

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

25

**ANNUAL REPORT  
1998-99**



**(Department of Indian Systems of Medicine & Homoeopathy)**

**MINISTRY OF HEALTH AND FAMILY WELFARE**

**(Government of India)  
New Delhi**



## CONTENTS

S.No.	Subject	Page No.
I.	<b>Preface</b>	V
II.	<b>Administrative Report</b>	1
III.	<b>Technical Report</b>	14
A.	<b>AYURVEDA</b>	
1.	Abbreviations used for Institutes/Centres/Units	14
2.	Clinical Research Programme	17
	(a) Clinical Therapeutic Trials	17
	(b) Statement showing disease groups, number of patients studied and participating projects during 1998-99	35
	(c) Statement of the patients attended at OPD and admitted/discharged in the IPD during 1998-1999.	37
	(d) Health Care Research Programme	38
3.	Medico-Ethno-Botanical Survey Programme	43
4.	Cultivation of Medicinal Plants	49
5.	Musk Deer Breeding Programme	54
6.	Pharmacognosy Research Studies	55
7.	Plant Tissue Culture	57
8.	Chemical Research Programme	59
9.	Pharmacological Research Programme	64
10.	Drug Standardisation Research Programme	70
11.	Literary Research Programme	76
12.	Amchi Medicine Research Unit	82

13.	Family Welfare Research Programme	84
14.	Publications and Participations	91
<b>B.</b>	<b>SIDDHA</b>	
1.	Abbreviations used for Institutes/Units	116
2.	Clinical Research Programme	117
3.	Health Care Research Programme	123
4.	Medico-Botanical Research Programme	124
5.	Pharmacognosy Research Programme	126
6.	Chemical Research Programme	127
7.	Pharmacology Research Programme	128
8.	Pharmaceutical/Standardisation Research Programme	130
9.	Pharmacy	134
10.	Literary Research Programme	135
11.	Publications and Participations	136
<b>IV.</b>	<b>Acknowledgement</b>	140

## PREFACE

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

### **Clinical Research Programme**

Clinical conditions studied in Ayurveda during the reporting period, include Tamaka swasa (Bronchial asthma), Annadravasula (Gastric ulcer), Parinamasula (Duodenal ulcer), Arsa (Piles), Bhagandara (Fistula-in-ano), Parikartika (Fissure-in-ano), Swetapradara (Leucorrhoea), Madhumeha (Diabetes mellitus), Mutrasamari (Urolithiasis), Vyanbalvaishmya (Hypertension), Hridroga (Coronary heart diseases), Medoroga (Obesity and lipid disorders), Paksvadha (Hemiplegia), Pangu (Paraplegia), Saisaviyavata (Poliomyelitis), Gridhrasi (Sciatica), Amavata (Rheumatoid arthritis), Slipada (Filariasis), Visamjwara (Malaria) etc.

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

During the execution of this programme, medical aid to 3,44,189 patients through Out Patient Departments and 1900 patients at In-door Patient Department 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 basis so that benefits of the research programmes carried out can reach to the grass root level. Under these programmes, team 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 prevalence of diseases, food habits with regard to different seasons, socio-economic status, natural resources, the standard, the types of treatment available to the rural/tribal folk. During the period under report, a population of 1,14,239 individuals pertaining to 82 villages including 32 tribal pockets have been covered under this programme and incidental medical aid provided to 28,624 patients.

## **Drug Research Programme**

The Drug Research Programme consists of Medico-botanical Survey, Cultivation of Medicinal Plants, inter-disciplinary research programme like, Pharmacognostical, Chemical, Pharmacological and Toxicological studies besides Drug Standardisation studies. Under Medico-botanical Survey Programme over 63 survey tours were conducted and 3,136 plant specimens, 140 raw drugs besides 136 museum samples were collected. 387 drug samples consisting of 188 species and weighing more than 1126.5 kg were collected for supply to projects carrying out the work related to the laying the Pharmacopoeial Standards under centrally sponsored scheme besides PLIM, Ghaziabad. The Survey Units have also taken up maintenance work of their Herbarium and Museum. About 450 medicinal species are presently growing in different Gardens. A Video Film on Guggulu has been prepared by the Council. Pharmacognostical studies of 10 drugs, Chemical studies of 15 drugs and Pharmacological and Toxicological studies of 35 drugs used in Ayurveda and Siddha System of Medicine have been carried out during the reporting period. The Council is also maintaining a Musk Deer Breeding Farm at Mehroori in Kumaon Hills and there were 16 adult animals at the end of reporting period.

Under Drug Standardisation Research Programme Pharmacognostical/ Phyto-chemical/TLC studies on 124 drugs were conducted. Analytical standards were laid down for 17 formulations used in Ayurveda and Siddha

besides standardisation of two market samples and study of metallic contents of five raw drugs.

### **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". During the reporting period backlog of JRAS and BMEBR has been cleared and seven books/Monographs were published besides publication of nine Souvenirs, Abstracts and Folders.

### **Family Welfare Research Programme**

Clinical screening and Pharmacological studies of the oral contraceptive agents are being carried out under this programme. 527 new cases were studied besides 1272 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 nine 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 fields under the aegis of the Council.

Dated: 04/05/2000



**(G. Veluchamy)**

Director

and Member-Secretary  
Governing Body (CCRAS)





## ADMINISTRATIVE REPORT

The Central Council for Research in Ayurveda and Siddha is a Society registered on 30th March, 1978 under Societies Registration Act XXI of 1860. During the period under report ending 31st March, 1999, the membership of the Society and Governing Body of the Council were as under:

### **President**

Sh. Dalit Ezhilmalai  
Minister of State for Health &  
Family Welfare  
(Independent charge)

### **Vice- President**

Vd. B.D. Triguna

### **Official Members**

#### 1. Secretary (ISM&H)

Smt. Shanta Shastri.  
Deptt. of ISM&H  
Ministry of Health & F.W.

#### 2. Joint Secretary (ISM&H)

Shri Pradip Bhargava

#### 3. Joint Secretary (FA)

Shri Vijay Singh

### **Non-Official Members**

1. Prof. S.K. Changani
2. Dr. G.P. Dubey
3. Dr. Kulwant Singh
4. Vd. D.K. Triguna
5. Vd. Balendu Prakash
6. Sh. Harinarayan Swami
7. Dr. Jaiprakash Narayan  
(Expert in Pharmacology)
8. Prof. A.N. Namjoshi (Expired)  
(Expert in Pharmacology)

	9. Prof. S. Shantamma (Expert in Botany)
	10. Prof. S.K. Sarin
	11. Dr. J.Krishnamoorthy (Expert in Siddha)
	12. Dr. V. Suba Laxmi
Director, NIA, Jaipur	Dr. C.H.S. Shasrti
Director, NIS, Chennai	Vacant
Member-Secretary	Dr. Prem Kishore

### **Executive Committee**

The Executive Committee was constituted on 14/5/1998 and consisted of the following :

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

During the period under report, the Executive Committee met thrice on 27/7/98, 21/12/98 and 17/3/99.

The Committee had directed to enhance delegation of more financial/ administrative powers to Standing Finance Committee and the Director, CCRAS to enable them to consider the items at their level and need not be brought to Executive Committee.

## Finance Committee

The Standing Finance committee consisted of the following:

1. Sh. Pradip Bhargava Chairman  
Joint Secretary (ISM&H)  
Ministry of Health & F.W.
2. Sh. Vijay Singh Member  
Joint Secretary (FA)  
Ministry of Health & F.W.
3. Vd. D.K. Triguna Member  
(To represent Ayurveda)
4. Dr. V. Suba Laxmi Member  
(To represent Siddha)
5. Director, CCRAS Member-Secretary

During the period under report, the Standing Finance Committee met thrice on 10/6/98, 30/9/98 and 19/12/98 and considered and approved proposals related to financial matters.

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

The Council is following the orders and guidelines issued from time to time by the Government 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 strength of employees in different groups on 1.1.1999 is as under :

Group	Number of employees	SC	%age of total employees	ST	%age of total employees
A	146	16	10.95	6	4.11
B	196	12	6.12	2	1.02
C	556	89	16.00	28	5.04
D	674	236	35.01	67	9.94
Total	1572	353	22.46	103	6.55

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. The programme launched by these projects 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 areas and through OPD/IPD of these Institutes/Centres and under Mobile Clinical Research Programmes/Community Health Care Research Programme, Medical Relief and Health benefit have been extended to a large number of SC/ST population. The budget of the Council stipulates specific allocations for SC/ST component plans.

### **Official Language Implementation Committee:**

The Council is having an Official Language Implementation Committee under the Chairmanship of the Director, CCRAS to review the position regarding implementation of official language act/policy/rules, orders, programmes etc. and to suggest measures for increasing the pace of Hindi in the Council. During the period under report, the committee met on 30.3.99

### **Scientific Advisory Committee (Ay.)**

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

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

During the period under report, the Scientific Advisory Committee (Ay.) met on 26/8/98 and evaluated the programmes and provided necessary guidance.

### Scientific Advisory Committee (Siddha)

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

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

During the period under report, the Scientific Advisory Committee (Siddha) met on 10/8/98 and evaluated the programmes and provided necessary guidance.

### Organisational Network of CCRAS

There are 5 Central Research Institutes, 7 Regional Research Institutes, 10 Regional Research Centres, 27 Research Units, 7 Tribal Health Care Research Projects, One Documentation and Publication Division, 12 Family Welfare Research Projects and one Research Projects on Tibetan medicine 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	Funds released	Actual exp.
Expenditure	1998-99	1998-99	1998-99
		(Rupees in Lakh)	
Plan	814.00	796.63	Not received so far
Non-Plan	1820.00	1795.00	-
F.W.R.S.	38.00	37.98	-

## **Audited Statement of Accounts**

The Accounts of the Council for the year 1998-99 for the period from 1st April, 1998 to 31st March, 1999 has been audited by the D.A.C.R.

## **SEMINARS/CONFERENCES**

The following Seminars were organised by the Council :

### **a) National Seminar on Amavata**

The Council organised a National Seminar on Amavata at C.R.I. (Ay.), Bhubaneswar on 14-15 May, 1998. The Seminar was inaugurated by Sh. D. Pradhan, Hon'ble Union Minister of Surface Transport. 30 Articles on different aspects of Amavata were presented by the participants. An expert group meeting on Emergency medicines was also held on 13.5.98.

### **b) Seminar on Literary Research**

A two days Seminar on Literary Research was organised by the Council on Feb. 22-23, 1999 at Varanasi. The Seminar was inaugurated by Prof Y.C. Simhadi, Vice-Chancellor of the B.H.U., Vaidya B.D. Triguna presided and Prof. P.V. Sharma was the Chief guest. Other dignitaries who attended the Seminar were : Sh. P. Bhargava, J.S. (ISM&H), Prof. V.P. Singh, Vaidya S.K. Mishra & Vd. S.K. Sharma etc. About 40 guest lectures/papers were delivered/presented in the Seminar.

### **c) National Seminar on Rasayana**

The Council organised a three days National Seminar on Rasayana from 8th to 10th March, 1999 at New Delhi. The Seminar was inaugurated by Smt. Shanta Shastri, Secretary, ISM&H on 8.3.98 and inaugural function was presided by Padambhooshan Rajvaidya B.D. Triguna. The inaugural address stressed the importance of Rasayana therapy since the earliest times and also underlined the importance of this therapy in the present context. Rajvaidya Triguna introduced the theme of conference and expressed his desire that the ancient practices of Rasayana therapy should be adopted into for the health care of masses. About 60 research papers and 20 key note addresses were presented in this Seminar. The valedictory address was delivered by Sh. P. Bhargava, J.S. (ISM&H) on 10.3.98.

## **WORKSHOPS/IMPORTANT MEETINGS**

The following workshops/important meetings were held :

### **1) Expert Group meet on Patents**

Sh. P. Bhargava, J.S. (ISM&H) inaugurated Expert Group Meet on Patents organised by CCRAS and CCRUM on 29.10.1998. The participants included experts in the field such as Dr. R.H. Singh, Dr. D. Shankar, Dr. S. Hussain, Dr. S. Kumar and Dr. C. K. Katiyar. The Committee recommended that ancient texts and manuscripts to be documented as national heritage record to make the basis on National Heritage Patent, Information Patent System on ISM&H and establishment of branches of ISM should have Patent Cell etc.

### **2) Meeting on Research and Development of Rasaushadhis**

A meeting on research and development of Rasaushadhis was held at R.R.C. (Ay.), Hastinapur on 5-12-98 under the Chairpersonship of Smt. Shanta Shastri, Secretary, ISM&H. Sh. P. Bhargava, J.S. (ISM&H), Vd. B.D. Triguna, Vd. S.K. Mishra, Vd. G.L. Chanana, Vd. Balendu Prakash, Dr. P.V.V. Prasad, Vd. G. Dwivedi, Vd. A.K. Mishra, Dr. Bajwa and Senior Officers of the Council were present. The participants highlighted the need for application of Rasaushadhis in Ayurvedic therapy specially in the management of emergent clinical conditions.

### **3) Expert Group meeting on Anti-fertility Research Programme**

A meeting on Expert Group Committee on Anti-fertility Research Programme under ISM was held at CCRAS Hqrs on 11.2.99 under the Chairpersonship of Smt. S. Shastri, Secretary, ISM&H to discuss on the clinical trials of Pippalyadi Yoga, Prof. R.C. Chowdhary, Dr. (Mrs.) M. Roy Chowdhary, Dr. M.D. Nair, Dr. V.K. Behal, Dr. (Mrs.) L.R. Tlukuji, Dr. R. Tek attended the meeting. The Committee decided that before going for the clinical trial of drug, it may be standardised.

### **4) Expert Group Meet on Epidemic Control**

Expert Group Meet on Epidemic Control was held on 11th & 12th March, 1999 in Council's Auditorium. The meeting was inaugurated by Sh. P. Bhargava, J.S. (ISM&H). The meet was attended by Rajvaidya B.D. Triguna, Dr. J. Krishnamoorthy, Dr. V.P. Sharma, Dr. Uma Chawla, Dr. Neena Valecha & Dr. D. Dattan. The Expert Group Meet has made recommendations for planning & effective management of epidemic control through Ayurveda & Siddha.

## **5) Workshop on Re-orientation of Ayurveda & Siddha Physicians in HIV/AIDS and S.T.D.**

A three days workshop sponsored by NACO on Re-orientation of Ayurvedic Physicians in HIV/AIDS and STD was held from 26th to 28th Feb., 1999 at CRI (Ay.), Mumbai. The workshop was inaugurated with a key note address by Chief Guest, Dr. D. Sen Gupta, Consultant, WHO/NACO on 26.2.99.

About 60 Ayurvedic Physicians from different Ayurvedic Colleges of Maharashtra, private practitioners and volunteers were imparted training towards the hazards of HIV/AIDS and STD alongwith the prevention and control.

Another workshop on Re-orientation of Siddha Physician was organised at Chennai in collaboration with NACO during 22-24 March, 1999. The workshop was inaugurated by Dr. J.R. Krishnamurthy and presided over by the Director, CCRAS. The workshop was divided in six scientific sessions and leading experts in the field of Siddha, Modern, Naturopathy & Yoga delivered lectures during the workshop.

## **6) Awareness for Prevention of AIDS**

World AIDS Day is observed on 1st December every year all over the world. A function on awareness for prevention of AIDS was organised by the Council on 1-12-98. Dr. Prem Kishore, Director and Dr. K.D. Sharma, Dy. Director (Tech.) addressed the staff of the CCRAS and other Councils and explained the preventive measures for spreading of AIDS. Dr. V.P. Singh, Asstt. Director (Homoeopathy), CCRH delivered a lecture explaining the gravity of the problems particularly among the younger generation and the preventive measures, since there is no vaccine for prevention and drugs for cure.

## **7) Preparatory Meeting for Epidemic Control on Forthcoming Conference/Seminar**

A preparatory meeting of the experts in the field of epidemic control was held on 17/12/98 in the CCRAS Hqrs office under the Chairmanship of Dr. Prem Kishore, Director, CCRAS. Vd. S.K. Mishra, Dr. B.N. Sinha, Tibbia college, New Delhi, Shri Shyam Sunder, JID, CBHI, New Delhi, Dr. Neena Valecha, Asstt. Director, ICMR, New Delhi and Dr. Uma Chawla, JID, NICD, New Delhi alongwith Sr. Officers of the Council participated in the meeting.



## **8) Meeting on Mantra Chikitsa**

A Meeting for implementation of Mantra Chikitsa was held on 14.12.1998 in the Conference Hall of the CCRAS Hqrs office under the chairmanship of Vd. B.D. Triguna. Tapasvi Janak Shahi, Vd. S.K. Mishra, Vd. Nanak Chand Sharma and Senior Officers of the Council participated in the meeting. It was recommended that the Mantra therapy may be carried out by Sh. Shahi at C.R.I., New Delhi.

## **9) Meetings of the Officer-in-Charges**

- i) A meeting of the senior officers & in-charges of the Northern Zone for monitoring the research programmes was held on 24th and 25th October, 1998 in the Hqrs office of the Council at New Delhi. The officers explained the work being carried out and submitted the proposed programmes for the next five years from 1998-2003.
- ii) A meeting of the Head of the Institute/Centres of South-Zone for monitoring the research programme was held on 27-12-1998 at National Institute of Mental Health & Neuro Sciences, Bangalore. The meeting was called to review the work done by the Institutes/Centres and to plan the work for the next five years.
- iii) A meeting of the Council's Project Heads functioning in Institute of Medical Sciences, B.H.U., Varanasi was held on 21.2.99 in the Committee Room of the Institute. Prof. R.H. Singh, Prof. J.K. Ojha, Prof. G.P. Dube, Prof. V.P. Pandey, Prof. M.V. Acharya, Dr. M. Dwivedi and representatives from CRI (MT) participated.
- iv) Again, a meeting of the Incharges of Institutes/Centres/Units for monitoring of the research programme was held on 13.3.99 at Council's Hqrs. office, New Delhi. Director, CCRAS, addressed the officers and emphasised to implement the recommendations of the expert group meet in peripheral Institutes of the Council.

## **EXHIBITIONS**

The Council arranged following exhibitions :

### **1) Mystique India - 1998**

The Council participated in Mystique India - 1998 exhibition held from 7th to 15th October, 1998 at Pragati Maidan, New Delhi and organised an exhibition on Ayurveda & Siddha Systems of Medicine. The Council has also

organised OPD clinic on specialised Ayurvedic therapies of eye diseases, Jalokavacharan, health check-up, hypertension etc. Among the dignitaries visited the Council exhibition were Smt. Suman Kant, wife of Hon'ble Sh. Krishna Kant, Vice-President, Smt. S. Shastri, Secretary & Sh. P. Bhargava, J.S., Deptt. of ISM & H, Sh. Y.N. Chaturvedi, Secretary, Deptt. of Family Welfare, Dr. Jai Prakash Narayana, Chairman, SAC (Ay.) and Dr. X.Zhang, TSM, WHO.

The Council highlighted the efforts of the Council in providing scientific footing to various Ayurvedic therapies and concepts. The therapies like Panchakarma, Kshara-sutra, Jalauka were explained to the visitors through visual charts etc. Photographs as well as green herbs in flower pots were displayed and their common uses introduced.

## **2) India International Trade Fair-1998**

The Council participated in the India International Trade Fair - 1998 from 14-27 Nov., 1998 and put up display of activities relating to mother and child Health Care Programme. The pamphlets and folders on activities and achievements of the Council were distributed to the visitors. The specialist consultancy for the patients was also organised on this occasion.

## **3) Perfect Health Mela - 1998**

The Council participated in Perfect Health Mela - 1998 from 18th to 29th December, 1998 and put an exhibition on medicinal plants and drug samples. It organised medical check-up and distributed pamphlets on cow-milk, Kshar-sutra, Panchakarma therapy and contraceptive.

## **TRAINING PROGRAMMES**

### **1) Training Programme on Panchakarma**

A two months re-orientation training programme on Panchakarma was organised at CRI, New Delhi & I.I.P., Cheruthuruthy sponsored by Deptt. of ISM&H, Ministry of Health & Family Welfare. During the training programme, the participants were given theoretical as well as practical training. A total no. of 22 trainees were registered on both centres.

### **2) Panchakarma Training Programme**

One month training programme in Panchakarma treatment for 10 Ayurvedic physicians deputed by the Govt. of Sri Lanka was started on 2.11.98 and completed on 1.12.98 at IIP, Cheruthuruthy, Kerala. It was

inaugurated by Sh. S. Ajay Kumar, (M.P.). These doctors were given the training in various Panchakarma procedures.

## **VISIT OF FOREIGN/INDIAN DIGNITARIES**

### **I) Srilankan Delegation**

A 16 members delegation of Ayurvedic and Traditional practitioners from Sri Lanka visited the Hqrs. office CCRAS & CRI (Ay.), New Delhi on 14-8-98 led by Mr. J.M. Maxie Perera, Senior Assistant Secretary, Ministry of Health & Indigenous Medicine. The delegation was apprised with the research activities of the Council & a video film prepared by the Council, 'Resurgence' was shown to them.

Again, two separate delegations of Ayurvedic physicians led by senior officers of Ministry of Health & Indigenous medicines of Sri Lanka visited the Council's Head Quarters and CRI (Ay.), New Delhi on 2-3 Nov. & 24-25 Nov., 1998. They were taken around the museum and herbarium of the Hqrs office and the various speciality clinics in the CRI, New Delhi.

### **II) Norway Delegation**

A 11 members delegation of the Royal Norway Alternative Medicine Commission visited CRI (Ay.) & Hqrs on 20-8-98. The visiting delegation was shown a few of the important areas of the clinical activities of the Institute. The other details of the ongoing programmes were shown to the delegation through the video film, 'Resurgence'. Sh. O.S. Veerwal, Director, Deptt. of ISM&H and Sh. Ishwar Das also accompanied with the delegation.

### **III) Myanmar Visitors**

Prof. K.M. Tun, Director General, Deptt. of Traditional Medicine, Ministry of Health, the Union of Myanmar visited the various departments at CRI (Ay.), New Delhi as well as the Hqrs office of the Council on 18.8.98. He was apprised with the Kshar-sutra techniques, Panckharma Chikitsa and activities of the other laboratories and departments.

Again, under WHO study tour, two groups from Myanmar visited CRI (Ay.), New Dehli & Hqrs office on 7.12.98 & 11.12.98. The delegations were given a brief account of important achievements of the clinical programmes of the institute.

#### **IV) WHO Delegates**

Dr. X. Zhang, Chief Medical Officer, Traditional Medicine Programme, Switzerland, WHO delegate visited the Hqrs office and CRI (Ay.), New Delhi on 6-10-98. She was apprised with the research programmes and activities of the Council. She was also shown a film by the Council.

#### **V) Korean Delegation**

A Korean delegation headed by Dr. Y.J. Park, Director, Oriental Medicine Policy Division, Min. of Health & Family Welfare, Seoul, Korea, visited the Hq office of the Council on 9-10-98. They were apprised with the ongoing research activities and achievements of the Council.

#### **VI) Dr. L. Giuricin, Italy**

Dr. L. Giuricin from Italy visited the Hqrs office on 21-9-1998. She was apprised with the ongoing activities and achievements of the Council.

#### **VII) Russian Delegation**

A six member delegation headed by Dr. S. Mayskaya, General-Director, NAAMI Medical Centre, Moscow visited the Hqrs office and CRI (Ay.) N.Delhi, on 22-12-98. On different aspects of Ayurveda, the delegation held discussion with Vd. B.D. Triguna, Chairman, Executive Committee of the Council. Vd. Triguna said that the culture and customs of Russia are very much similar with India and Ayurveda system of medicine would be more suitable to them. The delegation was apprised with the research activities of the Council through a video film.

#### **VIII) Union Minister of State for Health & Family Welfare and Members of the Parliamentary Consultative Committee**

Hon'ble Sh. D. Ezhilmalai, Union Minister of State of Health & Family Welfare alongwith 8 members of Parliamentary Consultative Committee attached to Ministry of Health & Family Welfare visited the Regional Research Institute (Drug Research), Thiruvananthapuram on 15-10-98. Smt. Shanta Shastri, Secretary & Sh. P. Bhargava, J.S.- both Deptt. of ISM&H were also present on this occasion. Director, CCRAS and Research Officer Incharge explained the activities of the Institute to the visiting dignitaries. The visiting dignitaries appreciated the clinical studies on psoriasis and the effect of Nimbidin .

A meeting of members of the Parliamentary Committee was also held on 15-10-1998 at Thiruvananthapuram. The members stressed upon the involvement of ISM&H in National Health Programme.

#### **IX) Secretary, ISM&H, Ministry of Health & Family Welfare, New Delhi.**

Smt. Shanta Shastri, Secretary, ISM&H, Ministry of Health & Family Welfare visited Central Research Instt. (Ay.), New Delhi on 10-9-98. She was taken around the various sections and clinics of the Institute. She showed keen interest in the progress of the Council's work related to the contraceptive potential of Neem Oil, treatment of urolithiasis with Ayurvedic drugs and the management of ano-rectal diseases by Kshar-sutra technique.

#### **Instalation of Internet Facility**

In order to get access to the international activities in the field of Ayurveda through global network, the Council has installed internet facility at one of its premier institute, namely Jawahar Lal Nehru Ayurvedic Medicinal Plants Garden & Herbarium, Pune, engaged in research on Ayurvedic medicinal plants. The institute got access to the global network from 4th June, 1998 and its e-mail address is jnamgh@pn2.vsnl.net.in.

#### **Hindi Week**

A Hindi Week was organised from 14-21 Sept. 1998 by Hindi section of the Council Hqrs office. On this occasion the programmes taken up were debates, essay writing, noting competition and question forum in which the staff of Hqrs office & Documentation & Publication Division participated. Similar programmes were also organised by the various Institutes/Centres functioning under the Council.

