Central Council for Research in Ayurveda & Siddha

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CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA

ANNUAL REPORT
1991-92

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

CONTENTS

PREFACE

The Annual Report 1991-92, as in past, highlights the achievements under different research programme in Ayurveda and Siddha under the Council. These programme are conducted through the Council's Institutes, Centres and Units, many of them located in premier medical academic Institutions of the country. The research programmes got a new direction with the implementation of new programme projection 1992-97 from April, 1992. Some of the salient features on Clinical Research (include FW), Drug Research and Literary Research are indicated herewith.

The field trials of Anti-malaria drug (Ayush-64) in collaboration with NMEP and Govt. of Tamil Nadu had been an important features under National Priority Programmes. Besides this Clinical studies on Rheumatoid Arthritis, Bronchial Asthma, Peptic Ulcer, Hypertension, Diabetes, Urolithiasis, Filariasis, Kala-a-zar and Psoriasis etc. have also been persued for evolving their appropriate treatment. During the course of these studies medicare at OPD level and IPD level has been provided to 2,89,945 and 2013 patients respectively A workshop on Valigunmum (Peptic ulcer) was also held. The Family Welfare Research Programme have highlighted the oral contraceptive potential of Pippalyadiyoga and Spermicidal effect of local application of Neem oil. The Health Care Research Programme have covered over 100 helmets, villages and tribal pockets with a population of about 1,25,000 and treated about 34,000 patients during these programmes.

Medico-Botanical exploration of fresh areas resulted in collection of about 1200 specimen, identification of about 1600 specimen and mounting and accession of 793 and 836 specimen respectively. About 800 Kgs. of drug material has been supplied for research to Council's projects and PLIM, Ghaziabad. The cultivation of Medicinal Plants Programme through 5 gardens maintain about 550 drugs plants, besides extensive cultivation and intensive experimental studies on a few of them. Scientific investigation on 11 drugs for Pharmacognosy, 20 drugs for Phytochemistry and 40 drugs under Pharmacology/Toxicology has been concluded. The musk deer breeding farm in Kumaon hills studies various aspects of life of musk deer besides collection of about 100 gms of musk from the animals without harming them.

Pharmacopoeal Standardisation work of 81 single drug, 15 formulations and method of manufacture of 3 categories of preparations are

carried out. In addition, preliminary standardisation work of 38 formulations of Ayurveda/Siddha are also covered. The workshop on Rasa Shastra at Hyderabad had been an important event under this programme.

Besides publication of three quarterly journals JRAS, BMEBR and BIIHM and the bi-monthly News Letter, the Council has also brought out many books and Monographs on different aspects of Research Programme.

The Workshop on Literary Research and Dr. D.V. Subba Reddy Memorial Lecture at Indian Institute of History of Medicine, Hyderabad had also been an important event in Literary Research Programme. The Council has also organised and arranged exhibition of Councils' research activities and publications.

DIRECTOR
CCRAS

Date: 5.5.1993

ADMINISTRATIVE REPORT

The Central Council for Research in Ayurveda and Siddha is a Society registered on 20th March, 1978 under the Societies Registration Act XXI of 1860. During the period under report ending 31st March, 1992 the membership of the Society and Governing Body of the Council were as under:

President		Shri Chandra Shekhar Prime Minister and Union Minister for Health & Family Welfare. (upto 20.6.91)
		Ms. D.K. Thara Devi Siddarth Union Minister of State for Health & Family Welfare (from 21.6.91)
Official Members	1.	Sh. M.S. Dayal Addl. Secretary (H) Ministry of Health & Family Welfare
	2.	Mr. T.K. Das
		Ms. Veena Maitra Joint Secretary Incharge of ISM Ministry of Health & Family Welfare
	3.	Mrs. A.P. Ahluwalia Joint Secretary (F.A.) Ministry of Health & Family Welfare
Non Official Members	1.	Vd. S.S. Changani
	2.	Dr. (Miss) P.V. Tewari
	3.	Prof. A.N. Namjoshi
	4.	Dr. A. Anand Kumar
	5.	Vd. D.K. Triguna
	6.	Dr. G.V. Satyawati

7. Vd. S.P. Gupta
8. Dr. N.H. Rao
9. Prof. H.H. Siddiqui
10. Dr. Y.K. Sarin
11. Dr. R. Kannan

Director, NIA, Jaipur	Vd. L.N. Sharma
Director, NIS/CRI(S)	Vacant
Member Secretary	Dr. V.N. Pandey Director, CCRAS

During the period under report the Governing Body met once on 22nd October, 1991 and inter-alia decided on the following important matters:-

1. Approved the production of two video Films on following priority items:-
   a) A film on "Shilajit - an Ayurvedic Drug"
   b) A film on "Cultivation of Guggulu"

2. Approved the creation of one post each of Chowkidar and one part time Safaiwala in all the existing nine Tribal Health Care Research Projects under Plan.

3. Approved the holding of Silver Jubilee Celebration of Amalgamated Units, Tarikhet at an estimated expenditure of Rs. 1.50 lakhs.

4. Approved the renaming of the Amalgamated Units, Tarikhet as "Indian Institute of Ayurveda for Drug Research" (Bhartiya Ayurvedic Bheshaja Anusandhan Sansthan).

5. Approved the extension of the tenure of the grant-in-aid enquiry on "Studies on Antifertility Agent" under Prof. A. Chatterjee at Deptt. of Pure Chemistry, University College of Sciences, Calcutta University for the period from 1.10.89 to 31.3.91 on an expenditure ceiling of Rs. 69,000/- per year.

6. Approved the grant of conveyance allowance of Rs. 500/- per month to the Project Officer, Amchi Research Unit, Leh, Ladakh.

7. Approved the enhancement of rent and payment of arrears of rent in respect of building No. D-5, Green Park, occupied by Documentation and Publication Division, New Delhi.

8. Approved the creation of 9 posts of Labourers in the Regional Research Institute for Ayurveda, Calcutta subject to the condition that necessary clearance is obtained from the Ministry of Health & F.W.

9. Approved the purchase of one Maruti Gypsy in replacement of the old condemned jeep no. WMA 1598 at an estimated expenditure of Rs. 2.75 lakhs.

10. Adopted the Annual Report and Audited Statements of Accounts of the Council for the years 1988-89 and 1989-90.

11. Approved the draft annual report of CCRAS for the year 1990-91.

12. Approved certain amendments to clause 4(ii) of the Memorandum of Association, Rule 41 of Rules and Regulations and 14(e) of the Bye Law subject to ratification by the Council's society.

13. Approved the assignment of commercial exploitation of patented Drug 777 oil, a Siddha medicine for Psoriasis, through NRDC.

14. Constituted a Committee under the Chairmanship of Additional Secretary (Health) having 2 members nominated by A.S. (H) and the Director, CCRAS as Member Secretary which will go into the existing staff structure of the research programmes undertaken in the Council and suggest reorganisation,readjustment and redeployment of staff and facilities by undertaking certain minimum programmes through the Institutes/Centres with a view to manage the entire activities from within the available funds.

15. Ratified the shifting of Pharmacological Research Unit from Jodhpur to SMS College, Jaipur under the charge of Dr. N.K. Khanna, Head of the Department of Pharmacology.

16. Ratified the implementation of the orders of the Ministry in regard to revised rates of Nursing Allowance, Washing Allowance and uniform Allowance in respect of entitled employees of the Council with effect from 27.8.91.

17. Authorised the Vice President (Union Minister of State for Health & F.W.) to reconstitute the SAC (Ay.) and the SAC(S).

18. Approved the payment of arrears of rent on account of increase of rent at 10% to the owners of the building at S-10, Green Park Extension Market occupied by the Hqrs. Office of the Council with effect from 26.2.1989.

19. Approved the amendment to the Recruitment Rules from the classification of "ministerial" to "Non-ministerial" in respect of certain posts attached to the research hospitals functioning under the Council to make them eligible for grant of Hospital Patient Care Allowance.

20. Approved the revision of pay scale of Compounder from Rs. 1200-2040 to Rs. 1350-2200 subject to the condition that the qualification, content and duties of Compounder are comparable to Pharmacists w.e.f. 22.10.1991.

Finance Committee

During the year under report the standing Finance Committee consisted of the following:

1.	Joint Secretary (ISM) Ministry of Health & Family Welfare	Sh. T.K. Das Ms. Veena Maitra	Chairman
2.	Dy. Secretary (IF) Ministry of Health & Family Welfare	Sh. A.K. Joshi	Member
3.	One Technical member to represent Ayurveda	Vd. B.D. Triguna	Member
4.	One Technical member to represent Siddha	Dr. A. Ananda Kumar	Member
5.	Director of the Council	Dr. V.N. Pandey	Member Secretary

No meeting could be held during the reporting period

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

The Council is following the orders and guidelines laid down by the Government of India in respect of reservation and representation of SC/ ST in the services of the Council. The recruitment/promotion is done according to the roster points. The Council is having a total staff strength of 1596 employees and No. of SC/ST employees in different groups as on 1.1.1992 is as under (upto 31.12.1991).

Group	No. of employees	SC	Percentage of total employees	ST	Percentage of total employees
A	115	5	4.3	3	2.61
B	119	8	6.7	2	1.68
C	700	84	12.00	25	3.57
D	662	213	32.17	49	7.40
Total	1596	310	19.42	79	4.95

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

Official Language Implementation Committee

The Council is having an official Language Implementation Committee under the 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 twice in April, 91 and February, 92.

Scientific Advisory Committee (Ayurveda)

The SAC (Ay) was as below upto February, 1992.

1.	Vd. Shivkaran Sharma Changani	Chairman
2.	Dr. (Mrs.) L. Shardamma	Member
3.	Dr. V. Narayanaswamy	Member
4.	Vaidya Davinder Kumar Triguna	Member
5.	Vaidya Satya Pal Gupta	Member
6.	Dr. N. Hanumantha Rao	Member
7.	Vaidya N.G. Bandhopadhya	Member
8.	Vaidya Pradeep K. Debnath	Member
9.	Vaidya Veni Madhav Ashwani Kumar Shastri	Member
10.	Vaidya Surinder Kumar Sharma	Member
11.	Prof. A.N. Namjoshi	Member
12.	Dr. Rajender Gupta	Member
13.	Vd. S.K. Mishra	Member
14.	Dr. V.N. Pandey	Director & Member Secretary

During the year under report the Scientific Advisory Committee (Ay) was reconstituted with the following members from 14.2.1992.

1.	Vd. B.D. Triguna	Chairman
2.	Vd. S.S. Changani	Member
3.	Prof. A.N. Namjoshi	Member
4.	Vd. S.P. Gupta	Member
5.	Vd. D.K. Triguna	Member
6.	Vd. S.K. Mishra	Member
7.	Dr. Rajender Gupta	Member
8.	Vd. Sri Ram Sharma	Member
9.	Dr. S.M. Angadi	Member
10.	Sh. P.R. Krishna Kumar	Member
11.	Dr. (Miss) P.V. Tewari	Member
12.	Vd. M.S. Shastri	Member
13.	Vd. R.P. Swami	Member

14.	Vd. Bhagwan Singh	Member
15.	Dr. V.N. Pandey	Director & Member Secretary

SAC (Ay) Sub-Committee meeting of Ayurveda Sabdakosa held on 20-21 June, 1991.

SAC (Ay) Clinical Research Sub-Committee meeting held on 5.9.91.

The Scientific Advisory Committee (Ay) met on 6.9.91 during the period under report and evaluated various research programmes/ schemes of the Council and provided necessary guidance and reviewed the ongoing programmes and suggested improvements wherever felt necessary.

Scientific Advisory Committee (Siddha)

The SAC(S) was as below upto February, 1992.

1.	Dr. R. Kannan	Chairman
2.	Prof. A.N. Namjoshi	Member
3.	Dr. J.R. Krishnamurthy	Member
4.	Dr. V. Ramdas	Member
5.	Dr. K.V. Vaitheswaran	Member
6.	Dr. Anand Kumar	Member
7.	Dr. V.N. Pandey	Director & Member Secretary

During the year under report the Scientific Advisory Committee(S) was reconstituted with the following members from 14.2.92.

1.	Dr. R. Kannan	Chairman
2.	Dr. A. Ananda Kumar	Member
3.	Dr. K.V. Vaitheswaran	Member
4.	Dr. V. Subramaniyan	Member
5.	Dr. R. Thyagarajan	Member

6.	Dr. Joseph Thas	Member
7.	Dr. V.N. Pandey	Director & Member Secretary

The Scientific Advisory Committee (Siddha) met on 26.8.91 during the period under report and evaluated the programmes and new schemes and the recommendations were placed before the Finance Committee/Governing Body for consideration and approval.

Organizational Network of CCRAS

There are 12 Central/Regional Research Institute, 10 Regional Research Centres, 27 Research Units, 7 Tribal Health Care Research Projects in Ayurveda, 1 Documentation and Publication Division, 12 Family Welfare Research Units and 1 Research Project on Tibetan Medicine besides 2 Research Institutes, 10 Research Units and 2 Tribal Health Care Research Projects in Siddha System of Medicine. One time bound Research Enquiry concluded its work and submitted the report.

Budget Provision

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

(Rs. in lakhs)

Scheme	Actual Expenditure 1990-91	Budget Estimates 1991-92	Revised Estimates 1991-92	Actual Expenditure 1991-92
Plan	114.33	200.00	150.00	136.12
Non-Plan	537.31	524.00	572.45	550.00
F.W.R.S.	15.18	19.00	16.00	19.47

Audited Statement of Accounts

The Accounts of the Council for the year 1991-92 for the period from 1st April, 91 to 31st March, 92 were audited by the D.A.C.R.

Special Events

1. Head Quarters building for CCRAS and other Research Councils as well as CCIM and CCH named as Jawaharlal Nehru Bhartiya Chikitsa Avum Homoeopathy Anusandhan Bhawan which is under construction at Janakpuri Institutional Area is in the final stages of completion and the Council Headquarters is expected to be shifted to this building by the end of December, 1992. The building was designed by the Design Bureau of DGHS and the construction was entrusted to CPWD at an initial estimated outlay of Rs. 376.85 lakhs. During the year under review, meetings were held with agencies for Power, Water connections etc. and various matters connected with internal finishing & fixtures were finalised.

2. The Council continued detailed study of AYUSH-64 in collaboration with National Malaria Eradication Programme at Madras through Dr. A. Lakshmipati Research Centre for Ayurveda, Madras during the reporting period.

3. A one day symposium on Cervical Spondylitis organised by Indraprasthiya Vaidya Sabha was held at the All India Institute of Medical Sciences, New Delhi on 26.4.91. On this occasion, the Hon'ble Prime Minister Shri Chandra Shekhar released the CCRAS Video Film "Ayurveda - the Science of Life" and a book entitled "Sahasrayoga" published by CCRAS

4. The Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune was recognised by the University of Pune as an approved Research Centre for post graduate research.

5. The Council Officers participated in the second International Ayurvedic Conference in Nepal and organised an exhibition during the period.

II TECHNICAL REPORT - AYURVEDA

Abbreviations used for Institutes/Centres/Units

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

33.	Clinical Research Unit under FWRP, Patiala	CRUFP
34.	Clinical Research Unit under FWRP, Bombay	CRUFB
35.	Clinical Research Unit under FWRP, Lucknow	CRUFL
36.	Clinical Research Unit under FWRP, Jaipur	CRUFJ
37.	Clinical Research Unit under FWRP, Calcutta	CRUFC
38.	Clinical Research Unit under FWRP, Ahmedabad	CRUFA
39.	Clinical Research Unit under FWRP, Trivandrum	CRUFT
40.	Clinical Research Unit under FWRP, Varanasi	CRUFV
41.	Pharmacological Research Unit under FWRP, Jamnagar	PhRUFJ
42.	Pharmacological Research Unit under FWRP, Varanasi	PhRUFV
43.	Pharmacological Research Unit under FWRP, Bhubaneswar	PhRUFBh
44.	Pharmacological Research Unit under FWRP, Trivandrum	PhRUFT
45.	Pharmacological Research Unit, Calcutta	PhRUC
46.	Pharmacological Research Unit, Lucknow	PhRUL
47.	Pharmacological Research Unit, Jodhpur	PhRUJ
48.	Pharmacological Research Unit, Varanasi	PhRUV
49.	Pharmacological Research Unit at CRI (Ay), Delhi	PhRUD
50.	Pharmacological Research Unit, Trivandrum	PhRUT
51.	Toxicity Research Unit, Jhansi	TRUJh
52.	Chemical Research Unit, Calcutta	ChRUC
53.	Chemical Research Unit, Varanasi	ChRUV
54.	Chemical Research Unit, Hyderabad	ChRUH
55.	Chemical Research Enquiry, Lucknow	ChREL
56.	Pharmacognosy Research Unit, Calcutta	PREC
57.	Pharmacognosy Research Unit, Pune	PRUP
58.	Indian Institute of History of Medicine, Hyderabad	IIHMH
59.	Literary Research Unit, Madras	LRUM
60.	Documentation and Publication Division, New Delhi	DPDD
61.	Tribal Health Care Research Project (Ay), Car-Nicobar	THCRPC
62.	Tribal Health Care Research Project (Ay), Ziro	THCRPZ
63.	Tribal Health Care Research Project (Ay), Palamau	THCRPP
64.	Tribal Health Care Research Project (Ay), Jhabua	THCRPJ
65.	Tribal Health Care Research Project (Ay), Chinchapada	THCRPCh
66.	Tribal Health Care Research Project (Ay), Jagdalpur (M.P.)	THCRPJa
67.	Tribal Health Care Research Project (Ay), Imphal (Manipur)	THCRPI
68.	Drug Standardisation Research Project, Jamnagar	DSRPJ
69.	Drug Standardisation Research Project, Varanasi	DSRPV
70.	Research Project in Tibetan System of Medicine, Leh	RPTSML
71.	Medicinal Plant Garden at RRC, Itanagar	MPGI

CLINICAL RESEARCH PROGRAMMES

The clinical research programmes of Council are directed to develop safe and effective therapy for selected diseases and study the health problems of population at large. The clinical trials of simple herbal, herbomineral, and extracts-isolates of plant drugs, and health care research programmes, Service oriented survey and surveillance programme, Community health care research programme and Tribal Health Care Research Programmes are included under the clinical research programmes.

