant did not show any effect on oestrous cycle.

Kebuka (Costus speciosus) **PhRUFV**

The water & Ethonolic ext. did not show any effect on ovulation, while ethonolic ext. at a dose of 100 mg/rat/day showed 40% antifertility effect.

6. A. Evaluation of three putative plants used as 'Priyangu' for Sonita sthapana property in female rats. **PhRUFJ**

Callicarpa macrophylla (CM), *Prunus mahaleb* (PM) and *Aglaia roxburghiana* (AR) powder suspensions were assessed for their effect on bleeding and clotting time and on spasmogen induced contractile response in isolated rat uterus. They were also assessed for oestrogenic property. PM shortened bleeding time and clotting time. CM showed weak to moderate oestrogenic activity. Both CM and PM produced significant antispasmodic effect in rat uterus. AR produced biphasic effect.

B. Assessment of effect of Abhrak bhasma (AB) and Abhrak garbha pottali (AGP) on spermatogenesis in just maturing male rats. **PhRUFJ**

Both AB and AGP were administered orally in a dose of 25 mg/kg^{-1} and $6mg/kg^{-1}$ for 45 consecutive days. Their effect on sperm count, weight and cytoarchitecture of seminal vesicle,testis and ventral prostate was studied. AB produced 51% increase in sperm count and AGP 30.36% increase. Histological examination showed moderate proliferative response in seminal vesicles from AB treated groups.

C. Assessment of effect of Suvarna bhasma on spermatogenesis in male rats. **PhRUFJ**

The test drug was administered for 12 days. The drug produced an apparent increase in sperm count. Histological examination revealed increase in the cellularity of interstitial tissue in testis obtained from drug treated group.

Table 1

Statement of the cases Studied for Clinical Evaluation of Oral Contraceptive Agents 1995-96

Name of the drug	Centre	Studies			Number of cases Dropped out due to				continuing the drug
		New	Old	Total	Pregnancy		Side effects	Other reasons	
					D.F.	D.O.			
Ayush-AC-IV									
	Lucknow -	Report not received							
	Trivandrum	56	82	138	-	3	-	55	80
	Calcutta	6	11	17	-	-	-	6	11
	Patiala	11	17	28	1	3	-	18	6
	Bombay	35	39	74	17	-	2	8	47
	Jaipur	50	-	50	09	10	5	10	16
Pipplyadi Yoga									
	Calcutta	21	19	40	-	-	-	17	23
	Ahmedabad	30	67	93	1	3	1	36	52
Neem Oil									
	Delhi	36	24	60	-	8	-	18	34
K- Capsule									
	Varanasi	34	87	121	13	-	-	24	84
Vandhyavari									
	Bombay	44	490	534	17	-	-	20	497

Table 2

Statement of the cases Studied for Clinical evaluation of Oral contraceptive Agents

Drug formulation	Data Analysed		Data yet to be analysed	
	Number of Women studied	Total Number of Women cycles studied	Number of Women studied	Total No. of Women cyceles studied
1. K- Capsules JAPAKUSUM (*Hibiscus rosa sinensis*)	776 - (Max cycles followed 103)	20344	450	
2. J- Capsules Vidanga Beej (seeds of *Embelia ribes*)	88 - (Max cycles followed 36)	851	Nil	These Data are yet, to be compiled and analysed
3. Ayush AC IV	4073 - (Max cycles followed 36)	35615	1698	
4. Pippalayadi Yoga				
Group-I	861 -	8607	482	
Group -II	811 - (Max cycles followed)	4438		
5. Neem Oil	43 -	450	153	

Results (Pearl Index-Hundred Women Years-HWY)

Details	Oral contraceptives					I.V. Application
	K-Capsules	J- Capsules	Ayush AC-IV	Pippaliyadi Yoga		Neem Oil
				Gr.I	Gr.II	
i) Due to drug failure	2.86	0	5.59	8.09	3.52	0
ii) Due to patient failure	1.11	0	7.62	0.55	6.48	4.6
iii) Combined (I+II)	3.97	0	13.21	8.64	10.00	4.6

PUBLICATIONS/PARTICIPATIONS

A. 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.	Pandey, K.K.	Cure Obesity	Jeevaniya	Shisir, 1996
2.	Pandey, T.N. & Rajagopalan, S.S.	Comparative study of three regimen, containing Satavari on Amlapitta(Acid dyspepsia with or without ulcer)	JRAS. XV (1-2)	1994
3.	Pillai, N.G.K. & Nair, C.P.R.	A comparative study of follicular eczema of modern medicine as Romamoola Vicharchika in Ayurveda.	JRIM. Page 45	May, 1995
4.	Pillai, N.G.K. et al.	Role of Sastika Pinda Sweda in the management of Ardita.	JRAS. XIV (1-2)	1993
5.	Sharma, P.C. & Dennis, T.J.	Jaundice and herbal remedies	Nisorgopachar Varta	1995
6.	Uniyal, M.R.	Vata Janit Vyadhiyon Mein Amavata Avam Upachar.	Sachitra Ayurveda	Dec. 1995