## A. TECHNICAL REPORT - AYURVEDA

### 1. Abbreviations Used for Institutes/Centres/Units

S.No.	Institutes/Centres/Units	Abbreviations
1.	Central Research Institute [Ay.], New Delhi	CRID
2.	Central Research Institute [Ay.], Bhubaneswar	CRIB
3.	Central Research Institute [Ay.], Mumbai	CRIM
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], Guwahati	RRCGu
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 [Ay], Varanasi	MCRUV
24.	Mobile Clinical Research Unit [Ay], Jamnagar	MCRUJ

25.	Dr. A.Lakshmipati Research Centre for Ayurveda, V.H.S. Chennai	ALRCAC
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], Varansai	CDRSV
30.	Indian Institute of Ayurveda for Drug Research, Tarikheth	IIADRT
31.	Captain Srinivasamurthy Drug Research Institute for Ayurveda, Chennai	CSMDRIAC
32.	Jawahar Lal Nehru Ayurvedic Medicinal Plants Garden & Herbarium, Pune	JNAMPGHP
33.	Clinical Research Unit under FWRP, Patiala	CRUFP
34.	Clinical Research Unit under FWRP, Mumbai	CRUFM
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, Bhubaneswar	PhRUFB
44.	Pharmacological Research Unit under FWRP, Trivandrum	PhRUFT
45.	Pharmacological Research Unit, Calcutta	PhRUC
46.	Pharmacological Research Unit, Lucknow	PhRUL

47.	Pharmacological Research Unit, Jaipur	PhRUJ
48.	Pharmacological Research Unit, Varanasi	PhRUV
49.	Pharmacological Research Unit, 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	IHMH
59.	Literary Research Unit, Chennai	LRUC
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], Nagpur	THCRPN
66.	Tribal Health Care Research Project [Ay], Jagdalpur (M.P)	THCRPJa
67.	Tribal Health Care Research Project [Ay], Imphal [Manipur]	THCRPI
68.	Drug Standardisation Research Project, Jamnagar	DSRPJ
69.	Drug Standardisation Research Project, Varanasi	DSRPV
70.	Research Project in Tibetan System of Medicine, Leh	RPTSM
71.	Medicinal Plant Garden at RRC, Itanagar	MPGI



## 2. CLINICAL RESEARCH PROGRAMME

The Clinical Research studies on Tamaka svasa (Bronchial asthma), Annadrava Sula (Gastric ulcer), Parinama Sula (Duodenal ulcer), Kamala (Jaundice), Arsa (Plies), Bhagandara (Fistula-in-ano), Parikartika (Fissure-in-ano), Madhumeha (Diabetes mellitus), Mutrasamari (Urolithiasis), Vrikka Shotha (Nephrotic syndrome), Vyababala Vaisamy (Hypertension), Hricchula (Angina), Hridroga (Coronary Heart Diseases), Medoroga (Obesity and Lipid Disorders), Paksavadha (Hemiplegia), Pangu (Paraplegia), Saisaviya Vata (Post Polio Paralysis), Gridhrasi (Sciatica), Amavata (Rheumatoid arthritis), Apasmara (Epilepsy), Sirah Sula (Headache), Dristi Dosh (Myopia), Sveta Pradara (Leucorrhoea), Karkatarbuda (Cancer), Kitibha (Psoriasis), Kuposana (Malnutrition), Visamajvara (Malaria), Slipada (Filariasis), Kal-a-zar and Deha-Manas Prakriti (Psycho-Somatic Constitution) were carried out during the reporting period. 2,92,566 patients attended at OPD level while 1,588 patients were admitted in the IPD during these studies. Details of these studies are provided hereunder:

### (a) Clinical Therapeutic Trials

#### Tamaka Svasa (Bronchial asthma)

The clinical trials on Tamaka Svasa were conducted at CRI, Mumbai; IIK, Patiala; RRI, Gwalior, Junagarh, Patna and RRC, Vijayawada. A total number of 159 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

Table

#### Results of Clinical studies of Ayurvedic preparations on Tamaka Svasa [Bronchial asthma]

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1	Pippali	RRIG	16	-	1	2	5	8
	Vardhamana,	RRCV	6	-	2	-	1	3
	with Samira	RRIP	13	-	2	6	1	4
	Pannaga Rasa	IIKP	7	3	2	1	-	1
		RRIJu	3	1	-	1	-	1

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
2.	Siris Tvaka Kvatha	RRIG	28	-	5	2	7	14
		RRCV	8	-	6	1	-	1
		RRIP	13	-	4	1	-	8
		IIKP	10	5	3	1	-	1
		RIIJu	33	7	7	6	2	11
3.	Anantaparni Ghanvati	IIKP	11	6	3	1	-	1
4.	Pippali Vardhamana	CRIM	11	1	2	3	2	13
Total			159	23	37	25	18	56

### Annadrava Sula (Gastric ulcer)

The Clinical trials on Annadrava Sula were conducted at the RRC, Itanagar and CRU, Hyderabad. A total number of 79 cases have been studied adopting different therapeutic approaches, The following Table summarises the details related to the line of approach and the number of cases studied together with the results:

**Table**

#### **Results of clinical studies of Ayurvedic preparations on Annadrava Sula [Gastric ulcer]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Praval Pisti+ Jahara Mohara Pisti+Mukta Pisti	RRCI	39	6	3	9	2	19
		CRUH	11	11	-	-	-	-
2.	Eladi Curna + Amalaki Curna	RRCI	18	3	5	2	1	7
		CRUH	11	11	-	-	-	-
Total			79	9	30	11	3	26

## Parinama Sula [Duodenal ulcer]

The clinical trials on Parinama Sula were conducted at the CRI, Bhubaneswar; IIP, Cheruthuruthy; CRU, Kottakkal and CRU, Hyderabad. A total number of 41 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results.

**Table**  
**Results of clinical studies of Ayurvedic preparations on**  
**Parinama Sula [Duodenal ulcer]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	(a) Nimbidin capsules	CRUK*	4	2	-	2	-	-
	(b) Mahatikta Ghrita (Sodhana & Sansamana)		1	-	-	1	-	-
	(c) Indukanta Ghrita (Sodhana & Sansamana)		1	-	-	1	-	-
2.	Indukanta Ghrita Snehana	IIPC	1	-	1	-	-	-
3.	Amasaya Praksalana with Bilva	CRUH	31	-	27	-	-	4
4.	Patra Kvatha Amalaki Rasayana	CRIB	3	1	2	-	-	-
Total			41	3	30	4	-	4

\* Endoscopically provided cases.

## Kamala [Jaundice]

The Clinical trial on Kamala was conducted at the RRC, Hastinapur. A total number of 44 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table****Results of Clinical studies of Ayurvedic preparations on Kamala [Jaundice]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	(a) Bhumyamalaki + Katuka + Kasani + Kakamaci Kvatha	RRCH	15	3	1	1	-	10
	(b) Dhatri Lauha + Ayush -55 + Sarjika Kshara		29	5	2	2	1	19
Total			44	8	3	3	1	29

**Arsa [Piles]**

The Clinical trials on Arsa were conducted at the CRI, New Delhi and Mumbai; and RRC, Mandi. A total number of 233 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table****Results of clinical studies of Ayurvedic preparations on Raktarsa (Haemorrhoids)**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Apamarga Kshara Sutra	CRID	210	190	12	3	-	5
2.	Taila Basti	CRIM	16	3	4	3	-	6
3.	(a) Kankayana Vati + Kasisadi Taila + Triphala Curna	RRCM	4	3	1	-	-	-
	(b) Karvyadi Rasa + Kasisadi Taila + Triphala Curna	RRCM	3	1	2	-	-	-
Total			233	197	19	6	-	11

## Bhagandara (Fistula-in-Ano)

The Clinical trials on Bhagandara were conducted at the CRI, New Delhi and Mumbai. A total number of 49 cases have been studied adopting Kshara-Sutra technique. The following Table summarises the details related to the line of approach and the number of cases studied together with the results:

**Table**

### **Results of clinical studies of Ayurvedic preparations on Bhagandra [Fistula-in Ano]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Kshara Sutra	CRID	43	37	1	-	-	5
		CRIM	6	1	2	1	-	2
Total			49	38	3	1	--	7

## Parikartika (Fissure-in-Ano)

The clinical trials on Parikartika were carried out at the CRI, New Delhi and Mumbai. A Total number of 133 cases were subjected to different therapeutic approaches. The following Table accounts the treatment details, number of cases under trials and the results of trials :

**Table**

### **Results of clinical studies of Ayurvedic preparations on Parikartika [Fissure-in-Ano]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Apamarga Kshara Jatyadi Taila	CRID	120	115	5	-	-	-
2.	Kankayana Vati Triphala Curna	CRIM	13	4	7	-	-	2
Total			133	119	12			2

## Madhumeha [Diabetes mellitus]

The Clinical trials on Madhumeha were conducted at the CRI, Bhubaneswar, New Delhi, Mumbai; IIK, Patiala and RRC, Jammu . A total number of 162 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table**  
**Results of clinical studies of Ayurvedic preparations**  
**of Madhumeha [Diabetes mellitus]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	AYUSH-82 Powder	CRID	29	7	4	5	6	7
2.	Candra Prabha Vati+ Trivanga Bhasma + Vijayasara Kvatha	CRIM	19	5	3	11	-	-
		RRCJ	14	9	2	3	-	-
		IIKP	24	6	11	3	-	4
3.	Nisamalaki	CRIB	54	15	8	23	8	-
4.	Methi Ka Curna	IIKP	18	5	8	2	-	3
Total			162	47	38	47	14	16

## Mutrasmari [Urolithiasis]

In the CRI, Delhi and RRC, Jammu, the clinical trials on 43 patients of Mutrasmari were carried out. The following Table records the total number of cases, the details of treatment and the results of the clinical study.

**Table****Results of clinical studies of Ayurvedic preparations  
on Mutrasmari [Urolithiasis]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Palasa Kshara	CRID	29	8	6	7	6	2
2.	Sveta Parpati + Pasana Bheda, Goksura & Kulatha kvatha	RRCJ	14	7	2	2	-	3
Total			43	15	8	9	6	5

**Vrikka Shotha [ Nephrotic syndrome]**

CRU (AT), Varanasi has conducted clinical studies on 14 cases of Vrikka Shotha with Trinapanacamula Kvatha. The study showed marked reduction in oedema and fatigueness in majority of the cases after six months of the treatment. The study showed significant increase in total urinary output, creatinine clearance and serum protein (24 hours). The study also showed decrease in urinary protein output and total blood urea after the completion of the treatment (24 hours).

**Vyanabala Vaisamyia [Hypertension]**

The Clinical trials on Vyanabala Vaisamyia were conducted at the CRI, New Delhi, Mumbai; IIP, Cheruthuruthy; IIK, Patiala; RRI, Calcutta and RRC, Mandi and Itanagar. A total number of 256 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table**

**Results of clinical studies of Ayurvedic preparations  
on Vyanabala Vaisamya [Hypertension]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Tagaradi	CRIM	5	1	1	1	2	-
	Curna+	IIPC	16	2	-	1	-	13
	Jatamansi	IIKP	25	13	3	2	-	7
	Curna+	RRCM	11	1	6	3	1	-
	Arjuna Tvaka	RRCI	17	-	4	6	3	4
	Kvatha	RRIC	14	6	4	-	-	4
2.	Usiradi	CRIM	5	1	1	1	2	-
	Curna+	IIPC	19	5	1	-	-	13
	Jatamansi	IIKP	62	23	14	7	-	18
	Curna+	RRCM	8	1	2	4	1	-
	Arjuna Tvaka	RRCI	52	12	15	9	3	13
	Kvatha	RRIC	12	6	2	-	-	4
3.	Arjuna Ghana	CRID	10	-	10	-	-	0
	Satva+							
	Vaca Ghana							
	Satva+							
	Jatamansi Ghana							
	Satva+							
Brahmi Ghana								
Satva								
Total			256	72	64	33	10	77

**Hricchula (Angina)**

In the IIK, Patiala, a clinical trial on a total number of 11 patients of Hricchula was conducted with Arjuna Tvaka Ghana Vati. Out of 11 cases, good response in 5 cases, fair response in 4 cases and poor response in 2 cases were recorded.

**Hridroga (Coronary Heart Diseases)**

CRU (AT), Varanasi has studied 28 new cases of Hridroga with Puskara Guggulu. The study showed good response in 14 cases, fair response in 8 cases, poor response in 4 and no response in 2 cases. The study showed significant increase in the Cardiac output and significant decrease in the blood-pressure, both systolic and diastolic, after six months of treatment.



The study also showed statistically significant decrease in the serum levels of total lipid, total cholesterol, HDLC, LDLC, VLDLC and Triglycerides.

### Medoroga (Obesity and Lipid Disorder)

The Clinical trials on Medoroga were conducted at the CRI, New Delhi, Mumbai and ALRCA, Chennai. A total number of 40 cases have been studied with Vyosadi Guggulu. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table**  
**Results of clinical studies of Ayurvedic preparations**  
**on Medoroga [Obesity & Lipid Disorder]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Vyosadi Guggulu	CRIM	21	-	2	6	3	10
		ALRCAC	3	-	2	1	-	-
		CRID	16	-	6	6	3	1
Total			40	-	10	13	6	11

In addition to the above studies, 40 cases of Medoroga (Obesity and lipid disorder) of either sex were also taken under clinical studies by the CRU (AT), Varanasi in order to compare the effect of test drug Vyosadi Guggulu (in 26 cases) with the placebo (in 14 cases). Significant improvement in blood pressure (both systolic & diastolic), body weight, total fat% of body, obesity index and other biochemical parameters viz. Triglycerides, total cholesterol, HDLC, LDLC and VLDLC was observed in treatment group after six months of treatment. No significant change could be observed in triceps and sub-scapular skin fold thickness parameters, muscularity index and linearity index in both the groups.

### Paksavadha (Hemiplegia)

The Clinical trials on Paksavadha were conducted at the CRI, New Delhi, Bhubaneswar, Mumbai; IIP, Cheruthuruthy; IIK, Patiala and RRC, Nagpur. A total number of 189 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related

to the line of approach and the number of cases studied together with the results :

**Table**

**Results of clinical studies of Ayurvedic preparations on Paksavadha [Hemiplegia]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	(a) Ekangavira Rasa	CRIB	6	2	1	1	-	2
	(b) Samira Pannaga Rasa		3	-	1	-	-	2
2.	(a) Samira Pannaga Rasa+ Pancakarma Therapy	CRIM	3	-	3	-	-	-
	(b) Ekangavira Rasa with Pancakarma Therapy		3	-	1	2	-	-
3.	Samira Pannaga Rasa+ Nirgundi Taila (Abhyanga)+ Sastikasali Pinda Sveda	IIPC RRCN	28 35	3 6	9 15	10 4	1 -	5 10
4.	Ekangavira Rasa+ Masa Taila+ Sastikasali Pinda Sveda Ex.	IIPC RRCM CRID	27 18 29	3 5 2	8 5 6	10 1 9	2 - 2	4 7 10
5.	Pancakarma Therapy	IIPC	22	4	4	7	3	4
6.	Ekangavira Rasa Virecana Basti	IIKP	15	4	5	2	-	4
<b>Total</b>			<b>189</b>	<b>29</b>	<b>58</b>	<b>46</b>	<b>8</b>	<b>48</b>

## Pangu (Paraplegia)

The Clinical trial on Pangu was conducted at the IIP, Cheruthuruthy. A total number of 29 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table**  
**Results of Clinical studies of Ayurvedic preparations**  
**on Pangu [Paraplegia]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1. (a)	Pancakarma with Murcchita Taila	IIPC	13	2	1	2	4	4
(b)	Asvagandha Kvatha+ Goracnadi Vati+Bala Asvagandha Taila Abhyanga		16	5	4	2	3	2
Total			29	7	5	4	7	6

## Salsaviya Vata (Post Polio Paralysis)

In the CRI, Delhi the total number of 11 cases of Saisaviya Vata were subjected to a clinical trial with Ekangaveera Rasa and Sastika Sali Pinda Sveda. Out of 11 cases, good responses in 3 cases, fair responses in 2 cases and poor response in 2 cases were observed. The remaining 4 cases discontinued the study before the completion of the treatment.

## Gridhrasi (Sciatica)

The Clinical trials on Gridhrasi were conducted at the CRI, Bhubaneswar, New Delhi and IIP, Cheruthuruthy. A total number of 99 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of the cases studied together with the results :

**Table**  
**Results of clinical studies of Ayurvedic preparations**  
**On Gridhrasi [Sciatica]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Trayodosanga	CRIB	16	3	6	1	-	6
	Guggulu+ Visatinduka Vati+Abhayanga+ Svedana	IIPC	21	6	3	6	1	5
2. (a)	Maharasanadi Kvatha+ Nirgundi Taila	IIPC	25	3	15	4	-	3
(b)	Pancakarma Therapy+ Bala Kvatha+ Murchhita Taila+ Kaisor Guggulu + Patra Potali Svedan		8	2	1	4	-	1
3.	Trayodosanga Guggulu+ Visatinduka Vati+ Rasna Kvatha+ Mahanarayana Taila+ Nirgundi Kvatha for Svedana	CRID	29	4	6	6	6	7
<b>Total</b>			<b>99</b>	<b>18</b>	<b>31</b>	<b>21</b>	<b>7</b>	<b>22</b>

## Amavata (Rheumatoid arthritis)

The Clinical trials on Amavata were conducted at the CRI, Bhubaneswar, Delhi, Mumbai; IIK, Patiala; IIP, Cheruthuruthy; RRI, Gwalior; RRC, Nagpur and Itanagar. A total number of 183 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table**

### **Results of clinical studies of Ayurvedic preparations on Amavata [Rheumatoid arthritis]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Pippali Vardhamana+ Samira Pannaga Rasa	RRIG	6	-	1	2	1	2
2.	Mahayogaraja	RRIG	13	-	2	3	2	6
	Guggulu+	CRIB	17	7	2	1	1	6
	Simhanada	RRCN	16	10	3	1	-	2
	Guggulu+ Vaisvanara Curma	RRCI	22	9	3	5	1	4
3.	Asvagandha Curma	RRCI	11	2	4	1	1	3
4.	Mahayogaraja Guggulu+ Simhanada Guggulu	CRIM	9	1	4	-	2	2
5.	Mahayogaraja Guggulu+ Vaisvanar Curma	IIKP	33	7	17	9	-	-
6. (a)	Asvagandha Kvatha (Internal) +Balukasveda	IIPC	29	12	5	2	3	7

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
(b)	Pancakarma Therapy with Murcchita Taila		7	2	3	-	-	2
7.	Vardhamana Pippali+Sunthi Guggulu+ Godanti Bhasma+ Mahanarayana ↻ Taila+ Nirgundi Patra ↻ Svedana	CRID	29	5	12	4	3	5
Total			183	60	65	25	8	25

### Apasmara (Epilepsy)

In the CRI, Delhi a clinical trial of Apasmara patients was conducted with Ayush-56. Out of the total number of 3 patients all the three patients got the good response.

### Sirah Sula (Headache)

In the ALRCA, Chennai, a clinical trial on Sirah Sula cases was conducted with Varunadi Kshira Paka, a Nasya. Out of the total number of 10 cases, good response in 3 cases, fair response in 2 cases, poor response in the one case and no response in 4 cases were recorded.

### Dristi Dosa (Myopia)

A clinical trial on 27 cases of Dristi Dosa was carried out at CRI, New Delhi with Saptamrita Lauha (internally), Triphala Kvatha (eye wash), Netra-Bindu (Medicated Madhu) and eye exercises. Out of 27 cases studies, good response by 3 cases, fair response by 4 cases, poor response by 7 cases and no response by 3 cases were recorded. The remaining 10 cases discontinued the study before the completion of treatment.

### Sveta Pradara (Leucorrhoea)

In th CRI, Mumbai, the total number of 58 cases of Sveta Pradara were subjected to clinical trials with two different Ayurvedic treatments. Number of cases and the results of the treatment given so far are Tabled below :

**Table****Results of clinical studies of Ayurvedic preparations  
on Sveta Pradara [Leucorrhoea]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1. a)	Svarna Vanga+ Kukkutanda Tvaka+ Punamava Mandoor	CRIM	30	14	10	4	2	0
b)	Pusyavanga Curna		28	12	8	4	4	0
Total			58	26	18	8	6	0

**Karkatarbuda (Cancer)**

In the CRI, New Delhi, 10 cases of Karakatarbuda were taken under clinical trial with the drug STG (a code drug) supplied by the Council itself. Two cases showed poor response and two cases were reported to die while 6 cases dropped out from the study.

**Kitibha (Psoriasis)**

The Clinical trials on Kitibha were conducted at the CRI, New Delhi; RRI, Junagarh and Trivandrum. A total number of 52 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table****Results of clinical studies of Ayurvedic preparations  
on Kitibha [Psoriasis]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Nimbaghana Sveda with water+ Lajjalu Kerama oil	RRIJu	5	-	1	2	-	2

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
2.	Kaisora	RRIJu	8	-	2	1	2	3
	Guggulu+	RRIT	10	-	4	-	4	2
	Visvamiitra	CRID	3	-	1	1	-	1
	Kapala Taila							
3. (a)	Nimbatikta Cap.+ Lajjalu Kerama	RRIT	14	2	2	6	2	2
(b)	Arogyavardhani +Cakramarda		12	3	3	1	4	1
Total			52	5	13	11	12	11

### Kuposana (Malnutrition)

The Clinical trials on Kuposana were conducted at the RRC, Mandi, Bangalore and Nagpur. A total number of 65 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with results :

**Table**

### Result of clinical studies of Ayurvedic preparations on Kuposana [Mal-nutrition]

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Arnalaki	RRCM	20	-	8	6	-	6
	Curna+	RRCB	10	9	-	-	-	1
	Asvagandha							
	Curna+							
	Satavari							
	Curna							
2.	Asvagandha	RRCB	10	9	-	-	-	1
	Leha	RRCN	17	11	-	-	-	6



S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
3	Amalaki Curna+ Asvagandha Curna	RRCN	8	3	-	-	-	5
Total			65	32	8	6	1	19

### Slipada (Filariasis)

The Clinical trials on Slipada were conducted at the CRI, Bhubaneswar; RRC, Vijayawada and RRI, Patna. A total number of 84 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results :

**Table**

#### **Result of clinical studies of Ayurvedic preparations on Slipada [Filariasis]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Sudarsana	CRIB	10	3	2	-	-	5
	Ghana Vati	RRIP	19	-	3	3	-	13
	Arogyavardhini Vati Punarnavarista							
2.	Ayush-64	RRIP	8	-	5	-	-	3
		RRCV	1	-	-	-	1	-
3.(a)	Saptaparna Ghana Vati	RRCV	3	1	1	-	1	-
(b)	Ayush-55		43	11	10	12	4	6
Total			84	15	21	15	6	27

## Kala-a-zar

In the RRI, Patna, a clinical trial was taken upon 3 cases of Kala-a-zar with Pravalamuktadi Yoga, Loka Natha Rasa and Jvarasani Rasa. Only one case showed poor response and 2 cases were dropped out before the completion of the trial.

## Determination of Deha-Manas Prakriti ( Psycho-somatic constitution) with special reference to disease proneness

CRU (AT), Varanasi continued the study of Deha-Manas Prakriti during the reporting year and has completed the study of 590 normal subjects and 271 cases suffering from different disease conditions. The data obtained so far were statistically analysed and the correlation of different parameters with different Deha-Manas Prakriti in normal and diseased subjects were established.