Clinical trials:

The three main components of clinical trial, the patient alongwith his disease, the therapy and the method of study, are well defined precisely. The studies on National priority programmes, the diseases not easily manageable by modern treatments are selected for study. The trial therapies are formulated in light of concept of the pathogenesis of diseases in Ayurveda. The selection of patients though based largely on classical features has been well defined and specified as per the currently acceptable parameters. Apart from clinical features which are also quantified, the biochemical, pathological, radiological, electrophysiological and endoscopic parameters are also suitably adopted for assessment of results. There is a possibility of variation of observations due to lack of availability of uniform facilities at all centres. Such factors may also be attributed to excessive drop outs.

The observations on effect of trial therapies on Amavata (rheumatoid arthritis), Paksavadha (hemiplegia), Saisaviyavata (post-polio-paralysis), Amlapitta (hyperacidity), Parinamasula (duodenal ulcer), Annadrava sula (Gastric ulcer), Raktarsa (bleeding piles), Tamaka Svasa (bronchial asthma), Sveta Pradara (leucorrhoea), Rakta Pradara (dysfunctional uterine bleeding), Madhumeha (diabetes mellitus), Mutrakricchra (dysuria), Mutrasmari (urolithiasis), Hridroga (ischaemic heart disease), Vyana Bala Vaisamya (hypertension), Visamajvara (malaria), Kala-a-zar, Slipada (filariasis), Kitibha (psoriasis), Vicarcika (eczema), Apasmara (epilepsy), Manasa Vikara (mental disorders) and Arbuda Visesa (cancer) etc. are presented herewith. In the course of these clinical studies 247448 patients were provided medicare at O.P. level while 1376 patients have been treated at I.P. level. The description on each of the diseases is provided with details of trial therapy,

participating Institutes/Centres/Units, number of patients and results of therapies.

Amavata (rheumatoid arthritis):

The Clinical studies on Amavata have been conducted at CRIs Bombay and Bhubneshwar, RRIs Calcutta and Gwalior, RRC Itanagar, IIK Patiala and IIP Cheruthuruthy on 137 patients as per details given below.

Results of clinical studies of Ayurvedic preparations on Amavata (rheumatoid arthritis)

S. No.	Therapy	Instt./ Centre	Total Cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1	2	3	4	5	6	7	8	9
1. a)	Musta curna Baluka sveda	IIPC	8	4	-	2	2	-
b)	Asvagandha curna Baluka sveda	IIPC	6	-	3	-	2	1
c)	Pancakarma with Murchana taila	IIPC	4	-	I	1	2	-
2.	Sunthi guggulu Patrapinda sveda	IIKP	38	-	28	8	2	-
3. a)	Asvagandha curna Eranda taila Baluka sveda	CRIB	3	-	2	-	-	1
b)	Sunthi guggulu Baluka sveda	CRIB	1	-	-	-	-	1
c)	Musta curna Baluka sveda	CRIB	4	1	2	-	-	1
4. a)	Asvagandha curna Eranda taila Baluka sveda	RRIC	4	1	2	-	-	1

1		2	3	4	5	6	7	8	9
	b)	Sunthi guggulu	RRIC	38	11	9	5	1	12
5.		Musta curna	RRIC	7	-	1	5	-	1
6.	a)	Musta curna Baluka sveda	RRCI	12	1	5	4	-	2
	b)	Sunthi guggulu	RRCI	3	2	1	-	-	-
7.	a)	Musta curna	CRIBh	7	2	1	-	-	4
	b)	Asvagandha curna Eranda taila	CRIBh	2	-	-	-	1	1
		Total		137	22	55	25	10	25

Paksavadha (hemiplegia):

The clinical studies on 103 patients of Paksavadha has been conducted at IIP Cheruthuruthy, IIK Patiala and CRIs Bombay, Bhubaneshwar and Delhi. The results of the treatment are tabulated herewith.

Result of clinical studies of Ayurvedic preparations on Paksavada (hemiplegia)

S. No.		Therapy	Instt./ Centre	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1		2	3	4	5	6	7	8	9
1.		Ekangavira Rasa Mahamasa Taila Abhyanga	IIKP	4	-	-	-	1	3
2.	a)	Bhadradarvadi Kvatha, Dhanvantara gutika, Snehana Masa taila, Svedana	IIPC	25	-	-	10	11	4
	b)	Ekangavira Rasa Snehana Masa taila, Svedana Sastikasali	IIPC	29	-	1	8	16	4

1	2	3	4	5	6	7	8	9
	c) Pancakarma therapy	IIPC	19	2	6	3	2	6
3.	a) Ekangavira Rasa Snehana, Svedana	CRIB	13	3	2	5	2	1
	b) Samira Pannaga Rasa, Snehana-svedana	CRIB	2	-	-	1	-	1
4.	Ekangavira Rasa Maha Masa taila Abhyanga Sastika-sali Pinda Sveda	CRID	6	-	1	1	-	4
5.	a) Samira Pannaga Rasa	CRIBh	1	-	-	-	-	1
	b) Ekangavira Rasa	CRIBh	4	-	4	-	-	-
	Total		103	5	14	28	32	24

Grivastambha (cervical spondylitis):

A few Ayurvedic preparations have been studied on 12 patients of Grivastambha at CRIs Delhi and Bombay as per details tabulated herewith.

Results of clinical studies of Ayurvedic drug preparations on Grivastambha (cervical spondylitis)

S. No.	Therapy	Instt.	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	a) Musta curna Baluka sveda	CRIB	7	-	1	3	1	2
	b) Musta curna	CRIB	3	-	-	1	-	2
2.	Ekangavira Rasa	CRID	2	1	-	-	-	1
	Total		12	1	1	4	1	5

Kampavata (parkinson's disease):

Kampavatari Rasa and Balasvagandha kasaya with or without Mahamasa taila Abhyanga has been studied on four cases at CRI Bombay. The effect of Abhyanga with drugs appears to be better.

Saisaviyavata (post polio paralysis):

The effect of Ekangavira Rasa with Abhyanga, Sveda and Gorocanadi Vati and Asvagandha with Balasvagandha taila Abhyanga, has been studied on 19 cases at CRI, Delhi and IIP Cheruthuruthy. The results are tabulated below:

Results of clinical studies of Ayurvedic preparations on Saisaviyavata (post-polio paralysis)

S.No.		Therapy	Instt.	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.		Ekangavira rasa Masa taila abhyanga. Sasti-kasali pinda sveda	CRID	17	1	5	8	-	3
2.	a)	Gorocanadi vati, Asvagandha curna, Balasvagandha taila	IIPC	1	1	-	-	-	-
	b)	Ekanga vira Rasa, Eranda taila, Mahamasa taila Abhyanga	IIPC	1	-	-	1	-	-
		Total		19	2	5	9	-	3

Gridhrasi (sciatica):

The clinical trial of Bhallataka in different dose schedules and Hingu triguna taila with Abhayanga has been conducted at IIP Cheruthuruthy and CRI Bhubaneshwar on 41 patients. The results are given below in table:

Results of clinical studies of Ayurvedic preparations on Gridhrasi (sciatica)

S. No.		Therapy	Instt.	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	a)	Bhallataka 250 mg	IIPC	6	-	-	1	5	-
	b)	Bhallataka 500 mg	IIPC	11	-	1	4	6	-
	c)	Bhallataka 500 mg to 12 gm. Vardhamanakrama	IIPC	14	3	-	5	5	1
2.		Hingu Triguna Taila	CRIBh	10	5	-	-	-	5
		Total		41	8	1	10	16	6

Pangu (paraplegia):

The effect of three sets of therapies have been studied on 16 patients of Pangu at IIP Cheruthuruthy as per details given in table below:

Results of clinical studies of Ayurvedic preparations on Pangu (paraplegia)

S.No.		Therapy	Instt.	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	a)	Goracanadivati Asvagandha Bala Taila	IIPC	8	2	-	3	1	2
	b)	Ekangavira rasa Eranda taila Mahamasa taila	IIPC	5	-	1	3	-	1
	c)	Pancakarma with Murchana taila	IIPC	3	-	-	-	2	1
		Total		16	2	1	6	3	4

Ardita (facial paralysis):

The effect of Mahavatavidhvansa Rasa, Rasna Saptaka kvatha and Sastika Sali Pinda Sveda has been studied on 10 patients of Ardita at IIP Cheruthuruthy. Out of 10, six patients showed good response and 4 patients showed fair response.

Vatarakta:

The trial of Kumarika vati, Maharasnadi ghanavati and Kaisora guggulu has been taken up on 7 patients at RRC Mandi. The therapy provided fair response and poor response in 3 patients each and one patient was recorded as drop out.

Amlapitta (hyperacidity)

The clinical studies on 130 patients of Amlapitta has been taken up at CRIs Bombay and Bhubaneshwar, RRI Junagarh, RRCs Nagpur, Mandi and Hastinapur and CRU, Hyderabad to assess the effect of different treatments as per table below:

Results of clinical studies of Ayurvedic preparations on Amlapitta (hyperacidity)

S.No.		Therapy	Instt./ Centre/ Unit	Total Cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1		2	3	4	5	6	7	8	9
1.	a)	Sarjiksara Jahara Mohara Pisti, Amalaki Svarasa	CRIB	6	1	2	-	1	2
	b)	Avipattikara curna, Kaparda Bhasma	CRIB	4	2	-	-	-	2
	c)	Sarjiksara Amalaki curna	CRIB	3	-	1	-	1	1
2.	a)	Sarjiksara Jahara Mohara Pisti	RRIJu	3	-	-	2	-	1

1		2	3	4	5	6	7	8	9
	b)	Control bland diet	RRIJu	6	-	3	1	1	1
	c)	Avipattikara curna, Kaparda Bhasma	RRIJu	11	5	2	2	1	1
	d)	Sarjikasara Amalaki curna	RRIJu	15	1	7	3	1	3
3.		Avipattikara curna, Kaparda Bhasma	RRCN	6	1	1	-	-	4
4.	a)	Avipattikara curna Kaparda bhasma	RRCM	9	2	3	1	3	-
	b)	Amalaki curna Sarjiksara Jahara Mohara Pisti	RRCM	6	3	2	1	-	-
5.		Avipattikara curna, Kaparda Bhasma	RRCH	34	2	3	1	-	28
6.	a)	Avipattikara curna, Kaparda Bhasma	CRUH	4	3	1	-	-	-
	b)	Sarjiksara, Jahara Mohara Pisti, Amalaki Svarasa	CRUH	17	9	6	-	-	2
7.		Avipattikara curna, Kaparda Bhasma	CRIBh	6	4	-	-	-	2
		Total		130	33	31	11	8	47

Parinamasula (duodenal ulcer):

The clinical studies on 56 patients have been taken up at CRIs Bhubaneshwar and Delhi and CRUs Hyderabad and Kottakkal to assess the effect of a few Ayurvedic preparations as per table below.

Results of clinical stı dies of Ayurvedic preparations on Parinamasula (duodenal ulcer)

S. No.		Therapy	Instt./ Unit	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1		2	3	4	5	6	7	8	9
1.	a)	Nimbatiktam	CRID	3	2	-	1	-	-
	b)	Suta sekhara Rasa	CRID	2	2	-	-	-	-
2.		Suta Sekhara Rasa. Amalaki Svarasa	CRUH	23	2	15	-	-	6
3.	a)	Maha Tiktaka ghrta Sodhana samana	CRUK	9	-	6	1	2	-
	b)	Mahatiktaka gharta samana	CRUK	6	1	1	4	-	-
	c)	Nimbatiktam	CRUK	4	-	2	2	-	-
4.		Nimbatiktam	CRIBh	9	3	1	-	-	5
		Total		56	10	25	8	2	11

Annadravasula (gastric ulcer)

The comparative effect of two sets of Ayurvedic drug preparations has been studied on 24 patients of Annadravasula at RRC Itanagar as per table below:

Results of clinical trials of Ayurvedic preparations on Annadravasula (gastric ulcer)

S. No.	Therapy	Centre/ Unit	Total Cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Pravala Pisti, Jahara Mohara Pisti	RRCI	19	7	5	2	-	5

1	2	3	4	5	6	7	8	9
	Amalaki curna Eladi curna	CRUH	5	1	4	-	-	-
	Total		24	8	9	2	-	5

Kamala (jaundice):

The studies on two sets of Ayurvedic preparations have been taken on 25 patients of Kamala at IIP Cheruthuruthy and RRCs Jammu, Mandi and Hastinapur as per details tabulated herewith:

Results of clinical studies of Ayurvedic preparations on Kamala (jaundice)

S. No.	Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1. a)	Punarnava Mandura. Arogya vardhini. Sveta parpati	IIPC	3	1	-	-	-	2
b)	Kiratatikta. Musta Parpata, Katuki and guduci kvatha	IIPC	1	1	-	-	-	-
2.	Punarnava Mandura, Arogyavardhini, Sveta parpati	RRCJ	8	8	-	-	-	-
3.	Punarnava Mandura, Arogyavardhini, Sveta Parpati	RRCH	6	3	1	-	-	2
4.	Punarnava Mandura, Arogyavadhini Sveta parpati	RRCM	7	2	2	1	-	2
	Total		25	15	3	1	-	6

Raktarsa (bleeding piles):

The clinical trials of some Ayurvedic approaches of treatment have been taken up at IIK Patiala, CRIs, Delhi, Bombay and RRC Nagpur on 89 patients. The results are tabulated below:

Results of clinical studies of Ayurvedic preparation on Raktarsa (bleeding piles)

S. No.		Therapy	Instt./ Centre	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	a)	Bolabhadra Rasa Kasisadi Taila	IIKP	15	7	2	4	1	1
	b)	Surana kanda Bhasma. Kasisadi Taila	IIKP	10	3	3	2	1	1
2.		Apamarga Ksara	CRID	50	30	14	4	1	1
3.		Taila Vasti	CRIB	8	3	4	1	-	-
4.		Bolabhadra Rasa Kasisadi Taila	RRCN	6	1	1	-	-	4
		Total		89	44	24	11	3	7

Bhagandara (fistula in-ano):

The trials of Ksara sutra in cases of Bhagandara, has been continued at CRIs Delhi and Bombay on 28 patients as per table below:

Results of clinical studies of Ayurvedic preparations on Bhagandara (fistula-in-ano)

S.No.	Therapy	Instt.	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No resp.	Drop out
1.	Apamarga Ksara sutra	CRID	22	17	1	-	-	4
2.	Ksara sutra	CRIB	6	3	-	-	-	3
	Total		28	20	1	-	-	7

Grahani Roga (malabsorption syndrome):

The trials of Kutaja ghana vati and Sankhadrava, have been further continued at RRC Jammu on 10 patients of Grahani Roga. The results shows good response in eight patients and fair response and poor response in one patient each.

Pravahika:

A combination of Jatiphaladi curna, Mahasankha Vati, Citrakadi Vati and Hingvastaka curna, has been tried on 80 patients at RRC, Gangtok. The treatment has been fairly effective as could be seen by the results indicating good response in 17 patients, fair response in 16 patients, poor response in 23 patients and 24 patients recorded as drop out.

Tamaka Swasa (bronchial asthma):

The Clinical studies on Tamaka Swasa, have been taken up on 116 patients at IIK Patiala and RRIs Junagarh, Gwalior and Patna to assess two approches of treatment. Results may be seen in table below:

Results of clinical studies of Ayurvedic preparations on Tamaka swasa (bronchial asthma)

S. No.		Therapy	Instt./ Centre/ Unit	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	a)	Somalatadi Yoga	IIKP	17	2	4	5	-	6
	b)	Bhagottara gutika	IIKP	32	5	6	4	1	16
2.	a)	Bhagottara gutika	RRIJu	17	-	5	6	-	6
	b)	Somalatadi Yoga	BRIJu	14	1	6	3	-	4
3.		Somlatadi Yoga	RRIG	7	-	3	2	2	-
4.	a)	Bhagottara gutika	RRIP	11	2	4	3	-	2
	b)	Somalatadi Yoga	RRIP	18	1	4	5	-	8
		Total		116	11	32	28	3	42

Pinasa (upper respiratory infection):

The trial of Pathyadi Kvatha has been taken on 42 patients of Pinasa at CRI Bombay. Good response was noted in 4 patients, 16 patients showed fair response and 6 patients did not show any effect. The remaining 16 patients were grouped as drop out.