S.No.	Name of the Author (s)	Title of the paper	Name of the Journal	Date of Publication
B. Health Care Research & Ethno-Medicine.				
7.	Badhe, P.D. & Pandey, V.K.	Novel medicinal uses of a few plants used by Korku tribe of Melghat in Amravati.	BMEBR, XIV (3 & 4)	Dec. 1993
8.	Dixit, R.S. & Pandey, S.N.	Some important Ayurvedic Medicinal Plants of Bundelkhanda.	Vignan Patrika	1995-96
9.	Kumar, A. et al.	The Folklore medicines used by Gujjar & Bakarwal communities of Jammu region	BMEBR, XIV (3 & 4), 98	1993
10.	Maity, S.K.	Amulya Vanousadhi -Halud	Krishi Vikas Varta	Oct, 1995
11.	Maity, S.K.	Amulya Vanousadhi -Rasun	-do-	June, 95
12.	Maity, S.K.	Amulya Vanousadhi -Tentul	-do-	Jan., 96
C. Medico Botanical Survey & Cultivation				
13.	Hemadri, K. & Rao, S.S.	Quantitative assessment of Medicinal Plants found in Visakhapatnam Distt. A.P	BMEBR, XIV (1 & 2), 26	1993
14.	Pathak, N.N.	Bundelkhanda mein Ausadhiya Kheti per Adhyana	Akhil Bhartiya Vanavignana Ay. Sanogosthi	1995-96

S.No.	Name of the Author (s)	Title of the paper	Name of the Journal	Date of Publication
15.	Sharma, P.C. & Dennis, T.J.	Collection of plant drug with references to eco-climatic vis-a-vis modern researchers	Biorhythm	1995
16.	Singh, D.N.	Use of medicinal plants of Sikkim in Ayurvedic medicines	Cultivation of Medicinal Plants & Orchids in Sikkim Himalayas	Jul. 95
17.	Yelne, M.B.	Botanical identity of beeds found in India under the name Rudraksha	Biorhythm	1993
D. Pharmaceutical, Pharmacognostical & Chemical Research				
18.	Chaudhari, B.C. et al.	Identity of commercial Parsik Yavani in Gujrat	BMEBR, XIV (1 & 2), 56	1993
19.	Das, S.R. & Naskar, D.	The evaluation of medicinal plants in South Western, West Bengal.	BMEBR, XV (3 & 4), 118	1993
20.	Asolkar, L.V. & Kotiyal, J.P.	Some research possibilities in Indian medicinal aromatic plants for health & cure-1	BMEBR, XV (1-4), 86	1994
21.	Kotiyal, J.P. Asolkar, L.V.	Phytochemical investigation on Chlorophytum- A Review	BMEBR, XV (1-4), 75	1994
22.	Yelne, M.B. et al.	Pharmacognostic study of Bhumyamalaki (Phyllanthus fraternus)	BMEBR, IV (1-2), 12	1993

S.No.	Name of the Author (s)	Title of the paper	Name of the Journal	Date of Publication
E. Pharmacology				
23.	Nair, R.B. et al.	Antivenom effect of *Aristolochia tagala* -A biochemical study	JRAS, XV (1 & 2), 64	1994
24.	Pillai, N.R. et al.	Hypoglycaemic potential of *Moringa oleifera* in experimental animals	Fitoterapia	1995-96
25.	Pillai. N.R. et al.	Gastrointestinal effect of *Croton tiglium* in experimental animals.	-do-	-do-
F. Drug Standardization				
26.	Nair, K.V.	Standardization of Ayurvedic drugs	Aryavaidyan. III (4), 201	May, 95
27.	Tiwari, S.K. et al.	Standardization of Bhringaraja Taila	JRAS, XIV (1 & 2), 83	1994
G. Family Welfare				
28.	Shah, M.B. (Mrs) et al.	Kamechcha mein Stri Ka Mahatva	Nirogsukh	1995
H. Literary & Miscellaneous				
29.	Ali, Momin	Book Review: Vaidya Chintamani by R.N. Sharma	BIIHM, 24 (2)	Jul. 94

S.No.	Name of the Author (s)	Title of the paper	Name of the Journal	Date of Publication
30.	Dennis, T.J.	Rudraksha not just a spiritual symbol but also a medincinal remedy	Biorhythm	1995
31.	Kishore, P.	Abhinav Chintamani Avam Parichaya	Ayurveda Mahasammelan Patrika	Mar.,95
32.	Kishore, P.	Swasthyavardhak Amalaki	Jeevaniya	Mar. 96
33.	Nair, R.B. and Nair, C.P.R.	Sages Panacea for modern day ailments (Popular article)	Financial Express	Apr. 95
34.	Pandey, K.K.	Abhrak Bhasma	Jeevaniya	Shishir 1996
35.	Pathak, N.N.	Nighantu Mein Nimba Vivechan	Sachitra Ayurveda, 2	1995
36.	Shah, D.C. et al.	Save Environment	Sachitra Ayurveda	Jan. 95
37.	Shah, M.B. (Mrs) et al.	Balako Ki Sundarta mein badhak Yuka Pipilika Krimi.	Shuchi	1995
38.	Shah, M.B. (Mrs) et al.	Shishu Saundarya aur prakriti	Shuchi	Apr. 95
39.	Shah. V.K.	Ausdhi Durupayoga ke Samdarbha mein Madataga Prachin Avem Avachin Samikshatmaka Aydhyana	Sachitra Ayurveda	Jul. 95
40.	Subhaktha P.K.J.P.	Dalhana	BIIHM. 44 (2)	Jul. 94
41.	Uniyal, M.R.	Ayurveda and Paryavaran.	Sachitra Ayurveda	Nov. 95