## Visamajvara (Malaria)

The Clinical trials on Visamajvara were conducted at the RRI, Jaipur and RRC, Hastinapur and Jammu. A total number of 136 cases have been studied adopting different therapeutic approaches. The following Table summarises the details related to the line of approach and the number of cases studied together with the results:

**Table**

### **Result of clinical studies of Ayurvedic preparations on Visamajvara [Malaria]**

S.No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Ayush-64	RRIJ	32	19	3	8	2	-
		RRCH	32	12	2	1	-	17
		RRCJ	47	26	-	-	4	17
2.	Parijata Ghana Vati	RRCH	25	2	5	1	-	17
Total			136	59	10	10	6	51

**(b). Disease groups, Number of Patients and Participating Projects under Clinical Research Programmes during 1998-99**

S.No.	Disease Groupwise	Patients Nos.	Participating Projects
I.	Prana Vaha Srotas Vyadhi		
	a) Tamaka Svasa	159	CRIM, IIKP, RRIIG, RRIJu, RRIP, RRCV
II.	Anna Vaha Srotas Vyadhi		
	1) Annadrava Sula	79	RRCI, CRUH
	2) Parinama Sula	41	CRIB, IIPC, CRUK, CRUH
	3) Kamala	44	RRCH
III.	Mala Vaha Srotas Vyadhi		
	1) Arsa	233	CRID, CRIM, RRCM
	2) Bhagandara	49	CRID, CRIM
	3) Parikartika	133	CRID, CRIM
IV.	Mutra Vaha Srotas Vayadhi		
	1) Madhumeha	162	CRID, CRIM, CRIB, IIKP, RRCJ
	2) Mutrasamari	43	CRID, RRCJ
	3) Vrikka Shotha	14	CRU (AT) V
V.	Rasa-Rakta Vaha Srotas Vyadhi		
	1) Vyanabala Vaisamya	256	CRID, CRIM, IIPC, IIKP, RRIC, RRCM, RRCI
	2) Hricchula	11	IIKP
	3) Hridroga	28	CRU (AT) V
VI.	Medo Vaha Srotas Vyadhi		
	1) Medoroga	80	CRID, CRIM, ALRCAC, CRU (AT) V
VII.	Vata Vyadhi		
	1) Paksavadha	189	CRID, CRIM, CRIB, IIPC, IIKP, RRCN

	2) Pangu	29	IIPC
	3) Saisaviya Vata	11	CRID
	4) Gridhrasi	99	CRID, CRIB, IIPC
VIII.	Sandhi Gata Vyadhi		
	1) Amavata	183	CRID, CRIM, CRIB, IIPC, IIKP, RRIg, RRCN, RRCI
IX.	Manovaha Srotas Vyadhi		
	1) Apasmara	3	CRID
X.	Siro Vyadhi		
	1) Sirah Sula	10	ALRCAC
XI.	Netragata Vyadhi		
	1) Dristi Dosa	27	CRID
XII	Artava Vaha Srotas Vyadhi		
	1. Sveta Pradara	58	CRIM
XIII.	Sarva Dehagata Vyadhi		
	1) Karkatarbuda	10	CRID
	2) Kitibha	52	CRID, RRIJu, RRIT
	3) Kuposana	65	RRCM, RRCB, RRCN
XIV.	Agantuja Vyadhi		
	1) Visamajvara	136	RRIJ, RRCJ, RRCH
	2) Slipada	84	CRIB, RRCV, RRIP
	3) Kala-a-Zar	3	RRIP
XV.	Deha-Manas Prakriti	861	CRU (AT) V

**(c) Statement showing number of patients attended at O.P.D.& admitted in I.P.D. during 1998-99.**

Sl. No.	Institute/ Centre	O.P.D.Patient			I.P.D.Patient		% of bed Occu- pancy
		New	Old	Total	Admit- ted	Dis- charged	
1.	CRI, Delhi	12,975	14,639	27,614	231	209	37.69
2.	CRI, BBSR	8,492	6,898	15,390	161	150	27.00
3.	CRI, Mumbai	5,586	5,523	7,109	82	76	13.53
4.	IIC, Patiala	5,107	5,245	10,352	185	181	24.67
5.	IIP, Chy.	10,122	27,296	37,418	323	317	84.43
6.	RRI, Lucknow	6,534	4,978	14,512	6	6	0.98
7.	RRI, Calcutta	5,811	12,601	18,412	59	54	26.58
8.	RRI, Junagarh	2,883	4,269	7,152	23	24	4.90
9.	RRI, Patna	6,078	7,898	13,976	43	43	21.93
10.	RRI, Gwalior	3,166	1,971	5,137	26	27	21.68
11.	RRI, Tvm.	2,386	8,386	10,772	68	66	63.00
12.	RRI, Jaipur	2,455	937	3,392	72	75	33.62
13.	RRC, Nagpur	2,428	6,952	9,380	70	69	-
14.	RRC, Bangalore	2,391	7,420	9,811	-	-	-
15.	RRC, Jammu	5,575	6,863	12,438	-	-	-
16.	RRC, Mandi	8,086	5,080	13,166	10	10	3.12
17.	RRC. Hastinapur	6,872	6,825	13,697	33	34	14.44
18.	RRC. Gangtok	3,730	3,036	6,766	-	-	-
19.	RRC. Vijayawada	2,311	4,913	7,224	65	61	40.68
20.	RRC, Itanagar	7,957	12,174	20,131	2	2	0.7
21.	ALRCA, Chennai	361	506	867	-	-	-
22.	ARU, Bangalore	650	716	1,366	-	-	-
23.	CRU, Kottakal	-	-	-	76	75	39.9
24.	CRU, Hyderabad	791	1,670	2461	53	53	53.13
25.	CRU (AT), Varanasi	943	-	943	-	-	-
26.	CRU (MT), Varanasi	830	1,090	1,920	-	-	-
27.	ARU, Safdarjung Hospital, Delhi	10,555	9,933	20,488	-	-	-
<b>Total</b>		<b>1,21,075</b>	<b>1,70,819</b>	<b>2,91,894</b>	<b>1,588</b>	<b>1,532</b>	<b>-</b>

#### **(d) Health Care Research Programme**

The Council runs its Health Care Research Programme through Mobile Clinical Research Units comprising of two components viz. Service Oriented Survey and Surveillance Programme and Community Health Care Research Programmes. These Units are attached with RRCs/RRIs/CRIs of the Council and equipped with mobile vans. In addition there are independent Tribal Health Care Research Programmes equipped with a jeep, a physician, GDA and attendant who periodically visit villages/tribal areas to conduct research studies. These Units provide medical aid at their doorstep and at the same time take up study of their health statistics, the incidence of diseases and local health care practices which have been safeguarding their health for centuries traditionally. The Units also impart knowledge about health and hygiene in the villages where they work. 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.

#### **(i) Service Oriented Survey & Surveillance Research Programme :**

The data regarding socio-economic status, incidence of diseases and their relationship with various etiological factors are compiled randomly from the selected villages. The folklore medical practices are also noted. During the period under report 21 villages with a population of 26,567 were surveyed and 7,063 patients were also treated with Ayurvedic drugs.

#### **(ii) Community Health Care Research Programme:**

Each of the Institute/Centre has been assigned a few villages in their vicinity under this programme. The knowledge about health care, prevention of diseases, health promotive measures and use of local herbs for treatment of common ailments is imparted to the people of the selected villages. The details of socio-economic status, environmental factors influencing the disease proneness are recorded. This programme has been executed in 28 villages with a population of 32,363 and 1,470 patients have also been provided incidental medical aid.

### **(iii) Tribal Health Care Research Programme:**

This programme has been initiated with the aim to study the living conditions of the tribal people, folk medicines used by them, occurrence 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 doorsteps. This programme has been continued further by the Tribal Health Care Research Projects functioning at Car-Nicobar (Andaman & Nicobar Islands), Jamune (Distt. Palamau), Jagdalpur (Madhya Pradesh), Jhabua (Madhya Pradesh), Imphal (Manipur) and Ziro (Arunachal Pradesh). 13 villages consisting of a population of 21,837 individuals have been covered and incidental medical aid extended to 9,219 patients during the reporting period. One of the Units located at Chinchpada-Dhule (Maharashtra) is stationed at Regional Research Centre, Nagpur presently. Likewise at Ziro (Arunachal Pradesh), the Unit has remained non-functional as no Officer joined. Presently one Asst. Research Officer has joined the Tribal Health Care Research Programme, Ziro and attempts are being made to make it functional from Regional Research Centre, Itanagar. Tribal Health Care Research Programme, Imphal could not visit field stations due to prevalent local insurgency.

**Service Oriented Survey & Surveillance  
Research Programme**

Sl. No.	Institute/ Unit	Name of the Village	Population covered	No. of patients treated	Common diseases
1.	MCRU, Varanasi	Singhi Tali	1,200	300	Pradara, Aisara, Pravahika, Sandhisula, Pratisyaya, Kuposana
2.	RRI, Gwalior	Bijauli Sonarpura	1,530	624	No details available
3.	RRC, Bangalore	Mallenalla-sadra Karenahalli	2,960	1,032	Vatavyadhi, Tavakroga, Vrana, Kasa, Udarsula, Jvara
4.	RRI, Junagadh	Choravadi Virapura	1,640	92	Svasa, Tvakdosa, Amavata, Gradhrasi,
5.	IIP, Cheru-thuruthy	Thekkumakara	2,185	840	Tvakroga, Vatavyadhi, Katisula, Kasa, Svasa, Sandhisula
6.	MCRU, Jamnagar	Bedi	4,168	47	Svasa, Kasa, Jvara, Katisula
7.	RRC, Vijayawada	Kuttur	110	73	Tvak roga, Rakta chapa, Sveta pradara, Kasa, Udarsula,
		Malkapuram	1,980	663	Tvak roga, Kasa, Katisula, Jvara, Vaṭavyadhi
8.	RRC, Mandi	Dabor	56	31	Pradara, Pravahika, Kasa
9.	RRC, Nagpur	Sawanga	2,537	203	Vishamajvara, Vatavyadhi, Kasa, Katisula
10.	RRC, Jhansi	Madora Sarmau	2,150 -	108 58	No details available
11.	RRI, Lucknow	Beejapur, Dindapur Jhalaua	2,000 1,500	924 -	Tvak roga, Udara roga, Kasa, Vata Vikara
12.	RRC, Jammu	Ismailpur Sangrampur	344 571	268 86	-
13.	RRI, Calcutta	Guchuriya Kharibari	1,399 462	990 324	-
		21	26,567	7,063	



## Community Health Care Research Programme

Sl. No.	Institute/ Unit	Name of the Village	Population covered	No. of patients treated	Common diseases
1.	RRI, Gwalior	Ganeshpura Udaipura	1,080	329	No details available
2.	RRC, Bangalore,	Naganayakana- halli, Lakshmi- pura	2,500	617	Vatavyadhi, Tvak roga, Kasa, Vrana, Udarsula
3.	RRI, Junagadh	Gadoi  Aniyara	1,863	125	Amavata, Tvakdosa, Svasa, Sula
4.	ALRCA, Chennai	Thorapakkam village Pettai Sevaram, Thorapakkam Colony, Muttakara- macavari, Mettukuppam	10,200	582	Kasa, Tvak roga, Vata- vyadhi, Sveta pradara, Amlapitta
5.	CRI, New Delhi	Poothkalan (Kanjavala Road)	-	83	Svasa, Pratisyaya, Sirah sula, Kasa
6.	IIP, Cheruthuruthy	Kuromathra  Trangali	-  -	515  1,273	Tvakroga, Katisula, Sandhisula, Vatavyadhi, Kasa, Jvara, Sandhisula, Vatavyadhi, Udarasula, Tvakroga, Katisula
7.	MCRU, Jamnagar	Nava-nagna Vadi	1,417 3341	23 34	Svasa, Arbuda, Kamala, Kasa, Tvak roga
8.	RRC, Vijayawada	P. Nainavaram, Golapudi	296 1,244	80 511	
9.	RRC, Mandi	Pandoh	65	29	Krimi, Pradara, Svasa, Yakrit Vikara
10.	RRC, Nagpur	Nayakund	2,626	173	Svasa, Pandu, Visamajvara
11.	RRC, Jhansi	Bedora	3,440	151	Details not available
12.	RRC, Itanagar	Pama village	-	569	-do--
13.	RRC, Jammu	Chak Jafat Patniyal	567 249	330 123	-do-
14.	RRI, Calcutta	Konchpukur	2,075	1,062	-do-
15.	CRI, Mumbai	Saki Naka	1,400	541	-do-
16.	RRC, Guwahati	Dalibari Rudreswar	-	320	-do-

### Tribal Health Care Research Programme

Sl. No.	Institutes/ Units	Name of the Villages	Population covered (Approx)	No. of Patients treated	Common diseases
1.	Palamau	Khurakhurd Bhera, Saluta, Darami, Kalyanpur Mangra, Rabdi, Panchnadia & Dubiakhar	21,837	4,555	Kasa, Visama Jvara, Pradara, Jvara, Gridhrasi, Katisula, Netra roga
2.	Jhabua	Headquarters	-	177	Jvara, Amlapitta, Sandhisula, Pravahika, Visama jvara, Kamala
3.	Jagdalpur	Headquarters	-	606	Twak roga, Udarsula, Sandhisula, Kasa, Vatavyadhi, Katisula, Sirahsula
4.	Car-Nicobar	Headquarters	-	1,567	Krimi, Svasa, Jvara, Tvak Roga
5.	Imphal	Headquarters	-	635	Kasa, Amlapitta, Daurbalya, Arsa, Amavata, Adhmana, Galaroga, Karnaroga
6.	Amchi Leh-Ladakh	Headquarters	-	1,679	Stomach diseases, Kidney problems, Neuritis and peripheral neuritis, Arthritis, common cold & influenza.
Total		13	21,837	9,219	

### 3. MEDICO-ETHNO BOTANICAL SURVEY PROGRAMME

The research on the medico-botany forms the basis of research in Ayurveda. Medico-ethnobotanical survey is an important component of drug research, which provides basic information/data and authentic raw drug materials for initiating research studies i.e. clinical/phyto-chemical/pharmacological/pharmacognostical/drug standardisation etc. Various survey units functioning at the Regional Centres and Institutes have collected useful basic information covering various important phyto-geographic regions/states/districts including inaccessible rural and tribal areas. These data has been published in the medico-botanical monographs from time to time.

The ongoing programme allotted by the Department of ISM&H, Ministry of Health & Family Welfare (Government of India) for collection and supply of genuine raw drugs to the various survey units of the Council as a priority programme of the "Central Scheme for evolving Pharmacopoeial Standards of ISM Drugs" (abbreviated "Central Scheme") has been continued. Under this programme various Survey Units of the Council are required to supply the selected raw drugs of Ayurveda, Siddha, Unani and others to 25 Institutions all over the country, identified for the purpose. In spite of many constraints, fifteen Survey Units located at Bangalore, Bhubaneswar, Gangtok, Guwahati, Gwalior, Jaipur, Jhansi, Junagarh, Itanagar, Jammu Patna, Nagpur, Tarikhet, Trivandrum and Vijayawada have all together supplied over 367 samples distributed in 188 species of plants to the identified 25 institutions and reference sample to PLIM, Ghaziabad. Following is the work done at a glance during the year 1998-99 by the Survey Units of the Council:

#### A. Raw Drug supply: Central Scheme

No. of Survey Units	No. of Plant species collected/supplied	Col-lected	Raw Drug Samples			No. of Institutions supplied
			Sup-plied	Reference samples PLIM	Weight	
15	118	387	367	367	Over 1,091 kg.	25

## B. Important work carried out:

No. of Survey Tours conducted	Specimens Collected	Raw Collected/Supplied	Drugs	No. of plant species collected/Supplied	Herbarium Specimens Prepared/ Indintified/ Accessioned (mounted)
Over 45 (+local survey)	±3,065	140	139	78	1,856 911 1,106
Museum specimens collected	Paper Published/ Communicated	Technical Know-how imparted	Exhibitions arranged	Participation in Seminar/ Workshops	
123	25	3 organiza- ations	3	Internation/ several National level	

Following is the brief resume of the work done by the various Survey Units of the Council:

### 1. Regional Research Centre (Ay.), Bangalore (Karnataka)

The Survey Unit functioning under RRC, Bangalore has conducted two survey tours besides local survey for collection of raw drugs under Central Scheme for evolving pharmacopoeial standards under the Department of ISM&H, Minsitry of Health & Family Walfare, Government of India (Central Scheme). 17 raw drugs weighing 32.320 kg have been collected and 17 raw drugs comprising of 17 species have been supplied to the institutions allotted for the purpose. During the two survey tours, 216 field book nos. comprising of over about 600 specimens and 3 folk lores have been collected. In the herbarium section, 206 specimens have been prepared (mounted) and 146 specimens have been identified and accessioned. The Research Officer (Bot.) and his team of the Centre has imparted technical assistance to two organisations including Ayurveda College, Vijayawada in the identification of 39 specimens.

### 2. Central Reseach Institute (Ay.), Bhubaneswar (Orissa)

The Survey Unit functioning under the CRI, Bhubaneswar has undertaken several drug collection tours in the surrounding forest areas and collected 50 raw drugs weighing over 49.250 kg. comprising of 37 species. The Unit has supplied 48 items of raw drugs to various allotted organisations under the "Central Scheme" for evolving pharmacopoeial standards of Ayurvedic drugs. Two drugs (±2kg) were supplied to CSMDRIA, Chennai. Routine work of the herbarium maintenance was also carried out.

### **3. Regional Research Centre (Ay.), Gangtok (Sikkim)**

The Survey Unit located at RRC, Gangtok conducted three survey cum drug collection tours and collected  $\pm 207$  specimens comprising of 62 spp., the Unit collected 8 items of raw drugs including reference samples under Central Scheme to various organisations. In the herbarium section, 121 specimens were prepared, 67 identified and accessioned 16 specimens in the herbarium of the Centre. 11 samples have been added in the Museum.

### **4. Regional Research Centre (Ay.), Guwahati (Assam)**

The Survey Unit located at RRC, Guwahati has undertaken twelve survey tours of 63 days duration for collection of drugs and collected 32 raw drugs weighing 154.2 kg. (fresh) and supplied 30 drugs to the research organisations allocated under "Central Scheme". 11 museum samples weighing 20 kg. and one herbarium specimen have supplied to PLIM, Ghaziabad. One research paper was communicated and Research Officer (Bot.) delivered a talk.

### **5. Regional Research Institute (Ay.), Gwalior (Madhya Pradesh)**

The Survey Unit at RRI, Gwalior has undertaken two survey tours and also local tours in the surrounding areas for collection of raw drugs. 37 raw drugs weighing 213 kg. have been collected for supply to various research organisations. 21 raw drugs were supplied to the allocated Institutions under "Central Scheme". During the period under report, 259 specimens comprising of 221 species and 26 folklores have been gathered during the survey tours and 216 specimens were accessioned in the herbarium and 7 samples added in the museum and one research paper was read in a national Seminar.

### **6. Regional Research Centre (Ay.), Itanagar (Arunachal Pradesh)**

The Survey Unit functioning under the RRC, at New Itanagar has undertaken an extensive survey tour and a few local survey tours for drug collection. A collection of 140 specimens including some species of Ayurvedic importance have been collected. During the reporting period 105 specimens have been identified, 251 specimens mounted, and 5 drug samples added to the Museum, besides collection and supply of 2.5 kg. of raw drugs comprising of 3 items to other organisations under "Central Scheme". Three research papers were published and two communicated for publication.

## **7. Regional Research Institute (Ay.), Jaipur (Rajasthan)**

The Survey Unit functioning under RRI, Jaipur has undertaken 3 survey tours including drugs collection under Central Scheme in surrounding areas of Jaipur. During the tours, out of 51 drugs weighing over 31.3 kg were collected, a collection of 35 raw drugs have been made for the "Central Scheme" while 16 drugs for other survey units/PLIM, Ghaziabad. Supply of 30 raw drugs comprising of 13 species under "Central Scheme" to different organisations allotted have been made. Reference samples of raw drugs under "Central Scheme" have been sent to PLIM, Ghaziabad. Out of 16 drugs collected, 15 drugs have been supplied to other organisations other than Central Scheme. During the reporting period, 47 specimens have been collected for Herbarium of the Institute. Two monographs on Medicobotany have been modified as per referee's comments and sent for publication. One research paper have been sent for publication (accepted).

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

The Survey Unit located at RRC, Jammu has undertaken two survey tours and collected 51 raw drugs for supply. Seven drugs (+25.5 kg) were supplied to other institutes and O.P.D. of the Centre. 31 Samples of raw drugs (+19 kg) were supplied to various organisations under Central Scheme. Fourteen samples were added to the Museum of the Research Centre, 19 specimens identified and accessioned ten specimens.

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

The Survey Unit at RRC, Jhansi has collected 324 kg. samples of raw drugs from the garden and local areas and supplied 204 samples to various organisations. Out of which 18.6 kg of samples and 8 kg reference samples of raw drugs were supplied under "Central Scheme". Besides this during the reporting period, survey tours to Lalitpur & Allahabad forest division have been undertaken.

## **10. Regional Research Institute (Ay.), Junagarh (Gujarat)**

Survey Unit located at RRI, Junagarh has conducted local survey tours (37 days) in the surrounding areas for collection of raw drugs under "Central Scheme". In all 16 samples of raw drugs have been collected and supplied to over 15 organisations besides 15 reference samples to PLIM, Ghaziabad. 8 drug samples have been supplied to other Institutes etc. During the period

23 specimens for herbarium have been collected, 177 specimens mounted and 14 samples added to the museum and arranged two exhibitions on the medicinal plants.

#### **11. Regional Research Centre (Ay.), Mandi (Himachal Pradesh)**

The Survey Unit located at RRC, Mandi has undertaken one survey tour, collected 30 specimens. In herbarium section, mounted 500 specimens and accessioned 345 specimens. Scientists of the Centre participated in a workshop of Himalayan medicinal plants

#### **12. Regional Research Centre (Ay.), Nagpur (Maharashtra)**

The Survey Unit located at RRC, Nagpur conducted one extensive survey tour and five short tours for collection of raw drugs in the surrounding forest areas. 34 raw drugs were collected which includes 24 drugs samples for "Central Scheme", out of which 15 raw drugs have been supplied to various allotted units. Ten drugs have been supplied to other organisations. During survey, 108 specimens, 23 folklores were collected. In herbarium section, 54 specimens mounted, 10 specimens accessioned and 4 specimens added to museum. Two research papers communicated for publication.

#### **13. Regional Research Institute (Ay.), Patna (Bihar)**

The Survey Unit located at RRI, Patna has undertaken one survey tour besides local drug collection tours. 238 specimens have been collected and 3 folklores from the tribals of Hazaribagh area and 12 samples for the museum of the Institute. 5 drugs were collected and supplied to allotted institute. Under "Central Scheme", 4 drugs were supplied to PLIM Ghazabad. 38 kg. powder of *Vicoa indica* (Vandhavari) was supplied to CRI (A), Mumbai.

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

The Survey Unit under IIADR, Tarikhet has undertaken six tours and collected/supplied 37 raw drugs ( $\pm 315$  kg. fresh) to different allocated organisations under "Central Scheme". The Institute has arranged 3 exhibitions. Besides routine work, a herbarium of drugs (Ayurvedic formulary) was arranged. Technical know-how' on medicinal plants imparted. Scientists participated and presented papers in 3 workshops/seminars.

### **15. Regional Research Institute (DR), Trivandrum (Kerala)**

The Survey Unit functioning at RRI, Trivandrum has undertaken one survey tour and several local tours for collection of raw drugs under "Central Scheme". 28 drugs representing 26 species and weighing 32 kg. have been collected & supplied to institutions under "Central Scheme". Fifty raw drugs representing 45 species (over 50 kg.) has been supplied to CCRAS units/hospital etc. Identification of 50 specimens, accessioning of 151 specimens and mounting of 183 specimens was done in the herbarium section. 37 samples added to the museum. Scientist participated & presented paper in one seminar.

### **16. Regional Research Centre (Ay.), Vijayawada (Andhra Pradesh)**

The Survey Unit functioning at RRC, Vijayawada conducted six tours (two long duration and four local) and collected 66 raw drugs comprising of 55 species weighing over 48 kg. 66 raw drugs have been supplied to various organisations under "Central Scheme". A collection on 400 specimens distributed in 130 F.B. nos. have been made during medico-botanical survey tour. During the period 125 specimens have been mounted and three research papers have been published.

### **17. Central Herbarium and Museum of Medicinal Plants at CCRAS Hqrs. New Delhi**

The Survey Units of the Council located in 16 states of the country are maintaining their collection of medicinal plants in their own respective herbaria. The Governing Body of the Council has approved the establishment of a Central Herbarium & Museum at New Delhi which may have representative specimens and raw drug samples from all the states of 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 reporting year, collection of specimens from different survey units were received for the Central Herbarium which have been maintained and is being further rearranged. The Museum section is also being reorganized and developed.

The Museum section is arranging exhibition in the capital from time to time and participated in the "Mystique India-1998" exhibition held at Pragati Maidan, New Delhi. It was very much appreciated by the visitors both from India and abroad.



## 4. CULTIVATION OF MEDICINAL PLANTS

The Council has taken up cultivation of important medicinal plants of Ayurveda and Siddha at the 5 herbal gardens located at Pune (Maharashtra), Mangliawas near Ajmer (Rajasthan), Jhansi and Tarikhet in Uttar Pradesh and Itanagar (Arunachal Pradesh) on large/semi large/small scale experimental cultivation. These species under cultivation in these gardens comprised of arid/semi-arid/tropical/sub-tropical and temperate regions. Some exotics have also been grown. The medicinal plants being cultivated under this programme are primarily with an objective to study their adaptability, growth, pathogenesis, flowering, fruiting and to assess the yield at different regions in bio-edaphic conditions. Efforts are also being made with the help of experimental studies to provide basic data/suitable agro-techniques for the successful cultivation and growth of rare and endangered species of the medicinal plants.

The medicinal plants garden at Pune is a demonstrative/representative garden together with other research activities. At the Guggulu Herbal Farm, Mangliawas: Guggulu an endangered species *Commiphora wightii* (Arn) Bhand., a plant of arid and semi-arid region has been cultivated on large experimental scale with a view to conserve/domesticate and procure of the oleo-gum-resin evolving safe, suitable methods for tapping gum. The oleo-gum-resin is a drug of high repute in Ayurveda. In the herbal garden located at Ranikhet, the Council has successfully domesticated Saffron (Kumkum) and evolved techniques for its propagation.

A brief resume of the work carried out under the cultivation programme at each of the cultivation centre is provided hereunder:-

### 1. Jawaharlal Nehru Ayurvedic Medicinal Plants Garden & Herbarium, Pune (Maharashtra)

The JNAMPG&H located at Pune has a total land area of 19 acres, out of which 10 acres was developed and being utilized for cultivation and maintenance/demonstrative purposes.

About 400 species of medicinal, economic and ornamental plants of importance have been maintained, out of which 141 taxa are from among

the plants included in Ayurvedic Formulary, Part-I. Under the "Central Scheme" for Development & Cultivation of Medicinal Plants, 92 saplings of Jyotishmati (*Celastrus paniculatus* Willd.), and 7 saplings of Arjuna (*Terminalia arjuna* W&A) were planted in the garden.

Experimental cultivation of Gambhari (*Gmelina arborea* Linn.) taken up since 1996 to study the growth & performance of degraded rocky land and effect of cow-dung manure on growth. The performance of 'Gambhari' on degraded rocky land was quite satisfactory and the species is suitable for cultivation on such type of waste land. Experimental cultivation of another medicinal plant, Guduchi [*Tinospora cordifolia* (Willd.) Miers.] planted in 16 pots is in progress.

Out of garden's produce, 30.380 kg. of dried crude drugs viz. Guduchi (*Tinospora cordifolia* (Willd.) L. Miers.), Nirgundi (*Vitex nequundo* L.), Amalaki (*Phyllanthus emblica* L.) & ' Shatavari' (*Asparagus racemosus* Willd.) were supplied to the Council's Institutions. Apart from the aforementioned, 44.950 kg. dried crude drugs collected from the garden during the reporting period are stored for further supplies. Species of Kumari, Ushira, Japa, Nirgundi and Amalaki are planted in the garden on comparatively large scale and being maintained to meet further requirements. 474 plant specimens of medicinal plants were collected for preparation of Herbarium sheets, 316 plant specimens were poisoned & 104 were mounted. For development of seed bank, seeds/fruits of about 32 species of medicinal plants were collected.