Sveta Pradara (leucorrhoea):

The clinical studies on 206 patients were conducted at IIK Patiala, CRIs Delhi, Bhubaneshwar and Bombay, RRIs Jaipur, Junagarh and Calcutta and RRC Nagpur. The results of study of effect of different approaches of treatment may be seen in table below:

Results of clinical studies of Ayurvedic preparations on Svetapradara (leucorrhoea)

S. No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1	2	3	4	5	6	7	8	9
1. a)	Svarna Vanga Kukkutanda tvak Bhasma Punarnava Mandura	CRID	4	3	-	-	-	1
b)	Asvagandha curna Lodhrasava Patrangasava	CRID	5	2	2	-	1	-
2.	Svarna Vanga Kukkutanda Tvak-Bhasma Punarnava Mandura	IIKP	30	4	24	2	-	-
3. a)	Svarna Vanga Kukkutanda Tvak-Bhasma	CRIB	7	-	5	2	-	-

1		2	3	4	5	6	7	8	9
	b)	Svarna Vanga Kukkutanda Tvak-Bhasma Punarnava Mandura Pancavalkala-Kvatha Uttara Vasti	CRIB	28	21	4	3	-	-
	c)	Punarnava Mandura Pancavalkala-Kvatha Uttara Vasti	CRIB	9	-	5	3	1	-
4.	a)	Svarna Vanga Kukkutanda Tvak-Bhasma Punarnava Mandura	RRIC	20	2	8	2	-	8
	b)	Asvagandha Patrangasava Lodhrasava	RRIC	17	1	7	1	1	7
5.	a)	Svarna Vanga Kukkutanda Tvak Bhasma	RRIJu	7	6	1	-	-	-
	b)	Punarnava Mandura Pancavalkala-Kvatha Uttar Vasti	RRIJu	24	10	5	4	-	5
	c)	Asvagandha Patrangasava/ Lodhrasava Nirgundi Taila-Picu	RRIJu	13	4	4	3	-	2
		Asvagandha Lodhrasava Patrangasava Nirgundi Taila	RRIJ	21	4	3	-	-	14

1	2	3	4	5	6	7	8	9
7.	Svarna Vanga Kukkutanda Tvak-Bhasma Punarnava-Mandura Nirgundi Taila-Picu	RRCN	10	1	-	-	2	7
8.	Svarna Vanga Kukkutanda Tvak-Bhasma	CRIBh	11	6	1	1	-	3
	Total		206	64	69	21	5	47

Raktapradara (metrorrhagia):

The clinical studies on Raktapradara has been conducted at IIK Patiala, CRIs Delhi and Bhubaneshwar, RRIs Calcutta and Junagarh on 99 patients. The results of different treatments may please be seen in table below:

Results of clinical studies of Ayurvedic preparations on Raktapradara (metrorrhagia)

S. No.	Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1	2	3	4	5	6	7	8	9
1.	Kamadudha Rasa Durva Svarasa	IIKP	10	5	-	-	2	3
2. a)	Bolabhadra Rasa Laksadi Kvatha	CRID	24	2	7	-	2	13
b)	Kamadudha Rasa Durva Svarasa	CRID	17	1	3	4	1	8
3. a)	Kamadudha Rasa Durva Svarasa	RRIC	2	-	-	-	-	2
b)	Bolabhadra Rasa Laksa Rasa	RRIC	6	-	-	-	-	6

1		2	3	4	5	6	7	8	9
4.	a)	Bolbhadra Rasa Laksadi Kvatha	RRIJu	27	10	2	3	-	12
	b)	Kamadudha Rasa Durva Svarasa	RRIJu	11	4	-	1	-	6
5.		Kamadudha Rasa	CRIBh	2	-	1	1	-	-
		Total		99	22	13	9	5	50

Madhumeha (diabetes mellitus):

Clinical trials of some herbal and herbo-mineral preparations has been conducted on 96 patients of Madhumeha at IIK Patiala, CRIs Delhi and Bombay, RRIs Calcutta and Junagarh and ALRCA Madras. The results may be seen in table below:

Results of clinical studies of Ayurvedic preparations on Madhumeha (diabetes mellitus)

S. No.		Therapy	Instt./ Centre/ Unit	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1		2	3	4	5	6	7	8	9
1.		Ayush 82 Silajita	CRID	36	3	15	-	9	9
2.	a)	Chandra Prabhavati Trivanga Bhasma Vijayasara Kvatha	CRIB	12	-	-	1	3	8
	b)	Ayush 82	CRIB	11	-	-	4	1	6
3.	a)	Nisadi Yoga Vijayasara Kvatha	IIKP	2	-	-	1	1	-
	b)	Nygrodhadi Kvatha	IIKP	1	-	-	-	-	1
4.	a)	Nygrodhadi Curna	RRIC	2	-	-	-	-	2
	b)	Rastinon	RRIC	3	-	-	-	-	3

1	2	3	4	5	6	7	8	9
5.	Ayush 82	ALR-CAM	6	2	-	2	-	2
6.	Ayush 82	RRIJu	23	-	6	6	-	11
	Total		96	5	21	14	15	41

Mutrakriccha (dysuria):

The clinical studies on 43 patients of Mutrakriccha has been conducted at RRI Gwalior and RRCs Itanagar and Hastinapur. The results are summarised in the table below:

Results of clinical studies of Ayurvedic preparations on Mutrakricchra (dysuria)

S. No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	Sveta Parpati Trina Pancamula-Kvatha	RRIG	3	-	2	1	-	-
2.	Sveta Parpati Trina Pancamula Kvatha	RRCI	29	18	3	3	-	5
3. a)	Sveta Parpati-Trina Pancamula Kvatha	RRCH	8	1	2	-	-	5
b)	Goksuradi Guggulu Trina Pancamula Kvatha	RRCH	3	-	2	-	-	1
	Total		43	19	9	4	-	11

Mutrasmari (urolithiasis)

The clinical studies on 51 patients of Mutrasmari have been conducted at CRI Delhi and RRCs Jammu and Mandi. The results of a few treatments are summarised below:

Results of clinical studies of Ayurvedic preparations on Mutrasmari (urolithiasis)

S. No.		Therapy	Instt./ Centre	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	a)	Sveta Parpati, Pasana Bheda, Goksuru	RRCJ	5	3	1	1	-	-
	b)	Sveta Parpati, Kulatha	RRCJ	15	7	7	1	-	-
2.	a)	Bru. Trina Panca-Mula Kvatha, Goksuru kvatha	RRCM	7	-	1	3	1	2
	b)	Ananda Bhairavi vati, Pasana Bheda, Goksuru Kvatha	RRCM	3	-	2	-	1	-
3.		Sveta Parpati, Pasanabheda, Goksuru, and Kulatha kvatha	CRID	21	4	5	6	6	-
		Total		51	14	16	11	8	2

Medoroga (obesity)

The effect of Ayush 55 and Navaka guggulu has been assessed on 26 patients of Medoroga in two groups at RRI Junagarh as per table given below:

Results of clinical studies of Ayurvedic preparations on Medoroga (obesity)

S. No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	Navaka guggulu	RRIJu	13	-	2	5	-	6
	Ayush 55	RRIJu	13	-	3	2	-	8
	Total		26	-	5	5	-	14

Hridroga (ischaemic heart diseases):

Clinical trial of Puskara Guggulu was conducted on 20 patients of Hridroga at CRU (AT/MT) Varanasi. Good response was observed in 11 cases while 6 cases reported fair response, 2 cases poor response and one case reported no response.

Vyanabala Vaishmaya (hypertension)

Comparative clinical trial of Usiradi curna with Arjuna and Jatamansi with Tagradi curna with Arjuna and Jatamansi has been taken up on 78 patients at IIK Patiala, CRI Delhi, RRI Calcutta and RRC Mandi. The results are tabulated below:

Results of clinical studies of Ayurvedic preparations on Vyanbala Vaishamya (hypertension)

S. No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1	2	3	4	5	6	7	8	9
1.	Tagaradi curna, Arjuna Jatamansi	IIKP	15	4	6	2	3	-
2.	Usiradi curna, Arjuna	CRID	31	8	5	8	-	10

1		2	3	4	5	6	7	8	9
3.		Usiradi curna, Arjuna + Jatamansi	RRIC	22	4	3	-	4	11
4.	a)	Tagradi curna, Arjuna + Jatamansi	RRCM	4	1	1	-	1	1
	b)	Usiradi curna, Arjuna + Jatamansi	RRCM	6	2	1	2	-	1
		Total		78	19	16	12	8	23

Visamajvara (malaria):

The trials of Ayush 64 a coded drug has been taken up in blood smear positive cases for P. vivax and cases with clinical diagnosis only. The study of effect of Ayush 64 in 368 blood smear positive cases has been taken up at RRI Junagarh, RRC Itanagar and ALRCA Madras. The results of the treatment may be seen in table below:

Results 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	RRIJu	13	13	-	-	-	-
2.	a)	Ayush 64	RRCI	20	9	4	1	3	3
	b)	Chloroquin	RRCI	2	2	-	-	-	-
3.	a)	Ayush 64	ALR-CAM	143	73	-	-	49	21
	b)	Chloroquin	ALR-CAM	190	110	-	-	-	80
		Total		368	307	4	1	52	104

The trials on 63 cases of Visamajvara (clinical diagnosis only) to

study the effect of Ayush 64 has been taken at IIK Patiala, CRI Delhi, RRI Jaipur and RRCs Nagpur, Mandi, Gangtok and Hastinapur. The results are tabulated below:

Results of clinical studies of Ayurvedic preparations on Visamajvara (Malaria clinical)

S. No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	Ayush 64	IIKP	25	14	-	-	1	10
2.	Ayush 64	RRIJ	10	5	3	2	-	-
3.	Ayush 64	RRCM	2	-	-	-	-	2
4.	Ayush 64	RRCM	8	4	4	-	-	-
5.	Ayush 64	RRCH	5	4	-	-	1	-
6.	Ayush 64	RRCG	5	3	-	2	-	-
7.	Ayush 64	CRID	8	3	3	2	-	-
	Total		63	33	10	6	2	12

Kala-a-zar:

The clinical studies on Kala-a-zar has been taken up on 70 patients in selected villages near Patna by RRI, Patna. The therapy consisting of Mukta Vidrumanjana Rasa, Loka Natha Rasa, Jvarasani and Sarva Jvara Hara lauha, provided good response. Most of the signs and symptoms were relieved. Out of 70 patients under trials, good response was observed in 2 patients, fair response in 17 patients and poor response in 6 patients while 5 patients did not respond to treatment. The remaining 40 patients could not complete the full course of treatment.

Slipada (filariasis):

The clinical studies on 84 patients of Slipada have been conducted at CRI Bhubaneshwar, RRI Patna and RRC Vijayawada. The results of the treatment are tabulated below:

Results 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.	Arogyavardhini, Sudarsana Ghana Vati, Punarnavadi Kvatha	RRCU	37	3	16	3	2	13
2. a)	Ayush 64	RRIP	10	1	2	3	-	4
b)	Sudarsana ghana vati Mahamanjisthadi Kvatha	RRIP	16	4	3	1	-	8
3.	Sudarsana ghana vati, Arogya-vardhini, Punarnavarista	CRIBh	20	9	4	3	3	1
4.	Sapta parna ghana vati	CRIBh	1	1	-	-	-	-
	Total		84	18	25	10	5	26

Kitibha (psoriasis):

The clinical studies on 73 patients of Kitibha has been taken up at CRI Delhi and RRIs Trivandrum and Junagarh to assess the effect of some Ayurvedic treatment. The results are tabulated herewith:

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.	Arogyavardhini Chakramarda Taila	CRID	5	-	-	5	-	-
	Arogyavardhini Chakramarda Taila	RRIJU	17	-	7	4	-	6

1		2	3	4	5	6	7	8	9
3.	a)	Arogyavardhini Chakramarda Taila	RRIT	14	3	2	2	-	7
	b)	Kaishora Guggulu	RRIT	7	-	2	1	1	3
	c)	Nimbatiktam, Lajjalu Kera	RRIT	30	6	8	5	2	9
		Total		73	9	19	17	3	25

Vicarcika (oozing eczema)

Clinical studies on 73 patients of Vicarcika has been taken up at RRI Trivandrum and RRC Itanagar to assess the effect of some Ayurvedic drugs. The results are summarised herewith.

Results of clinical studies of Ayurvedic preparations on Vicarcika (oozing eczema)

S. No.		Therapy	Instt./ Centre/ Unit	Total cases	Results				
					Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1		2	3	4	5	6	7	8	9
1.	a)	Cakramarda curna Cakramarda kera	RRIT	15	9	2	1	-	3
	b)	Manjisthadi kvatha	RRIT	10	5	2	-	-	3
	c)	Arogyavardhini Aragyavadha kvatha	RRIT	13	3	4	3	-	3
	d)	Aragvadha kvatha, Kaishora gugulu	RRIT	12	3	6	2	-	1
2.	a)	Cakramarda curna, Cakramarda kera	RRCI	11	2	3	3	2	1
	b)	Manjisthadi kvatha, Arka patra kera	RRCI	3	1	1	-	-	1
	c)	Arogyavardhini	RRCI	9	1	2	4	1	1
		Total		73	24	20	13	3	13

Pama (scabies)

Clinical studies of some Ayurvedic preparations on 37 patients has been taken at RRC Itanagar as per table given below:

Results of clinical studies of Ayurvedic preparations on Pama (scabies)

S. No.	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	Tuvaraka Gandhaka	RRCI	10	2	1	3	3	1
2.	Kaishora guggulu Maha Maricyadi taila	RRCI	27	4	7	7	8	1
	Total		37	6	8	10	11	2

Other Tvak rogas:

The effect of a set of drugs consisting of Sh. Gandhaka, Arogyavardhini and Haridra Khanda has been studied at RRC Gangtok. The results indicate good response in 53 patients, fair response in 19 patients, poor response in 30 patients and 27 patients were recorded as drop outs.

Svitra (vitiligo)

The clinical trial of Ayush 57 has been conducted on 38 patients of Svitra at RRI Trivandrum and RRCs Vijaywada, Mandi and Hastinapur. The results may be seen in the table below:

Results of clinical studies of Ayurvedic preparations on Svitra (vitiligo)

S. No.	Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1.	Ayush 57	RRIT	13	-	-	1	-	12
2.	Ayush 57	RRCV	14	1	2	-	-	11

1	2	3	4	5	6	7	8	9
3.	Ayush 57	RRCM	3	-	-	-	-	3
4.	Ayush 57	RRCH	8	-	3	-	-	5
	Total		38	1	5	1		31

Apasmara (epilepsy):

The clinical studies on 67 cases of Apasmara has been further continued to study the effect of Ayush 56 at CRI, Delhi, RRI, Jaipur and ARU Bangalore. The follow up studies are under progress. The results may be analysed after completion of trial.

Cittodvega (anxiety neurosis):

The clinical trials of Ayushmana 15 and Ksira Bala Taila has been further continued on 13 patients of Cittodvega at ALRCA Madras. The results are summarised below:

Results of clinical studies of Ayurvedic preparations on Cittodvega (anxiety neurosis)

S. No.	Therapy	Instt./ Centre	Total cases	Results				
				Good resp.	Fair resp.	Poor resp.	No. resp.	Drop out
1. a)	Ayushmana 15	ALR-CAM	8	-	3	1	1	3
b)	Ksira bala taila	ALR-CAM	5	1	1	-	1	2
	Total		13	1	4	1	2	5

Rasayana (prevention of aging):

A combination of Satavari, Punarnava, Bala, Guduci, Amalaki and Yasti has been put to trial on 2 elderly volunteers at ALRCA Madras. Both of them reported good response.

Arbuda Visesa (cancer)

The clinical studies on two phytochemical isolates STG and Plumbagin has been taken at CRI, Delhi on 8 cases. None of the cases could complete the study.

Gala Ganda

A combination of Kaisora Guggulu, Godanti Bhasma and Punarnava Mandura has been put to trial on 10 cases at RRC Gangtok. The treatment provided good response and fair response in one patient each and poor response in four patients while four patients have been classified as drop outs.