B. Participation

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
1.	Acharya M.V.	Clinical study of Kirat-tiktadi Yoga on Kitibha Kushtha with special references to Psoriasis	Workshop on Tvakroga, RRI, Trivandrum, Jan. 1996
2.	Amma, K.G.B.	Study on Psoriasis and its treatment with Nimbathiktam & Lajjalukera and Arogyavardhini & Chakaramarda Kera.	-do-
3.	Bikshapathy, T. & Acharya, M.V.	The effect of A.B. formulation in leucoderma.	-do-
4.	Hepsiba, P.T.A.	Clinical studies of *Wattakaka volubilis*-A Wonder drug for skin diseases	-do-
5.	Hepsiba, P.T.A.	*Leucas aspera* (Dronapuspi) A drug for psoriasis	-do-
6.	Hepsiba, P.T.A. & Trivedi, V.P.	AIDS-a dreadful disease with its prevention, measures and rehabilitation with special references to J & K. State.	4th National Congress on Ayurveda, Global Health and Ayurvedic approach for irrecoverable disease in the 21st century, RRI Jammu. February, 1996.

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
7.	Kumari, K. et al	A review of additional vegetable drugs for Panchakarma therapy in polio available in J & K.	National Seminar on Panchakarma in Poliomyetis. Ahmedabad, Feb., 1996
8.	Nair,A.R. et al.	Treatment of Vicharchika with the Chakramarda kwatha and Charkamarda kera, Manjistadi Kwatha and Arkapatra kera.	Workshop on Tvakroga, RRI Trivandrum. Jan. 1996
9.	Nair, K.V. et al.	Tvakroga	-do-
10.	Nair, P.R.C.	Savitra and its management	-do-
11.	Nair, P.K.S.	Ayurvedic approach to the prevention of skin disease	-do-
12.	Nair, P.K. S. et al.	Role of Sodhana and Rasayana therapy in the management of Psoriasis-A case study.	-do-
13.	Nair, R.B. et al.	Curative and preventive effect of *Salacia prenoides* on pancreas in chronic cassava fed model.	National Symposium on Cassava Nutrition & Health, Trivandrum February, 1996.
14.	Narayan, A.	The concept of Health & Hygiene on ancient traditional medical sciences of India.	2nd Conf. Traditional Medical Sciences of India, Madras. December, 1995

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
15.	Narayana, A.	Role of *Argemone mexicana* in the management of nonhealing ulcers.	1st Conf. Ass. Ayu. Surgeons of A.P.. Hyderabad, April, 1995
16.	Namboodiri, P.K.S.	Speech on Role of Tridosha in Pancha karma treatment	Ayurveda Seminar Sree Sankora Community for Ayurveda conciousnes Ltd. Changanacherry Kerala, Jan. 1996
17.	Pillai, N.G.K.	Salient achievement in dermatological Research	Workshop on Tvakroga. RRI. Trivandrum. Jan. 1996.
18.	Pillai, N.G.K. & Gopa Kumari, K	Immunulogical mechanism in Psoriasis	-do-
19.	Pillai, N.G.K. et al.	Methodology for Ayurvedic diagnosis of skin disease	-do-
20.	Shah, V.K. et al.	A Clinical review on Pama & Vicharchika	-do-
B. Health Care Research & Ethno-Medicine			
21.	Hemadri, K. et al.	Skin diseases, Tribal Medicine	-do-

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
22.	Kumar, A. & Kumar, N.	Phototoxic and photoallergic skin disease in Kashmiri migrants and their traditional food habits.	Workshop on Role of Indian Systems of Medicine in Health delivery systems, Directorate of Indian System of medicine, Govt. of J&K, Jammu, Jan. 1996.
23.	Narayana, A.	An emergency traditional approach of Apasmara.	National Institute of Ayurveda, Jaipur Feb. 1996.
24.	Sharma, S.K.	*Prathmik Chikitsa* ke Bara *mein prarambhika* Jankari ke Gharelu upchar.	*Seminar organised by* Himachal Pradesh mahila Mandal. Mandi March, 1966.
C. Medico-Botanical Survey & Cultivation			
25.	Chatterjee, A.	Tissue culture of Medicinal Plants	National Symposium, Botany Deptt. Calcutta University. 1995.
26.	Singh, P.B.	Conservation and utilisation of Medicinal and aromatic plants of Himachal Pradesh	Biodiversity & Information on Medicinal & aromatic plants, New Delhi. 1995

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
27.	Uniyal, M.R.	Scientific approach and methodology for commercial cultivation of Medicinal Plants in Indian systems of medicine, J & K.	Role of Indian Systems of Medicine in Health Delivery system, J & K, Jammu, Jan. 1996.
D. Pharmaceutical,Pharmacognosy & Chemical Research			
28.	Banerjee, A. et al	Chemical investigation of *Hemidesmus indicus*	6th Asian Chemical Congress, Manila (Phillippine), May, 22-25,1995
29.	Brindha, P. et al.	Chemical Constitutents & the identification of the drug plant *Phyla nodiflora*	Regional Symposium on current trends in Heterocylic chemistry, Gandhipuram, Feb., 1996.
30.	Chatterjee, A.	Inaugural address on organic synthesis.	National Symposium on challenge in organic synthesis held at Indian Association for the cultivation of Sciences, Jadavpur, 1995.
31.	Nair, G.A.	Flavonoids of *Fumaria parviflora*	8th Kerala Sciences Congress 1996.
32.	Sasikala, E. & Bhima Rao, R.	Pharmacognosy of the leaves of *Aglaia roxburghiana*	Indian Pharmaceutical Science Congress, Visakapatnam, Dec. 1995