Guidance and technical knowhow in respect of cultivation of medicinal plants were imparted free of cost to a number of interested individuals and institutions. Some seeds and saplings were also spared free of cost to some colleges and institutions for developing medicinal plants gardens.

Eighty nine saplings of Guggulu (*Commiphora wightii*) (Arn.) Bhandari were supplied to the academic/ research institution for plantation purpose at the rate of Rs. 20/- per sapling as approved by the Council and a sum of Rs. 1780/- was earned.

The Institution celebrated Hindi week w.e.f. 14.9.98 to 21.9.98. Assistant Director Incharge participated in four National/International Seminars and delivered two plenary lectures.

Dr. P.C. Shrama, Assistant Director Incharge was nominated as a member of the Expert Groups constituted by the Deptt. of ISM&H and by the Deptt. of Family Welfare, Govt. of India for preparing project proposal and evaluation of projects respectively.

During the current year Internet facility was made available to this Centre through VSNL, being utilised to surf and to collect data on medicinal plants through www. Data on the following plants has been collected i.e. Kesar, Brahmi, Bel, Kumari, Vacha etc. A website on CCRAS is also being created on world wide web. The editing on data on bibliography of the research papers published by scientists of CCRAS is in progress. The garden received a large number of visitors during the period, particularly students from colleges of the country and also some visitors from abroad.

## 2. Guggulu Herbal Farm, Mangliawas (Rajasthan)

The Guggulu Herbal Farm, Mangliawas functioning under RRI, Jaipur is located about 26 kms. from Ajmer. The farm is spread over an area of  $\pm 142$  acres and is mainly devoted for the conservation, cultivation and propagation of an endangered precious medicinal plant 'Guggulu' (*Commiphora wightii* (Arn.) Bhand. The cultivation practice includes studies in respect of growth behaviour and other experimental studies on various aspects to tapping gum of Guggulu are being carried out in the plantation area of about 40 acres of land.

About 13,885 Guggulu plants are being maintained in the farm besides 72 species of other medicinal plants which includes 'Satawari' (*Asparagus racemosus*), 'Amrita' (*Tinospora cordifolia*), 'Langli' (*Gloriosa superba*), 'Nimba' (*Azadirachta indica*), 'Kumari' (*Aloe vera*), 'Kuberaksh' (*Caesalpinia bonduce*), 'Amalaki' (*Embllica officinalis*), etc.

During the reporting period, 215 rooted plants, 5,340 cutting and 150 plants of Guggulu prepared through air layering have been planted, besides this 1216 plants/seedlings/seeds of 'Kumari', 'Bakayan', 'Sirish', 'Pita Karveer', 'Nimba', were planted/sown. During the period about 1,200 Guggulu plants died mainly due to termite infestation.

Experimental studies using hormones on stem cuttings for better sprouting growth and extraction of gum in Guggulu on 62 plants and other plants (the adulterants of Guggulu) were conducted during the reporting period.

An amount of Rs. 57,250/- was earned through selling 2,300 Guggulu plants (Rs. 11,250/-) and 50 kg. of Gum Guggulu supplied to IMPCL, Mohan (Rs. 11,250/-).

During the reporting period a number of Guggulu cuttings and plants together with 15 species of 19 items of raw drug were collected and supplied to various institutes. Guggulu Gum, and fruits of 'Ingudi', seeds of 'Kuberaksh', etc. were collected as farm produce for supply.

A monograph on the "Cultivation of Guggulu" is submitted to Council for publication and is under print. A number of visitors/scientists visited the garden.

### **3. Regional Research Centre (Ay.), Itanagar**

The Medicinal Plants Garden located at RRC, New Itanagar has an area of 17 acres of land which includes 2 acres of land of the institute's campus, It consists of steep slopes and ditches along the hilly area. About 10.5 acres of land is presently being utilised for cultivation of medicinal plants. Experimental/small scale cultivation of 181 plants have been undertaken out of which 98 medicinal plants are from the Ayurvedic Formulary Part-I. Some of important plants included species of Chitrak, Arjuna, Nagkesar, Vibbitaka, Bakul etc. 21 medicinal plants of Alpine, sub-Alpine and arid zone areas have been introduced in the garden during the period.

7 drug samples of different medicinal plants about 4.5 kg. have been collected/supplied to the OPD/IPD or RRC (A) and other Centres/Units of the Council. Experimental studies using different fertilizers/plant hormones have been taken up. A number of visitors and students from colleges etc. visited the garden.

### **4. Regional Research Centre (Ay.), Jhansi**

Cultivation of medicinal plants on experimental/semi large scale cultivation as well as for demonstration purposes of 200 species have been undertaken at Regional Research Centre (Ay), Jhansi in about 15 acres of land, out of the total 46 acres of land. 9 species of medicinal plants which includes 'Guggulu' (*Commiphora wightii*), another species of 'Guggulu' (*Commiphora agallocha*), Sarpagandha (*Rauwolfia serpentina/R. canesens*), 'Satawari' (*Asparagus racemosus*), 'Kumari' (*Aloe barbandensis*) etc. have been planted. Experimental cultivation of plants like 'Atibala' (*Abutilon indicum*), 'Gunja' (*Abrus precatorius*), 'Vasa' (*Adhatoda vasica*), 'Kalmegh' (*Andrographis paniculata*), etc. have been done. Medicinal plants for demonstration in the beds and in 300 potted plants in the green house have been maintained. In the green house potted plants have been maintained for demonstration and other studies. Seeds of medicinal plants of Ayurvedic importance have been sown according to season in the green house/beds.

Besides routine work of maintenance, the work of fencing is under progress. The labelling of the plants cultivated/growing in the garden has also been taken up. The grass in block 'C' have been auctioned for Rs. 2500/-and amount sent to Hqs. About 80 kg. of dry/fresh drug material comprising of seeds, roots etc. have been collected and deposited in the Central Drug Depot of the Centre.

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

The herbal garden of the Institute is located along Kumaon hills of Ranikhet at an altitude of 1710 metres (m.s.l.): 8 acres land of the institute is being maintained and utilised, out of which 5 acres utilised for cultivation programme/research studies which also includes 1.5 acres for Saffron cultivation. A small medicinal plants garden "Chamma Vanvatika" in Tehri district at Chamma about 400 kms. from Ranikhet is also maintained under this Institute for cultivation purposes. In the garden more than 100 medicinal plants have been maintained and the data with regards to their adoptability etc. have been recorded. Planting material including seeds from Ranikhet garden are planted. Corns of Saffron planted showed moderate growth & development.

In the herbal garden, 150 species of medicinal plants including plants of Alpine/sub-Alpine areas are being maintained. Among species cultivated, 50 plants from Ayurvedic Formulary, Part-I have also been grown. The plant of "Yasthimadhu" (*Glycyrrhiza-glabra*) introduced in the garden is observed to be well adopted. Experimental studies on Agro-techniques of selected plants have been conducted and species of plants of Ayurvedic importance and aromatic in nature have been raised in the nursery of the garden. Five raw drugs under "Central Scheme" have been supplied to different insitutions during the reporting period. Experimental study using nutrients/auxins on two medicinal plants have been conducted. Six species of plants including Kutuki, Ratanjot, Kutaj, Gandharyan, Satua have been introduced. Forty species of seeds (planting material) have been collected, out of which 25 species have been sent to Chamma Vanoushadhi Vatika for planting.

### Experimental Cultivation of Saffron

• In the experimental cultivation programme of 'Saffron' at Tarikhet in a area of 1 hact., data pertaining to the adoptability, growth, yield besides other experimental studies have been recorded. The cultivation of 'Saffron' in this habitat is successful which is a remarkable achievement.

During the reporting period in the garden of the Institute, there are 2.5 lakh corns of Saffron of 1-3 cm diameter have been recorded. Reasonable blooming was obseved with 14,000 flowers but 3,500 buds not opened due to untimely rains. 10,718 flowers (weighing 450.5 gm.) and 698 gm. stigma & style-dry weight 84 gms. were collected. Three experimental studies on effect of biofertilizers/leaf cutting and micronutrients on growth and development of plants were carried out.

## 5. MUSK DEER BREEDING PROGRAMME

The musk deer breeding farm in an area of 2 acres of land, was established during 1972 at Mehroori district, Almora at an altitude of 2250 metres. Climatically the area is Alpine, sub-Alpine, moderately humid and covered with evergreen forest comprising of Oaks, Rhododendrons, Urtica and under cover of various shrubs and herbs. There are in all 16 adult animals maintained in the farm. Initially there were 21 animals but 5 animals died due to natural/untimely death.

During the period under report, observations and data on sixteen animals pertaining to different life style growth/development, food habit, behaviour, reproduction etc. were recorded. Scarcity of fodder plants in the area have been indicated. Seven female copulated 3 males. The 3 males did not show interest in copulation. For the first time a 16 months female "Devshree" copulated with male counterpart. The animals were examined by a team of doctors from Mukteswar & Berinag and suitable treatment given. To meet out the problem of inbreeding in the farm and improve growth of the musk deer, an exchange of animals with state farm at Kachula Kharak has been proposed/finalised. The same will be implemented next year. The routine maintenance work in the farm was carried out.

## 6. PHARMACOGNOSY RESEARCH STUDIES

The Pharmacognostical investigation play central role in the Drug Research Programmes. The Pharmacognostical Research Units of CCRAS located at Calcutta, Delhi, Jammu, Lucknow and Pune have taken up the Pharmacognostical investigations of the following drugs widely used in Ayurveda.

Aranyajiraka (*Vernonia anthelmintica* Willd.) : Seed

Ashmantaka (*Ficus rumphii* Blume) : Stem bark & root

Matsyakshi (*Alternanthera sessilis* (R.Br.) : Whole plant

Paranka (*Garuga pinnata* Roxb. ) : Stem - bark

Satavari (*Asparagus racemosus* Linn.) : Root

Vastuka (*Chenopodium album* Linn.) : Root, Stem

Vishnukranta (*Evolvulus alsinoides* Linn.) : Whole plant

The studies covered details of the drugs in respect of the origin, botanical identification and correct determination of Ayurvedic nomenclature including synonym together with properties, botanical description and key characters. This comprehensive task includes study of different facets, such as morphology of drug parts including the sensory characters, cell and tissue structures, both qualitative and quantitative, cell contents, preliminary phytochemical analysis, thin layer chromatographic studies, detection of the chemical constituents like alkaloids, steroids and terpenoids, phenols, tannins, saponins, flavanoids, proteins etc., fluorescence analysis, physical constant values including ash and extractive values, dry matters and moisture contents etc. The analytical studies of the powdered drug which is

considered to be of immense help in detection of adulterants was also carried out. These studies are useful in evolving the pharmacopoeial standards for single drugs besides helping in overcoming the controversy and confusion that exists regarding their proper identity/authenticity due to synonyms.

Units of the Council located at Calcutta, Delhi, Chennai ,Pune and Varanasi have laid down pharmacopoeial standards for about 20 drugs under "Central Scheme for evolving pharmacopoeial standard of ISM drugs" allotted by Department of ISM&H, Ministry of Health & Family Welfare.



## 7. PLANT TISSUE CULTURE

Plant Tissue Culture Laboratory at JNAMPG&H, Pune continued experiments on the following six drugs.

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

The study covered are seed germination trials, phytochemical investigations, TLC studies, *in vitro* propagation for rapid multiplications.

### 1. Shalaparni (*Desmodium gangeticum* DC.)

*In vitro* regeneration, callus culture and germination trials were conducted on petiole explants on MS medium supplemented with Kn (0.5-4mg/l) & B-5 (Gamborg) medium supplemented with (1.0-2.0 mg/l Kn.). In all the medium, single bud sprouted but on B-5 plain medium; callusing was observed at cut end. Callus culture studies were conducted on MS & B-5 medium, supplemented with BAP, IAA, Kn (0.5-2.5 mg/l) & coconut milk 100 cc/l. No regeneration was observed.

### 2. Guggulu {*Commiphora wightii* (Arn.) Bhandari}

Callus culture studies were carried out by taking nodal sectors, unripe & ripe fruits, flowers & leaf as explants and inoculating on B-5 medium fortified with Kn (1mg/l), BAP (1.0-2.5 mg/l) & in combination with IAA (2.5 mg/l). In all the experiments, callusing was observed in cases of nodal sectors and fruit explants; where as flower & leaf did not show any response. Abortive embryos were inoculated on B-5 plain medium. No positive response was observed. Further trials are continued. 2, 4-D an unusual

hormone was used for nodal sectors, flowers & fruit culture, to find out feasibility of *In vitro* regeneration. Callusing was observed in case of nodal sectors on B-5 and 0.5 mg/l, 2, 4-D.

### 3. Banafsha (*Viola serpens* Wall.)

The dilution of major salts in basal MS & B-5 medium & combination with 2, 4-D was tried and swelling of petiole was observed. Trials were also conducted to enhance rate of germination by soaking of 1, 2 years, 1 month, 1 & 2 weeks old mature & immature as well as fresh seeds in IAA, NAA, BAP, Gibberelic acid. Maximum germination rate was observed when fresh mature seeds soaked in 100 ppm NAA for 48 hours. It gave as much as 80% germination within 21 days. For cold treatment, the seeds were kept at  $5\pm 1^{\circ}\text{C}$  for 24 & 48 hours. No response was observed in it.

### 4. Prasari ( *Paederia foetida* L.)

Effect of  $\text{GA}_3$ , 2, 4-D on callus, phytochemical investigations & TLC studies were carried out. In cases of callus culture, 2, 4-D showed positive response of fast growing callus. Phytochemical investigations confirmed the presence of glycosides & sugars in *in vitro* grown callus. The comparative TLC of leaf & callus (on pet. ether extract) developed 5 spots on both the plates after spraying with Iodine fumes showing presence of identical compounds in leaf as well as in callus.

### 5. Brahmi (*Bacopa monnieri* [L.] Pennel.)

*In vitro* grown callus and multiple shoots subcultured on MA+BAP & IAA (2.5 mg/l each.) were dried & stored at room temp. for further experiments. Similarly, leaf, stem & root callus along with multiple shoots were kept at  $38\pm 2^{\circ}\text{C}$  (for determination of physical constant of loss on drying). Total 480 gms callus & 350 multiple shoots were collected.

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

The complete plantlets were transferred to vermiculite and kept at 90% humidity in environmental chamber. These plantlets were further transferred in nursery [mixture of soil and sand (1:3)]. After 30 days, 50% survival rate was observed.

Internodal portion from stems were inoculated on MS+2.0 mg/l BAP. Callus was formed after 28 days. The callus was inoculated of aforesaid medium, gave rise to shoot buds. The observations are still continued.

## 8. CHEMICAL RESEARCH PROGRAMME

The medicinal plants have been given an exalting position as a source of new therapeutic agents for the treatment of various diseases. Phytochemical studies including isolation and characterisation of bioactive constituents play an important role in the development of new drugs. The Chemical Research Units located at Calcutta, Chennai, Delhi, Hyderabad, Lucknow, Trivandrum and Varanasi have isolated different active principles from 12 medicinal plants to carry out further studies. A brief resume of the work carried out during the year 1998-99 in reported as under :

### 1. *Atavi Jambira (Atalantia monophylla)* ChRUH

A pale yellow compound (m.p. 134°C) has been isolated from the petrol extract. On the basis of spectroscopic data, it could be a new hydroxy dectamine alkaloid. Another compound Commurrayin has also been isolated from the same fraction. The characterisation of compound was done with the help of NMR/MS.

### 2. *Cipadessa fruticosa* Bl. ChRUC

From the ethereal fraction of ethanolic extract of fruit and seeds, a crude gummy solid was isolated by column chromatography. The crude gummy solid was subjected to a series of chromatographic resolution over silica gel. The final column afforded a solid in the hexane-ethylacetate (1:1) eluate. This solid was further purified by trituration with acetone and labelled as "CF-3".

Hexane-acetone (6:4) eluent of parent column left a gummy solid. The pure solid was obtained by the triturating this fraction with chilled ether, it was dried and designated as "CF-4". Characterisation of this solid is in progress.

### 3. *Hewittia bicolor* Wt. ChRUC

Structure elucidation of previously isolated three compounds designated as WB-1, WB-2 and WB-3 is still under progress. Based on IR and NMR

spectral data compound, WB-1 may be a long chain substituted fatty acid.

#### 4. Hingu (*Ferula assafoetida* Regel)

ChRUC

Column chromatography of etheral extract of gum resin afforded a compound which was crystallised to shining needles. With the help of spectral data, the compound was identified as ferulassin (Fig. I)

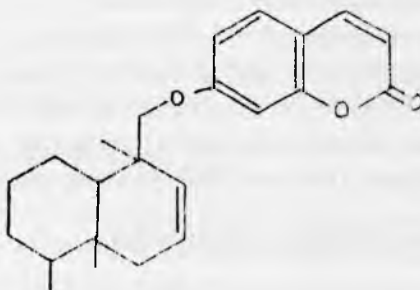


Fig. I

#### 5. Kapittha (*Feronia limonia* Linn.)

ChRUC

Alcoholic extract of petrol defatted roots on repeated column chromatography afforded three coumarins, identified as 7-oxygenated coumarin geranyl umbelliferone (Fig. II), 7-oxygenated coumarin, marmin (Fig. III) and furano coumarin, xanthotoxin (Fig. IV) with the help of Co- TLC, Co-IR & m.m.p.

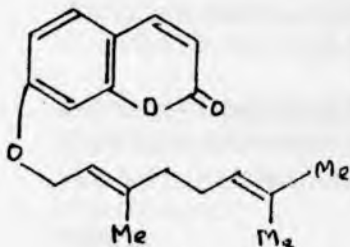


Fig. II

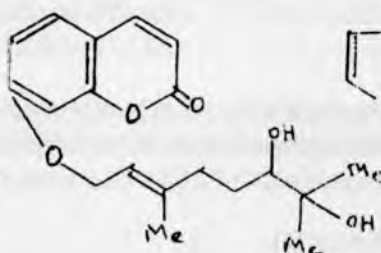


Fig. III

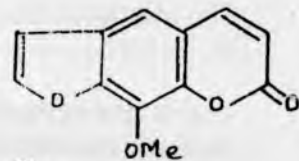


Fig. IV

## 6. Karnasphutica (*Boenninghausenia albiflora* Reichb)

ChRUC

From ethanolic extract of air dried roots, a compound-Boennin (Fig. V) has been isolated. Structure of Boennin was established with the help of spectroscopy and by correlation of NMR with Jayantinin.

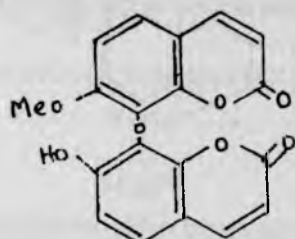


Fig. V

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

ChRUC

Chloroform extract of flower afforded two amorphous white compounds m.p. 238-240°C (d) and 286-287°C (d) designated as SA-II and SA-III. Identification of these two compounds with the help of modern techniques is in progress.

## 8. Parijata; Shefali (*Nyctanthes arbortristis* Linn.)

ChRUC

From the ethanolic extract of seeds, a colourless solid comp. (m.p. 118-20°C) has been isolated. Structure elucidation of compound is in progress.

## 9. Pasupasi; Kamuka (*Myristica malabarica* Lam.)

ChRUT

The benzene extract of the leaves afforded  $\alpha$ -amyrin and  $\beta$ -amyrin and two phenolic compounds.

## 10. Sala; Aswakarna (*Shorea robusta* Gaertn.f.)

ChRUC

From the gum resin, a solid compound characterised as 2 $\alpha$ , 3 $\beta$ , 23-triacetoxy-11-oxo-urs-12-en-28 oic acid (Fig. VI) (m.p. 310-12°C) have been isolated.

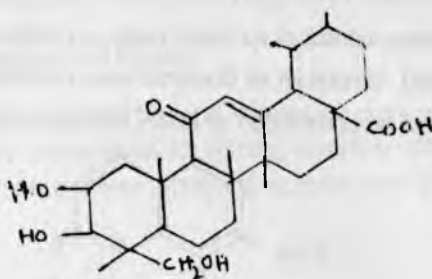


Fig. VI

### 11. Surjavarta (*Cleome gynandra* Linn.)

ChRUC

A novel 20 (S), 23 (S) epoxy-dammarane triterpenoid cleogynol (Fig. VII) having a hemiketal unit have been isolated from the petroleum-ether extract of the whole plant.

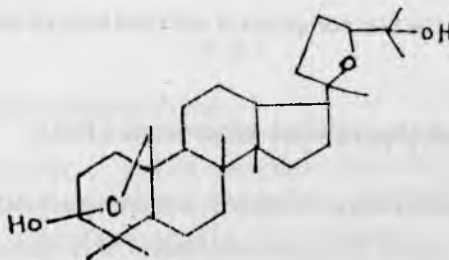


Fig. VII

### 12. Uttamarini; Yogaphala [*Pergularia daemia* (Forsk) Chiov.]

ChRUC

A white solid compound [m.p. 255<sup>o</sup>c (d)] has been isolated from the methanolic extract of whole plant by repeated column chromatography. The compounds gave +ve L.B. test. I.R. data of compound have been determined. Further work is in progress.

### 13. Miscellaneous Work

ChRUT

- (i) Qty. of Nimbathiktham isolated/supplied to the clinical/Pharmacology Unit-7.758 kg.
- (ii) Qty. of Psoralin oil supplied to clinical section - 9950 ml.
- (iii) Qty. of Viswamitra-Kapal Taila supplied to Clinical Research - 14.650L

CRID

- (iv) Extracts of Raktachandan (*Ptrocarpus santalinus*) (Stem bark) and Tagar (*Valeriana wallichii*) (Roots) were prepared and supplied to Pharmacological Research Unit, New Delhi.

CSMDRIAC

- (v) Percentage determination of anthraquinones viz. Chrysophenol and emodin in market samples of Revatchini with the help of HPTLC were done.
- (vi) HPTLC finger prints of following plants were obtained:
  - 1. Ketaki (*Pandanus odoratissimus* L.)
  - 2. Karutan Kalangu (*Corallocarpus epigaeus* C.B.)
  - 3. Chinni (*Acalypha fruticosa* Forsk)
  - 4. Cenkalunir Kilangu (*Pontederia vaginalis* Roxb.)

ChRUC

- (vii) Total quantity of curcumin was determined in rhizomes of Haridra (*Curcuma longa* Linn.).

## 9. PHARMACOLOGICAL RESEARCH PROGRAMME

Pharmacological and Toxicological studies of plant drugs have an important role in the development of drug research. The studies are based on experimental models in different species of animals. This provides vital information for pursuing clinical studies. The Pharmacological Research Programme of the Council is being carried out at various Institutes and Units of the Council located at Calcutta, Cheruthuruthy, Delhi, Jaipur, Jhansi, Lucknow, Mumbai, Patiala, Trivandrum and Varanasi. During the reporting period 18 single drugs, coded drugs and compound formulations were studied. A brief resume of these studies is as under:

### 1. Ekangaveera Rasa

IIPC

Decoction of the Ekangaveera Rasa was prepared and studies for the pharmacological actions. Decoction was administered orally at a dose of 1 g/kg and it produced mild hyper activity in gross behaviour. It also exhibited analgesic effect. The drug did not showed anti-inflammatory effect.

### 2. Jambira (*Citrus limon* Linn.) Burm.f.

PhRUT

Fresh juice of the fruits was used for the screening. *Citrus* juice showed mild sedative effect as well as gastric secretory activity.

### 3. Neem oil (*Azadirachta indica* A. Juss.)

TRUJh

Neem oil had wide therapeutic index in rats as upto 0.6 ml/kg no untoward effect could be seen. It is devoid of analgesic, anticonvulsant, hypothermic, hypnotic, local anaesthetic action and frog's heart, skeletal muscle and rabbit intestine. The further studies are in progress with this drug.



#### 4. Pi: A coded drug

PhRUC

In continuation to the previous observations, some more experiments were performed on oral administration (single dose). The drug neither produced marked toxic effect till 3 gm/kg of body wt. in mice nor showed cataleptic effect. It protects cataleptosis induced by haloperidol significantly in rats at dose level of 100 mg/kg. The drug was devoid of clonidine induced hypothermia effect, and lithium induced head twitch effect in control and Pi treated rats.

The drug is safe and non-toxic till 3 gm/kg of body weight.

#### 5. Pippalyadi Yoga

CRIM

Sub-acute toxicity study of Pippalyadi Yoga in rats by oral route was carried out. The drug Pippalyadi Yoga was administered to Group-II & III, each containing 10 males and 10 females orally for 13 weeks on 6 days a week basis. To control group no. I (containing 10 males & 10 females) was administered suspension of Tween-80 in distilled water for the period of 13 weeks on 6 days a week basis.

During the period of treatment, various investigations viz. food and water intake, body weight, behaviour and mortality rate and urine analysis were carried out. At the end of the study, the animals were sacrificed and haematological, biochemical, organ weight and autopsy examinations were carried out. The result of the experimental groups are comparable with control group. There is no noteworthy difference between them and were in physiological normal limit. Thus, no toxicity was detected through the tests conducted.

#### 6. Rudraksha [*Elaeocarpus sphaericus* (Gaertn) K.Schum.] PhRUV

Extracts of fruits of Rudraksha suspended in 3% Tween-80 in double distilled water. The extracts used were petroleum-ether, benzene, chloroform, acetone and ethanol. Studies on mesenteric mast cells of rats were carried

out. The effects of 5 & 10 mg/ml of different extracts were screened. It was found that all the extract protected degranulation of comp. 48/80 induced mast cell. However, all the extracts at 20 mg/ml dose failed to protect mast cell degranulation.