DISEASES, NUMBER OF PATIENTS AND PARTICIPATING PROJECTS UNDER CLINICAL RESEARCH PROGRAMMES DURING 1991-92

S. No.	Diseases Groupwise	Pts. Nos.	Participating Projects
1.	**Vatavyadhis**		
	i. Amavata	137	IIKP, IIPC, RRIC, RRIG, RRCI, CRIB, CRIBh
	ii. Paksavadha	103	IIKP, IIPC, CRID, CRIB, CRIBh
	iii. Grivastambha	12	CRIB, CRID
	iv. Kampavata	4	CRIB
	v. Saisaviya vata	19	CRID, IIPC
	vi. Gridhrasi	41	IIPC, CRIBh
	vii. Pangu	16	IIPC
	vii. Vatarakta	7	RRCM
	ix. Ardita	10	IIPC
2.	**Amlapitta/Parinamasula**		
	i. Amlapitta	130	CRIB, RRIJu, RRCH, CRUH, CRIBh
	ii. Parinamasula	56	CRID, CRUH, CRUK, CRIBh
	iii. Annadravasula	24	RRCI, CRUH
3.	**Other GI Diseases**		
	i. Kamala	25	IIPC, RRCH, RRCJ, RRCM
	ii. Raktarsa	89	IIKP, CRID, CRIB, RRCN
	iii. Bhagandara	28	CRIB, CRID
	iv. Grahani roga	10	RRCJ
	v. Pravahika	80	RRCG
4.	**Tamaka Swasa etc.**		
	i. Tamaka Swasa	116	IIKP, RRIJU, RRIG, RRIP
	ii. Pinasa	42	CRIB
5.	**Striroga**		
	i. Sveta pradara	206	CRID, CRIB, IIKP, RRIC, RRIJ, RRCN, RRIJu, CRIBh
	ii. Rakta pradara	99	IIKP, CRID, RRIC, RRIJu, CRIBh

6.	**Mutraroga**		
	i. Madhumeha	96	CRID, CRIB, IIKP, RRIC, ALRCAM
	ii. Mutra kriccha	43	RRCI, RRCII, RRIC
	iii. Mutrasmari	51	CRID, RRCJ, RRCM
7.	**Medoroga**	26	RRIJu
8.	**Hridroga**	20	CDRSV
9.	**Vyana Bala Vaisamya**	78	IIKP, CRID, RRIC, RRCM
10.	**Visamajvara**		
	i. P. vivax +	368	RRIJU, RRCM, ALRCAM
	ii. Clinical	63	IIKP, RRIJ, RRCM, RRCN, RRCII, CRID, RRCG
11.	**Kala-a-zar**	70	RRIP
12.	**Slipada**	84	RRCV, RRIP, CRIBh
13.	**Tvak roga**		
	i. Kitibha	73	CRID, RRIJu, RRIT
	ii. Pama	37	RRIT, RRCI
	iii. Vicarcika	73	RRCI
	iv. Svitra	38	RRIT, RRCII, RRCU, RRCM
	v. Other tvak rogas	129	RRCG
14.	**Manasa Roga**		
	i. Apasmara	67	CRID, RRIJ, ARUB
	ii. Cittodvega	13	ALRCAM
15.	**Others**		
	i. Rasayana	3	ALRCAM
	ii. Arbuda Visesa	8	CRID
	iii. Galaganda	10	RRCG

HOSPITAL STATISTICS OF CLINICAL RESEARCH PROJECTS

S. No.	Instt./Centre/Unit	OPD			IPD		
		New	Old	Total	Adm.	Disch.	% bed Occup.
1.	CRI, Delhi	11578	12468	24046	180	167	29.02
2.	CRI, BBSR	5045	4795	9850	182	163	32.4
3.	IIK, Patiala	6034	4724	10758	261	231	-
4.	IIP, Cheruthuruthy	8383	41187	49570	213	171	61.90
5.	CRI, Bombay	2515	7278	9793	161	156	58.6
6.	RRI, Lucknow	3135	3063	6198	-	-	-
7.	RRI, Calcutta	4885	17836	22721	43	40	24.15
8	RRI, Junagarh	4663	9182	13845	37	37	10.6
9.	RRI, Patna	2799	4744	7543	-	-	-
10.	RRI, Gwalior	3939	3479	7418	25	25	6.52
11.	RRI, Trivandrum	2391	10666	13057	41	36	58
12.	RRI, Jaipur	2513	2561	5074	105	101	32.35
13.	RRC, Nagpur	1591	5647	7238	-	-	-
14.	RRC, Bangalore	728	2029	2757	-	-	-
15.	RRC, Jammu	5294	6722	12016	-	-	-
16.	RRC, Mandi	3266	2512	5778	-	-	-
17.	RRC, Hastinapur	3480	5211	8691	-	-	-
18.	RRC, Jhansi	311	149	460	-	-	-
19.	RRC, Itanagar	-	4600	14374	51	49	33.4
20.	RRC, Vijayawada	2425	5321	7746	20	18	18.5
21.	ALRCA, Madras	294	372	666	-	-	-
22.	ARU, Bangalore	272	459	7561	13	12	33.7
23.	CRU, Hyderabad	-	-	738	42	45	-
24.	CRU, Kottakal	-	-	-	142	127	67.8
	Total	85,096	1,62,352	2,47,448	1596	1376	-

HEALTH CARE RESEARCH PROGRAMMES

The Service oriented Survey and Surveillance Programme, the Community Health Care Research Programme and Tribal Health Care Research Programme constitute the Health Care Research Programme under the Council. These programmes envisage compilation of information/data regarding health status of the population of neighbouring villages within 25-30 kms. of the Institute/Centres/Units and also provide medical aid at the doorsteps of the people. The main objective of these programmes is to study the health status of the people including incidence of various diseases. The compilation of informations on folk medical practices, health education and health promotive measures are also covered. The data on patients indicated in annexures include the old cases.

SERVICE ORIENTED SURVEY AND SURVEILLANCE PROGRAMME:

The information/data regarding socio-economic factors, incidence of diseases and their relationship with various etiological factors are compiled in randomly selected villages. The patients are also given appropriate Ayurvedic treatment. Side by side, the folk lore medical claims if any are recorded. During the period under report the programme has been taken up on population of 29342 in 43 villages and 7278 patients suffering from various ailments are reported to be treated. (Table-I).

COMMUNITY HEALTH CARE RESEARCH PROGRAMME:

Each Instt./Centre has taken up a few villages in their neighbourhood for execution of this programme. The people of the selected villages are imparted knowledge for health, education, prevention of diseases, health promotive measures and utilisation of local herbs for relief of their common ailments The patients observed in the course of this programmes are provided treatment and their details are recorded in a programme covering socio-economic, environmental and other factors influencing their causation. The details of work conducted in 29 villages with a population of 30446 under this programme alongwith 6518 patients treated may be seen in Table-II.

TABLE-I

Work Conducted under Service Oriented Survey and Surveillance Programme during 1991-92

S.No.	Instt./Centre	Villages	Population	Patients	Common Diseases
1	2	3	4	5	6
1.	IIP, Cheruthu-ruthy	Kurumala Pangarappilly	843	879	Katisula, Pandu, Krimi, Jvara, Pradara.
2.	CRI, Bombay	Gitanjal Dharavi	5000	186	Kasa, Swasa, Pratisyaya.
3.	RRI, Culcutta	Kestomati	924	615	Atisara, Jvara, Kasa, Krimi, Vatavyadhi.
4.	RRI, Jaipur	Dharas Kalyanpura Khatipura	1694	247	Jvara, Vrana, Kasa.
5.	RRI, Lucknow	Bandharu	207	207	Atisara, Tvak Roga, Jvara, Netra Roga.
6.	RRC, Mandi	Bhadyal Gutkara Behara, Otta, Jhal	879	294	Jvara, Kasa, Krimi, Pratisyaya, Tvak Roga.
7.	RRC, Nagpur	Kalkuhi Samangi Hadkeswar Dhamana Bahadura Advali, Gouhi Bidgaon Charanpur, Ghogli Suravardi Kasarwara, Dhuti Kotheurada Nimkha	8878	512	Atisara, Vatavata, Jvara, Kasa, Krimi, Pratisyaya.
8.	RRC, Bangalore	Chanckaketa	2000	110	Krimi, Kasa, Udar-sula, Vata Vyadhi.

1	2	3	4	5	6
9.	RRC, Gauhati	Sungimaru	4000	514	Atibala, Pravahika, Jvara, Svasa, Pratisayaya
10.	RRC, Hastinapur	Mukarakpu	3000	339	Udarasula, Krimi, Kasa, Jvara.
11.	MCRU, Varanasi	Nelhupur Samana Parkhawa	5000	2566	Atisara, Pratisyaya, Pravahika, Amavata.
12.	MCRU, Jamnagar	Vibhapur Narayan Red	1377	96	Jvara, Pratisyaya Udarasula, Katisula.
13.	RRC, Gangtok	Pachey khani Nauey Ranka	1760	441	Jvara, Kasa, Pratisyaya.
14.	RRC, Patna	Panapur, Dharacumpiar Chak Ibrahim Chandpur Sardarh	780	272	Kasa, Atisara.
	Total	43	29342	7278	

TABLE-II

Work conducted under Community Health Care Research Programme during 1991-92

S.No.	Instt./Centre	Villages	Population	Patients treated	Common Diseases
1.	IIP, Cheruthu-ruthy	Keezhillam Chetakodu	4907	841	Kasa, Pandu, Pradara, Udarasula, Vatavyadhi.
2.	RRI, Calcutta	Koipal	748	722	Atisara, Jvara, Kasa, Amlapitts, Pratisyaya.
3.	RRI, Jaipur	Mukundpur	2000	392	Jvara, Netra Roga, Vrana, Udarasula.

1	2	3	4	5	6
4.	RRI, Junagarh	Padariya	2000	252	Jvara, Tvakroga, Udarasula, Vata-vyadi.
5.	RRC. Mandi	Ghansaroo Padhina Gutkara, Behara	526	902	Jvara, Pratisyaya, Tvakroga.
6.	RRC. Nagpur	Panjri, Wagada, Vihirgaon. Kalamara Umargaon Ksori, Mangoli Nanda Dhanoli Kinhi. Jabli	8416	480	Atisara, Amavata, Jvara, Kasa, Pratisyaya Tvakroga, Vatavyadhi. Vrana.
7.	RRC, Bangalore	Kolhnur	6000	826	Jvara. Kasa, Pratisyaya, Tvak-roga, Vrana, Vata-vyadhi.
8.	RRC, Itanagar	Jullyvasti Chempuvasti		573	Atisara, Krimi, Kasa, Tvakroga, Visama Jvara, Jvara.
9.	RRC. Gauhati	Patgaon	500	209	Atisara, Jvara, Pratisyaya, Pravahika.
10.	HADR. Tarikhet	Obgharghetli	5466	966	Jvara, Vata Vyadhi, Pradara, Kasa.
11.	RRI, Patna	Chak Dharampur. Raghopur, Chaturanga	383	355	Katisula Carmaroza, Kasa, krimi.
	Total	29	30446	6518	

Tribal Health Care Research Programme

This Programme has been initiated with the aim to study living condition of Tribal people, folk medicine used by them, occurence of medicinal plants to the area. Propagation of knowledge about oral hygienes. Prevention of diseases, use of common medicinal plants available in the area and to extend medicinal aid at their door steps. This programme has been continued further by the Tribal Health Care Research Projects functioning at Car-Nicobar (Andaman-Nicobar Island), Ranka Block District Palamau (Bihar), Chinchpada Distt. Dhule (Maharastra) (Report not received), Jagdalpur (Madhya Pradesh), Ziro (Arunachal Pradesh) and Imphal (Manipur). During the reporting period of 44 Tribal Pockets/Villages consisting of a populations of 42810 individuals have been covered and incidental medical aid extended to 17819 Patients (Table III). About 80 specimen of the Plants found growing in these areas have been collected. Efforts have also been initiated to compile and analyse the data/informations gathered by these projects. Besides this the project at Palamau carried out same Clinical Trials on Visamjvara, Parinamsula, Abhisyanda, Gridhrasi and Twak Roga in the field conditions. The treatment provided in these Clinical conditions and results there of is shown in the Table IV.

TABLE-III

Work Conducted Under Tribal Health Care Research Programmes

Sl. No.	Location of the Project	Tribal Pockets Covered	Population	No. of Patients treated SC/ST & other	Common Diseases
1	2	3	4	5	6
1.	Imphal (Manipur)	Mahabale Sangal brou	806	179	Atisara, Pravahika, Rakta Chap are common disease in the area, Arsha, Amlapitta, Galaganda Jwara, Kasa, Krimi Mukha Roga, Prameha, Rajodosa Swasa, Udarsula, Vrana, Sandhi Sula, etc.

1	2	3	4	5	6
2.	Palamau (Bihar)	Khanwa. Halumar Dulsulma, Juru Manasuti, Tabar Sutarwa, Ponachi Pokhorcha Ledwa Khard, Goura, Hurmur Jora, Turradih, Manika	25268	5546	Atisar, Apasmar, Paksaghat, Galganda, Grahani dosa, Hrid Roga, Jwara, Kasa, Katisvia, (Panasharoga), Pradar.
3.	Ziro (Arunachal Pradesh)	Siro Michi. Dirgha Dafla Borseleen lower Jorum T & Kahal	2810	1812	Atisar, Arsha, Amlapitta, Ajirna, Amavata Adhaman, Aruchi, Apasmar, Danta sula, Dhatuvikar, Kasa, Krimi, Katisula, Pradara, Tvak Roga, Visam jwar, Vatavyadhi, Yakrit roga.
4.	Jagdalpur (Bastar)	Ahhawal, Gatavand	1552	1702	Atisar, Arsa, Apasmar, Amavata, Asmari, Krimi, Kandukustha, Mukhroga, Pandu, Pradara. Paksaghata, Sotha. Rojokosa Sitapitta, Upadansa.
5.	Car-Nicobar			4323	Atisar, Argsa, Apasmar, Amlapitta, Jwara. Kasa, Krimi, Kandu. Mutvra Krichha, Pandu, Pravahika, Prameha, Sirahasula, Tvak roga, Visma Jwara, Pradara.
6.	Chinchpada	Abtipada, Nangirada Bilipadu Magrani, Haruipada Baradi-padu, Sandanipada, sopekham Pan Bara Partapur 19 Nineteen tribals	12374	4227	Atisar, Arsa. Amlapitta Galaganda, Jwara, Kasa, Krimi, Kamala, Katisula, Pandu, svitra, Sandhi sula. Sit pitta, visama jwara, Timira. Vata Vyadhi.
	Total	44	42810	17819	

TABLE-IV

Sl. No.	Diseases/Treatment	Good res.	Fair res.	Poor res.	No. res.	LAMA	Total
1.	Visam jwara (AYUSH 64, Parijat patra swarasa)	77	-	3	4	-	84
2.	Udar Sula (Parinwmsulaw Avipattikar curna + Astinadhu curna + Kapardika Bhasma)	33	11	10	-	-	54
3.	Swasa (Vasa kwath + Madhu + ghrit silayaga)	33	31	13	-	-	77
4.	Twak vikara (Kaishora guggulu + Khadira kwath, for external use bhasan with Narikela tail)	21	2	2	-	1	26
5.	Pravahika (Kutajavaha + Lasunadi vati)	34	21	19	5	-	79
6.	Arsa (Parada qutika + Swadist Virechan curna and for external use Kashisadi taila)	25	12	5	-	3	45
7.	Sitapitta (Kamdoh-mishranam (Kamdudha 500 mg vanga bhasma-500 mg swarna-500 mg Thrice a day) Maksik Bhasma, Anupan Dudgha Sarkara, for external use pulara Jivaka Bhal mala, Dhara nama	3	-	-	-	-	3
8.	Sandhigat vata (S.N. Guggulu + Nirgundi Patra Kwath and for external use Panch guna taila mardanam)	171	32	-	-	-	203
9.	Swet Pradara Pusyanuga curna + Lodhrasava, for external use tea leaf kwath, yonidharanam	21	7	-	-	-	28

MEDICO BOTANICAL SURVEY PROGRAMME

The medico-botanical survey programmes of the Council are the backbone of all the Drug Research and Clinical Research Programmes. Not only they cater the need of drug samples but also these units accumulate authentic drug samples to form regional Herbarium and Museum at differents parts of the country heading way to the establishment of a Central Herbarium and Museum of Ayurvedic Medicinal Plants in New Delhi where the samples are proposed to be classified according to Ayurvedic texts as well as according to the modern Botanical Classification.

The Drug Research Programme under the Council includes survey of medicinal plants and their cultivation. The drug standardisation programme alongwith scientific investigations on Pharmacognosy, Phytochemistry, Pharmacology and Toxicology are the other areas for investigation under this category, all such programmes and the clinical trial of the vegetable drugs require genuine material/raw drugs which are explored and supplied by these survey units. The demand of drug samples of the Council as well as outside agencies is met by the survey units.

The survey of medicinal plants programmes have covered most of the forest areas of the country through regular survey tours as well as special intensive survey tours in selected areas.

Efforts have also been made for simultaneous compilation of information in form of several research articles and preparation of reports/ monographs. Some of the reports already published include the following:-

1. Observations on Medico-botanical exploration of Andaman Nicobar Islands.
2. Medico-Botanical Exploration of Puri Distt. (Orissa).
3. Glimpses of Medico-botany of Bastar Distt. (M.P.).
4. Medico-Ethno-Botanical Explorations of Sikkim Himalayas.

Some of the other similar reports completed are now under the process of publication include the following:-

1. Ethno Botanical Explorations of Nagpur and Wardha Forest Divisions and Nagpur Circle (M.S.).

2. Medico Botanical Exploration of Melghat Forest (M.S.).
3. Medicinal Plants of Kachchh (Gujarat).
4. Common medicinal plants of Rajasthan etc.

Therefore realizing the importance of the medico botanical survey programmes, the Council has compiled a new Programme Projection for the next five years (1992-93 to 1996-97). The same has been issued to all the survey units during the reporting period.