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
33.	Sukumar, E. & Bhima Rao, R.	Biological studies on cerpegin a novel pyridine alkoloid from *Ceropesis juncea*	Indian Chemical Society Convention, Jaipur Dec., 1995.
34.	Vasantha. S.	A new flavonoids and steroid of *Vicoa indica*	Indian Pharmaceutical Sciences Congress. Visakapatnam, Dec., 1995.
E. Pharmacology			
35.	Alam. M.	Antifertility activity of oleanolic acid-3-glucoside in albino rats	Regional Symposium on current trends in Heterocyclic Chemistry Gandhipuram. Feb.,1996
36.	Gopal, R.H. et al.	Antibacterial activity of *Etretica microphylla* Lam.	Indian Pharmaceutical Sciences Congress Visakapatnam, Dec., 1995.
37.	Murthy. A.R. et al.	Clinical evaluation of Diuretic effect of *Trianthema portula castrum*	National Seminar on Herbal Sciences, Gujarat, March, 1995
38.	Murthy. A.R. et al.	Diuretic effect of *Trianthema portula*castrum on experimental study	6th World Congress on Holistic life and Medicine Kozhokde (Calicut), Kerala.

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
F. Drug Standardisation			
39.	Bhima Rao, R. et al.	Role of organic reagents in the proximate analysis of Rasa Yoga Drugs.	Indian Pharmaceutical Sciences Congress, Visakapatnam, Dec.. 1995.
40.	Tyagi, M.K. & Kishore, P.	Rasa-shala Nirman Ka Mahatva.	Rasashastra Karyashala RRC, Hastinapur. Aug., 1995.
H. Literary & Miscellaneous			
41.	Arya, M.P.S.	Ayurveda Chikista mein Jyotish ka Samanwaya	Manava Nirman Sanstha, New Delhi. April, 1995.
42.	Arya. M.P.S.	Rogavihin Chikitsa ke liye Ayurveda ka Yogadan	Sanskrit Academy, Delhi Administration. Sept., 1995
43.	Arya. M.P.S.	Manasa Roga Aur Ayurvediya upchar.	All India Ayurvedic Congress U.P. Branch, Bulandsahar, Dec., 1995.
44.	Bhima Rao, R.	Traditional Medicine retrospects and project.	Golden Jubilee of IMCOPS, Madras, 1995-96.

S.No.	Name of the Author (s)	Title of the paper	Conference/Seminar/Workshop and Date of Participation
45.	Chatterjee, A.	Natural Products & their utilisation.	14 th, G.P. Chatterjee Award Lecture Indian Sciences Congress. Calcutta, 1995.
46.	Kumar, A. & Kumar. N.	Ayurveda, life style global health.	4th National Congress on Ayurveda Global health and Ayurvedic approach for the irrecoverable disease in the 21st century RRL, Jammu. Feb.. 1996.
47.	Kumar, N & Kumar, A.	Ethical codes in Ayurveda	4th National Congress on Ayurveda, Global health and Ayurvedic approach for the irrecoverable diseases in the 21st century RRL. Jammu. Feb., 1996.
48.	Kumar, N. & Kumar, A.	Ayurvedic heritage of J & K- A review of Ranbir Prakasa.	Workshop on Role of Indian systems of medicine in health delivery systems Govt. of J & K, Jammu. Jan. 1996.
49.	Rama Rao, B.	Interesting aspect of Health care in Tamilnadu History.	VI World Congress on Holistic Life & Medicine, Kerala. Jan., 1996.
50.	Rama Rao, B.	Study of literature for history of medicine	National Seminar on Research methodology in Unani Medicine Jamia Hamdard. New Delhi. April, 1995.

TECHNICAL REPORT-SIDDHA

Abbreviations used for Institutes/Units

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

CLINICAL RESEARCH PROGRAMME

The Clinical Research Programme in Siddha Medicine is being carried out on selected clinical conditions through the Clinical Research Units/ and Institutes. The Clinical conditions like Kalanjagapadai (Psoriasis) Manjalkamalai (Infective hepatitis) Sandhivata Soolai (Rheumatoid arthritis). Velluppunoi (Anaemia), Venkattam (Leucoderma) etc., have been taken up for study during the reporting year. Brief resume of work carried out on each of the clinical conditions are reported on the following lines.

1. Kalanjaga padai (Psoriasis)

Kalanjaga padai has been taken up for study by the CRI (S) Madras and CRU (S) Palayamkottai.The coded drug '777 oil' was administered at the dose level of 10ml. alongwith milk two times a day to all the cases taken for trial. The patients were also advised to apply oil on the affected parts of the body. The results of the treatment are reported hereunder.

Result of the clinical/therapeutic trial of '777' oil on the cases of Kalanjaga padai (Psoriasis).

S.No.	Instt./Unit	Total cases	Result of the treatment			
			Com.r	Mark.r.	Mod.r.	LAMA
1.	CRI (S)	180	15	122	29	14
2.	CRU (S)	1	-	1	-	-
	Total	181	15	123	29	14

2. Putrunoi (Cancer)

Putrunoi has been taken up in CRIA (S) Madras. The coded drugs RGX, VK2 and SKX were administered at the dose levels of 500 mg. each filled in gelatine capsules in two divided doses alongwith milk in a day. Nithyakalyanikalkam and Pachaiennai with thurusu are used as medicines for external application to the tumors and ulcers. 13 cases were treated during the reporting year. Out of which 2 cases showed mild relief and

remainig 11 cases discharged at request. It was noted significantly that all the cases treated showed considerable reduction in the growth/size of the ulcers/tumors, arrest/or reduction of the discharge and reduction of pain etc.