#### **7. Sigrū (*Moringa oleifera* Lam.)**

**PhRUT**

Methanol extract of the root bark of the drug was subjected to a detailed screening for hypoglycaemic/anti-diabetic activity in experimental animals. The extract was administered orally in 1 and 1.5g/kg body weight. The extract showed significant hypoglycaemic effect.

#### **8. Tagar (*Valeriana wallichii* DC.)**

**PhRUD**

Benzene extract of the Tagar root was used for the pharmacological screening and pharmacodynamic studies i.e. acute toxicity, analgesic, anti-inflammatory, pentobarbitone sleeping effect with various dosages.

During acute toxicity studies, no adverse effect was observed upto 6 hours of drug administration. None of the rats died upto 10 days of observations. No significant anaesthetic activity was observed with this extract by tail immersion method, hot plate method in rats and chemical writhing technique in mice. The extract did not exhibit any significant effect by carrageenin induced inflammation in hind paw of albino rats. The drug failed to exhibit any significant change in the righting reflex of albino rats (pentobarbitone sleeping time test).

#### **9. Talisa (*Abies pindrow* Spac.)**

**PhRUV**

Extracts of leaves of the drug suspended in 3% Tween-80 in double distilled water. Petroleum-ether, benzene, chloroform, acetone and ethanol extracts were used for screening. The effects of the graded doses (5, 10 and 20 mg/ml) of different fractions of the drug suggested that all the extracts protected comp. 48/80 induced mast cell degranulation at different dose levels, However, the petroleum-ether fraction at the dose level of 20 mg/ml

did not have any protective role, while at dose level of 2.5, 5, 10, 20 mg/kg, *i.p.* showed significant anti-inflammatory effect. However, 20 mg/kg dose did not have any protective effect.

Ethanol extract at dose level of 2.5, 5, 10, 20 mg/kg, *i.p.* showed significant anti-inflammatory effect. However, 20 mg/kg dose did not have any effect.

#### **10. Tanduliya (*Amaranthus spinosus* Linn.)**

**PhRUT**

Methanol extract of whole plant was used. The drug exhibited significant anti-inflammatory activity and moderately diuretic effects in rats.

#### **11. Tankana (Borax)**

**TRUJh**

Toxicity studies on Tankana were continued in experimental animals. The drug was administered orally to rabbits for 15 days in graded doses. No morbidity or mortality could be observed during the treatment period. Behaviour and other physiological activities were normal. Even after 15 days of treatment, no adverse drug reaction could be noticed.

#### **12. Trayodsanga Guggulu**

**IIPC**

Decoction of Trayodasanga Guggulyu (1g/kg, *p.o.*) showed hyper activity and analgesic effect. All the other experiments showed no effect. The drug was devoid of any anti-inflammatory effect.

#### **13. Vidanga (*Embelia ribes* Burm. f)**

**IIPC**

Alcohol (100 mg/kg, *p.o.*) and decoction (1 g/kg, *p.o.*) did not produce any effect in gross behaviour, antipyretic, analgesic and anti-depressant activity.

#### **14. Vishnugandhi (*Evolvulus alsinoides* Linn.)**

**PhRUT**

The methanol extract of the whole plant of the drug showed CNS sedative and diuretic effects in rats.

**15. Amalaki (*Embllica officinalis* Gaertn.)**

**PhRUJ**

A suspension of Amalaki powder in distilled water did not have any significant anti-inflammatory activity when tested on albino rats by inducing inflammation by planter injection of carrageenin even with a dose of 1 mg/kg. body wt. Further, it was tested for any activity on smooth muscles of gastrointestinal tract. It was tested for any activity on smooth muscles of gastrointestinal tract. It was observed that even with 1 ml. of 1 : 1000 and 1 : 10,000 solution, there was no effect but with 0.5 ml of 1 : 100 solution, there was a relaxant (spasmolytic) effect on rabbit's ileum. It was put locally in the eye of the rabbit after filtering it to see if there is any effect on smooth muscle of the eye. It did not produced any significant effect in eye(pupillary size).

**16. Ashwagandha [*Withania somnifera* (Linn.) Dunal]**

**PhRUL**

Extensive work has been done in this regard experimentally as well as clinically and very promising results have been obtained on thousands cases of rheumatoid arthritis. Comparative study for the adverse drug reactions in comparison with modern drug (NSAIDS) have also been made.

**17. Musta (*Cyperus rotundus* Linn.)**

**PhRUL**

Extensive work has been done in this regard experimentally as well as clinically and very promising results have been obtained on thousands cases of rheumatoid arthritis. Comparative study for the adverse drug reactions in comparison with modern drugs (NSAIDS) have also been made.

**18. Silajit**

**PhRUL**

Hyperoxaluria produced by administration of glycine has been found to be reduced by the pre-treatment with Silajit. This has got potential in the prevention and recurrence of a urinary stones.

Our earlier reports have revealed beneficial effect of Silajit on the blood sugar levels in alloxan induced experimental set up. The Clinical studies done so far have also revealed quite interesting results on the free radical parameters as well as on the microscopic albuminurea after the treatment with Silajit.

## 10. DRUG STANDARDISATION RESEARCH PROGRAMME

Standardisation of drugs is an important aspect in Health Care System as it determines the authenticity of medicinal formulations and genuine single drugs for us. Standardisation of Ayurvedic drugs consisting of herbal, mineral and animal origin drugs is a difficult task. The Council undertook the task of standardisation and laying down physico-chemical values of the single drugs that are entering as ingredients in the formulations. It also has undertaken standardisation of process of manufacture like Asava, Arista, Avaleha, Bhasma etc.

The Council has also undertaken standardisation work of 'Shelf life Study', 'Packing material' etc. The safety and efficacy aspect of the drug is taken up by Pharmacological Units and the establishment of the identity of drugs by Pharmacognosy Units under the Council.

As a second phase of study, the Council has worked out plan to lay down analytical values and to identify main and other costly ingredients and by preparing different proportionate ingredients in different quantity or by deleting some of them other than the standard formulary and to establish whether there is any change in the analytical values. Efforts are also being made to prepare fingerprints of single and compound drugs through chromatographic studies to make standardisation work more comprehensive.

There are six standardisation units functioning under the Council located at Chennai, Bangalore, Trivandrum, Tarikhet, Varanasi & Jamnagar. Only three units located at Chennai, Varanasi and Jamnagar are well equipped units. Other three units lack latest high precision equipment and tech. manpower. The Council has made fresh allocation of research

programmes and attempts will be made to modernise these labs and appoint tech. personnel to augment their research performance.

The Ministry has also allotted 10-12 single herbal drugs occurring in official Formularies of Ay., Siddha, Unani, Homoeo. to various organisations including a few to the Councils Units e.g. CSMMDRIA--Chennai, JNAMPG&H-Pune, CCRAS-Hqrs. Office, DSRP-Varanasi and Jamnagar.

Details of work done during 1998-99 by various Units located at Chennai, Bangalore, Trivandrum, Jamnagar and Varanasi are as follows:

### Standardisation of Single Drug

Bilva	<i>Aegle marmelos</i> Corrl. (Root)	RRIT
Paci	<i>Pogostemon heyneanus</i> Benth (Leaves)	"
Yava	<i>Hordeum vulgare</i> L. (Grain)	"
Cavya	<i>Piper retrofractrum</i> Vahl. (Fruit)	"
Pippali	<i>Piper longum</i> L. (Fruit)	"
Ardra	<i>Zingiber officinale</i> Rosc. (Rhizome)	"
Dhyanyak	<i>Corriadrum sativum</i> L. (Fruit)	"
Aswagandha	<i>Withania somnifera</i> Dun. (Root)	"
Usira	<i>Vetiveria zizanioides</i> Nash (Root)	"
Bala bheda	<i>Sida retusa</i> L. (Root)	"
Dhataki	<i>Woodfordia fruticosa</i> Kurz (Flower)	"
Citraka bheda	<i>Plumbago rosea</i> (Root)	"
Candana	<i>Santalum album</i> L. (Heart Wood)	"
Lavanga	<i>Syzygium aromaticum</i> (L.) Merr. (Flower)	"
Goksura	<i>Tribulus terrestris</i> L. (Fruit)	"
Patha bheda	<i>Cyclea peltata</i> Diels (Root)	"
Eranda	<i>Ricinus communis</i> L. (Root)	"

Nagadanti	<i>Croton oblongifolius</i> Roxb	"
<b>Pharmacognostic Study</b>		
Arjuna	<i>Terminalia arjuna</i>	DSRPJ, RRCB
Vanyajiraka	<i>Vernonia anthelmintica</i>	"
Madhuka	<i>Madhuca Indica</i>	RRCB
Arka	<i>Calotropis procera</i>	"
Tanduliya	<i>Amaranthus spinosa</i>	"
Sugnadhabala	<i>Pavonia odorata</i> Willd.	CMSMDRIAC
Pashana bheda	<i>Coleus amboinicus</i> Lour.	"
Amlavetasa	<i>Garcinia pedunculata</i> Roxb.	"
Patrasnuhi	<i>Euphorbia nivulia</i> Buch. Ham.	"
Vetasa	<i>Calamus thwaitesii</i> Becc.	"
Harmal	<i>Ciccus setosa</i> Roxb.	"
Ketaki	<i>Pandanus odoratissimus</i> Roxb.	"
Vanni	<i>Prosopis spicigera</i> L.	"
Panasa	<i>Artocarpus heterophyllus</i> Lamk.	DSRPV
	( <i>Artocarpus integrifolia</i> , L.)	"
Eranda Karkati	<i>Carica papaya</i>	"
Shlesmataka	<i>Cordia dichotoma</i>	"
<b>Physico-chemistry</b>		
Arjuna	<i>Terminalia arjuna</i>	DSRPJ
Vanyajiraka	<i>Vernonia anthelmintica</i>	"
Dadima	<i>Punica granatum</i>	"
Swarna patri	<i>Cassia angustifolia</i>	"
Vasa	<i>Adhatoda vasica</i>	"



Jatiphals	<i>Myristica malabarica</i>	RRIT
Ban haridra	<i>Curcuma aromatica</i>	"
Kareura	<i>Curcuma zeodaria</i>	"
Kancanara bheda	<i>Bauhinia racemosa</i>	DSRPV
Mahispitta		"
Mayur puccha		"
Sesmataka	<i>Cordia dichotoma</i>	"
Vasacandanadi taila		DSRPJ
<b>TLC study</b>		
<i>Adhatoda vasica</i>		DSRPJ
<i>Chitraka haritaki</i>		"
Vasa candanadi taila		"
<i>Pandanus odoratissimus</i> L.		CSMDRIAC
<i>Corallocarpus epigaeus</i> Clarke		"
<i>Acalypha fruticosa</i> Forsk.		"
<i>Pontederia vaginalis</i> Roxb.		"
Mahispitta		DSRPV
Varahapitta		"
<i>Artocarpus heterophyllus</i> lamk		"
<i>Cordia dichotoma</i> (GLC also)		"
Ashoka ghrita		"
Panchagavya ghrita		"
Karpasasthyadic taila		"

## Standardisation of Formulations

Sankha Bhasma	RRCB
Kapardika Bhasma	"
Sringa Bhasma	"
Pranada gutika	RRIT
Balarista	"
Cangeri ghrita	"
Prabhakara vati	"
Kusmanda rasayanam	"

## Histological work

<i>Ervatamia heyaneana</i> T. Cooke	RRIT
<i>Samadera indica</i> Gaertn.	"
<i>Knema attenuata</i> Warb.	"
<i>Bauhinia racemosa</i>	DSRPV

## Sample collection/Preparation

Reunka ( <i>Vitex negundo</i> -fruit)	DSRPJ
Nidigdhika ( <i>Solanum xanthocarpum</i> -root)	"
Brhati ( <i>Solanum indicum</i> -root)	"
Arjuna ( <i>Terminalia arjuna</i> -stem bark)	"
Vasa ( <i>Adathoda vasica</i> )	"
Kancanar ( <i>Bauhinia purpurea</i> - stem bark)	"

Vasacandanadi taila

"

Arjunarista

RRCB

**Metalic content of raw drug**

Lauha

DSRPJ

Abhraka

"

Kasisa

"

Svarna maksika

"

Svarna Gairika

"

**Standardisation of market samples**

Godanti

DSRPV

Mukta shukti

"

## **11. LITERARY RESEARCH PROGRAMME**

The Literary and Medico-Historical Research Programmes of the Council are being carried out at Indian Institute of History of Medicine, Hyderabad; Documentation and Publication Division, New Delhi and Literary Research Unit, Chennai.

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

The Institute for History of Medicine is devoted for study, research and publication in the field of history of all systems of medicine. The main stress is given to 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 treatise, collection of information from non-medical sources, archaeological, epigraphical material, hereditary physicians and other such related sources. The Institute maintains a Library and Museum of medico-historical importance and also publishes a bi-annual magazine viz., "Bulletin of Indian Institute of History of Medicine'

During the reporting period under biographical studies of commentators on classical treatise of Ayurveda and Unani physicians, material on 2 commentators had been compiled and articles have been prepared. Under the programme of search and collection of medical manuscripts/rare books of ISM, 22 old/rare books were collected. Material was compiled on different topics of Medico-historical value and 4 articles have been prepared. Research papers have been presented in different Conferences/Seminars and also sent for International Conference at Birmingham, England. Hindi translation of an manuscript entitled "Rasa Pradipika" has been completed.

Under the special allotment of "Revision of check-list of Medical Manuscripts in India", 165 index cards of catalogue/lists of two Institutions/Centres have been prepared.

## **2. Documentation and Publication Division New Delhi**

The Documentation Wing carried out programme of documenting information on Silajatu and some classical references were also added on Swarna (Gold), Rajat (Silver), Tamra (Copper), Vanga (Tin), Kamsya (Bronze), Pittala (Brass), Kasisa, Tankana (Borax), Gandhaka (Sulphur), Abhraka (Mica), Parad (Mercury), Yasada (Zinc) from Rasa Granthas and Nighantus. Besides this, references on Karavellaka, Nandi, Vata, Ulatkambal and Jalakumbhi have also been compiled.

The Documentation Section has also abstracted 108 research articles to enrich data base of research information on Ayurveda and Siddha. During the reporting period, 11 technical queries were replied by the Division.

The Library of the Division has procured 60 new books on Ayurveda, Siddha and allied sciences as per recommendations of Library committee. Besides, subscription of 3 foreign journals, viz. Planta Medica, Journal of Natural Product and Lancet, 22 Indian Journals were procured by the library related to Ayurveda and allied sciences.

Issue of CCRAS Documentation Bulletin, Vol. 19, No. 1-2, 1998 was prepared and mailed to Council's Institutions/Centres/Units.

Photographic coverage of the Mystique India - 1998, International Trade Fair, Perfect Health Mela - 98, Dhanwantari Jayanti Celebration and Literary Research Seminar organised by the Council at BHU, Varanasi, National Seminar on Rasayana at New Delhi and Expert Group Meet on Epidemics Control Programme held at New Delhi have been made.

Printing section has provided xerox copy of 25,120 impressions, page making - 5,392, Riso-printing- 9,58,078, duplicating service - 9,611 and binding/set making - 43,341 relating to H.Q. Office and DPD.

1634 Photos of Seminars/Drugs have been prepared and coloured films exposed - 1,224 besides 69 transparencies.

The Reprography Wing printed/reprinted following publications during the reporting year:

1. Ayurvediya Aushadhiyan Avam Samanya Gharelu Upachar, 2nd revised edition (Hindi Edition, 1998).
2. Swasthavritta (Hindi & English)
3. Research activities of the Council
4. Swasthya Raksha Ki Ausadhiyan (Hindi)
5. Key challenge & Directions for Ayurvedic contribution in the National Global contex (for expert group meeting).
6. Select Bibliography on Research in Ayurveda and Siddha
7. Research Papers regarding protocol.

The Publication Wing of the Division have published Newsletters for the period July to December, 1997, January - June, July - August, September - October and November-December, 1998. The issue of January-February, 1999 have also been released within the reporting period. Publication Wing has also brought out conjoined issues of volumes 17, number 1-2 & 3-4, 1996, Vol. 18, number 1-2 & 3-4, 1997 and Vol. 19, No., 1-2, 1998 of Journal of Research in Ayurveda and Siddha alongwith the conjoined issue of Bulletin of Ethno-Medico-Botanical Research Vol. 18, No. 1-2, 1997.

During this period monographs/folders, abstracts and souvenirs were also published as hereunder:

### **Monographs**

1. Abhinava Chintamani
2. Phamacognosy of Indigenous Drugs, Vol. III

3. Standard Ayurvedic Nomenclature of Ayurvedic Medicinal Plants.
4. Common Healing Herbs
5. Samanya Rogahar Vanasptiyan
6. Saral Siddha Vaidya Gharelu Upachar
7. Japnadodhwansa (Mahamari) Niyantrana Mein Ayurveda Ka Yogadan (Hindi edition).

#### **Monographs/Publications in the Press**

1. Ayurvedic Management of Arsa
2. Medicinal Plants of Nagpur & Wardha Forest Division
3. Ayurvedic Drugs in the Management of Cancer
4. Cultivation of Guggulu.

#### **Folders, Abstracts & Souvenirs**

1. Gau-Dugdha
2. Ano-rectal diseases
3. Panchakarma therapy way to perfect health
4. Pippalyadi Yoga
5. Activities of CCRAS
6. Abstract for the Seminar on Literary Research
7. Souvenir for the Seminar of Literary Research
8. Abstract for the National Seminar on Rasayana.
9. Souvenir for the National Seminar on Rasayana.

### 3. Literary Research Unit (Ayurveda), Chennai

The Units has collected xerox copy of the manuscript from Anna Hospital and pages were numbered and bounded in book form. A copy of the each book will be provided to the Hqrs. Office as early as possible.

This Unit has also conducted a survey tour to the Chandrasekharendra University's Library, Kancheepuram on 6.2.99. The information of the following important microfilms is gathered as given below:

S. No.	Catalogue No.	Name	Pages
1.	699	Vaidyakam	395
2.	798	Rasaratanakara	142
3.	855	Vaidya Nidhanam, Kasaya Varge	52
4.	857	Chikitsa Paddhati	333
5.	878	Vaidya Grahata Sivayoga Tatvam	308
6.	879	Vaidyagranth	338
7.	1279	Vaidyajnana and Some portions of Astanga hrdaya	185
8.	1345	Vyakhya Sara	257
9.	1567	Vaidya Ratnakara	240
10.	1632	Vaidyakam	240
11.	1920	Yoga Sangraha	425

Survey tours has also been conducted to Trichy, Madurai & Coimbatore, but at present they are not possessing any manuscript related to Ayurveda & Siddha and they have assured that whenever such information will be gathered, the same will be communicated to the Library, Chennai.



Dr. P.P.N. Bhattathiri, Asstt. Director (Ay.), ALRCA, Chennai has donated a Malayalam manuscript entitled "Bala Chikitsa" to the Library of the Unit. This manuscripts contains 43 pages.

## **12. AMCHI MEDICINE RESEARCH UNIT, LEH-LADAKH**

The Clinical Research Unit of Amchi System of Medicine is functioning under the Council at Leh-Ladakh. It is carrying out research under three broad heading viz.

- a) Literary Research
- b) Medicinal Plant & Mineral Research Work
- c) Clinical Research work

During the reporting period, Amchi Unit has surveyed and located 22 different texts of Ayurveda in 'Stan-gyur' which were translated into Tibetan between 8th-13th century A.D. by both Indian and Tibetan Scholars. Authorship of these texts are attributed to well-known Indian Scholars like Nagarjuna, Vagbhat etc. In future the Council may select through this Unit some important books on priority for translation in Hindi/Sanskrit and prepare critical edition of Ayurvedic classical books.

Under medicinal plant and mineral survey programme, the Unit conducted 3 survey tours to different areas of Ladakh during the reporting period viz.

- I) Mar-Youl-Sapi-Kargil
- II) Chang Thang (Pangong Lake, Tangtse, Sheshul, Chumathang)
- III) Choglamsar-Chushot and Shey areas

The Unit collected 25 important herbarium of Amchi medicinal plants from the areas surveyed during the period.

In its clinical activity, the Unit diagnosed patients according to Amchi system of medicines and treated their ailments by Amchi medicines. During

the reporting period, the Unit treated 1,679 patients out of which 1,421 were new patients.

In addition, the Unit participated in exhibitions held at Leh-Ladakh and Patna and presented herbarium sheets of Amchi herbs and Thankas of Amchi medicine system. The R.O. presented six papers at Seminars/Workshops and submitted two papers for publication during the reporting period.

### **13. FAMILY WELFARE RESEARCH PROGRAMME**

Programme of Family Welfare Research includes two main aspects viz. (1) Clinical trial of oral and local herbal-mineral formulation and single plant drugs and (2) Chemico-pharmacological studies including toxicological studies.

The Clinical trial are being conducted on females of child bearing age group (15-45 yrs.) for affirming the antifertility potentials of Ayurvedic drugs while on the other hand under the Chemico-pharmacological research, the effect of different extracts of plant drugs for their antifertility, antiimplantation, antiovaratory and estrogenic activities is being evaluated. Toxicological studies for evaluating their acute, sub-acute and chronic toxicological effects are being conducted.

#### **Clinical Studies**

Clinical evaluation of five drugs and drug combinations have been taken up at the Institute/Units functioning at Ahmedabad, Mumbai, Calcutta, Delhi, Jaipur, Lucknow, Chennai, 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 years, number of drop outs and number of cases continuing at the end of the reporting (separately for each drug) are reported in Table 1 & 2. The clinical evaluation of the drugs based on the studies of yester years is given in Table 3.

#### **Special Research Programme**

A special research programme to see the clinical efficacy of Pippalyadi Yoga has been started on the recommendations of the Committee chaired

by Professor Ranjit Rai Chowdhury, N.I.I., New Delhi, at the following places recently :

1. PGI, Chandigarh under Dr. Sarla Gopalan
2. JIPMER, Pondicherry under Dr. Asha Umachigui
3. Kamla Nehru Hospital, Allahabad under Dr. Raj Baweja

### **Chemico-Pharmacological Studies**

Chemico-Pharmacological studies were carried out at Bhubaneswar, Jamnagar, Trivandrum, Varanasi and Toxicological studies at Jhansi and C.R.I.A., Mumbai (Pippalyadi Yoga):

1. Madar (*Calotropis procera*)
2. Papaya seed (*Carica papaya*)
3. Kosataki (*Luffa acutangula*)
4. Vasa (*Adhatoda vasica*)
5. Bahuphali (*Corchorus depressus*)
6. Tejraj (*Cynoglossum glochidium*)
7. Pippalyadi Yoga (Vidanga, Tankan & Pippali)
8. Gritha Kumari (*Aloe barbadensis*)
9. Puga (*Areca catechu*)

#### **1. Madar (*Calotropis procera*)- leaves .**

**PhRUFV**

Preliminary trial conducted with petroleum-ether and ethanol extracts, indicated a significant antifertility effect with 200 mg/kg. On the basis of preliminary trial and result obtained, Unit is planning to test the antifertility activity using other methods.

**2. Papaya (*Carica papaya*)- seed. PhRUFV**

For preliminary studies seed extracted by using ether for experimental screening. Higher doses showed encouraging antifertility effect.

**3. Kosataki [*Luffa acutangula* (Linn.) var *Amara*] PhRUFJ**

The decoction of the whole plant was evaluated for its effect on spermatogenesis in young male rats.

The test decoction did not affect on sperm count and sperm motility significantly at the dose level studied (equivalent to 1330 mg/kg of crude drug). It also did not effected the weight of testis, seminal vesicle and ventral prostate.

Histological studies showed features of moderate stimulation in seminal vesicles of test drug treated group. No modulatory changes could be observed in testis and ventral

**4. Vasa (*Adhatoda vasica* )- Swarasa for Uterine stimulant effect  
PhRUFJ**

Vasa Swarasa (0.1 ml. of 1: 100 solution/40 ml bath fluid) produced uterine stimulant effect in isolated uterus preparation obtained from oestrogen primed young female rats. Shortening of latency of onset of parturition was observed in Swarasa administered mice, in full pregnancy in comparison to control pregnant mice.

**5. Bahuphali (*Corchorus depressus*) PhRUFJ**

The test drug was evaluated for different biological activities including spermatogenesis modulation effect in young male rats. The test drug did not effect sperm count. The drug did not effect the weight of testis and seminal vesicle. Significant decreases in weight of ventral prostate was observed. The drug was found to be devoid of anxiolytic, antidepressant, sedative and

analgesic effects. The drug showed weak adaptogenic effect. Toxicological screening showed elevation of blood urea level.

#### **6. Tejraj (*Cynoglossum glochidium*)**

**PhRUFJ**

Significant increase in the percentage of activity motile sperm was observed. Histopathological study revealed presence of moderate fatty degeneration changes in the liver obtained from Tejraj administered group.

#### **7. Ghritha kumari (*Aloe barbadensis*)**

**PhRUFT**

Leaf juice supplied by R.R.I., Trivandrum was used for the study.

Anti-implantation activity - Alcohol extract was given orally in doses of 2ml and 5ml /100g body wt. from D1 to D10 of pregnancy. Ovary was examined for the presence of Corpus luteum (C.L.). Number of pups born out were noted and examined for abnormalities. Study is in progress using higher doses.

#### **Observation**

With a dose of 2ml/100gm body wt., there was anti-implantation activity of 40% with regressed implants. But at 5 ml/100gm, there was 65% effect.

#### **8. Puga (*Areca catechu*)**

**PhRUFT**

Aqueous extract of the fruit powder was used for the study.

#### **Actute toxicity**

No toxicity seen upto 500mg/100gm. But at 1000mg/100gm there was CNS effect suggestive of toxicity.

#### **Anti-implantation**

This was carried out as per WHO protocols using aqueous extract. No significant effect noticed upto 200 mg/100gm. But at 500mg/100gm body wt. there was 60% anti-implantation activity. Further studies are in progress.