A brief resume of the work carried out during the year 1991-92 by the seventeen medico botanical survey units of CCRAS located at Bangalore, Bhubaneshwar, Calcutta, Gangtok, Gauhati, Gwalior, Itanagar, Jaipur, Jammu, Jhansi, Junagadh, Mandi, Nagpur, Patna, Tarikhet, Trivandrum and Vijayawada is presented below:-

The Survey Units at RRC (Ay.) Bangalore (Karnataka) has undertaken two medico-botanical survey tour programmes in moist deciduous and evergreen forests of North Kanara and also carried out 5 local survey tours in Bangalore distt. Collection of 259 species distributed over 200 General and 74 Families was made. Completion of Survey monographs on Kolar and Tumkur districts is in progress. Contributed 4 research articles. Participated in 4th World Conference on Holistic Medicine. Provided technical assistance to students of Botany, Ayurveda and M. Pharma.

The Survey unit located at C.R.I. (Ay.) Bhubaneshwar (Orissa) has undertaken maintenance work of herbarium specimens and Identification of 655 specimens was done in the unit. Collection of drugs 'Saptaparn' and 'Nirgundi' was done as per demand of the I.P.D. of the Institute.

The Survey Unit at R.R.I. (Ay.) Calcutta (West Bengal) has undertaken 43 days daily survey tours in different areas of Calcutta and 24 Parganas (coverning) both South and North Zones). Collection of 135 specimens was made which represent 51 Families and 118 Generas. Raw drug collection of 63 drugs weight 294 Kg. was made for supply to CCRAS Units and PLIM, Ghaziabad. Preliminary recording of medicinal plants of Birbhum district has been done.

The Survey Unit located at Gangtok (Sikkim) has continued general maintenance work of the specimens stored.

The Survey Unit located at R.R.C. (Ay.) Gauhati (Assam) has

undertaken 33 days local survey tours and collected 70 kg. of fresh raw drugs. Maintenance of Herbarium and Museum was continued. Two research papers were also published.

The Survey Unit located at R.R.I. (Ay.) Gwalior (Madhya Pradesh) has undertaken 25 days Survey Programme in the Bilaspur District Forest areas with the collaboration of R.R.C. (Ay.) Jhansi Survey Staff. Collection of 238 specimens was made covering 52 families, 166 Generas and 215 species. Collected 17 drug samples for supply purposes and 15 for the museum. Collection of 20 folklore claims was also made.

The Survey Unit at R.R.C. (Ay.) Itanagar (Arunachal Pradesh) has done some local survey tours, identification of 45 specimen was done and 457 were accessioned.

The Survey Unit at R.R.I. (Ay.) Jaipur (Rajasthan) has undertaken 5 days local survey tour programmes in the Jaipur and Sikar forest areas using 89 Field Book Numbers. Identification of 492 specimen and mounting of 573 was done, 8 Folklore claims were collected and 350 index cards were prepared. Monograph on the Desert areas of Rajasthan was submitted for publication purposes.

The Survey Unit at R.R.C. (Ay.) Jammu-Tawi (J&K) has participated in the Poonch Mela-91 and collection of some Ayurvedic importance medicinal plants was made from Poonch area using 47 Field Book Numbers. Mounted 103 specimen and Poisoned 123 and 18 index cards were also prepared.

The Survey Unit at R.R.C. (Ay.) Jhansi (Uttar Pradesh) has assisted is one survey tour programme in the Bilaspur forest of Madhya Pradesh under R.R.I. (Ay.) Gwalior, 35 Field Book Numbers of Jhansi and 227 of Gwalior were used. The specimens, collected represent 52 families 160 Genera and 214 species. Raw drug material 56 Kg. was collected for supply to different units.

The Survey Unit located at R.R.I. (Ay.) Junagadh, (Gujarat) has undertaken one survey tour programme in the Surendranagar and Rajkot District using 83 Field Book Numbers collection of 5 plants which seem to be new records for Maharashtra has also been made. Accessioned 95 species. Collected 5 Folklore claims. Three drug samples weight 1.35 Kg. were also supplied.

The Survey Unit at R.C.C. (Ay.) Mandi (Himachal Pradesh) has maintained the previous collections of Herbarium and Museum.

The Survey Unit located at R.R.C. (Ay.) Nagpur (Maharashtra) has undertaken one survey tour programme in the North Chanderpur circle and Tadoba divisions, using 22 Field Book Numbers. Mounting of 44 specimens and poisoning of 82 plants was done. Accessioned 25 plants specimens and prepared 13 index cards, collected 15 Folklore claims. A monographs on Bhandara Division, Nagpur circle has been prepared. Another monograph on Melghat District has been submitted to the Council for publication purposes.

The Survey unit located at R.R.I. (Ay.) Patna (Bihar) has undertaken identification of 113 plant specimens and incorporated the same number. Local survey tours for collection of drug Vandhyavari (*Vicoa indica*) 125 Kg. were undertaken.

The Survey Unit at I.I.A.D.R. Tarikhet (Uttar Pradesh) has surveyed Tarai Bhabbar areas for 15 days. 64 specimens for Herbarium and 12 for museum were collected. Raw drug samples 21 weight 215 Kg. were collected for supply purposes. Five folklore claims were collected, compilation work of Herbal wealth of Garhwal and Kumaon is being continued. Monograph on Son Bhadra (Mirzapur) has been submitted to the Council for publication purposes.

The Survey Unit located at R.R.I. (DR) Trivandrum (Kerala) has conducted a six days survey tour programme in the Nilambur forest division and collected 66 plant specimens avoiding duplication and commonly growing species; these represent 32 species. 27 genera and 18 families. Five folklore claims were collected from a primitive tribal Cholanaikar who still live in caves and whose population is only about 200 only. Identification of 277 herbarium specimens was completed. 50 crude drug samples of market were identified and supplied to Pharmacy and other units. Compilation work of monograph continued.

The Survey unit at R.R.C. (Ay.) Vijayawada (Andhra Pradesh) has undertaken one survey tour programme in the Tribal Pockets of Vishakhpatanam distt. A.P. 36 Field Book Numbers were used. 116 herbarium sheets mounted and 216 accessioned. Raw drug material of 5 drugs weight 30 kg. was collected for supply purposes. Published 3 research articles, located 'Bharangi' (*Pygmaeopremna herbacea*) in wild in forest of Chintapalli of Vishakhapatnam division:

CENTRAL HERBARIUM AND MUSEUM

During the reporting period the work has been done under Central Herbarium and Pharmacopoeial Garden at C.R.I. (Ay.) New Delhi. The summary of Centre herbarium is as under:-

1. 1800 No. of herbarium sheets were stiched and about 2500 number of herbarium sheets were poisioned further 800 Numbers were pasted new levels.

   Maintenance of herbal garden were made according to its need.

   Further C.R.I. New Delhi has arranged exhibitions on 22.4.91 in the Institute, on 25.4.92 to 26.4.92 at A.I.I.M.S. New Delhi, on 3rd and 4th Nov. 1991 at Constitution Club and on 23rd Nov. to 25th Nov. at Lucknow.

MUSK DEER BREEDING PROGRAMME

(A) The musk deer breeding farm is being maintained by the Council at a hight of 7,500 ft. M.S.L. on two acre land at Mehrori in Kumaon Hills. At present, there are 25 animals, out of which 11 are male and 14 are female animal. During the last 19 years, the Council has made efforts to maintain properly these animals in the natural surroundings and the feed given to them is also obtained from the locally growing herbs. The observations made on the behavioral adoptability of the animals, in taking milk feed, fodder, grain, water and also their pasture, growth and development during heat and pregnancy, diseases, injury and wounds and their remedial measures etc. have been studied.

It has been observed that the animals do not like any type of change, alternation, addition and disturbances etc. They prefer calm and quite surrounding in their living area. Females also did not like to live in herds. The stockades have now been extended to 17 in number, so that the increased number of animals could be maintained in comfort. The animals in rainy season prefer to eat *Prunus domestica, Bergenia* species, *Persicaria nepalenses*, *Garanium wallichinum* Sweet leaves and stool, the adult male animal prefers stert grazing with *Agaricus* species and ferns.

(B) **Observations on extraction of Musk:**

Attempts have been made to extract the musk from the musk-deer without killing the animal. This extraction has been done by milking the musk from the pod and also scooping its pod without giving anaesthesia or tranquilizer.

Amount of Musk collected on 3.3.1992 and 4.3.1992

Code No.	Animal No.	Date of Birth	Age of collection	Amount Collected	Appearance and Texture of Musk
81	Himansu	30.8.1987	4 yrs. 6 mths.	19.921 gm.	Semisolid
82	Asuthosh	27.6.1986	7 yrs. 8 mths.	37.33 gm.	Semisolid
83	Vinay	24.6.1983	8 yrs. 8 m 7D	8.696 gm.	Hard and Dry
84	Vijay	24.6.1983	8y 8m 7D	10.126 gm.	Hard and Dry
85	Jeevan	21.6.1988	3y 8m 10D	0.951 gm	Semisolid
86	Anang	29.6.1985	6y 8m 2D	17.301 gm.	Semisolid

1	2	3	4	5	6
87	Vivek	30.6.1989	3y 7m 23D	2.528 gm.	Hard any Dry
88	Athrey	3.7.1988	3y 7m 18D	4.493 gm.	Semisolid

(C) Blood samples for details investigations has also been collected from nine animals (4 females & 5 males) and analysed in collaboration with G.B. Pant University, Pant Nagar (Nainital). The striking feature is sickle shape of R.B.C. in all the cases.

(D) **Loss of animals:**

During the reporting year one male musk deer named Vivek died on 8.3.92. Post martum was done alongwith possible Histo/ pathological details were obtained in collaboration with I.V.R.I. Mukteshwar (Nainital). The cause of death reported was congestion of lungs. Data in animals skeleton are being colleced.

(E) **Accidental injuries and their remedial measures:**

One female animal injured her right hind leg by dashing her self against the stockades wire mesh wall on 19.10.91. The leg was fractured. Attempt to join it through plastering was done. Later on after observation it was found that bones did not join and to avoid gangrine the leg was amputed from the hip joint by the V.S. Berinag on 29.11.91.

CULTIVATION OF MEDICINAL PLANTS PROGRAMME

The Council's five herbal gardens located at Pune, Jhansi, Mangliawas, Tarikhet and Itanagar are maintaining about 550 medicinal plants species of Ayurveda and Siddha importance. A few important medicinal species have also been taken up on experimental as well as on semi-large scale level. The plantation includes those of tropical/sub-tropical and temperate regions, besides exotic ones.

The main objective of this entire programme is to study the medicinal plants for their adoptability, growth behaviour flowering, fruiting etc. at different altitudinal levels and ecological conditions, working out suitable agro-chemical techniques for the successful cultivation and growth of rare, scarcely distributed and threatened plant species and to provide quality drug material in adequate quantity for research/pharmaceutical purposes.

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

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune has achieved rare distinction of its being recognised by WHO for imparting training to its fellows in the field of medicinal plants cultivation due to its being the only Institute in the country carrying out research in the field of cultivation of Ayurvedic medicinal plants and tissue culture studies as well as growing about 450 Ayurvedic medicinal plants species in its garden for demonstration purpose. The Pune University, Pune, has also approved the Institute as an approved Post Graduate Research Centre to carry out research studies in the field of Medico-botany including Pharmacognosy.

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

Jawaharlal Nehru Ayurvedic Medical Plants Garden and Herbarium, Pune:

The cultivation of medicinal plants programme of the Institute

which includes experimental, semi-mass scale and for demonstrative purpose of important Ayurvedic medicinal plants is presently confined to about 10 acres of the land out of a total of 19 acres available for cultivation purpose. The garden is maintaining a total of 440 species of medicinal, economical, ornamental importance out of which 145 species are from among the medicinal plants included in Ayurvedic Formulary, Part-I.

About 2 dozen new introductions were made in the garden during the reporting period which includes some important medicinal plants like Pippali (*Piper longum*), Tamalapatra (*Cinnamomum tamala*), Jatiphala (*Myristica fragrans*), Kaseru (*Scirpus kysoor*), Kakamaci (*Solanum nigrum*), Tambula (*Piper betal*) etc. and regular observations are being made to study their growth behaviour.

The medicinal plants taken up on semi mass scale cultivation are Vanapalandu (*Urginea indica*), Anantamula (*Tylophora indica*), Ushira (*Vetiveria zizanioides*), Kumari (*Aloe barbadensis*).

Under experimental cultivation the investigations carried out include seed germination trials of Sarpagandha, Satavari, Ashoka, Bibhitaka, Ingudi, Indravarni, Ashwagandha, Krishna Dhatura, Meshashringi; trials on cultivation of Vaca and vegetative propogation of Meshashringi, Ishwari and Jyotishmati.

Experimental studies have yielded some interesting and important results. Seed germination studies have revealed that the month of June is the most suitable period for germination of seeds of Ashoka under the soil and climatic conditions of Pune, giving about 84 percent germination without any presowing treatment. The germination rate varied from zero to 33% in most of the other plants.

Exhaustive trials carried out on Sarpagandha and Satavari using different methods like Scarification, acid treatment, hot and cold water soaking and harmone treatment etc. raised the germination percentage to 85% in Sarpagandha and also increased the viability period of the seeds from 6 to 12 months which is an achievement. However, Satavari gave 60% germination rate but after seeds were exposed to gamma rays higher germination rate upto 80% was recorded.

The cultivation trials carried out on Vaca revealed poor yield of rhizomes condition. Vegetative propagation of Meshashringi through

cuttings, layering and air layering and only cuttings in case of Ishwari and Jyotishmati did not yield productive results.

The Institute has played an important role in meeting partly the drug requirement of the Council's different research projects and have also taken various steps to streamline the supply of crude drug material to Council's various research Units etc. About 90 kg (Dried crude drug material) comprising of about 12 species was collected from garden during the reporting period and supplied 86 kg of the material to Council's different Institutes/Centres. The important being are Amalaki, Haritaki, Putikaranj and Madana. In addition to this about 25 quintals of fresh leaves of Kumari and 10 quintals of fresh roots of Ushira are available in the garden, besides large number of plants of Japakusum and Nirgundi.

The other important activities of the Institute includes participation and presentation of five scientific papers in International/National seminars/workshops held at Bangalore, Bombay and Varanasi during the reporting period. 2 Exhibitions were also organised at Nasik and Bombay. It also took steps to encourage and popularise cultivation of medicinal plants in the regions and extended free consultancy to interesting individuals/agencies in respect of cultivation techniques, knowhow for propagation, multiplication and cultivation of medicinal plants etc. besides supplying germ plasm material of about 100 species to different educational and research organisations for developing medicinal plants garden.

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

Regional Research Centre, Jhansi

The cultivation activities of the Centre is confined to about 15 acres of the land out of a total of 40 acres under its possession for cultivation purpose. During the reporting period the Centre has taken up cultivation of medicinal plants of Ayurvedic importance both on experimental, semi large scale as well as for demonstration purpose. Presently about 200 medicinal species are growing and also properly maintained at different places in the herbal gardens including the Green House.

A few of the important Ayurvedic plants taken up on large scale

cultivation are Satavari (*Asparagus racemosus*), Kumari (*Aloe barbadensis*), Bahunimba (*Andrographis paniculata*), Guggulu (*Commiphora wightii*), Yastimadhu (*Glycyrrhiza glabra*), Latakasturi (*Hibiscus abelmoschus*), Rasna (*Pluchea lanceolata*), Bakuci (*Psoralia corylifolia*), Sarpagandha (*Rauwolfia serpentina*), Prisniparni (*Uraria picta*) and Salaparni (*Desmodium gangeticum*).

Some of the important plants taken up on small scale experimentation to study their adoptability, growth behaviour in the climatic conditions of Jhansi are Yashtimadhu, Mandukparni, Pashanbheda and Rasna.

A total of 71 medicinal plants species has been representated in the Herbal garden in the form of demonstration beds and some of the important species are Pisaca-Karpasa (*Abroma augusta*), Apamarga (*Achyranthes aspera*), Atibala (*Abutilon indicum*), Sahachara (*Barlaria prionitis*), Punarnava (*Boerhaavia diffusa*), Vasa (*Adhatoda zeylanica*), Anantamula (*Hemidesmus indicus*), Trivrtta (*Operculina turpethum*), Pippali (*Piper longum*), Ajmoda (*Apium graveolens*), Brihati (*Solanum indicum*), Kantakari (*Solanum xanthocarpum*), Goksuru (*Tribulus terrestris*), Dhataki (*Woodfordia fruticosa*), Eranda (*Ricinus communis*) etc.

A total of 197 medicinal plants are represented in the Green House in Polythene bags and cement pots. A few are Gunja (*Abrus precatorius*), Vaca (*Acorus calamus*), Iswari (*Aristolochia indica*), Damanaka (*Artemisia vulgaris*), Pasanabheda (*Bergenia ligulata*), Sallaki (*Boswellia serrata*), Swarnapatri (*Cassia augustifolia*), Aragvadha (*Cassia fistula*), Bharangi (*Clerodendrum indicum*), Mandukaparni (*Centella asiatica*), Gambhari (*Gmelina arborea*), Langli (*Gloriosa superba*), Salmali (*Salmalia malaberica*), Candana (*Santalum album*), Copchini (*Smilex aspera*), Guduci (*Tinospora cordifolia*), Aswagandha (*Withania somnifera*) etc. These species have been reported to be growing well and maintained properly and regular observations are also being made for their adoptability and growth behaviour etc. especially for such species which are not habitated to the region. It is interesting to note that the plants belonging to high altitude like Pasanbheda, Tagara and Copchini, Mameri, Daruharidra, Tejbala and Priyangu have survived and are growing well so far. Seeds/ saplings/cuttings of about 30 plants have also been growing at different places in the garden. This entire garden's plantation includes about 50 species mentioned in the Ayurvedic Formulary, Part-I.