3. Manjalkamalai (Infective hepatitis)

This clinical condition has been carried out at the CRI (S) Madras. The trial drug Athimathura choornam was administered at the dose level of 1 gm in two divided doses alongwith water. Eleven cases were taken up for trial. Out of which two cases showed complete, five cases showed marked relief and remaining four cases did not respond to the treatment and discharged at request.

4. Sandhuvatha soolai (Rheumatoid arthritis)

A study to evaluate the effect of Chandamarutha chendooram in the management of Sandhuvatha soolai has been taken up at CRI (S) Madras. The drug was administered at the dose level of 200 mg two times a day with honey. Tamarind and chilli free diet with less salt was advised to all the 41 cases selected for trial. Mynathailam was advised for external use on the affected parts. Out of the 41 cases, three cases showed complete relief, 28 cases showed marked relief and remaining 10 cases discharged at request.

5. Valigunmam (Peptic ulcer)

This clinical condition has been taken up at CRI (S) Madras to study the efficacy of Nagaparpam and Suyamakkini chendooram. The drugs at the dose level of 200 mg each were administered in two divided doses alongwith honey for a period of 21 days. On 22nd day Omam bath was advised to all the 22 cases selected for trial. Out of these 4 cases showed complete relief, 7 cases showed marked relief and remaining 11 cases did not respond to the treatment.

6. Vatha soolai

This disease condition has been described as one of the 80 Vatharogangal in Siddha literature. The study has been carried out at RRI (S) Pondicherry to evaluate the efficacy of Chandrmarutham and Vatha kesari thailam. The results of the treatment are reported as below.

Result of the clinical/therapeutic trial of certain Siddha drugs on Vatha soolai

S.No.	Drugs	Total cases	Result of the treatment			
			Com.r	Mark.r.	Mod.r.	LAMA
1.	Chandamarutham (200 mg BD (Int.)	4	3	-	-	1
2.	Vatha kesari thailam (Externally)	4	1	2	-	1
3.	Combination of 1 & 2	50	19	16	3	12
	Total	58	23	18	3	14

7. Velluppunoi (Anaemia)

This clinical condition has been undertaken by RRI (S) Pondicherry to determine efficacy of Ayabringaraja karpam. The drug was administered at the dose level of 260 mg three times a day alongwith hoeny for 21 days. 23 cases were taken up for tiral. Out of which 4 cases showed complete relief, 16 cases showed marked relief and remaining 3 cases did not respond to the treatment hence discharged.

8. Gunmam (Intestinal disorders)

The study has been alloted to RRI (S) Pondicherry and CRU (S) functioning at Trivandrum and Palayamkottai. The trial drugs Uppuchendooram, Gunmakudori Mezhugu, Kavikkal chendooram were chosen for the management of this clinical condition. The results of the treatment are shown hereunder.

Result of clinical/therapeutic trial of certain Siddha preparations on the cases of Gunmam (Intestinal disorders)

S.No.	Drugs	Total cases	Result of the treatment			
			Com.r	Mark.r.	Mod.r.	LAMA
1.	Gunmakudori Mezhugu (130 mg TDS)	2	-	1	-	1
2.	Uppuchendooram 1 gm BD and Gunmakudori Mezhugu (130 mg TDS)	2	1	-	-	1
3.	Kavikkal chendooram (200 mg BD)	2	1	1	-	-
	Total	6	2	2	-	2

9. Oothainoi (Asitis)

This clinical condition has been taken up at RRI (S) Pondicherry to assess the efficacy of Vedi uppu churnam. The trial drug at the dose of 130 mg alongwith 60 ml of Mullangi charu was administered two times a day. Two cases were taken up for trial and showed significant result.

10. Neerazhivu (Diabetes mellitus)

Neerazhivu is one of the 'Siruneer noigal' described in Siddha texts. The study in this clinical condition has been instituted at CRU (S) New Delhi and Clinical Wing of DRS (MD) Madras. The trial drugs such as Abraga-chendooram and Kezhanelii choornam are taken up to evaluate their efficacy in the management of Neerazhivu. The results of the treatment are tabled below:

Results of the clinical/therapeutic trial of Siddha preparations on Neerazhivu (Diabetes mellitus)

S.No.	Drugs	Total cases	Result of the treatment			
			Com.r	Mark.r.	Mod.r.	LAMA
1.	Abraga chendooram (200 mg BD)	26	4	10	-	12
2.	Kezhanelli choornam (500 mg BD)	32	1	9	12	10
	Total	58	5	19	12	22

11. Venkuttam (Leucoderma)

This clinical condition has been taken up by clinical wing of DRS (MD) Madras to prove the effect of Ponnimalai chendooram, Thambira chendooram and Chirattai Thgilam. No toxic side effects were noticed on the cases taken up for trial. The result of the treatment is given in the following table:

Result of clinical/therapeutic trial of certain preparations on Venkutam (Leucoderma)

S.No.	Drugs	Total cases	Result of the treatment			
			Com.r	Mark.r.	Mod.r.	LAMA
1.	Thambira chendooram	4	-	1	3	-
2.	Ponnimilal chendooram	21	-	9	12	-
	Total	25	-	10	15	-

12. Saramanoigal (Skin disorders)

The study has been carried out at CRU (S) Trivandrum to prove the efficacy of Siddha preparations such as Iranelli karpam, Gandhagarasayamon etc. The drug at the dose level of 130 mg and 2 gm respectively two times a day was administerd in all the 24 cases. Karappan thailam and Arugamplulthailam have been advised to apply on the affected parts. Out of the 24 cases, 15 cases showed complete relief and remaining 9 cases showed marked relief.