**Table 1**

**Statement of the cases studied for clinical evaluation of the contraceptive agents during, 1998-99**

Name of drug	Centre	Cases Studied			Number of Drop out cases					Cases continuing
		New	Old	Total	Drug Failure	Drug Ommission	Side effect	Other reason	Total	
AYUSH AC - 4	Lucknow	27	90	117	-	-	-	-	52	54 (11 cases completed study)
	Trivandrum	51	-	51	-	-	-	11	11	40
	Calcutta	18	19	37	-	2	1	13	16	21
	Patiala	28	14	42	-	5	2	18	25	17
	Mumbai	16	55	71	7	-	-	1	8	63
	Jaipur	55	-	55	-	19	26	-	55	-

Note : RRI Lucknow - 11 cases completed 36 cycles out of 117 cases (52 drop out reason not indicated in the report).

Jaipur : Previous report indicated 46 cases under follow-up but this year report shows majority of cases left study due to nausea, giddiness etc.



**Table 2**

**Statement of the cases studied for clinical evaluation of oral contraceptive agents**

Name of drug	Centre	Cases Studied			Number of Drop out cases					Cases continuing
		New	Old	Total	Drug Failure	Drug Omission	Side effect	Other reason	Total	
Pippalyadi yoga	Ahmedabad	31	63	94	-	1	-	18	19	75
	Calcutta	26	19	45	2	-	-	16	18	27
K.Capsule	Varanasi	36	Nil	36	-	-	-	-	-	36
Vandh-yavari	Mumbai	300	960	1260	59	-	-	-	59	1201
Neem Taila	Delhi	39	52	91	1	3	-	17	21	46 (24 cases completed study)

Neem Taila : 24 cases completed study under this trial for temporary sterility. It shows 90% effect as a local contraceptive.

**Table 3**  
**Statement of the cases studied for clinical evaluation of oral  
 contraceptive agents**

Drug formulations	Drug Analysed		Drug yet to be analysed	
	Number of women studied	Total number of women cycles studied	Number of women studied	Total number of cycles studied
1. K-capsule Japakusum ( <i>Hibiscus rosa sinensis</i> )	776	20,344 (Max. cycle followed 103)	565	
2. J-capsule (Vidanga Beeja)	88	851 (Max. cycles followed 36)	Nil	These data are yet to be compiled or analysed
3. Ayush AC-IV	4,073	35,615 (Max. cycles followed 36)	2151	
4. Pippalyadi yoga				
Group I	861	8,607		
Group II	811	8,607	606	
5. Neem Oil	43	450	220	

**Results**  
**(Pearl Index-Hundred Women years - HMY)**

Details	Oral contraceptive				I.V. Application	
	K-capsules	J-capsules	Ayush -AC-IV	Pippalyadi yoga		Neem oil
				Gr. I	Gr. II	
Due to Drug failure	2.86	0	5.59	8.09	3.52	0
Due to patient failure	1.11	0	7.62	0.55	6.48	4.6
Combined (I + II)	3.97	0	13.21	8.64	10.00	4.6

## 14. PUBLICATIONS AND PARTICIPATIONS

### I. PUBLICATIONS

Sl. No,	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
<b>A. CLINICAL AND BASIC RESEARCH</b>				
1.	Acharya, M.V.	Clinical study of Kiratatikatadi Yoga on Kitibha (Psoriasis).	J.R.A.S., Vol. XVII (No. 1 & 2), 26-34 1996	1998
2.	Bharti & Mishra, A.	Agni Vimarsha.	Ayurvedic Mahasammelan Patrika, Part-9, September, 1998	1998
3.	Bhatia, D.	Role of Ayush-64 in Malaria Epidemic.	J.R.A.S., Vol. XVIII (No. 1 & 2), 71-76, 1997	1998
4.	Bikshapathi, T. <i>et al.</i>	Clinical evaluation of <i>Picrorhiza kurroa</i> in the management of chronic obstructive airway disease.	J.R.A.S., Vol. XVII (No. 3-4), 126-148, 1996	1998
5.	Gupta, S. <i>et al.</i> ,	A comparative conceptual study of Yoni Vyapad with special reference to Shothaj Yoni Roga	Ayurvedic Maha Sammelen Patrika, March, 1999	1999

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
6.	Jadhav, A.D.	Amlapitta, Vrana (Ulcer)- Ek Samshodhanatmak Drishtikona.	Ayu, 1998	1998
7.	Kumar, N & Kumar, A.	Effect of Sphatika in the management of Tundikeri (Tonsillitis-streptococcal infection).	J.R.A.S., Vol. XVII (No. 3-4), 149-156, 1996	1998
8.	Kumar, N. & Kumar A.	A comparison of different drug schedules under different groups of Grahani Roga.	J.R.A.S., Vol. XIX (No. 3-4), 79-88, 1998	1998
9.	Kumar, N. & Kumar A.	Evaluate the effect of K.B.J. 1000 in the management of Grahani Roga.	J.R.A.S., Vol. XVIII (No. 1-2), 38-46 1997	1998
10.	Madhavikutty, P. <i>et al.</i>	Comparative clinical study on Musta, Aswagandha and Panchakarma therapy in Amavata (Rheumatoid arthritis).	J.R.A.S., Vol. XVIII (No. 1-2), 1-10, 1997	1998
11.	Nanda, G.C. <i>et al.</i>	Nishamalaki in Madhumeha : A clinical study.	J.R.A.S., Vol. XIX (No. 1-2), 34-40, 1998	1998
12.	Nair, P.K.S. <i>et al.</i>	Role of Panchakarma in the management of Pakshaghata (Hemiplegia).	J.R.A.S., Vol. XIX (No. 1-2), 22-33, 1998	1998
13.	Nair, P.R.C. <i>et al.</i>	Management of Post Polio residual paralysis with certain Ayurvedic formulations.	J.R.A.S., Vol. XVIII (No. 1-2), 11-20, 1997	1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
14.	Nair, P.R.C. <i>et al.</i>	Management of Post residual paralysis with Balaswagandha Lakshadi Taila and Shashitikasali, Pinda Sweda.	J.R.A.S., Vo. XVII (No. 3-4), 113-125, 1996	1998
15.	Padhi, M.M. <i>et al.</i>	Study of the effect of two formulations made with the plant <i>Lygodium flexuosum</i> Sw. as local application in the cases of Vichrachika (Eczema).	J.R.A.S., Vol. XIX (No. 1-2), 9-21, 1998	1998
16.	Pillai, N.G.K. <i>et al.</i>	Management of Psoriasis by Aragvatha Satapaka Ghrita.	J.R.A.S., Vol. XVII (No. 1-2), 35-44, 1996	1998
17.	Sehrawat, D. <i>et al.</i> ,	The clinical studies on contraceptive effect of Nimba taila.	J.R.A.S., Vol. XIX (No. 1-2), 1-8, 1998	1998
18.	Shahi, V.K. & Kishore, P.	A review of clinical studies on Pama and Vicharchika.	Ayurveda Mahasammelan Patrika, January, 1999	1999
19.	Sridhar, B.N. <i>et al.</i>	Study on Kuposhana (Malnutrition) in school children and its treatment with Bala Poshaka churna.	Aryavaidyan, Vol. XI (No. 2), 1998	1998
20.	Swamy, G.K. <i>et al.</i>	Clinical evaluation of Sirisa Twak Kwath in the management of Tamak Shwasa (Bronchial asthma).	J.R.A.S., Vol. XVIII (No. 1-2), 21-27, 1997	1998
21.	Swamy, G.K.	Retinitis Pigmentosa-A case study.	Manphar Vaidya Patrika, Vol. I, Issue No. II, June, 1998	1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
22.	Swamy, G.K. & Bhattathiri, P.P.N.	Vatari Guggulu and Maharasa Nadi kwatha in the management of Amavata -A clinical study.	J.R.A.S., Vol. XIX (No. 1-2), 41-48, 1998	1998
23.	Tripathi, K. & Upadhyay, L.	Clinical evaluation of Dashmool in various neurological disorders.	J.R.A.S., Vol. XVII (No. 1-2), 85-90, 1996	1998
24.	Uniyal, M.R.	Ayurveda Avum Yoga Dvara Pachanavah Sansthan Ke Rogaon Ka Upachar.	Ayurveda Mahasammelan Patrika, September, 1998	1998
25.	Uniyal, M.R.	Vatavyadhiyon Mein Amavata Chikitsa.	Sachitra Ayurveda, September, 1998	1998
26.	Uniyal, M.R.	Shakhagata Tvak Roga Dadru-Viverchika Kitibha Ka Sepekshya Nidan Avum Ayurvediya Chikitsa.	Sachitra Ayurveda, March, 1999	1999
27.	Upadhyay, L. & Tripathi, K.	Serum and Urinary Sodium profile after surgery in obstructive uropathy with hypertension.	N.C.I.S.N., 1999	1999
<b>B. HEALTH CARE RESEARCH &amp; ETHNO-MEDICINE</b>				
28.	Badhe, P.D. <i>et al.</i>	Rare folk medicine practiced by Gond tribes of Wadsa forest division, Gadchiroli Dist. (Maharashtra).	B.M.E.B.R., Vol. XVIII (No. 1-2), 12-17, 1997	1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
29.	Bharti	Promotion of Mental Health (A review).	J.R.A.S., Vol. XVIII (No. 3 & 4), 132-140, 1997	1998
30.	Shetty, B.R. <i>et al.</i>	Studies on the Rasayana Effect of Geriatric Formulation in apparently normal aged persons.	J.R.A.S., Vol. XVIII (No.3-4), 108-117, 1997	1998
<b>C. DRAVYA-GUNA, MEDICO BOTANICAL SURVEY &amp; CULTIVATION</b>				
31.	Billore, K.V. <i>et al.</i>	Interesting Folk remedies by the 'Lok Vaidyas' of Rajasthan for 'Swas Roga'.	Ethnobotany : 10 : 42-45, 1998	1998
32.	Billore, K.V.	On the occurrence of <i>Triumfetta tungarensis</i> Billore in Nepal and other parts of India.	Journ. Ind. Bot. Soc. 2(2), 98	1998
33.	Dwarakan, P & Alagaesaboopathy, C.	Ethno-Veternary studies on Kolli Hill Tamil Nadu.	Flora & Fauna, June, 1996	July, 1998
34.	Dwarakan, P. & Alagaesaboopathy, C.	Biological spectrum of Kolli Hills, Eastern Ghats, Salem Dist., Tamil Nadu.	Journal Living World, December, 1998	1998
35.	Dwarakan, P. & Ansari, A.A.	Studies on the fern, flora of Kolli Hills, Eastern Ghats, Salem Dist. Tamil Nadu.	Journal Living World, December, 1998	1998
36.	Hemadri, K. <i>et al.</i> ,	Medico-Botanical Exploration of Phulabani and Koraput Dists. of Orissa.	Monograph	22.2.1999

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
37.	Joshi, G.C. <i>et al.</i>	Ethno-medico-botanical studies on the fungi of Kumaun Himalaya (U.P.).	B.M.E.B.R., Vol. XVIII (No. 1-2), 30-34, 1997	1998
38.	Majumdar, R. & Bharali, B.K.	Medicinal Plants from Chandel, Churachanpur, Ukhrul forest area of Manipur State, Part-I.	B.M.E.B.R, Vol. XVIII (No. 1-2), 35-42, 1997	1998
39.	Nair, K.V. <i>et al.</i>	Evaluation of South Indian Market Samples of Pippali.	B.M.E.B.R., Vol. XVIII (No. 1-2), 43-50 1997	1998
40.	Prusty, A.B. & Murthy, K.S.	Plight of <i>Salvadora persica</i> (Pilu) in Bhitara Kanika National Park, Orissa.	Journal Orissa Botanical Society, December, 1998	1998
41.	Rawat, M.S. <i>et al.</i>	Important medicinal plants of Arunachal Pradesh : Collection and utilisation.	Vikas, No. II, 115-119, 1998	1998
42.	Rawat, M.S. <i>et al.</i>	Notes on the Ethno-botany of the Monpa tribe of Tawang Distt., Arunachal Pradesh.	B.M.E.B.R., Vol. XVIII (No. 1-2), 1-11, 1997	1998
43.	Uniyal, M.R.	Lalitpur Janpada Mandavara Vanakshetra ki Jarhi-Butiyan Avum Lok Prachalit Prayog.	Ayurveda Mahasammelan Patrika, April, 1998	1998
44.	Vasudevan, P. <i>et al.</i>	Soil fertility status of Kanja Malai Hill, Tamil Nadu.	Madras Agri. Journal, September, 1997	1998



Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
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**D. PHARMACEUTICAL, PHARMACOGNOSTICAL AND CHEMICAL RESEARCH**

45.	Alam, M.M. <i>et al.</i>	Physio-chemical changes in Murchana Taila and Balawsagandhalaksadi Taila on Abhyanga.	J.R.A.S., Vol. XVIII (No. 3-4), 147-154, 1997	1998
46.	Alam, M.M. <i>et al.</i>	Standardisation of studies on Ksirabala Tailam.	Arya Vaidyan, Vol, XI, 164-167, 1998	1998
47.	Banerji, J. <i>et al.</i>	A new dimeric coumarin from <i>Boennighausenia albiflora</i> .	Indian Journal-Chemistry, 37B, 523, 1988	1998
48.	Dennis, T.J.	A success story of Taxol-New drug for Cancer.	Herbal Bulletin II(1), 4-6, 1998	1998
49.	Dennis, T.J. & Kumar, K.A.	Constituents of <i>Mesua ferrea</i> Linn.- Review Article.	Fitoterepia, Vol. LXIX (4), 291-304, 1998	1998
50.	Jadhav, A.D.	Pippali	Sachitra Ayurveda, May, 1998	1998
51.	Jadhav, A.D.	Yastimadhu	Ayurveda Mahasammelan Patrika, 1998	1998
52.	Jadhav, A.D.	Eranda	Tarun Bharat, Ayurveda Special, 1998	1998
53.	Jadhav, A.D.	Ayurvediya Aushadhikaran Mein Upayukta 20 Mahatvapurna Vanaspatiyan.	Ayurveda Mahasammelan Patrika, March, 1999	1999

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
54.	Mallick, B. <i>et al.</i>	Occurrence of Triacontanolic acid esters and a coumarin in root-bark of <i>Randia dumetorum</i> Lam.	J. Indian Chemical Society, 75, 111, 1998	1998
55.	Mandal, S. <i>et al.</i>	Drug value of <i>Swertia chirata</i> and its Phyto-constituents.	B.M.E.B.R., Vol. XVIII (No. 1-2): 82-88, 1997	1998
56.	Mathuram, V. <i>et al.</i>	13 C-NMR assignments of Gardenin-A.	Fitoterapia, Vol. LXIX, No. 2, 1998	1998
57.	Rao, P.P. <i>et al.</i>	Pharmacognostic study on stem-bark of <i>Moringa oleifera</i> Lam.	B.M.E.B.R., Vol. XVII (No. 3-4), 141-151 1996	1997
58.	Vasanth, S. & Ahmed, A.	6-Hydroxyluteolin 7, 3-dimethylether from <i>Pentenema indicum</i> .	Fitoterapia, Vol. LXIX No. 2, 1998	1998
<b>E. PHARMACOLOGY</b>				
59.	Bharti <i>et al.</i>	Hypoglycaemic activity of <i>Melia azadirachta</i> Linn. Bark.	J.R.A.S., Vol. XVII (No. 3-4), 162-168, 1996	1998
60.	Bharti <i>et al.</i>	Studies on hypoglycaemic activity of Shilajeet and Yashada Bhasma.	J.R.A.S., Vol. XIX (No. 1-2), 64-67, 1998	1998
61.	Chowdhary, D.P. <i>et al.</i>	Hypoglycaemic effect of hypoglycaemic formulations of AYUSH-82.	J.R.A.S., Vol. XIX (No. 3-4), 107-115, 1998	1998
62.	Nair, R.B. <i>et al.</i>	Hepatoprotective effect of Gudapippali Vasa Guluchyadi, Arkom, Patolapaturohinyadi Arkom, Drakshadi Arkom and Madantha Decoction on rats - A comparative study.	J.R.A.S., Vol. XIX (No. 1-2), 49-58, 1998	1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
63.	Ravishankar, B. <i>et al.</i>	Investigations on Ayurvedic drugs preparation for anti-venom activity - A preliminary screening.	J.R.A.S., Vol. XVII (No. 3-4), 169-179, 1996	1998
64.	Singh, R.K. <i>et al.</i>	Anti-inflammatory evaluation of some traditional medicinal plants - A preliminary study.	Ancient Science of Life, 1998	1998
65.	Singh, R.K. <i>et al.</i>	Pharmacological action of <i>Abies pindrow</i> leaf.	Indian Journal Exp. Biol. (36) 187-191, 1998	1998
66.	Singh, R.K. <i>et al.</i>	Pharmacological activity of <i>Elaeocarpus sphaericus</i> .	Phyto-therapy Research, 1999	1999

66

#### F. LITERARY & MISCELLANEOUS

67.	Alam, M.M. & Rama Rao, B.	Religious practices in South India to cure diseases.	Bulletin I.I.H.M., Vol. XXVIII (No. 1), 1-5, 1998	1998
68.	Kishore, P. <i>et al.</i>	Descriptive catalogue of Ayurvedic Manuscripts of Orissa.	Monograph	22.2.1999
69.	Kumari, K. <i>et al.</i>	Manava Ki Seva Mein Samudraj Sampada.	Vishwa Ayurveda Patrika, Vol. XIX, (No. 3-4), 1998	1998
70.	Narayana, A.	Medical manuscripts in Sri Venkateshware University Oriental Research Institute, Tirupati, Andhra Pradesh.	Bulletin I.I.H.M., Vol. XXVIII (No. 1), 85-94, 1998	1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
71.	Venkata Rama Raju, K. & Ali, M.	Dawn of Ayurveda during the Reign of Nizam VII of Hyderabad.	Bulletin I.I.H.M., Vol. XXVIII (No. 1), 67-84, 1998	1998
72.	Uniyal, M.R.	Ayurvediya Ausadhiyon Avum Jarhi-Butiyon Ke Patent Ke Sandarbha Mein Sujhab Avum Parinam.	Sachitra Ayurveda, April, 1998	1998
73.	Uniyal, M.R.	Patent Kanoon Ke Bhavi Dusparinam.	Sachitra Ayurveda, July, 1998	1998
74.	Uniyal, M.R.	Navograho Avum Nakshatron Ke Adhara Par Yagya Samidha Avum Paryavarana Saranskhana.	Sachitra Ayurveda, December, 1998	1998
75.	Uniyal, M.R.	Madak Dravyo Ke Prayog Se Haniya Avum Nashamukti Ke Upaya.	Ayurveda Mahasammelan Patrika, March, 1999	1999

## II. PARTICIPATION

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
<b>A. CLINICAL AND BASIC RESEARCH</b>			
1.	Acharya, M.V. & Uniyal, M.R.	Clinical effect of DGM along with Panchakarma as a promotor of complexion and lustre in Psoriasis universalis.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
2.	Babu, G. & Bhattathiri, P.P.N.	Pathyapathya Vicharana in the management of Amavata.	National Seminar conducted by Sastrajna Parishad at Chennai, 14-15/11/1998
3.	Bajwa, R.M.S. <i>et al.</i>	The effect of the LVM on Diabetes mellitus (Madhumeha) as a promotor of specific vitality.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
4.	Bharti <i>et al.</i>	Background note for Expert Group Meet upon Epidemic Control.	Expert Group Meet upon Epidemic Control, CCRAS, New Delhi, 11-12/3/1999
5.	Bikshapati, T. & Kumari, K.	Clinical evaluation of <i>Withania somnifera</i> (Linn.) Dunal in the management of Rheumatoid arthritis.	Seminar on efficacy of Ayurveda in Management of Amavata (Rheumatoid arthritis) and its complications, held at CRI, Bhubaneswar, 14th May, 1998
6.	Chopra, K.K.	Treatment of Bhagandara (Anal-Fistula) with Kshara Sutra.	Seminar on Ayurveda organised by Asiatic Society, Calcutta, 20.1.1999
7.	Chopra, K.K. <i>et al.</i>	Comparative evaluation of the efficacy of various combinations of herbal and herbo-mineral medicines in the management of Amavata.	Silver Jubilee National Seminar on Amavata organised by the CCRAS held at CRI (Ay.). Bhubaneswar, 14.5.1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
8.	Ghosh, S. <i>et al.</i>	Treatment of chronic disease Fistula-in-ano.	Seminar at PGTRA, Gujarat Ayurved University, Jamnagar, 20-21/7/1998
9.	Gopakumar, K. <i>et al.</i>	Studies on Kuposhana (Malnutrition) with special reference to Kamyra Rasayana and its treatment with <i>Aswagandhadi Lehya</i> .	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
10.	Gopal, R.H.	Immunosuppression in AIDS and other conditions.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
11.	Gurmet, P.	Amchi Medicine in Ladakh.	Doordarshan, Srinagar Camp, Leh, November, 1998
12.	Gurmet, P.	Arthritis.	Amchi Training Programme by Ladakh Amchi Sabha & NOMAD Health & Education, Leh, 27.10.1998
13.	Gurmet, P.	Concept of Humours.	Amchi Training Programme by Ladakh Amchi Sabha & NOMAD Health & Education, Leh, 22.10.1998.
14.	Gurmet, P.	Gout.	Amchi Training Programme by Ladakh Amchi Sabha & NOMAD Health & Education, Leh, 27.10.1998
15.	Kishore, P. <i>et al.</i>	Further studies of the effect of Sunthi-Guggulu and Baluka Sveda in the management of Amavata.	Silver Jubilee National Seminar on Amavata organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
16.	Kumar, A.	Sothahar Dravyo Ke Anushandhan Ka Sanksipta Paricharya Evum Amavata Chikitsa Mein Kuchh Yogon Ka Parikshana.	National Conference on Anti-inflammatory & anti-bacterial Ayurvedic drugs organised by National Academy of Ayurveda, New Delhi, 14-15/3/1999
17.	Kumar, A. <i>et al.</i>	The consortium to establish Rasayan therapy against Alzhimers disease.	National Seminar on Rasayana, CCRAS, New Delhi, 8-10/3/1999
18.	Kumar, R. <i>et al.</i>	Sodium homeostasis in hypertension with special reference to obstructive uropathy.	Published in Hypertension Society of Indian, Calcutta, 16-20/1/1999
19.	Kumar, S. <i>et al.</i>	The Role of Panchakarma and certain Ayurvedic medicines in the management of Amavata.	National Seminar on Amavata held at CRI (Ay.), Bhubaneswar, 14-15/5/1999
20.	Jadhav, A.D.	Articles on AIDS.	AIDS Souvenir, 26-28/2/1999
21.	Jadhav, A.D.	Evolving Protocol of R.A.	Seminar at Bhubaneswar, 29-30/4/1999
22.	Madhavikutty, P. <i>et al.</i>	Comparative clinical study of Musta, Aswagandha and Panchakarma therapy in Amavata.	National Seminar on Amavata held at CRI (Ay.), Bhubaneswar, 14-15/5/1998
23.	Malviya, N.K.	HIV/AIDS: Ayurvedic and Adhyatmik Treatment.	CRI (Ay.), Mumbai, 1/12/1998
24.	Malviya, N.K.	The effect of Raktachap on Urdhawajatu.	Seminar on Raktachap, Herbal Academy at CRI (Ay.), Mumbai, 22.2.1999

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
25.	Mishra, A.K. & Maity, S.K.	Efficacy of Ayurvedic drugs in the management of Amavata (Rheumatoid arthritis).	Seminar/Workshop on Efficacy of Ayurvedic drugs in the management of Amavata, CRI (Ay.), Bhubaneswar, 14-15/5/1998
26.	Mukundan, H. <i>et al.</i>	Psychological management -An Ayurvedic view.	25th National Annual Conference of the Indian Association of Clinical Psychology held at NIMH&NS, Bangalore on 11-13/1/1999
27.	Nair, A.R. <i>et al.</i>	Therapeutic trial of Mahayograj Guggulu, Sinhanand Guggulu and Vaiswanar Churna in Amavata.	Silver Jubilee National Seminar on Amavata organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998
28.	Nair, A.R. <i>et al.</i>	Use of steroids in the management of Rheumatoid arthritis.	Silver Jubilee National Seminar on Amavata, organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998
29.	Nanda, G.C. <i>et al.</i>	Differential diagnostic criteria of some specific joint diseases in Ayurveda vis-a-vis Amavata.	Silver Jubilee National Seminar on Amavata, organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998
30.	Padhi, M.M. <i>et al.</i>	Incidence of joint diseases with special reference to Amavata in and around Bhubaneswar.	Silver Jubilee National Seminar on Amavata, organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998
31.	Prabhakarana, V.A.	Raktamokshana and its importance in the management of chronic diseases in connection with Panchakarma.	Panchakarma Training Programme for Srilankan Physicians held at IIP, Cheruthuruthy, 17-18/11/1998



Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
32.	Prabhakaran, V.A. & Nagalakshmi, V.	Amasaya Prakshalana in Parinamasula.	National Ayurvedic Seminar organised by Vagbala Saran held at Kochi, 23.8.1998
33.	Sahu, D.P.	Current Advancements in the laboratory methods for diagnosis of leprosy.	Seminar organised by Lutheran World Services (India) at Calcutta, 23.7.1998
34.	Sahu, D.P.	Diagnosis of sexually transmitted diseases (STDs).	Seminar organised by Lutheran World Services (India) at Khariar, Dist. Naupura, Orissa, 3.12.1998
35.	Sahu, D.P.	Laboratory diagnosis of Malaria.	Seminar organised by Lutheran World Services (India) at Khariar, Dist. Naupura, Orissa, 2.12.1998
36.	Sahu, D.P.	Laboratory diagnosis in tuberculosis.	Seminar organised by Lutheran World Services (India) at Calcutta, 21.7.1998
37.	Sahu, D.P. <i>et al.</i>	Significance of investigations in Rheumatoid arthritis.	Silver Jubilee National Seminar on Amavata (Rheumatoid arthritis) organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998
38.	Sharma, B.R. <i>et al.</i>	Rejuvenative effect of 'VPK' along with 'SPR' on Bronchial asthma.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
39.	Singh, D.N.	Asthma Aur Ayurveda (Hindi-talk).	All India Radio, Gangtok, 12.2.1999
40.	Singh, D.N.	Ritu Prabhav Avum Ayurveda.	All India Radio, Gangtok, 10.12.1998.
41.	Sridhar, B.N. <i>et al.</i>	A study on Guduchi Rasayana along with Adraka Khanda in the management of Sheeta Pitta.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
42.	Swamy, G.K. & Bhattathiri, P.P. N.	Clinical trial of Varari-Guggulu and Maharasanadi Kwatha in the management of Sandhivata (Oseteo arthritis).	National Seminar conducted by Satrajne Parished held at Chennai, 14-15/11/1998
43.	Swamy, G.K. & Bhattathiri, P.P.N.	Vatari Guggulu and Maha Rasanadi Kwath in the management of Amavata -A clinical study.	Seminar on Amavata held at CRI (Ay.), Bhubaneswar, 14-15/5/1998
44.	Tripathi, K.	Clinical profile of leptospirosis.	Ranbaxy Round Table Conference, New Delhi, 1998
45.	Tripathi, K.	Recent trends in hypertensive disorders of pregnancy.	Joint Annual Conference of East India Chapter of API and Bihar, 1998
46.	Tripathy, K. <i>et al.</i>	Effect of ACE Inhibitor of GER in diabetic nephropathy.	Souvenir of Sixth International Symposium on Urology, Karachi (Pakistan), 16-18/11/ 1998
47.	Tumane, H.H.	Evolving a protocol of Rheumatoid arthritis.	Workshop of Amavata, CRI (Ay.), Bhubaneswar, 14-15/5/1998
48.	Upadhyaya, L. & Tripathi, K.	Antilipidaemic action of herbal compound (Lipan) is ischaemic and non-ischaemic heart disease with diabetic nephropathy.	International Symposium on prevention of Coronary Artery Disease, University college of Medical Sciences & GTB Hospital, Delhi, 27-29/ 11/1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
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**B. HEALTH CARE RESEARCH AND ETHNO-MEDICINE**

49.	Bharti <i>et al.</i>	A brief note upon Vardhakya and Rasayana.	Presented at Chinmaya and Vanaprastha Sansthan, Lodhi Road, New Delhi, 28.3.1998
50.	Billore, K.V.	On the status of raw drugs.	Ist National Symposium on "Ayurvedic drug Industry : Challenges of today & Tomorrow" organised by ADMA. 1998
51.	Billore, K.V.	Role of Herbal garden in education and Research.	National Seminar on Medicinal Plants Resources Development at Guj. Ayurved University, Jamnagar, Ahmedabad, 4-5 Oct. 1998
52.	Billore, K.V.	Fast depleting Medicinal Plant Wealth -An alarm of Nature	National Seminar on "Sustainable Usage of Medicinal Plants", at India International Centre, New Delhi, organized by Centre for Env. & management study, 1999.
53.	Dwarakan, P.	Dynamics of a flora and fauna diversity in the mangroves of Nizam patnam Guntur Dist.-A biological study.	Conference on Biological and Bio-technical Remedies to Environment Pollutions at Vellore, Tamil Nadu, December, 1998.
54.	Gurmet, P.	Fundamental of Tibetan Medicine and its Pharmacology.	5th International Congress on Ethno-Pharmacology, Thiruvananthapuram, Kerala, India, 20.3.1999
55.	Jukar, S.R.	A lecture on Family Welfare.	Kamgar Kalyan Kendra, Maharashtra State, Worli, Mumbai, 11.7.1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
56.	Kumar, S. <i>et al.</i>	Research trends on Amavata (Rheumatoid arthritis).	National Seminar on Amavata held at CRI (Ay.), Bhubaneswar, 14-15/5/1998
57.	Narayana, A.	Role of traditional dietetics : Promotion of positive health.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
58.	Rao, M.M. <i>et al.</i>	The role of surgery in the management of Amavata.	Silver Jubilee National Seminar on Amavata organised by the CCRAS, held at CRI (Ay.), Bhubaneswar, 14.5.1998
59.	Sahu, D.P.	Health management and health information systems.	Seminar organised by Xavier's Institute of Management, Bhubaneswar, 3.12.1998
60.	Thirunavakkarasu, S.	Kayakalpa (Rasayana therapy) in Siddha System of Medicine.	National Seminar on Rasayana, CCRAS, New Delhi, March. 8-10, 1999
61.	Uniyal, M.R.	Effective Ayurvedic medicinal plants used in Rasayana therapy.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
62.	Yoganasimhan, S.N. & Venkataram, B.S.	Evaluation of Rasayana drugs of Karnataka vis-a-vis Charaka Samhita in Karnataka.	National Seminar on Rasayana organised by the CCRAS, held at New Delhi, 8-10/3/1999
<b>C. DRAVYA GUNA, MEDICO BOTANICAL SURVEY &amp; CULTIVATION</b>			
63.	Alagaeasboopathi, C. <i>et al.</i>	Biodiversity of Indian medicinal Plants.	National Conference on Biological & Bio-technical Remedies to Environment Pollutions at Vellore, Tamil Nadu, December, 1998.
64.	Dwarakan, P. & Subramaniam, P.	To conserve the orchids cultivating scientifically, National Orchidarium, Salem Dist., Tamil Nadu.	National Conference on Biological & Bio-technical Remedies to Environment Pollutions at Vellore, Tamil Nadu, December, 1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
65.	Gurnet, P.	Herbs and Herbal Medicine of Ladakh and Himalayas.	South East Asian Seminar and Herbs and Herbal Medicine, 10.1.1999
66.	Singh, P.B.	Commerically important medicinal plants of Himachal Pradesh.	Workshop on Himalayan Medicinal Plants organised by G.B. Pant Instt. of Himalayan Environment and Development, Almora, 5-7/11/1998

**D. PHARMACEUTICAL, PHARMACOGNOSTICAL , CHEMICAL & PHARMACOLOGICAL RESEARCH**

67.	Bikshapathi, T.	Chemical analysis of Marichadi gutica and its comparison with other samples.	National Seminar Golden Jubilee Celebrations at SJIIM, Bangalore, 25.1.1999
68.	Brindha, P.	Pharmacognostic studies of <i>Cissus setosa</i> Roxb.	2nd World Congress on Ayurveda and Medicobotany, held at Pune, 26.10.1998 to 1.11.1998
69.	Brindha, P.	Plants in Indian System of Medicines.	National Seminar on Medicinal Plants, held at Maduravoil, Chennai, 29.9.1998
70.	Brindha, P. & Saraswathy, A.	Phyto-chemical comparison of <i>Pentatropies</i> , <i>Oldenlandia</i> and <i>Plumeria</i> .	National Seminar on Recent trends in Natural Products Chemistry, Deptt. of Chemistry, Bharathidasan Uni, Tiruchirapalli, 30-31/3/1999
71.	Chamundeeswari, D. <i>et al.</i>	Pharmacognostic studies on the bark of <i>Trewia polycarpa</i> .	50th Indian Pharmaceutical Congress Association, Mumbai, 13-16/12/1998
72.	Dey, D. & Das, M.N.	Pharmacognostical analysis of the flowers of <i>Carthamus tinctorius</i> Linn. used in Indian Systems of Medicine.	National Conference on Recent Trends in Spices and Medicinal Plants Research, Bose Institute, Calcutta, 2-4/4/1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
73.	Ethirajulu, S.	Adulterants and substitutes in ISM Botanical Drugs.	National Seminar on Medicinal Plants, held at, Maduravoyal, Chennai, 29.9.1998
74.	Ethirajulu, S. & Ali, U.S.	Herbal folk remedies for skin diseases in Tamil Nadu.	Golden Jubilee National Symposium of ICAR & IISR, 10-12/8/1998
75.	Ethirajulu, S. <i>et al.</i>	On the comparative pharmacognosy of <i>Aerva lanata</i> A. Juss. and <i>A. tomentosa</i> Forsk.	Second World Conference on Ayurveda and Medico-botany, Pune, 26.10.1998 to 1.11.1998
76.	Ethirajulu, S. <i>et al.</i>	Pharmacognostic studies on <i>Borreria articularis</i> Williams.	50th Indian Pharmaceutical Congress Association, Mumbai, 13-16/12/1998
77.	Gopal, H & Ram Kumar, V.	Microbial quality of herbal drugs.	National Seminar on Standardisation of Indian Traditional Medicine for Global Competitiveness, held at Hyderabad, 18-19/12/1998
78.	Kumar, N. <i>et al.</i>	Free radicals-The Bio-destructors and Bio-Nourishers - The Rasayanas.	National Seminar on Rasayana, CCRAS, New Delhi, 8-10/3/1999
79.	Mathuram, V.	Iridioids and flavanoids in plant medicines.	National Seminar on Medicinal Plants, held at Maduravoyal, Chennai, 29.9.1998
80.	Nair, R.B. <i>et al.</i>	Anti-inflammatory and antibacterial Ayurvedic drugs.	National Conference on Anti-inflammatory and Anti-bacterial Ayurvedic Drugs. N.A.A., New Delhi, 14-15/3/1999
81.	Narayanan, N. <i>et al.</i>	Pharmacognostic studies on the root of <i>Clerodendrum serratum</i> .	50th Indian Pharmaceutical Congress Association, Mumbai, 13-16/12/1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
82.	Ramesh, N. <i>et al.</i>	Constituents of <i>Bridelia crenulata</i> .	National Seminar on Recent Trends in Natural Products Chemistry, Deptt. of Chemistry, Bharathidasan Univ, Tiruchirapalli, 30-31/3/1998
83.	Saraswathy, A.	Anti-cancer Agents of Plant Origin.	National Seminar on Chemotherapeutic Agents from Herbs, Gwalior. 22-23/12/1998
84.	Saraswathy, A.	Quality assessment of Medicinal Plants.	National Seminar on Medicinal Plants, held at, Maduravoyal, Chennai, 29-9-98.
85.	Saraswathy, A.	Quality Control for Plant Drugs.	Seminar on Standardisation of Indian Traditional Medicine for Global Competitiveness, Hyderabad, 18th - 19th December, 1998
86.	Saraswathy, A.	Some folk remedies from Tamil Nadu in the Management of Common ailments.	Golden Jubilee National Symposium of ICAR & IISR, Calicut, 10-12th Aug, 1998
87.	Saraswathy, A.	Standardisation of Medicinal Plants used in Ayurvedic System.	Second Vishwa Vaidya Sammelan on Ayurved and Medico Botany, Pune, 26th Oct to Nov.1, 1998
88.	Saraswathy, A. and Sasan, T.	Miliacin from <i>Panicum miliare</i> Lamk.	50th Indian Pharmaceutical Congress Association, Mumbai, 13th-16th Dec., 1998
89.	Saraswathy, A. <i>et al.</i>	Pharmacognostic anatomy of Patola	-d0-

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
90.	Saraswathy, A. <i>et al.</i>	Pharmacognostic studies on <i>Ruellia tuberosa</i>	- do -
91.	Sukumar, E.	Analytical techniques in Natural Products Chemistry.	Second Annual Workshop on Analytical Chemistry, Deptt. of Chemistry, RKM Vivekanand College, Chennai, 11-12 June, 1998
92.	Suseela, L. <i>et al.</i>	Pharmacognostic studies on <i>Asystasia gangetica</i>	National Symposium on Spices, Medicinal and Aromatic Plants, held at Calicut (Kerala) 10-12th Aug, 1998
93	Suseela, L. <i>et. at</i>	Pharmacognostic studies on <i>Lagaces mollis</i> .	-do-
94.	Swami, S.P. <i>et al.</i>	Pharmacognostic studies on root & rhizome of Gundra ( <i>Typha angustata</i> Bory & Chamb)	Second Vishwa Vaidya Sammelan on Ayurveda and Medico Botany at Fergusson College, Pune, 26th Oct. to 1st Nov., 1998
95.	Thomas, S.	Anti-inflammatory activity of <i>Adhatoda beddomei</i> (B. Clarka and its comparative Clinical analysis in the <i>Justicia adhotoda</i> L.	-do-
96.	Thomas, S. & Saraswathy, A.	Physalin B as fertility regulating agent.	50th Indian Pharmaceutical Congress Association, Mumbai 13-16 Dec., 1998
97.	Thomas, S. <i>et al.</i>	Antifertility, properties of <i>Cleome vircosa</i> L. A common folklore plant.	Golden Jubilee National Symposium of ICAR & IISR, Calicut, 10-12th Aug, 1998
98.	Vasantha, S.	Alkaloids and terpenes in Plant medicines.	National Seminar on Medicinal Plants held at Maduravoil, Chennai, 29-9-1998



Sl. NO.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
99.	Vasantha, S.	Standardisation of Mahavasanadi Kwath Choorna used in Amavata.	Seminar on Amavata held at CRI, Bhubaneswar, 14-5-1998.
100.	Vasant, S. and Pappa, M.	Standardisation of raw drugs.	National Seminar on Standardisation of Indian Traditional Medicine for Global Competitiveness held at Hyderabad 18/19-12-1998
101.	Vasanth, S. <i>et al.</i>	Standardisation of Anandabhairava Rasa.	I.P.C. Mumbai, 13-12-98.
102.	Yelene, M.B. <i>et al.</i>	<i>In vitro</i> Propagation of Brahmi ( <i>Bacopa monnieri</i> (L.) Pennel.)	Second Vishwa Vaidya Sannelon on Ayurveda and Medicobotany at Fergusson College Pune, 26th Oct-1st Nov, 1998
103.	Yelne, M.B. <i>et al.</i>	Leaf culture of Sariva ( <i>Hemidesmus indicus</i> R.Br)	National Conference on Plant Drugs. An interdisciplinary approach, Azam Campus, Pune, 27th Jan. to 29 Jan., 1999
<b>E. LITERARY &amp; MISCELLANEOUS</b>			
104.	Ali, M.	Principle Methods and Importance of of Literary Research in Ayurveda.	Seminar on Literary Research held at BHU, Varanasi, 22-23/2/99
105.	Ali, M.	Rasayana Therapy in Classical literature of Ayurveda-A Review.	National Seminar on Rasayana organised by the CCRAS held at New Delhi, 8-10/3/99
106.	Ali M. <i>et al.</i>	Darush-shifa, the 1st Hospital of Hyderabad	III Annual Islamic Medical Association Conference on History of Islamic Medicine.
107.	Bhatnagar, V.K.	A study of rare manuscripts available at Bhandarkar Oriental Research Institute, Pune.	Seminar on Literary Research held at BHU Varanasi, 22-23/2/99

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
108.	Chaturvedi, D.D.	Key Note address on Role of Ayurveda in AIDS.	2nd Vishwa Vaidya Ayurveda Sammelan, Pune, 27th October, 1998.
109.	Chopra, K.K. <i>et al.</i>	Ayurvedic Cultural heritage of Orissa.	Seminar on Literary Research organised by the CCRAS held at BHU Varanasi, 22.2.99.
110.	Chopra, K.K. <i>et al.</i>	Chiksarnava - A Therapeutic treatise by Vishwanath Senn.	Seminar on Literary Research organised by the CCRAS held at BHU Varanasi, 22.2.99.
111.	Das, B. and Padhi, M.M.	Retrieval of Ayurvedic manuscripts : An urgent need with special reference to the State of Orissa.	Seminar on Literary Research organised by CCRAS held at BHU Varanasi, 22.02.1999
112.	Gurmet, P.	An Introduction to Ayurvedic text in Tibetan Buddhist Canon "Stangyur"	Seminar on Literary Research, BHU, Varanasi, 22-23 February, 1999
113.	Hussain, S.A. <i>et al.</i>	Development of medicine during Asaffjaty period.	III-Annual Islamic Medical Association Conference on History of Islamic Medicine held in Bermingham, England 27-28/6/68.
114.	Kumar, A.	Ranbir Prakasha - Its approach on skin diseases.	Seminar on Literary Research (CCRAS), BHU, Varanasi 22-23 Feb., 1999
115.	Kumar, N. <i>et al.</i>	Ayurvedic heritage of J & K - A review of Ranbir Prakasha.	Seminar on Literary Research (CCRAS), BHU, Varanasi 22-23 February, 1999
116.	Kumarswamy, R.	Preservation of Literary heritage.	Seminar on Literary Research held at BHU, Varanasi 22-23/2/1999
117.	Nanda, G.C. & Pandey, M.M.	Talk on Common uses of medicinal plants (in Oriya).	Doordarshan, Bhubneswar, April, 1998

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/ Workshop and date of participation
118.	Nanda, G.C. <i>et al.</i>	Kalpalata and Lilavati therapeutic treatises from medieval Orissa.	Seminar on Literary Research organised by CCRAS held at BHU, Varanasi, 22/2/99
119.	Padhi, M.M. & Das, B.	Talk on treatment of arthritis, eczema and dysentery by plants (in oriya).	Doordarshan, February, 1999.
120.	Padhi, M.M. <i>et al.</i>	Pathyapathya Vinishaya : Text on 16th Century from Orissa.	Seminar on Literary Research Organised by the CCRAS held at BHU, Varanasi, 22/2/99
121.	Sharma, K.D. <i>et al.</i> ,	Janpadodhwansa (Mahamari) Niyantaran Mein Ayurveda Ka Yogadan.	Expert group meet upon Epidemic Control, 11-12, March 1999 held at New Delhi.
122.	Singh, S.	A Bird's eye review on Shad Bhava Samudaya with special reference to etiology of foetal losses.	Seminar on Literary Research held at BHU, Varanasi, 22-23/2/99
123.	Uniyal, M.R.	Ayurveda Vangamay Mein Anushandhan Ki Disha.	Seminar on Literary Research held at BHU Varanasi on 22-23/2/99
124.	Yadava, R.S. & Singh S.	Safeguarding and conserving the Literary Heritage of Ayurveda.	Seminar on Literary Research organised by the CCRAS held at BHU Varanasi, 22-23 February, 1999

## B. TECHNICAL REPORT-SIDDHA

### 1. Abbreviations Used for Institutes/Units

S.No.	Year of Estt.	Institute/ Unit	Abbreviation
1.	1970	Central Research Institute, Chennai	CRISC
2.	1979	Regional Research Institute, Pondicherry	RRISP
3.	1979	Mobile Clinical Research Unit, Chennai	MCRUSC
4.	1980	Clinical Research Unit, Palayamkottai	CRUSP
5.	1981	Clinical Research Unit, New Delhi	CRUSND
6.	1986	Clinical Research Unit, Trivandrum	CRUST
7.	1979	Drug Research Scheme (MD), Chennai	DRS (MD) C
8.	1979	Drug Standardisation Research Unit, Chennai	DSRUSC
9.	1982	Drug Standardisation Research Unit, Bangalore	DSRUSB
10.	1981	Drug Standardisation Research Unit, Trivandrum	DSRUST
11.	1971	Survey of Medicinal Plants Unit, Palayamkottai	SMPUSP
12.	1979	Literary Research and Documentation Department, Chennai.	LR & DDSC
13.	1986	Tribal Health Care Research Project, Tirupathur, North Arcot Dist.	THCRPST
14.	1986	Tribal Health Care Research Project, Kalasa.	THCRPSK

## 2. CLINICAL RESEARCH PROGRAMME

The Clinical Research Programme in Siddha Medicine is being carried out on selected clinical conditions by the Institutes/Units of Siddha Medicine functioning under the Council. During the reporting year, the clinical conditions like Kalanjagapadai (Psoriasis), Putrunoi (Cancer), Gunmam (Intestinal disorders), Manjal Kamalai (Infective hepatitis), Sandhu Vathasoolai (Rheumatoid arthritis), Velluppunoi (Anaemia), Venkuttam (Leucoderma) etc. were studied.

### Kalanjaga Padai (Psoriasis)

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

#### Results of Clinical/therapeutic Trial of 777 oil on Kalanjaga Padai (Psoriasis)

S. No.	Drug	Total cases	Results of the trial			
			Comp. relief	Marked relief	Moder. relief	LAMA
1.	777 oil	160	-	77	52	31

### Vathasoolai

This disease condition has been described in the Siddha texts under "Vatharogangal". The study to evaluate the efficacy of Chendamarutham and Vatha Kesari Thailam in the cases of Vathasoolai has been taken up by the Regional Research Institute, Pondicherry. The trial drug Chendamarutham at the dose of 400 mg. alongwith honey was administered in two divided doses. Vatha Kesari Thailam was advised to apply externally on the affected parts. Forty seven (47) cases were taken up for study during

the reporting year. Out of the 47 cases, 21 got complete relief, 16 cases got marked relief and 10 cases did not respond to the treatment.

### Karappam

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

#### Results of Clinical/therapeutic Trial of Siddha Preparations on Sarumanoigal (Skin disorders)

S.No.	Drugs	Total cases	Results of the trial			
			Comp relief	Marked relief	Mod. relief	LAMA
1.	Parangipattai Chooram (500 mg.) Sangu parpam 130 mg. BD	6	3	2	1	-
2.	Idivallathi Mezhugu 130 mg. BD Punga Thailam (External application)	4	2	1	1	-
Total		10	5	3	2	-

### Yanaikkal Noi (Filariasis)

The effect of Linga Chendooram. Thalampoo Mathirai Nilavembu Kudineer and Kakkattanver Karkam and their combinations were studied on the clinical condition of Yanaikkalnoi at the Clinical Research Unit, Trivandrum. The study was carried out in three groups, in both carrier and manifested cases of Yanaikkal noi at OPD level. 29 cases were studied during the reporting year. The following Table shows the results of the study.

## Results of Clinical/therapeutic Trial of Siddha Preparations on Yanaikkalnoi (Filariasis)

S.No.	Drugs	Total cases	Results of the trial			
			Comp relief	Marked relief	Moder. relief	LAMA
1.	Linga Choornam	15	7	4	-	2
2.	Kakkattan Ver Karkam	16	8	4	-	4
Total		29	15	8	-	6

### Sandhu Vatha Soolai (Rheumatoid arthritis)

Sandhu Vata Soolai is described in Siddha literature, as one of the 80 Vatharogangal. A study to evaluate the effect of Chandmarutha Chendooram in the management of Sandhu Vatha Soolai has been taken up at CRI, Chennai. The drug was administered at the dose of 200 mg. twice a day alongwith honey. Tamarind and chilli free diet with less salt was advised to all the 42 cases selected for the trial. Out of 42 cases, 13 cases showed marked relief, 18 moderate relief and remaining 11 cases did not respond to the treatment.

### Manjal Kamalai (Infective hepatitis)

The study on this clinical condition has been carried out at the Central Research Institute, Chennai. The trial drug Arunelli Karkam was administered at the dose level of 1gm. in two divided doses alongwith water. 7 cases were selected for the trial during the reporting year. Out of the 7 cases, 2 showed marked relief, 2 cases showed moderate relief and remaining did not respond to the treatment.

### Gunmam (Intestinal disorders)

The study on efficacy of Siddha drugs in above condition was undertaken at the Regional Research Institute, Pondicherry. The trial drugs Uppu Chendooram & Gunmagudori mezhugu are administered at the dose level of 130 mg. and 1gm. in two divided doses with water. Out of the 7 cases selected for the trial, 1 case got complete relief, 5 cases showed marked relief and the remaining, 1 case did not show any response.

### **Vali Gunmam (Peptic ulcer)**

The disease condition is one of the eight varieties of the Gunmarogangal found in the Siddha texts. The Central Research Institute, Chennai has taken up clinical trial on this disease condition to determine the effectiveness of Suyamagni Chendooram. The patients suffering with severe pain in the epigastric region, nausea, vomiting with both eruption and haematosi etc. were selected for the trial. The diagnosis was further confirmed on modern parameters such, as FTM. Barium meal X-ray etc. The trial drug administered at the dose of 100 mg. filled in the gelatine capsules, twice a day for five days. Omam bath and gengeli oil bath have been advised on 6th and 7th day. The course was repeated for two more time. 12 cases were taken up for study during reporting period. Out of the 12 cases 5 cases showed marked relief, 2 cases moderate relief and 5 cases were discharged against medical advise.

### **Velluppu Noi (Anaemia)**

Clinical studies were conducted in 26 cases of Velluppu Noi at Regional Research Institute, Pondicherry to determine the effectiveness of the drug Aya Bringaraja Karpam. The drug at the dose of 260 mg. three times a day alongwith honey was administered for three weeks. Out of 15 cases taken up for trial, 3 cases showed complete relief, 4 cases showed marked relief and rest of the 8 cases did not respond to the treatment.

### **Putru Noi (Cancer)**

This disease condition has been described in the Siddha text under the head "Verananoigal". The study was undertaken in Central Research Institute, Chennai. The coded drugs RGX, VK2 and SKX, formulated by the Institute were taken up for the trial. The drugs at the dose of 250 mg. each filled in gelatine capsules were administered, twice daily alongwith milk. Ulcers and tumours were dressed with Nithiyakalayani Karkam and Pachaiennai with Thurusu. It is noted that all the cases showed considerable reduction in the size/growth of ulcer/tumours, reduction/or arrest of the discharge and also reduction of pain. 11 cases were studied during the reporting year. Out of which one case each showed marked and moderate relief, four cases showed mild relief and 5 cases were discharged at request.



## Eraippu Noi (Bronchial asthma)

Eraippu Noi is one of the respiratory diseases described in Siddha literature. The efficacy of the drugs Irunelli Karpam, Swasakudori Mathirai were studied at the Clinical Research Unit, Trivandrum. 8 cases of Eraippu Noi were selected for trial during the period. Out of 8 cases, 5 cases showed complete relief, 2 cases marked relief and 1 case did not respond to the treatment.