Some important medicinal plant creepers have also been taken up on

large scale cultivation along with the boundary wall of the garden to protect entry of animals and unwanted persons etc. to prevent the damage to the garden's plantation. Species planted are *Argyreia speciosa, Celastrus paniculatus, Paederia foteida, Tylophora indica, Tinospora cordifolia, Cocculus hirsutus* and *Operculina terpethum*.

The total produce of the garden during the period has been 124.25 kg. of the dry material consisting of different drug parts of about 15 medicinal plants species and supplied about 10 kg. of the material for research purpose. In addition, this garden has also obtained 1122 kg. of Ghritkumari earning a revenue of Rs. 1346/-.

Guggulu Herbal Farm, Mangliawas (Rajasthan)

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

About 13,400 Guggulu plants are presently growing under mass scale cultivation at different places of the garden. All possible attempts were made for the proper maintenance and survival of this entire plantation. About 52 other medicinal plant species mostly of Arid zone region are also growing and maintained in the garden and a few of the important species are Sallaki (*Boswellia serrata*), Kuberaksh (*Caesalpinia crista*), Karanja (*Pongamia glabra*), Nimba (*Azadirachta indica*), Sadabahar (*Vinca rosea*), Kumari (*Aloe vera*), Ingudi (*Balanitis roxburghii*), Satavari (*Asparagus racemosus*), Langli (*Gloriosa superba*), Babul (*Acacia nilotica*), Gokshuru (*Tribulus terristris*), Shirish (*Albizia lebbeck*), Erand (*Ricinus communis*), Guduchi (*Tinospora cordifolia*), Vanapalandu (*Urgenia indica*), and Bilva (*Aegle marmelos*).

A total of 4565 Guggulu cuttings and 150 Guggulu plants were introduced in the Farm during the months of June and July, 1991 under experimental cultivation programme and regular observations were made for their growth behaviour etc. at different growth stages. The experimental studies have indicated that Guggulu production using

ethephone was about 22 times more than control but the plants dried up after obtaining oleo-gum-resin. Further, experimental trials to prevent mortality of the plant after excudation of the oleo-gum-resin is in progress. It has also been observed that vegetative propagation of Guggulu through stem cuttings, is better than those raised through seeds and percentage of sprouting was also quite high.

The best period for the Guggulu cuttings and for the transplantation of Guggulu plants has been observed to be the month of June and July/ August respectively. Seeds germination in *Caesalpinia crista* and *Ricinus communis* is quite satisfactory when seeds are obtained from the healthy and disease free plants.

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

3 Exotic species namely *Euphorbia anticephalitica*, *Bursera hyndersiana* and *Tylophora asthmatica* are growing well in the garden. A total of 15 kg of Guggulu has been collected from the farm and supplied about 47 kg. of the crude drug material consisting of different drug parts of 58 species to Council's different research projects.

Indian Institute of Ayurveda for Drug Research, Tarikhet

The Institute has continued its cultivation programme both at Ranikhet and Chamma. The cultivation activities are confined to about 2.5 acres of the land out of a total of 7.8 acres available for the purpose which include 1.53 acres exclusively confined to Kumkum cultivation. At Ranikhet about 200 medicinal species mostly of Ayurvedic importance are growing in 296 beds at different places in the garden. A total of 37 species have also been undertaken on experimental trials for studying their adoptability, vegetative and reproductive growth behaviour etc. This includes about 14 species taken up during the reporting period. A few of these plants namely Ela (*Elettaria cardamomum*), Salmali (*Salmalia malabarica*), Haritaki (*Terminalia chebula*), Tamalapatra (*Cinnamomum tamala*), Saptaparna (*Alstonia scholaris*), Amalaki (*Emblica officinalis*).

A few medicinal species have also been undertaken for semi large scale cultivation to meet the demand of the Council's different research projects which includes Pippali (*Piper longum*), Manjistha (*Rubia cordifolia*). Tagara (*Valeriana wallichii*), Langli, (*Gloriosa superba*), Haridra (*Curcuma*

longa) and (*Bergenia sp.*). Special measures/techniques are being worked out for evolving ideal techniques for the successful cultivation of Tagara (*Valeriana wallichii*) and Manjishtha (*Rubia cordifolia*).

During the reporting period about 350 medicinal plants comprising of about 18 species collected from Bhujan - Garampani-Ramgarh area were planted in the garden and regular observations are being made with respect to their growth behaviour etc. This includes about 8 species which are new to the garden namely *Asparagus adscendens, Desmodium gangaticum, Calastrus paniculata, Holarrhena antidysenterica, Cryptolepis buchanani, Hugonia dalbergiodes, Nyctanthes arbortristis, Randia dumatorum*. The observation on the growth behaviour of these plants are still being made for their acclimatization to the climatic conditions of Ranikhet area. About 500 live medicinal plants have also been transplanted in the garden during the rainy season comprising of Tagara, Pashanabheda, Sati, Jivak and Patha etc. Propagation through root promoting harmone (Varadix-3) on the stem cutting of *Callicarpa macrophylla* and Priyangu was conducted with considerable success.

In the newly acquired green house, attempts are being made to develop nursery of important Ayurvedic medicinal plants which are normally not possible to germinate in the natural climatic conditions of Ranikhet. The seeds of 6 sps. of medicinal plants out of 13 species obtained from RRC, Jhansi were germinated and their growth behaviour is under observation. The seeds planted are Bakuci, Trivritta, Karanja, Aparajita, Brihati and Latakasturi.

A total of 71 medicinal plants of the entire plantation of the garden consist of medicinal plants included in Ayurvedic Formulary, Part-I.

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

The Cenre has supplied about 20 kg. of the drug material consisting of 3 medicinal species to the Council's different research projects during the reporting period.

Medicinal plants garden at Chamma has about 50 types of medicinal plants species grown in different parts and are reported to be properly maintained. Most of the species are for demonstrative purpose and a few are under the experimental trial for observing their adoptability and growth behaviour etc.

Saffron Experimental Cultivation:

Saffron cultivation project is carried out on about 15 acres of the land at Ranikhet and is spread out in about 560 beds of different sizes covering an area of 2,297 sq.m. The experiments were continued and regular observations were made on growth, development and multiplication of saffron corms from time to time. A total of about 4 lacks corms of large, medium and small size are being properly maintained at present. By the end of December the plants attained good height and vigourous vegetative growth was observed. The first flowering was observed in the last week of September and continued till first week of November. During the reporting period a total of 9,927 flowers weighing 3,693 kg. (fresh) were collected, yielding 74 gms. of saffron consisting of dry stigma and little part of style.

Different experimental studies taken up to increase the growth and yield of Saffron have indicated that application of N.P.K. in dose of 1 gm. and 2 gm. per sq. ft. proved effective in increasing the number of flowers to 40 and 20 respectively as compared to control. The experimental trials conducted on Udiyarigaon soil with a view to assess the extension and potential of the saffron cultivation to diferent places and soil in the valley gave a very poor vegetative growth as compared to the plants cultivated at Ranikhet due to its being rich in hematite and pyrite forms of iron. However, preliminary experiments conducted in the different places in the district Chamoli are indicative of taking up saffron cultivation under controlled agro-chemical conditions in this district and if successful, this may be a new record to this part of the valley.

The trial conducted with growth harmones in some cases showed good vegetative growth in different phases of experiment.

A few insects, pests and pathogens attacking the saffron plants have also been identified.

Regional Research Centre, Itanagar

The Centre has taken up the cultivation of some of the important Ayurvedic medicinal plants mostly of North Eastern Regions in its herbal garden in about 9 acres of the land out of a total area of about 17 acres available for the cultivation project. The cultivation has been taken up both on small experimental and semi large scale level. A total of

about 110 medicinal plants species are presently growing in its garden and also properly maintained for the demonstrative purposes. This includes 67 species mentioned in Ayurvedic Formulary, Part I.

A few important medicinal plants represented for demonstrative purpose are Sarpagandha (*Rauvolfia serpentina*), Kebuka (*Costus speciosus*), Bilva (*Aegle marmelos*), Nimba (*Azadirachta indica*), Saptaparna (*Alstonia nilgirica*), Rudraksh (*Elaeocarpus ganitrus*), Bakula (*Mimusops elengi*), Satavari (*Asparagus racemosus*), Bhringaraja (*Eclipta alba*), Lajjalu (*Mimosa pudica*), Guduci (*Tinospora cordifolia*), Karchura (*Curcuma zedoaria*), Gambhari (*Gmelina arborea*), Kakamaci (*Solanum nigrum*), Citraka (*Plumbago zeylanica*), Sahadevi (*Vernonia cinerea*), Banapsha (*Viola odorata*), Atibala (*Abutilon indicum*), Tamalapatra (*Cinnamomum tamala*), Vasa (*Adhatoda zeylanica*), Bhunimba (*Andrographis paniculata*), Amalaki (*Emblica officinalis*), Arka (*Calotropis gigantea*), Brihati (*Solanum indicum*), Dronapuspi (*Leucas lavandulaefolia*) etc.

A total of four medicinal species have been undertaken on experimental trial for studying their adoptability and growth behaviour etc. About 10 species have been taken up on semi-large scale cultivation in order to meet the crude drugs requirement of the Council's different Institutes/Centres. A total of 46 medicinal plants species have also been introduced in the garden during the period from April, 1991 to March, 1992.

About 105 kg. of crude drug material consisting of 12 medicinal plants species have been collected from the garden and supplied about 100 kg. of the material consisting of different drug parts of 8 medicinal species to the OPD of the Centre and PLIM, Ghaziabad (U.P.).

PHARMACOGNOSY RESEARCH STUDIES

Pharmacognostical studies play an important role in the entire gemut of drug research studies taken up by the Council. The different pharmacognosy Research Units of the Council have carried out pharmacognostic studies on the following drugs of Ayurvedic importance with the objective to help overcome the controversy and confusion that exists regarding their proper identity due to synonym and use of one and the same name for more than one drug and to evolve standards for single drugs so that genuine and authentic drug material can be made available for research and the Pharmaceutical industry.

Asana (*Pterocarpus marsupium*) -- bark
Bala (*Sida cordifolia*) -- fruit, stem, leaf
Bandak (*Dendrophthoe falcata*) -- leaf, flower
Haldu (hindi) (*Adina cordifolia*) -- leaf
Hritpatri (*Digitalis purpurea*) -- leaf
Kuberakshi (*Caesalpinia crista*) -- seed
Kumuda bhed (*Nymphae nouchali*) -- root
Nimba (*Azadirachta indica*) -- bark
Parusaka (*Grewia asiatica*) -- fruit

The Pharmacognostic research programme includes the study of source, collection, identification, correct determination of Ayurvedic nomenclature including synonyms, morphological and histological characters (both qualitative and quantitative), identification of diagnostic characters, test for purity, preliminary phytochemical studies, chromatographic studies, identification of chemical constituents like alkaloids, steroids and terpenoids, phenols, tannins, saponins and flavonoids etc. and fluorescence analysis of the various plants parts.

These chemo-taxonomic studies find useful place in evolving the pharmacopoeial standards for single drugs and also collectively forms a good base for the proper and systematic identification of genuine drug material from its adulterants and substitutes.

PLANT TISSUE CULTURE

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

The tissue culture studies on five important medicinal plants viz. Kutaja (*Holarrhena antidysenterica*), Satavari (*Asparagus racemosus*), Langali (*Gloriosa superba*), Meshashringi (*Gymnema sylvestre*) and Guggulu (*Commiphora wightii*) initiated during the previous years were continued during the reporting period. Complete protocol for ***in vitro*** propagation of Kutaja from nodal segments of stem was worked out and the tissue culture raised plants were transplanted in the field. These plants are growing well which reveals the success from the level of the laboratory to the field.

In case of Satavari (*Asparagus racemosus*) shoot tip culture has been found to be successful for multiplication. Multiple shoots, numbering upto 18 from each explant obtained on MS medium containing MAP in low concentration developed roots when transferred to medium supplemented with low concentration of auxins. But the percentage of shoots developing roots was found to be about 30 percent only. By trying different concentrations and also combinations of auxins and cytokinins, it was observed that NAA in moderate concentration was found to be most suitable in enhancing the percentage upto 69 & 62 percent respectively on 1/2 strength & full strength MS media. The studies have thus paved the way for successful multiplication of Satavari by shoot tip culture. Hundreds of plants can be produced within six months from a single shoot tip by using this technique which may prove very valuable for commercial cultivation of Satavari. Studies on hardening and field trials are in progress.

Multiple roots/rhizomes were observed in the culture raised from bulbous portion of the rhizome of Langali (*Gloriosa superba*) on MS medium supplemented with NAA and Kn in low concentration. The two types of structures, one somewhat L shaped rhizomatous and the other (majority) root like possessing prominent root cap were taken out and their anatomical study was made which confirmed that the cultures developed both the organs i.e. root & rhizomes. But number of rhizomes was quite low as compared to the number of roots, which are quite thick in contrast to the roots developed in nature. But anatomically both the

organs were found similar to those growing in nature. Phytochemical study of *in vitro* grown roots/rhizome was also carried out which revealed the presence of colchicine, the main active ingredient of the plant. Further studies which are still in progress may help in standardisation of the procedure for the successful root/rhizome culture and its commercial production.

In case of Guggulu (*Commiphora wightii*) and Meshashringi (*Gymnema sylvestre*) trials were made for *in vitro* propagation by shoot tip culture, but positive results have not been obtained so far.

CHEMICAL RESEARCH PROGRAMME

Chemical studies of plant drugs have an important role in the development of drug research. These studies comprise of isolation of active principles and ingredients responsible for their medicinal value. The Council is engaged in such studies through Phytochemical Research Units/Centres located at Calcutta, Delhi, Hyderabad, Lucknow, Madras, Trivandrum and Varanasi. A brief resume of the work carried out during the year 1991-92 is reported as under:

1. **Alabu (*Lagenaria siceraria* Standl.)** • ChRUH

Petroleum-ether extract of the seeds of the drug yielded an oil alongwith waxy material. The oil was purified by column chromatography and subjected to saponification. The unsaponifiable matter yielded ß-amyrin and sitosterol after purification through column chromatography. The chloroform extract which is less in quantity did not respond to the routine colour tests. Methanol extract indicated the presence of glycosides.

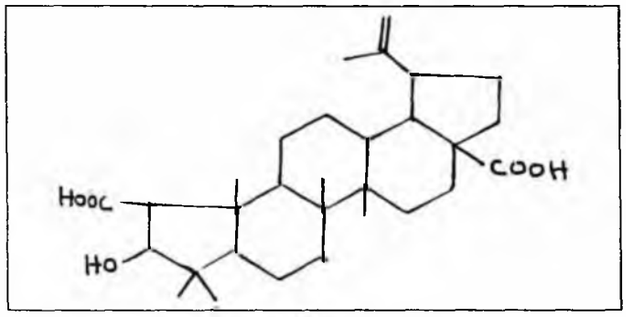
2. **Alarka (*Solanum trilobatum* Linn.)** CSMDRIAM

The steroidal alkaloid content present as solasodine were assayed in root, leaf, stem, flowers and berries (ripe and unripe). The alkaloid content was highest in leaves.

3. **(a) Badara (*Zizyphus jujuba* Lam.)** ChRUC

Ethanol extract of the bark after fractionation with ether, followed by column chromatography yielded a crystalline compound, m.p.

322-24° (dec.). On the basis of various physical, chemical aids, this compound was identified as ceanothic acid (Fig. 1).



(1)

Further, elution of the column chromatography afforded p-hydroxy-benzoic acid, m.p. 214-15°.

3. **(b) Badara (*Zizyphus jujuba* Lam.)** RRIT

The aqueous ethanol extract (85%) of the leaves of the plant after concentration was fractionated with benzene, ether and ethyl acetate in succession. Benzene extract yielded ß-amyrin, friedelin and sitosterol while ether extract gave caffeic acid. Apigenin, quercetin and its glucoside were isolated from the ethyl acetate extract.

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

Petrol defatted alcoholic extract (whole plant) after removal of solvent, was extracted with ethyl acetate. This extract gave a crystalline red solid, m.p. 210° (Dec.). Further work of the structure elucidation is in progress.

5. **Bhandir (*Clerodendrum infortunatum* Linn.)** ChRUV

Ethyl acetate fraction of the methanol extract of roots of the drug on column chromatographic separation yielded three flavonoidal compounds viz. quercetin, m.p. 310-118°, compound-II, m.p. 213-15° & compound-III. Final structural identification of the later two compounds are in progress.