13. Vellanoi (Leucoderma)

Vellainoi one of the magalirnoigal has been taken up for trial by CRU (S) Trivandrum. Chemparuthipookudineer and Kukkilparpam are the trial drugs. 15 cases were selected for study, out of which 10 cases showed complete relief and remaining 5 cases showed marked relief.

14. Eraippunoi (Bronchial Asthma)

Eraippunoi has been taken up for trial study at CRU (S) Trivandrum to evaluate the efficacy of Irunellikarpam and Swasakudori mathirai. 25 cases were selected for trial, out of which 15 cases showed complete relief and remaining 10 cases showed marked relief.

15. Yanaikkalnoi (Filariasis)

Yanaikkalnoi has been taken up for trial at CRU (S)Trivandrum to study the efficacy of Linga chendooram, Thazhamboo mathirai, Nilavembu kudineer and Kakkattanver karkam. The study was carried out in three groups and also both in carries and manifested cases attended the OPD of the unit. The results of treatment are hereunder:

Result of clinical/therapeutic trial of Siddha preparations on Yanaikkalnoi (Filariasis)

S.No.	Drugs	Total cases	Result of the treatment			
			Com.r	Mark.r.	Mod.r.	LAMA
1.	Linga chendooram	25	15	10	-	-
2.	Thazhamboo mathirai & Nilavembu Kudineer	25	12	13	-	-
3.	Kakkattanver karkam	25	9	16	-	-
	Total	75	36	39	-	-

Out Patient/ In Patient attendance at a Glance

S. No.	Instt./Units	No. of patient attended OPD			No. of patients admitted IPD
		New	Old	Total	
1.	CRI (S) Madras	6096	13, 796	19,892	267
2.	RRI (S) Pondicherry	3594	8, 803	12, 397	87
3.	CRU (S) Palyamkottai	466	861	1, 327	4
4.	CRU (S) Trivandrum	1625	7, 545	9, 170	-

HEALTH CARE RESEARCH PROGRAMME

Health Care Research Programme has been carried out by Mobile Clinical Research Units attached with CRI (S) Madras and RRI (S) Pondicherry. Two Tribal Health Care Research Programme at Kalasa and Tirupatur are also functing under Siddha Schemes. Brief resume of the work carried during the reporting period is given under.

Tribal Health Care Research Programme

The team conducted periodical study tours in the ten villages falling under the Jawadhi Hills tribal pockets. They are Koilur, Veerappanur, Palamarathur, Kodumampalli, Athikuppam, Guddur, Pallalapappli, Karumbur, Silamdampethi, Koodapattu. The team covered and recorded data in respect of Sex, Age, Marital status, Educational status, Occupation and Income per capita etc, of 1398 individuals out of total population of 6550. Incidental medical aid were provided to 1589 cases who are commonly suffering with Enigunmam, Iraippunoi, Kuasrpughunoi, Neerkovai, Suram, Moolam etc.The team also educated the individuals about the uses of the medicinal plants available in and around the villages surveyed and also personal hygiene etc., to the villagers.

MEDICO-BOTANICAL RESEARCH PROGRAMME

The Medico-Botanical Research Unit functioning at Palayamkottai has been engaged in exploring the availability of Medicinal plants especially utilised in Siddha Medicine which are found in the forest areas/divisions of Tamil Nadu. Since Marunthu (Drug) is the primary tool of entire research programme, surveying the taxonamy of the forest areas, procuring genuine and unadultered drug and arranging/preserving them and supply of the required material for the research purposes occupies very important role of this unit. The study includes identification, quantitative and qualitative of genuine plant drugs, their adulterants/substitutes etc.

During the reporting year, the unit conducted 8 survey/drug collection tours of Kodikarai (Pudukkottai Distt) Pachiparai (Kanyakumari Distt) and areas of Anna, Madurai, Kamaraj and Voc distt. of Tamil Nadu. 105 specimen belonging to 58 families, 97 genera & 104 species were collected and reported. 88 plant specimens were identified and out of which the identity of 16 specimen were confirmed. 142 plant specimens were mounted on Herbarium sheet and 102 specimens were added to the Herbarium.

Out of the 102 plant specimens added to the herbarium collection following are some of the plant/their parts are more important and widely used in the preparation of Siddha medicines. They are Silanthi (*Ochna obtura* DC.), Kalaththi (*Ficus retusa* L.), Karukka (*Pleurostylia wightii* Wight & Arn.); Walsurai (*Walsura trifoliata* Harms.); Peruvagai (*Salvadora persica* L.); Palappazham (*Mimusops hexandra* Roxb.), Iluppai (*Bassia latifolia* Roxb.); Chempoila (*Breynia vitisindaea* C. Fish.); Odukkam (*Cleistanthus collinus* Benth. ex Hook.), Vedaththalai (*Dichrostachys cinerea* Wt. & Arn.); Etti (*Strychnos nuxvomica* L.); Tadai (*Pterosperumum suberfolium* Lam.); Tara (*Mollugo pentaphylla* L.); Mahizham (*Mimusops elengi* L.); Nanjaruppan (*Tylophora indica* Merr.); Kozhinji (*Tephrosia pulcherrima* Gamble.); Azhinjil (*Alangium salvifolium* Wanger); Marauri (*Antiaris toxicaria* Lesch.); Kizhattamkodi (*Loesnoriella obtusifolia* Ac Smith)., Nearacl (*Ficus tysjahala* Burm f.); Kayamboo (*Memeclpon edule* Roxb.); Vetpalai (*Wrightia tinctoria* R.Br.); Mulkathini (*Solanum incanum* L.); Erumai Nakkalai (*Treena orientalis* Bl.); Konchi (*Glycosmis pentphylla* DC.); Poovanthi (*Sapindus emarginatus* Vahl.); Nedunari (*Polyalthia cerasoides* Bedd.); Vembadam (*Ventilago madaraspanta* Gaertn.); Kilivai (*Commiphora berryii* Engler.); Kuppaimeni (*Acalypha indica* L.); Sandhana Vembu(*Chukrasia tabuparisi* Adr. Juss.);