## Venkuttam (Leucoderma)

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

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

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

S.No.	Drugs	Total cases	Results of the trial			
			Comp relief	Marked relief	Mod. relief	LAMA
1.	Parangi Pattai Choornam	-	-	-	-	-
2.	Ponnimilai Chendooram Chirattai Thailam	-	-	-	-	-
3.	Annabedi Chendooram	5	3	2	-	-
4.	Poovarasam pattai Choornam	5	3	1	1	-
5.	Karuvelempattai Choornam	5	2	2	1	-
Total		15	8	5	2	-

### Out Patients/In Patients Attendance at a Glance

S.No.	Instt./ Unit	No. of patients attended OPD			No. of Patients attended IPD.
		New	Old	Total	
1.	CRI, Chennai	7,189	15,749	22,938	232
2.	RRI, Pondicherry	4,144	10,830	14,974	80
3.	CRU, Palayamkottai	28	2,359	2,640	-
4.	CRU, New Delhi	3	97	100	-
5.	CRU, Trivandrum	1,187	10,456	11,643	-
Total		12,804	39,491	52,295	312

### **3. HEALTH CARE RESEARCH PROGRAMME**

Health Care Research Programme has been carried out by the Mobile Clinical Research Units attached with Central Research Institute, Chennai and Regional Research Institute, Pondicherry and also two Tribal Health Care Research Programmes at Kalasa (Karnataka) and Tirupathur (Tamil Nadu).

#### **Tribal Health Care Research Programme**

**THCRPST**

The team conducted periodical study tours in the 19 pockets such as Kumarannager, Sowde Kuppam, Karuppadur, Guddur, Thiriyaram, Malai rediyur, Paarandappalli, Bommikuppam, China Udayamuthur, Eariyur, Pugalaikaranur, Pallalapalli, Kizhakku Medu, Kadhiraampatti Pallavalli, Srirangapatti, Nethaji Nagar, Jayapuram, Melguddur also nearby villages of Tirupathur Block. The team conducted 19 trips and covered 20,140 individuals from the total population. 2,063 patients were provided incidental medical aid for the treatment of Erigunman, Itaippunoi, Kudarpuzhuno, Neerkkovai, Moolam, Palnoigal, Sirangu, Peenasam, Soothaganoi etc.

**THCRPSK**

The team conducted 32 visits and about 32,220 individuals were covered and health statistics were recorded. 2301 cases were provided incidental medical aid. Erapippunoi, Erumal, Gunmam, Valigunmam, Karappan, Keelavayu Suramoothalnoi, Peenasam etc. were found common in the area. Out of 2,301 cases 1,114 cases are new and 1,187 cases are old.

#### **Mobile Clinical Research Programme**

**MCRUSC**

The team conducted 34 visits to the village patients during the reporting year and collected information on 1500 individuals. Incidental medical aid were provided to 508 patients. It was also noted that most of the villagers were suffering from one or more diseases. Irumal, Eraippunoi, Vaeeruvai, Vellai, Muttuvai, Thalivali, Surangoigai, Tholnoigal, Pun, Naalpattpun etc. were commonly found in the areas covered under the study. Out of 508 cases treated during visits, 192 cases are new and 316 cases are old.

#### 4. MEDICO-BOTANICAL RESEARCH PROGRAMME

Survey of forest areas for procuring drugs and arranging the supply of required materials for Research purposes occupies an important place. Medico-Botanical Survey Unit functioning at the Govt. Siddha Medical College, Palaymcottai has taken up this task. This Unit was established in 1971. During the past three decades, the Unit is engaged in exploring the availability of medicinal plants especially used in Siddha medicine, in the forest areas of Tamil Nadu. The study includes identifications, quantitative and qualitative of the genuine drugs their substitute/adulterants etc.

During the reporting year, the Survey Unit conducted 18 tours in the around Tirunelveli and Kanyakumari forest areas and also adjoining Kerala state for collecting the medicinal plants to supply to other Units. 271 specimens are collected during these drugs collection tours (Field book No. 6429 to 6690) and these belong to 61 families, 182 genera and 218 species were collected and reported. 167 specimens also collected during such tours for herbarium.

From the total collection, 85 herbarium specimens were identified and mounted on the sheets. Out of the 85 plant specimens added to the herbarium the following are some of the important and widely used in Siddha medicine. They are Ottanazhi (*Leea sambucina* Willd.); Pullipanchedi (*Cipadessa baccifera* Mig.); Vishamongil (*Crinum latitolum* L.); Amalai (*Aliophyllus zerratus* Radlk); Manikodi (*Osystema esculentum* R.Br.); Kodagasalai (*Ruellia patula* A.C.S.P.); Mayilai (*Vitex pubescens* Vahl.); Kurtilai Vayana (*Apama siliquosa* Lam.); Silavagai (*Albizia procera* Benth.); Chekkavuri (*Indigofera longeracemosa* Poir.); Vittil (*Aporosa lingelyana* Boil.); Analivegam (*Alstonia venenata* R.Br.); Siruthekkku (*Clerodendron serratum* Spr.); Vatham Kolli (*Artanema sesamoides* Benth.); Gnarai (*Syzygium caryophyllum* (L.) Alston.); Pavazhapoda (*Breynia rhamnoides* M. Arg.); Munthiri (*Anacardium occidentale* L.); Sarkarai vembu (*Scoporia dulcis* L.); Ponkorandi (*Salacia prinoidea* DC.); Kurthikandamooli (*Eleagnus conferata* Roxb.); Malampuluvan (*Aphonamixis polystachya* (Wall) parkar.); Kozhikodivai (*Dalbergia multiflora* Hyne.); Pavattai (*Pavetta indica* L.); Karumarunthu (*Terminalia coriacea* (Roxb.) W & A); Ayini (*Artocarpus hirsutus* Lam.); Pantri vagai (*Dalbergia paniculata* Roxb.); Odimaram (*Lannea coromandelica* Merr.); Orilai (*Desmodium rufescens* D.C.);

Vattapolava (*Pterospermum diversifolium* Bl.); Manippungu (*Sapindus laurifolia* Vahl.); Vazhukkaipul (*Commelina* Sp.); Indu (Vellai) (*Acacia pennata* Willd.); Pinnakkupoondu (*Corchorus aestuan* L.); Vellarugu (*Enicostemma littorale* Bl.); Venpollathi (*Fluggea leucopyrus* Willd.); Thelkodukkilai (*Heliotropium beylanicum* Lam.); Kozhinji (*Tephrosia pumia* (Lam.) Pers.); Thelkodpachilai (*Kbinia grantiflora* Rani.); Vidathalai (*Dishrostachys cinerea* (L.) Wight & Arm.); Pinnakk Kuzhai (*Melhania cannabina* Wight ex. Mast.); Thozhukanni (*Desmodium motorium* (Houtt.) Merr.); Ottukkodi (*Cuscuttahylina* Roth.); Ilaikkalli (*Euphorbia nerifolia* L.); Kumizh (*Gmelina arborea* L.); Kolunji (*Tephrosia procumbens* Hom.); Kavizh Thumbai (*Trichodesma zeylanicum* R.Br.); Chemmaram (*Gluta travancorica* Bedd.); Sathicharanai (*Trianthema portulacastrum* L.); etc.

13 different parts of the plants were collected and added to the Museum collection maintained by the Unit raising the total to 774 drug samples.

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

61 Folk-medicinal claims are listed in the report, collected from Kannaia tribes of Kanya Kumari forest division for treating/managing certain chronic diseases like jaundice, migraine, poisonous sting, diarrhoea, cough, scabies, ulcers/tumours due to STD infection, fever with rigor, Intestinal worms, wounds and ulcers, snakebite, piles and fissure, measles, bronchitis, dogbite, scorpion sting etc. apart from certain common ailments such as diseases connected with eyes, ear, teeth etc. The Kannaia tribes are knowing the art of 'Varma' (Marma) which is considered a very special methods described in Siddha medicine. The art of 'Varma' is also being practised for curing ailments among the tribes.

The Unit also reported about 700 plants drug used in Siddha and Ayurveda about their availability in Tamil Nadu State.

## 5. PHARMACOGNOSY RESEARCH PROGRAMME

The Pharmacognosy Research Programme is being undertaken at Pharmacognosy Research Wing functioning in DRS (MD), Chennai. During the reporting year pharmacognostic study on the following drugs were reported.

- 1) Koovai (*Maranta arundinacea* Linn.)
- 2) Karisalai (*Eclipta alba* Hassk.)
- 3) Manjal Karisalai (*Wedelia colendulacca* Lass).

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

## 6. CHEMICAL RESEARCH PROGRAMME

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

- 1) Sirupulladi (*Desmodium gangeticum* DC.)
- 2) Brami (*Bacopa monnieri*)
- 3) Mathulai (*Punica granatum* L.)

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

## 7. PHARMACOLOGY RESEARCH PROGRAMME

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

1. Annabedi Chendooram
2. Thazhambu Mathirai
3. Athimathura Churnam
4. Kuppaimeni Thailam
5. Pavalamalli Vithai
6. Veppam vithu Churnam
7. Chundai vatral Churnam
8. Vathakesari Thailam
9. Thalaga Mathirai
10. Idivallathi Mezhu
11. Sivappukukil Thailam
12. Sivanar Amirtham
13. Single drugs
  - a) Naval-seeds
  - b) Poovarasu
  - c) Tuvarai-roots
  - d) Mookirattai
  - e) Vallarai

### 1. Acute Toxicity Study

The drug *Annabedi chendooram* was non-toxic upto 5,000 mg. per kg on albino mice and rats and showed 50% mortality in the doses of 9,000 and



10,000 mgs. per kg. on albino mice. The drug *Thazhambu mathirai* was non-toxic upto 1,000 mg. per kg. on both species of albino mice and rats and showed toxic effects of mortality of 16.66%, 33.33%, 50% in the doses of 6,000, 7,000 and 8,000 mg. per kg. and mortality of 66.66% in the doses of 9,000 & 10,000 mg. per kg. body weight on albino mice. The drug *Kuppaimeni thailam* showed toxic effects of 33.33% and 16.66% mortality on albino mice and rats respectively in the dose level of 10 ml./kg. body weight. The drug alcoholic extract of *Nyctanthes arbortrites* was found to be non-toxic in the doses of 100, 1,000 and 3,000 mg. per kg. on albino mice and rats. The drug *Pavala parpam* also found to be non-toxic upto 7,000 mg. per kg. weight on albino mice and rats. The drug *Thalaga Mathirai* was non-toxic upto 7,000 mg/kg on albino rats but showed toxic effects and mortality of 16.66% in the doses of 6,000 and 7,000 mg/kg and 33.33% in the doses of 9,000 and 10,000 mg/kg body weight on albino rats.

### **Anti-inflammatory Study**

Carrageenin induced paw odema study with the drug *Vatha Kesari thailam* in the dose level of 5 ml. per kg, the drug *Athimathuram* in the dose level of 1,000 mg per kg and the drug *Sivappu kukkil thailam* in the doses of 2 and 5 ml per kg was carried out. The data are to be analysed statistically and the result will be communicated in due course of time. *Naval Seeds* in the dose 3,000 mg/kg., *Poovarasu* in the doses of 1000 mg/kg, *roots of Tuvarasi* in the doses 500 & 3000 mg/kg are also in progress.

### **Analgesic Study**

Acetic acid induced writhing episode study in albino mice with the drug *Sivanar amirtham* on albino mice in the doses of 50, 250 and 500 mg. per kg. and the drug *Veppam Vithy Choornam* in the doses of 50,500 and 5000 mg. per kg. body weight.

Eddy's hot plate heat response study with the drug *Sivanaramirtham* in the doses of 25 and 50 mg. per kg. body weight and the drug *Vappam vithu choornam* in the doses of 50,500 and 5,000 mg. per kg. body weight were carried out. The data are to be analysed statistically and the results will be communicated in due course of time. Studies on *Mookkarattai* in the doses 50,500,3,000 mg/kg., *Vallarai*, in the dose 50 mg/kg. and *roots of Thuvarai* in doses 500-3000 mg/kg are also in progress.

## 8. PHARMACEUTICAL/STANDARDISATION RESEARCH PROGRAMME

The drug standardisation plays an important role for obtaining authentic medicinal preparations and genuine single drugs for the therapeutic efficacy. It also occupies important place in both drug and applied clinical research because this provides approach data for obtaining genuine single drugs and authentically prepared compound medicines. The standardisation work has been taken up by the Council to study Siddha Formulary (Part-I) and also the single drugs which are entering into those formulations. The study was entrusted with Drug Standardisation Research Unit at 1) CSMDRIA, Chennai 2) Drug Standardisation Research Unit at RRI (DR), Trivandrum and 3) Drug Standardisation Research Unit at RRC (Ay.) Bangalore.

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

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

S.No.	Name of the drug	Parts analysed	Name of the Institute/Unit
1.	Isangu ( <i>Clerodendrum inerme</i> Gaertn.)	Aerial root	DSRUSC
2.	Kattuclumichai ( <i>Atalantia monophylla</i> Corr.)	Leaves	-do-
3.	Cirupadai ( <i>Coldenia procumbens</i> L.)	Whole plant	-do-
4.	Pala ( <i>Artocarpus heterophyllus</i> )	Leaves	-do-
5.	Kadalpasi (2 samples) ( <i>Gracillaria corticata</i> )	Whole plant	-do-
6.	Sarakonrai	Flowers	-do-

	( <i>Cassia fistula</i> L.)		
7.	Pink Cassia ( <i>Cassia nodosa</i> Buch.)	Flowers	-do-
8.	Seemaiagatti ( <i>Cassia alata</i> (L.) Benth.)	Flowers	-do-
9.	Avarai ( <i>Cassia auriculata</i> L.)	Flowers	-do-
10.	Iravi ( <i>Dryopteris filismas</i> (L.)	Rhizome	-do-
11.	Medday keerai ( <i>Asystasia gangetica</i> (L.)	Stem	-do-
12.	Devatali ( <i>Lansium anamallayamum</i> Bedd)	Leaves	-do-
13.	Orithal Thamarai ( <i>Hybanthus enneaspermus</i> )	Whole plant	-do-
14.	Akasakarutan ( <i>Corallocarpus epigaeus</i> )	Rhizome	-do-
15.	Vellarugu ( <i>Encostemma littorale</i> Blume)	Whole plant	-do-
16.	Cenkalanir Kilanku (Market sample)	Rhizome	-do-
17.	Vanni (5 samples) ( <i>Prosopis spicigera</i> L.)	Leaves	-do-
18.	Cenkiluvai ( <i>Commiphora cudata</i> )	Leaves	-do-
19.	Perunkancori ( <i>Laportea crenulata</i> )	Root	-do-
20.	Tippili (3 samples) ( <i>Piper longam</i> L.)	Fruit	-do-
21.	Anaikundrimani ( <i>Adenantha pavonia</i> )	Heartwood	DSRUST
22.	Purani (3 samples) ( <i>Bombax malabarica</i> )	Stem	-do-
23.	Magizham (3 samples) ( <i>Mimusops elengi</i> )	Root	-do-
24.	Maruthondri (2 samples) ( <i>Lawsonia ineramis</i> L.)	Leaves	-do-

25.	Ilavam (2 samples) ( <i>Eriodendron anfractuosum</i> DC)	Stem bark	-do-
26.	Kattukichili ( <i>Atalantia monophylla</i> Corr.)	Leaves	-do-
27.	Kakkattan (2 samples) ( <i>Ipomoea hederacea</i> (L.) Jacq)	Seeds	-do-
28.	Perettaikkiray (3 samples) ( <i>Ipomoea reniformis</i> Choisy)	Whole plant	-do-
29.	Ukaperungoli (3 samples) ( <i>Salvadora persica</i> L.)	Stem bark	-do-
30.	Karunjurai (3 samples) ( <i>Capparis sepiaria</i> L.)	Stem bark	-do-
31.	Umathai ( <i>Datura stramonium</i> )	Leaves	DSRUSB
32.	Kodikakkattan ( <i>Ipomoea hedarcea</i> )	Seeds	-do-
33.	Ilavoo ( <i>Bombax malabaricum</i> )	Flower	-do-
34.	Velvel ( <i>Acacia leucophloea</i> )	Stem bark	-do-
35.	Vel Velam ( <i>Acacia feruginea</i> )	Stem bark	-do-
36.	Karu Valam ( <i>Acacia arabica</i> )	Stem bark	-do-
37.	Convoloulus microphylla	Leaves	-do-

**Pharmacopoeial standards (analytical standards) of finished products:**

1.	Mankombu parpam	DSRUSC
2.	Canku parpam	-do-
3.	Mathulai Manappagu	-do-
4.	Civanavempukulittailam	-do-
5.	Tirikaduku cilranam	-do-
6.	Tiripala curanam	-do-
7.	Thanga parpam	DSRUST
8.	Thalaga parpam	-do-
9.	Poornachandrodayam	-do-

## Pharmacognosy

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

1. Ayil (*Holoptelea integrifolia* Planch)
2. Uka Perungoli (*Salvadora persica* L.)
3. Karanjurai (*Capparis sepiaria* L.)
4. Taludalai (*Clerodendrum phlomidis* L.)
5. Sirupadai (*Coldenia procumbens* L.)
6. Meddaykeerai (*Asyasia gangetica* T. Anders)
7. Palailai (*Artocarpus heterophyllus* Lam.)
8. Atutinnappalaiilai (*Aristolochia bracteolata* Lam.)
9. Nattaichuri (*Borreria hispida* Schuman)
10. Kattu elumichai (*Atalantia monophylla* Corr.)
11. Karutan kilanku (*Corallocarpus epigaeus* Benth.)
12. Cenkalunir Kilanku (Market drug)
13. Kovai ilai (*Coccinia indica* L.)
14. Cenkiluvai (*Commiphora caudata*)
15. Kuppaimeni (*Acalypha indica* L.)
16. Seemai Agathi (*Cassia alata* L.)
17. Perumpeelai (*Aerva javanica* (Burm. F.) Juss. ex. Schult)
18. Vallarai (*Centella asiatica* L.)
19. Umathai (*Datura stramonium*)
20. Kodikakkattam (*Ipomoea hederacea*)
21. Ponthagarai (*Cassia occidentalis*)
22. Nilavagai (*Cassia tora*)
23. Mulam (*Citrullus vulgaris*)
24. Ilavoo (*Bombax malabaricum*)
25. Elaokkali (*Euphorbia nivulia*)
26. Kattamanakku (*Jatropha Curcas*)

Apart from this DSRU (Siddha), Chennai has conducted the estimation of mercury in Linga Chendooram and purified the animal products i.e. Amaiodu, Sangu, Palakarai. HPTLC finger printing parameters were evolved for all the drugs subjected to analytical studies.

## 9. PHARMACY

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

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

The prepared medicines based on the method given in the literature are strictly followed in the Pharmacy. Varieties of preparations both required for research and general use are being prepared in the pharmacy such as Parpam, Chendooram, Choornam, Thailam, Nei, Parpam, Ennai, Kalkam etc. During the reporting period 1,225 kg. of Chendooram, Choornam, Parpam, etc. and 460 litres of oil based preparations were prepared. The pharmacy also supplied prepared medicines to the following Institutes/Units of Siddha functioning under the Council.

**The following Table shows the name of the units and the quantity of the medicines supplied.**

S.No.	Name of the Unit (s)	Quantity	
		Solids in kg.	Liquid in Litres.
1.	MRU (S), Madras	15.5	25
2.	CRU (S), Trivandrum	18.7	-
3.	CRU (S), Palayamkottai	3	5.3
4.	DRS (MD), Chennai	20.5	-

## 10. LITERARY RESEARCH PROGRAMME

Literature Research Programme has been carried out by the Literary Research and Documentation Deptt. Chennai. The work carried out during the reporting year are as given under.

- Konganar Muddal Kandam-1000: The printing work is completed. The book is dealing with fundamental principles and some very important prescriptions for disease like leprosy, tuberculosis and skin disorders and jaundice etc.
- Agathiyar Vaidhya Kaviyam 1,500 and Agathiyar Sowmiya Sagarram-1200: Indexing, classification and editing work has been completed and press copies are being prepared.
- The Unit has sold Council's publications for Rs. 13,650 during the reporting year.
- Siddha Kayakarpam (IIInd edition): Editing work is completed and press copies are made.
- Konganar Idaikandam-1000: correction work is completed and also compared with original work. Indexing and classification is in progress. Alchemy and magic practices are mainly dealt in this volume.

## 11. PUBLICATIONS AND PARTICIPATIONS IN THE FIELDS OF SIDDHA MEDICINE

### I. PUBLICATIONS

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
1.	Raja Lakshmi, S. and Veluchamy, G.	Clinical evaluation of Kungiliabarpam and Kadukkai decoction in the management of Vellai Noi (Leucorrhoea).	J.R.A.S. Vol. XVII (No. 3-4) : 157-161, 1996	1998
2.	Raja Lakshmi, S. <i>et al.</i>	Clinical evaluation of Athimathuram in <i>Viral hepatitis</i> (a Controlled study).	J.R.A.S., Vol. XVIII (No. 3-4): 141-146, 1997	1998
3.	Saraswathy, A. <i>et al.</i>	Analysis of Nochi Tailam.	J.R.A.S., Vol. XVII (No. 3-4) : 189-194, 1996	1998
4.	Saraswathy, A. <i>et al.</i>	Chemical analysis of Gorocana.	J.R.A.S., Vol. XVIII (No. 1-2) : 63-70, 1997	1998
5.	Saraswathy, A. <i>et al.</i> ,	Carpochromene from <i>Atalantia monophylla</i> Corr.	Fitoterapia, Vol. LXIX (5) : 463-64	1998



Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
6.	Saraswathy, A and Rani; M.G.	Chemical analysis of Cuvalak Kutori Mattirai.	Ancient Science of life, Vol. XVIII (No. 1) : 24-28	1998
7.	Saraswathy, A. <i>et al.</i>	Analysis of Arakkut Tailam.	J.R.A.S., Vol. XIX (No. 1-2) : 68-73	1998
8.	Saraswathy, A. <i>et al.</i>	Standardisation of Iti Vallati (Meluku).	J.R.A.S., Vol. XIX (No. 1-2) : 74-81	1998
9.	Sasikala, E. <i>et al.</i>	On the Pharmacognosy of <i>Azima tetraacantha</i> Lam. Leaves.	B.M.E.B.R., Vol. XVIII (No. 1-2) : 66-74. 1997.	1998
10.	Shantha, T.R. <i>et al.</i>	Pharmacognostical study of <i>Adenanthera pavonia</i> L. -Seeds.	B.M.E.B.R., Vol. XVIII (No. 1-2) : 55-65, 1997.	1998
11.	Shanta, T.R. <i>et al.</i>	Microscopic and Physico-chemical analysis of Kazharchchi Choorana-A Siddha Preparation.	B.M.E.B.R., Vol. XVIII (No. 1-2) : 75-81, 1997	1998
12.	Suresh, A. <i>et al.</i>	Management of Rheumatoid arthritis with Siddha drug combination -A clinical trial.	JRAS; Vol. XVIII (No. 3-4) : 126-131, 1997	1998
13.	Vijayalakshmi, B. <i>et al.</i>	Ayurvedic rationale of Southern Indian Vegetable Soup Search or Rasam.	Ancient Science of Life, Vol. XVII (No. 3) : 207-213	1998

## II. PARTICIPATION

Sl. No.	Name of the Author (s)	Title of the Paper	Name of the Conference/ Seminar/Workshop and Date of Participation.
1.	Chelladurai ; V. and Subramaniam. M.P.	Medicinal Plants of Kanya Kumari Forest and its conservation.	Seminar on Forests of KanyaKumari Distt. convened by the Conservation of Nature Trust, Nagercoil, T.N., 28/11/1998.
2.	Chelladurai, V.	Medicinal Plants in the development of Waste lands.	Seminar on the Wasteland Development, Kanyakumari, T.N.
3.	Ganapathraman, K. et al	Concept of Kayakalp in Siddha System of Medicine.	National Seminar on Rasayana organised by the CCRAS held at N.Delhi, 8-10/3/1999.
4.	Manickam, V.S. et al.	Some Noteworthy tree species of Courtallam hills, Western Ghats, T.N.	International Conference on Environment and Bio-ethics organised by Loyola College, Chennai, 14/1/1999.
5.	Meenatchinathan. E. et al.	Physiology of Seneacence (Aging) and Siddha philosophy of its post ponement.	National Seminar on Rasayana organised by the CCRAS, held at N. Delhi. 8-10/3/1999.
6.	Raja Laksmi, S. and Veluchamy, G.	Kayakalpa methods adopted by Siddha's-A scientific approach.	- do -

Sl. No,	Name of the Author (s)	Title of the Paper	Name of the Journal	Date of Publication
7.	Roy, J. et al.	Observation of some medicinal plants of Mundanthurai Range in Kalakad Mundanthurai Tiger Reserve. T.N.	International Conference on conservation of Tropical Species & Ecosystem, held at Trivandrum, 2/6/1998.	
8.	Rao. K.K. and Veluchamy. G.	Kaya Kalpa-the Rasayan of Siddhar's.	National Seminar on Rasayana organised by CCRAS held at N.Delhi, 8-10/3/1999.	
9.	Rao. K.K. and Veluchamy. G.	Iron deficiency-Anaemica and its management.	State level Task Challenge on Nutrition organised by UNESCO. Chennai	
10.	Ravishankar. V.	Literary Research-Council's Contribution in publishing and exhibiting the Siddha literature.	Seminar on Literary Research held at B.H.U. Varanasi, 22-23/2/1999.	
11.	Sivaprakash, K. <i>et al</i>	Role of Kayakalpa in Siddha for longevity of life.	National Seminar on Rasayana organised by CCRAS, N.Delhi. 10-12/3/1999.	
12.	Veluchamy. G. and Rajalakshmi, S.	Contribution of Siddhar & Therayar for the enrichment of Siddha system.	Seminar on Literary Research held at B.H.U., Varanasi, 22-23/2/1999.	

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25