6. **Bharangi-Bhed (*Clerodendrum splendense*)** CRID

Benzene extract of the flower petels yielded (24-S)-ethylcholesta 5,

22, 25-trien-3 ß-ol after column chromatography. Ether fraction of the ethanol extract also afforded a flavonoid, which is under identification.

7. **Bhurja (*Betula utilis* D. Don)** CRID

Ethyl acetate extract afforded a flavonoid, whose identification is under progress. Benzene extract also gave a dark coloured solid which is under separation by the column chromatography.

8. **Jati (*Jasminum grandiflorum* Linn.)** ChRUC

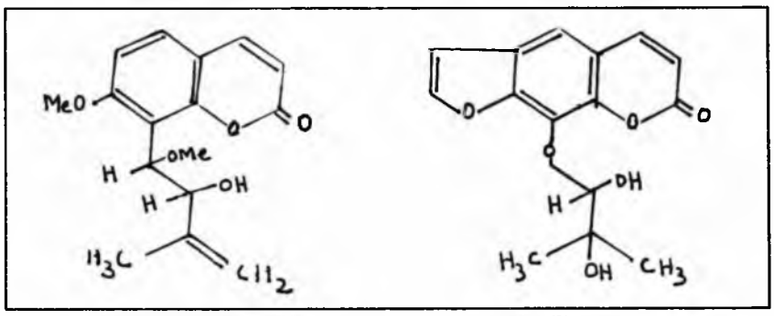
Chloroform extract of the whole plant on chromatographic separation yielded two crystalline solids, m.p.'s 262-63° & 330-31°.

Alcoholic extract of the fresh flowers after fractionation (n-hexane, ether, methylene chloride, ethyl acetate & n-butanol) afforded four crystalline compounds, m.p.'s 179, 200, 180 & 195. Characterization of the compounds obtained from the whole plant and the flowers is in progress.

9. **Karnasphutika (*Boenninghaussania albiflora*)** ChRUC

Air dried defatted whole plant was extracted with alcohol. Further work resulted in the isolation and characterisation of two more new coumarins, albiflorin-2, m.p. 94-95° & albiflorin-3, m.p. 144-45° (Fig. 2). Albiflorin-2 is the diastereoisomer of albiflorin-3.

Another coumarin derivative Komalin, m.p. 122-23° (Fig. 3) has been isolated for the first time from this plant. In addition to spectral studies the structure of Komalin has been confirmed by its partial synthesis from imperatorin.



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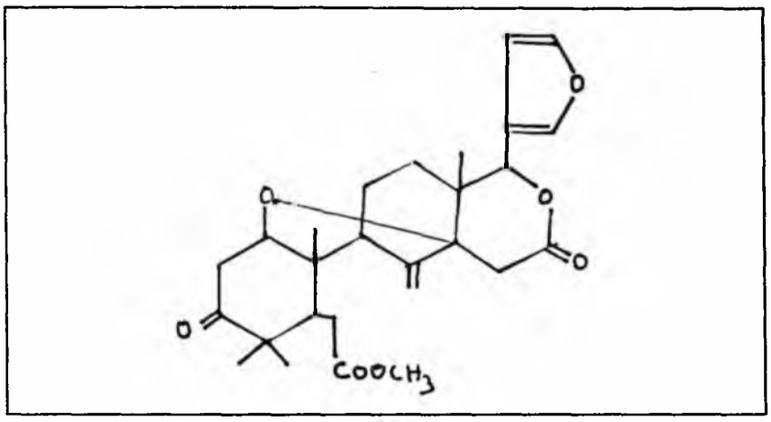
10. **Mamsrohini (*Soymida febrifuga* A. Juss.)** ChRUC

Ethanol extract of the bark yielded methyl angolensate (Fig. 4).



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11. **Panas (*Artocarpus integrifolia* Linn. f.)** ChRUC

Latex of the drug was extracted with solvent ether and chromatographed over silica-gel column. A crystalline solid, m.p. 142-44° is under identification.

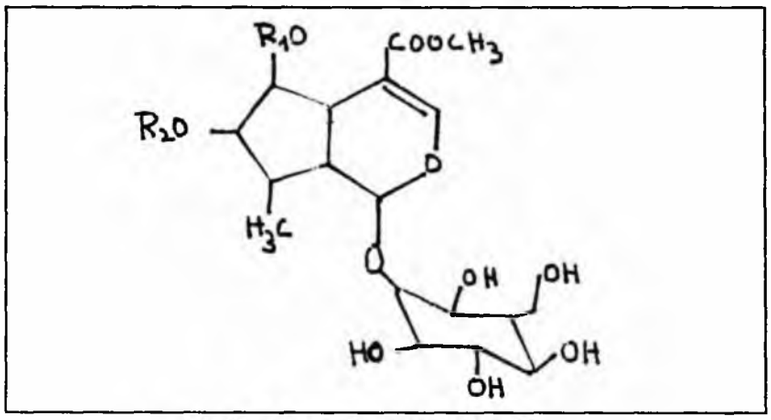
12 **(a) Parijata (*Nyctanthes arbortristis* Linn.)** ChREL

Flowers and seeds were taken up for the detailed studies. A wide array of activities has been exhibited by the extracts of various parts of the plants in CDRI, Lucknow. Promising anti-leishmanial activity has been exhibited by the alcoholic extract of fruits of the plants which has been traced to an iridoid mixture. Column chromatography of iridoid mixture resulted in the isolation of some compounds. Out of which p-methoxycinnamic acid, ß-sitosterol glycosides, arbortristoside-A &-B are known compounds. One unknown compound has been also isolated by fine column chromatography and the structure is yet to be determined.

12 **(b) Parijata (*Nyctanthes arbortristis* Linn.)** CSMDRIAM

From the leaves of the plant, two esters of 6-hydroxy loganin were

isolated and characterised as (1) 6-0 trans-cinnamoyl-6 ß-hydroxy loganin (Fig. 5) and (ii) 7-0-trans-cinnamoyl-6 ß-hydroxy loganin (Fig. 6) by HPLC separation and detailed spectral studies.

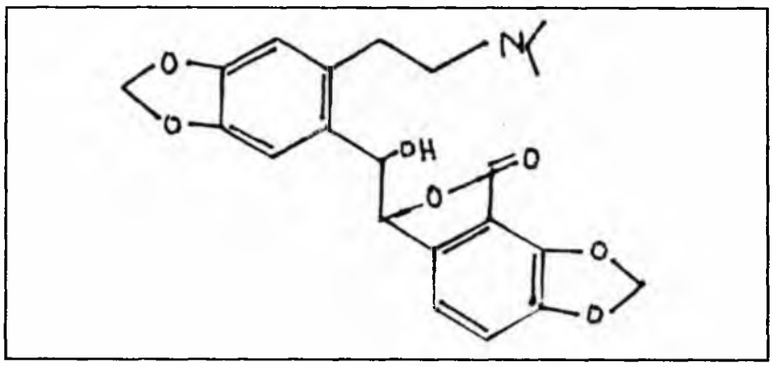


(5) R_1 = trans-cinnamoyl, R_2 = H

(6) R_1 = H, R_2 = trans-cinnamoyl

13. **Parpata** ***(Fumaria indica*** Pugsley) ChRUV

Aqueous-citric acid (7%) fraction of the methanol extract of the stems of the plant after basification with ammonium hydroxide was extracted with chloroform. On chromatography over silica gel column eluting with solvents of increasing polarity, five alkaloids were obtained



viz. protopine, m.p., 201-03°, protopine nitrate, m.p. 262-64°, narlumidine m.p., 247-49°, dl-tetrahydrocoptisine, m.p. 220-22° and a new alkaloid designated narlumicine, m.p. 161-63° (Fig. 7). Various physical and spectral data were employed for structure elucidation.

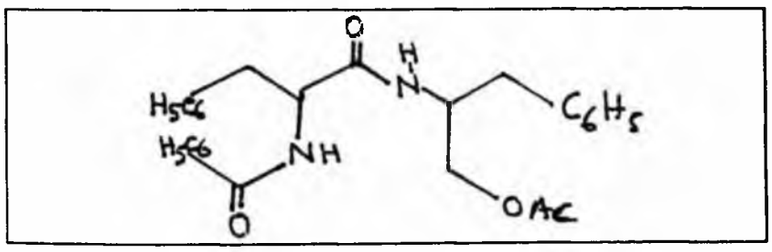
14. **Pithari (*Glossocardia bosvallia* DC.)** ChRUH

Petroleum-ether extract of the aerial part of the bush on column chromatography yielded two crystalline compounds of m.p. 75° and m.p. 60°. T.L.C. examination of the chloroform extract indicated the presence of 8 compounds. This extract on column chromatography yielded a crystalline compound of m.p. 286°. The yield of the acetone, ethyl acetate and methanol extracts is very less. Hence, no chemical work could be carried out on these extracts. Methanol extract indicated the presence of flavones, terpenes, steroids and glycosides.

In addition to the above extracts, large quantity of the plant material was extracted with methanol in soxhlet extractor. This extract after concentration was readsorbed again on the extracted plant material and dried. This readsorbed plant material was successively extracted with pet.-ether, benzene, chloroform, acetone, ethyl acetate and methanol. Further work is in progress.

15. **Puga (*Areca catechu* Linn.)** ChRUC

Neutral part of the ethanol extract of the crushed nut afforded aurantiamide acetate, m.p. 190-91° (Fig. 8).



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16. **Rohitaka (*Aphanamixis polystachya* W. & P.)** CSMDRIAM & ChRUC

Defatted coarsely powdered bark was extracted with methanol. The

methylene chloride fraction of this extract on chromatography also yielded methyl angolensate, m.p. 199-200° (Fig. 4)

17. **Shrivati (*Mussaenda frondosa* var. *glabra* Hook. f.)** RRIT

Ethyl acetate extract of the leaves of the plant on paper chromatography indicated the presence of four flavonoids. Three of them were identified as apigenin, orientin and iso-orientin. The identification of the fourth compound is in progress.

18. **Tagara (*Valeriana wallichii* DC.)** ChRUC

Alcoholic extract of the roots was partitioned with ether followed by ethyl acetate. Ether soluble part yielded a compound, seemed to be identical with betulinic acid. Ethyl acetate part gave a solid, m.p. 257-60° which could be sitosterol-ß-D-glucoside. Final characterisation of the solids is in progress.

19. **Tarkari (*Clerodendrum phlomidis* Linn.f.)** ChRUV

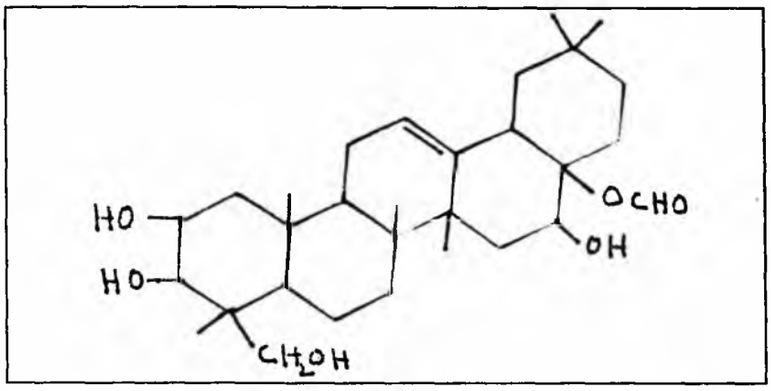
Flowers of the plant were further fractionated in a soxhlet extractor with solvents of increasing polarity and subsequent chromatographic resolution of the ethyl acetate extract over silicagel afforded three crystalline phenolic constituents viz. pectolinarigenin, m.p. 210°, hispidulin, m.p. 289° and a crystalline solid, m.p. 343°. The structure elucidation of the third compound is in progress.

20. **Vandhyavari (*Vicoa indica* DC.)** CSMDRIAM

Chloroform extract of the aerial part on column chromatography followed by GC-MS showed the presence of 27 staright chain hydrocarbons/esters. The above extract also yielded a new 28-nortriterpenoid viz. vicosigenin (2ß, 3ß, 16ß, 23-tetrahydroxy-17-formyloxy-18-norolean-12-ene; m.p. 252-4° (Fig. 9).

The methanolic extract of the plant afforded a new triterpenic glucoside, vicoside B (2ß, 3ß, 16ß, 23-tetrahydroxy-28-al-12-ene-3-0-ß-D-glucopyranoside) (Fig. 10).

The structure of vicolide A has been confirmed by X-ray studies and vicolide D was found 2'R, 3'R configuration by the same studies.



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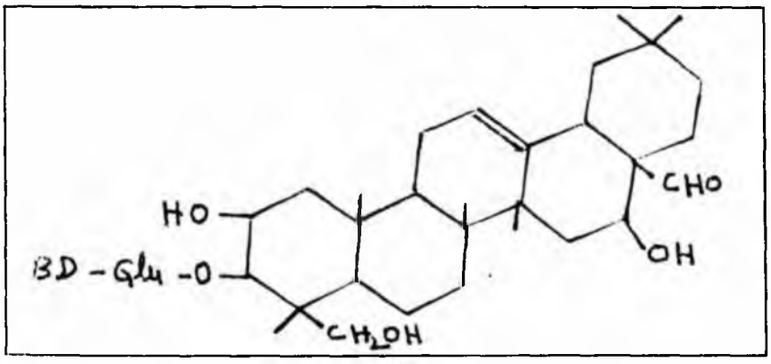

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Miscellaneous work ChRUC

During the period under review, 13 extracts were prepared and supplied to RRI (Ay), Calcutta.

CRID

Benzene and ethanol extracts of the roots, wood and stem bark of the *Dalbergia sisoo* were prepared.

ChRUH

1. Methanol extract of the fruits of *Tamarindus indica* was prepared and despatched for pharmacological testing to S.M.S. Medical College, Jaipur.

2. Ethanol extract of the seeds of *Azadirachta indica* was prepared and sent to Jaipur for pharmacological testing.

3. Petroleum-ether extract of the seeds of *Lagenaria siceraria* was also prepared and sent to Jaipur for pharmacological testing.

4. Drug Standardisation work on *Moringa pterygosperma* was completed and further work on this plant is discontinued.

ChREL

Literature survey of the *Nyctanthes arbortristis, Cinnamomum tamala, Coleus forskohlii, Semecarpus anacardium* and *Achyranthes aspera* were completed.

CSMDRIAM

550 Capsules of STG (100 mg strength) and 500 capsules of Plumbagin (5 mg strength) were supplied to Council Units for clinical trials.

Extraction & Supply RRIT

1. Quantity of Neem oil worked out .....90 Kg.
2. Quantity of Nimbathiktam supplied to the Clinical/Pharmacology Unit .....1.75 Kg.

PHARMACOLOGICAL RESEARCH PROGRAMME

Pharmacological and Toxicological studies constitute a very vital part in Drug Research Programme. These studies are based on experimental models in different species of animals. This provides vital information for pursuing clinical studies. These studies are carried out by various Pharmacological/Toxicological Research Units located at Bombay, Calcutta, Cheruthuruthy, Delhi, Jaipur, Jhansi, Lucknow, Patiala, Trivandrum and Varanasi. During the period under review 31 drugs (single drugs, coded drugs and compound formulations) were investigated by these units for routine Pharmacological Screening/ special effects such as analgesic, anti-pyretic, anti-inflammatory, anti-histaminic, C.N.S. depressant, cardio vascular, hypolipidaemic, anti-ulcer and adaptogenic effects etc. Toxicological studies comprising of acute, sub-acute and chronic toxicity studies were also carried out. A brief resume of the work carried out is reported below:

1. **Asvattha (*Ficus religiosa* Linn.)** CRIB

LD_{50} value of the benzene and ethanol extracts in mice by oral route is more than 2.0 gm/kg.

Benzene extract did not potentiate pentobarbitone induced narcosis while ethanol extract possessed weak CNS stimulating activity.

2. **Babbula (*Acacia leucophloea* Willd.)** IIPC

Ethanolic extract of the bark of the plant in doses of 100, 300 and 900 mg/kg was tested for its anti-pyretic, analgesic, anti-convulsant, hypnosis potentiating and anti-inflammatory activities. This extract in doses of 300 mg/kg and 900 mg/kg showed analgesic activity. In these dose levels it showed mild to moderate anti-inflammatory effect. However, it failed to exhibit antipyretic, anti-convulsant and hypnosis potentiating effects when tested in the above doses.

3. (a) **Bhurja (*Betula utilis* D. Don)** CRIB

LD_{50} value of the benzene and ethanol extracts in mice by oral route is more than 2.0 gm/kg.

The above extracts did not potentiate pentobarbitone induced narcosis.

(b) **Bhurja (*Betula utilis* D. Don)** TRUJ

The drug did not demonstrate any hypothermic effect and pentobarbitone hypnosis in rats. Frog's rectus and rat's uterus were not influenced by the drug. The drug is devoid of anti-fungal activity ***in vitro***.

4. **Dhataki [*Woodfodia fruticosa* (Linn.) Kurz]** PRUC

Alcoholic extract was studied (250 mg/kg, p.o) on acute models (dextran and turpentine pleurisy on rats) but exhibited significant anti-inflammatory property against turpentine only which necessitated studies on sub-acute/chronic models.

The extract was also studied at 250 mg/kg for thirteen consecutive days on sub-acute/chronic model (formaldehyde) of inflammation in rats. It produced no significant anti-inflammatory effect.