Kollama (*Anacardium occidentale* L.); Seetha(*Annona reticulata* L.); Vengai (*Pterocarpus marsupium* Roxb.); Payaththi (*Ficus hispida* L.); Kattuinji (*Zingiber zerumbet* J.F. Smith.); Ponmusutai (*Cissampelos pariera* L.); Vellaikiranthi (*Evolvulus nummularia* L.); Karivilanjikoodan (*Smilax zeylanica* L.); Vittil (*Aporosa lindleyana* Baill.); Gnanapalam (*Syzygium caryophyllatum* L.) Alston.); Ezhilaipalai (*Alstonia scholaris* R.Br.); Minnakodi (*Calycopteris floribunda* Lam.); Thetri (*Ixora coccina* L.); Siru adathodai (*Justicia beddomei* Bennet.); Vellai Karanthai (*Sphaeranthes africanus* L.) etc.

Different parts of a plant drug having importance to its medicinal value have been added to the museum samples and making the total to 739 of museum collection of the unit.

130 herbarium sheets identified and indexed which are having importance in the field of Siddha medicine were supplied to the Cenral Herbarium being maintained at Headquarters, New Delhi.

50 drug samples consisting of plants, animals products which are used extensively in the Siddha medicine were also supplied to Central Meseum being maintained at Headquarters, New Delhi.

Data collected on crude drug samples in respect of 20 plant drugs which are regularly exported to western countries like England, USA, Italy, France and also countries like Sri Lanka, Hongkong, Japan etc.

PHARMACOLOGY RESEARCH PROGRAMME

The Pharmacology Research Programme has been carried out in the Pharmacology section of CRI (S) Madras and Pharmacology wing of DRS (MD) Madras. The study has been conducted on the predetermined experimental models in the laboratory attached to the Institute. The following single/compound drugs are studied for their efficacy also determine their effect as anti-toxic and anti-inflammatory studies.

1. Anti toxicity studies

a) Kadakkai chooranam

b) Anthimathura chooranam

c) Vanga chunnam

d) Thazhamboo Mathirai

e) Nagaparpam

f) Vathakesari Thailam

2. Anti Inflammatory Studies

a) Naga parpam

b) Athimathura chooranam

c) Sivanan amitham

d) Thayir chumdi chooranam

1. Anti-toxicity studies

Acute toxicity study with Kadakkai chooranam on albino mice in the dose level of 10000 mg./kg. and on albino rats in the dose level of 9000 mg/kg. Vanga chunnam in the dose level of 6000-& 5000 mg/kg. on mice and rats respectively; Athimathura chooranam in the dose level of 7000 and 8000 mg/kg. an albino mice; Thazhamboo mathirai in the dose level of 50 and 100 mg/kg. on albino mice and albino rats in the dose of 100, 500 and 5000 mg./kg. did not manifest any toxic effects.

But the drug Nagaparpam in the dose of 6000 and 7000 mg./kg. on albino rats and mice manifested mortality of 33.33% and 50% respectively

on both the species and the drug Vatha kesari thailam on albino rats in the doses of 1, 5, 10, 15 and 20 ml/kg. and albino mice in the dose of 5 ml/kg. body weight manifested diarrhoea till 12 hours and subsequently returned to normal from 5 ml./kg. dose level onwards.

2. Anti-inflammatory study

Carrageenin induced paw odema study on albino rats with the drug Nagaparpam in the doses of 10 and 50 mg/kg; the drug Athimathuram in the doses of 100 and 500 mg/kg. and on the drug Thayis chundi chooranam in the doses of 200 mg./kg. were conducted and the data collected are being analysed statistically and results will be communicated. Cottenpettet granuloma study on albino rats with the drug Sivanas amisthemo in the dose if 50 mg./kg. and Thayischundi chooranam in the dose level of 100 mg/kg were conducted and data obtained are being statistically analysed and results will be communicated in due course.

DRUG STANDARDIZATION RESEARCH STUDIES

The drug standardization plays an important role for obtaining authentic medicinal preparation and genuine single drugs for the use in the therapeutic industry. It also occupies an important place in both manufacturing of drug and application in Clinical Research because it provides approach data for obtaining genuine single drugs and authentically prepared medicines. There three Drug Standardization Research Units functioning at Madras, Bangalore and Trivandrum have taken up the task of the study of laying pharmacopoeial standards for the formulations found in the Siddha formulary Part-I alongwith single drugs that are entering into those formulations.

The programmes aims at laying standards for the single drugs, pharmaceutical process involved in the manufacture of the formulations and finished products alongwith their analytical values.

A. Single drugs (Analytical studies)

S.No.	Name of the drugs	Parts analysed	Name of the Unit
1.	Tharpucani (*Citrullus vulgaris* Sch.)	Seeds	DSRUSM
2.	Perunkalarva (*Salvadoa persica* L.)	Leaves & Stem	-do-
3.	Mulam (*Cucumis melo* L.)	Rind Fruit	-do-
4.	Sirupeelai (*Aerva lanata* A. Juss)	Aerial part	-do-
5.	Nochi (*Vitex negundo* L.)	Roots	-do-
6.	Gorojanam (Bostaurus L.)	Oxgall	-do-
7.	Malaippoovarasu (*Hildegardia populifolia* Roxb.)	Leaves	-do-
8.	Kadukkai (*Terminalia chebula* Retz.)	Fruitrind	-do-
9.	Adividayam (*Aconitum hetrophyllum* Wall.)	Rhizome	DSRUST

10.	Anaikundrimani (*Adenenthera pavonina*)	Wood	DSRUST
11.	Chappan (*Caesalpinia sappan*)	Wood	-do-
12.	Pallipanchedi (*Cipadessa fruticosa*)	Leaves	-do-
13.	Karan surai (Market sample)	Stem bark	-do-
14.	Chenchamdanam (*Pterocarpus santalinus*)	Wood	-do-
15.	Nattamanakku (*Ricinus communis* L.)	Aerial part	-do-
16.	Puvarasu (*Thespesia populnea*)	Stem bark	-do-
17.	Nochi (*Vitex negundo*)	Aerial part	-do-
18.	Andimalli (*Mirabilis jalapa*)	Root stem	DSRUSB

B. Pharmacopoeial standards (analytical standards) of the finished products:

1)	Civan amirtham	DSRUSM
2)	Arakku Thailam	-do-
3)	Nochi Thailam	-do-

C. Phyto-Chemistry

1) Civanarvembu (*Indigofera aspalanthoides* Vahl.)
2) Perupeelai (Aerva tomentosa)
3) Andimali (Mirabilis jalapa L.)

D. Pharmacognostical identification of the following plants are reported.

1) Pasalaikkerai (Portulaca quaridfida L.)
2) Senthul (Tinospora cordifolia Miers.)
3) Kodikakkatam (Clitoria ternatea L.)
4) Malaippoovarasu (Hildegardia populifolia Roxb.)
5) Iruvakki
6) Iyvirali
7) Orielaithamarai

Apart form this DSRU (S) Tvm has collected literary information in respect of 25 plants drugs (single) which are entering into the Formulary of Siddha Part-I.

PHARMACY

The Pharmacy attached with CRI (S) is engaged with the preparation of classical preparations available in the Siddha texts and also chosen trial drugs for the Institute/Units of Siddha Medicine under the Council.

The raw drugs requirement met by the medico-ethno-botanical survey projects and also from local markets. These drugs are identified through experts in the field of Siddha medicine and Pharmacognosy to determine their genuiness/authenticity.

The method of preparation of medicines are based on the method given in Literature. Varieties of preparations such as Chendooram, Choornam, Parpam, Thailam, Ennai, Noi, Kalkam karpam etc.

During the reporting year, the Pharmacy manufactured 788.930 kg. of parpam, choornam and chendooram etc., and 929.350 litres of oil based preparations.

The Pharmacy also supplied prepared medicines to the following Institutes/Units of Siddha under the Council. (as per the table below)

S.No.	Name of the Instt./Units	Quantity	
		Solid (in Kg)	Liquid (in liters)
1.	CRU (S\ Tvm	18.750	-
2.	DRS (S) Madras	10.500	0.800
3.	THCRP Kaiasa	8.500	-
4.	DSRU (S) Madras	0.050	-
5.	CRU (S) Palayamkottai	3.500	12.000
6.	MCRU (S) Madras	13.500	10.000

Apart from this Pharmacy had also supplied 5000 capsules required for Dr. ALRIUM Madras.

LITERARY RESEARCH PROGRAMME

Literary Research Programme has been entrusted to LR& DD, Madras functioning at CRI (S) Madras. The following work has been carried out during the reporting year.

1. Siddha Maruthuva Eliya Vazhakku Morrigan: IV Edition

This book is very popular among the common people, well appreciated and has great demand. This deals with common remedies consists simple preparation for common ailments. The book consists of 58 ailments. The press copy of the IV edition is completed.

2. Therayar kudineer: II Edition

This one of the original work of Therayar consists of 100 simple remedies for common ailments. This book also has great demand among the common folk. The press copy of the II edition of the book is completed.

3. Agathiyar Pooranan 205:

The original work of Agathiyar consists of different method of preparation, dose, do's and don'ts. Basic principles to maintain good health including yogic position and its therapeutic effect etc. The book consists of 205 stanzas have been annotated fully by the Unit. The work on preparation of index, classification, editing are in progress.

4. Rama Devar 1000

This one of the rare work of Rama devar. It is believed that he lived in medival period and also used ingredients (metals, minerals and also animal products) for the preparations found during the period. The work on annotation of the book is in progress. About 400 stanzas have been annotated. The correction and comparison work has been completed.

5. The following publications are ready for publication:

1) Agathiyar pooranan- 205
2) Agathiyar vaidya kaviyam - 1500
3) Bogar Karukkadai Nigandu-500
4) Agathiyar sowmiya sagaram-1200
5) Rama devar-1000
6) Rs. 5, 321.40 have been sent to the Council as the collection on account of sale of Council's publications.

ACKNOWLEDGEMENT

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

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

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

The Council places on record the efforts of Deputy Director (Tech.), Programme officers, Stat. officer and Shri J.S. Bedi Steno Grade "B" for bringing out the Annual Report in the present form.