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

Gandhamarjara veerya in doses of 100, 200 and 400 mg/kg was tested for its effect on forced motor activity, anti-psychotic activity effect on d-amphetamine induced stereotype in mice and effect on exploratory behaviour (in mice) and anti-depressant activity (anti-reserpine test and behavioural 'despair' test in mice). In the doses tested it failed to antagonise d-amphetamine induced stereotype and exploratory behaviour in mice significantly. It also failed to modify reserpine induced ptosis, catatonia and sedation in mice as also the duration of mice immobility in the behavioural 'despair' test. At these dose levels it also failed to affect the performance of trained mice on rota rod.

6. **Hansprabha** TRUJ

Hansprabha was found to be safe in rabbits upto an oral dose of 4 gm/kg body weight. The doses upto 100 mg/kg administered orally to rabbits for 15 days had no adverse effect as the biochemical parameters were found to be normal. No pathological changes could be seen in the organs of drug treated rabbits. The drug is devoid of antibacterial activity. No local anaesthetic, anti-convulsant, analgesic activity has been observed in the drug. Frog's rectus and rat's uterus were not

influenced by the drug. On perfused frog's heart the doses of 30 mg and above of Hansprabha produced a significant positive inotropic and chronotropic effect which could be blocked by propranolol.

The drug did not exhibit any hypothermic effect and pentobarbitone hypnosis in rats. The drug is devoid of anti-fungal activity ***in vitro***.

7. **Haritaki** CRIB

LD_{50} value of Haritaki powder in rats by oral route is more than 2.0 gm/kg.

Haritaki powder in rats did not show anti-pyretic activity.

8. **Kadli (*Musa paradisica* Linn.)** PhRUL

Recently Banana is being used in different forms for prevention and treatment of peptic ulcer. A scientific study with powdered drug (fruit pulp) was conducted to assess whether it could prevent stress induced gastric ulcers in rats. The results were significant as it protected the animals from gastric ulcers but this needs further evaluation.

9. **Kakamachi (*Solanum nigrum* Linn.)** PhRUT

Ethanol and aqueous extracts of the whole plant were screened for general pharmacological effects. No mortality, gross behavioural or toxic changes were noticed at the oral doses of 100, 200, 500, 1000, 2000, 4000 & 5000 mg/kg body weight.

No effect on sleeping time was seen indicating no CNS sedative effect at different doses (50, 200 & 400 mg/kg). Mild analgesic activity noticed with 200 mg/kg. The drug is devoid of anti-convulsant activity. There was a hypotensive effect with 10 mg/kg but no such effects were observed at higher dose levels. No effect seen on respiration with regard to rate and amplitude. The drug showed anti-pyretic activity at 400 mg/kg. At 500 mg/kg there was mild diuretic activity. In carrageenin induced acute inflammation in rats, the extract in 200 and 400 mg/kg (p.o) showed significant anti-inflammatory effect. Both the extracts showed anti-spasmodic and spasmodic activity on smooth muscle respectively.

10. **Kalambak (*Coscinium fenestratum* Colebr)** Ph RUT

The ethanol extract of the drug, significantly reduced both free and

total acidity in the gastric secretion at 50, 100 & 200 mg/kg body weight.

11. **Lip Pink** PhRUT

The Lip Pink is used for cleaning the teeth as well as for certain gastro-intestinal disorders. It was observed that it did not modify the response of acetyl-choline (20 mg) on frog rectus muscle preparation in doses (10, 30, 100, 300, 1000, 3000 and 10,000 mg) studied.

Lip Pink, in doses of 10, 30, 100, 300 and 1000 mg did not produce any change in the heart rate and force of contraction. It had no effect on the tone of muscle. However, it reduced the amplitude of contraction.

Lip Pink showed anti-inflammatory effect in doses of 100, 300 and 10,000 mg/kg/p.o. against carragecnin induced oedema.

12. **Loknatha Rasa** CRIB

LD_{50} value of Loknatha Rasa in rats by oral route is more than 2.0 gm/kg.

13. **Mahameda (*Polygonatum cirrhifolium* Royle)** PhRUT

Methanol extract of the drug, did not show CNS sedative effect and toxicity upto 20 g/kg (p.o). Tonic effect of the drug extract has been studied using young male albino rats. Further work is in progress.

14. **Mukta Vidmanjana Rasa** CRIB

LD_{50} value of the Rasa in rats by oral route is more than 2.0 gm/kg.

15. **Musa (*Cyperus rotundus* Linn.)** Ph RUL

Clinico-Pharmacological studies for its anti-rheumatic and anti-arthritic activity in man during the last 8 years amply prove its efficacy, safety and patient compliance. It is proposed to conclude a 10 year study in 1994.

16. **Nagkesara (*Mesua ferrea* Linn.)** PhRUL

Petroleum-ether extract of the flowers exhibited protective effect against stress induced gastric ulcers in rats.

17. **Parpata (*Fumaria parviflora* Lamk)** PhRUL

70% Alcoholic extract of whole plant residue (alcohol free) tested against anoxia tolerance in mice showed no effect and was thus devoid of anti-oxidant activity. However, as observed earlier, it is a good anti-inflammatory agent and hence needs detailed evaluation of this activity.

18. **Punarnava (*Trianthema portulacastrum* Linn.)** Ph RUC

The CMC emulsified ethanolic extract in 250 mg/kg, p.o. on rats exhibited no significant anti-inflammatory effect against dextran induced inflammation in rats.

19. **Purnark of Haritaki** CRIB

LD_{50} value of Purnark of Haritaki in rats by oral route is more than 4.0 gm/kg.

The above drug in rats did not show antipyretic activity.

20. **Pushpakvati** TRUJ

Frog's rectus and rat's uterus were not influenced by this drug. The drug did not exhibit any hypothermic effect in rats but it (100 mg/kg) potentiated the pentobarbitone hypnosis in rats. The drug is devoid of anti-fungal activity *in vitro*.

21. **Sanjeevani (*Selaginella bryopteris*)** PhRUL

The aqueous extract of the whole plant was studied for its anti-ulcer activity in albino rats against immobilisation (18 hrs) stress induced peptic ulcers. The drug was found to have a significant effect.

It was also subjected to certain biochemical parameters for its cell injury preventing effect on the liver of rats. Malonaldehyde estimation was done in liver homogenates of animals treated with the drug. In doses of 50 mg/kg, p.o. in rats showed some effect on free radicals a very important facet of drugs which helps to prevent cell injury.

22. **Sarsap (*Brassica campestris* Linn.)** CRIB

LD_{50} value of the ethanol extract in mice by oral route is more than 2.0 gm/kg.

The above extract did not potentiate pentobarbitone induced narcosis.

23. **Sarva Jvara Hara Lauha** CRIB

LD_{50} value of the above drug in rats by oral route is more than 2.0 gm/kg.

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

Chloroform and methanol extracts of the roots showed significant CNS sedative effect, myocardial depressant effect or bradycardia on frog heart *in situ*. Methanol extract exhibited significant hypoglycaemic effect in rabbit.

25. **Udumbara (*Ficus racemosa* Linn.)** CRIB

LD_{50} value of the benzene and ethanol extracts in mice is more than 2.0 gm/kg. orally.

Benzene and ethanol extracts did not potentiate pentobarbitone induced narcosis.

26. **Code No.BS** PhRUC

The drug was investigated for hypoglycaemic effect on rats and exhibited highly significant hypoglycaemic effect.

27. **Code No. CC** Ph RUC

The drug was investigated on normal fasting as well as streptozolocin induced hyperglycaemic rats. It exhibited moderate anti-diabetic property which requires detailed investigations.

28. **Code No. DM** PhRUC

The drug administered in 250 mg/kg, p.o. in normal fasting as well as streptozolocin induced hyperglycaemic rats produced significant hypoglycaemic effect as observed from blood sugar level upto fourth hour.

29. **Code No. HM** PhRUC

HML was administered orally in 250 mg/kg on normal fasting as

well as streptozolocin induced hyperglycaemic rats. The drug showed significant reduction of blood sugar level, suggesting hypoglycaemic effect.

30. **Code No. HM-2** PhRUC

The drug exhibited significant hypoglycaemic property on normal fasting as well as streptozolocin induced hyperglycaemic rats.

31. **Code No. PR-1** Ph RUC

The drug administered in 250 mg/kg, p.o. against carrageenin induced inflammation in rats exhibited no significant anti-inflammatory property.

The drug exhibited dose dependent significant reduction of locomotor activity followed by drowsiness without producing loss of righting reflex and hind limb ataxia.

The drug administered in 100 mg/kg, p.o. in mice failed to potentiate pentobarbitone sleeping time in mice, protected maximal electric shock induced convulsions and against stress on wire. Exogenous application of (PR-1) in doses of 1 & 2 mg on rabbit eye appeared to produce no miosis. The drug in doses of 100 & 200 mg/kg, p.o. appeared to reduce locomotor activity in two and half hours, as observed by Kymographic tracings.

The drug in doses of 0.5 to 5 mg/kg, i.v. produced dose dependent sharp transient fall of blood pressure like that of acetylcholine. The effect of PR-1 in 0.5 mg/kg, i.v. was comparable to 2 kg/kg, i.v. dose of acetylcholine on atropinisation the hypotensive effect was totally abolished followed by vasopressure response in 5 mg/kg, i.v. dose. The drug produced dose dependent fall in respiratory rate with increase in amplitude. The result suggested presence of acetylcholine moity of muscarinic nature in PR-1.

The drug in 0.1 to 2 mg dose in 10 ml bath produced dose dependent contraction of smooth muscle (rat colon) and potentiation of Ach. induced spasm on the same tissue. The effect was counteracted by atropine. It suggested presence of acetylcholine moity in PR-1.

1, 2 and 3 mg doses of PR-1 in 10 ml bath produced dose response

contraction of the tissue as well as potentiation of acetylcholine induced spasm.

PR-1 in doses of 10 to 50 kg exhibited dose response tachycardia on frog heart. The heart stopped in diastole but recovered to normal after sometime.

The drug in 0 5 to 5 mg/kg, i.v. exhibited dose response contraction in intestinal movement in anaesthetised cats. The observation of majority of the parameters resembled PR-1, a parasympathomimetic agent having agonistic activity on the muscarinic (acetyl choline) receptors. Further studies on PR-1 for acetylocholine like action are being envisaged.

PHARMACEUTICAL RESEARCH/ STANDARDISATION STUDIES

The Council has carried out studies to lay down analytical values on the formulations included in the I and II Parts of Ayurvedic Formulary of Government of India. The study assumes importance as the analytical data laid down are based on the Formulary prepared in the Research Project itself. This approach vouchsafe for quality control on the formulations which are used in the Clinical Research Studies and other medicare programmes undertaken by the Council.

Having regard to this the Council has undertaken Research studies on single drugs that are entering as ingredient in the particular formulation, on process of manufacture like Asava, Arista, Curna, Bhasma etc. Standardisation studies on single drugs, process of manufacture and finished products are undertaken at Regional Research Institute, Trivandrum, Indian Institute of Ayurveda for Drug Research, Tarikhet, Captain Srinivasa Murthi Drug Research Institute for Ayurveda, Madras, Drug Standardisation Research Project, Jamnagar, while studies on Preliminary Standardisation studies are undertaken at Madras, Jamnagar and Drug Standardisation Research Project, Varanasi and Standardisation studies on single drugs and formulations are undertaken at Regional Research Centre, Bangalore.

As a second phase of study the Council has worked out a plan to lay down analytical values and to identify the presence or otherwise of main and other ingredients by preparing using different proportionate ingredients in different quantity or deleting some of them other than the Standard Formulary and to lay down the analytical values. This new study has revealed some encouraging leads and in time to come this study may be able to identify only genuine quality controlled formulations for clinical uses.

Standardisation of Single Drugs

This study envisages macroscopic study of the single drugs [part(s) used] belonging to plant kingdom and their solubility in alcohol and water, which are entering as the ingredients in the formu-lations undertaken for standardisation studies to establish its correct identity.

Standardisation of Method of Manufacture

This study envisages the laying down data on process of manufacture on various types of formulations like Asavarista, Rasayoga, Taila, Bhasma, Avaleha etc.

Studies on Laying Down Preliminary Analytical Values

This study envisages laying down analytical values of various types of formulations of Ayurvedic Formulary of India Vol. I and II of Government of India. Each of the formulations were analysed as per the format finalised for each type of preparations like Asavarista, Taila, Ghrita, Rasayoga, Vatigutika, Churna etc. after preparing the same in the Research Project as per the formulary.

Detailed Standardisation Studies

This study envisages study of the ingredients, their method of process and the finished products. The end product is subjected to lay down analytical values as per the format evolved for each type of formulations, to estimate various types of values, besides carrying out Thin Layer Chromatographic studies.

According to the method indicated above, the details of the standardisation studies carried out during the year 1991-92 are as under:-

Research Programmes allotted to each of the Standardisation Research Units are as under:-

1. **Regional Research Institute, Trivandrum**

i) Studies on the process standardisation of Asavarista, Kvatha, Vati-gutika and taila.

ii) To evaluate detailed analytical studies of the formulations to find out the composition and percentage of the important ingredients used and to prepare the formulations in various different proportionate combinations other than the standard formulary (Ayurvedic Formulary of India) and to study whether there is variation in the comparison and percentage of the constituents in formulation and to derive a characteristic isolate from the standard formulations

and their identification on following formulations:

Balarista, Parthadyarista, Samangadicurna, Chaturbhadra kvatha (prepared), Dashmula, Katutraya kvatha (prepared kvatha), Kusmanda Rasayana, Cangeri ghrita, Nalpamaradi Taila, Prabhakara Vati, Pranmada Gutika, Jvarayabhira Rasa, Vyoshadi Guggulu.

iii) Studies on the single drugs entering as composition of the formulations undertaken for study.

iv) Laying down analytical values (Determination of Metalic contents) for the market raw drug materials used in the preparations of Bhasmas.

v) Ancillary studies on shelf life/preservatives etc.

The studies carried out during the year 1991-92 are:

Single Drugs:

Vaca (*Acorus calamus*)
Danti (?) (*Cardiospermum halicacabum*)
Devadaru (*Cedrus deodara*)
Patha (*Cissampelos pariera*)
Dhanyaka (*Coriandrum sativum*)
(*Coscinium penastratum*)
(*Gynadropsis fenestratum*)
(*Illicium griffitii*)
Karavira (*Nerium indicum*)
Krishna Jiraka (*Nigella indicum*)
Trivrit (*Operculina turpethum*)
Madanaphala (*Randia dumetorum*)
Saptarangi (*Salacia prenoides*)
Salmali (*Salmalia malabarica*)
Candana (*Santalam album*)
Kakamachi (*Solanum nigrum*)
Patala (*Sterospermum suaveolens*)
Ajamoda (*Trachyspermum ammi*)
Nirgundi (?) (*Vitex agnus*)
Sunthi (*Zingiber officinalis*)
Tagara (*Valeriana wallichi*)

Detailed Standardisation:

Parthadyarista
Jwararybhra Rasa
Nalpamaradi kera Taila
Smangadi Curna

Besides above, studies market samples of the following Asavarista have been analysed to compare the values laid down by the Council by RRI, Trivandrum:

Abhayarista, Amritarista, Ashokarista, Balarista, Candanasava, Dashamularista, Jirakarista, Khadirarista, Kumaryasava, Kutajarista, Lohasava, Mustakarista, Parthadyarista and Punarnavasava.

2 **Regional Research Centre, Bangalore**

i) To evaluate detailed analytical studies of the formulations to find out the composition and percentage of the important ingredients used and to prepare the formulations in various different proportionate combinations other than the standard formulary (Ayurvedic Formulary of India) and to study whether there is variation in the composition and percentage of the constituents in formulation and to derive a characteristic isolate from the standard formulation and their identification on the following formulations:-

Ashokarista, Kutjarista, Ashwagandhadi Leha, Pancatikta Kvatha (prepared Kvatha), Indukanta Ghrita, Rajajyadi Curna, Bhringaraja Taila, Maricyadi Gutika, Kaphketu Rasa, Arogyyavardhini Gutika.

ii) Studies on the single drugs entering as composition of the formulations undertaken for study.

iii) Laying down analytical values (determination of metallic contents) for the market raw drug materials used in the preparation of Bhasmas.

iv) Ancillary studies on shelf-life, preservative etc.

The studies carried out during the year 1991-92 are:

Single Drugs:

Sunthi (*Zingiber officinalis*)

Kiratatikta (*Swertia chirata*)
Bala (*Sida spinosa*)
Brahmi (*Centella asiatica*)

Detailed Standardisation:

Maharasnadi Kvatha I
Maharasnadi Kvatha II
Bhringaraja Taila III & IV

3. **Captain Srinivasa Murthi Drug Research Institute for Ayurveda, Madras**

i) Completion of preliminary standardisation studies of the formulations of Vol. I and II of Ayurvedic Formulary of India.

ii) Laying down analytical values (determination of metallic contents) for the market raw drug materials used in the preparation of bhasmas.

iii) To evaluate detailed analytical studies of the formulations to find out the composition and percentage of the important ingredients used and to prepare the formulations in various different proportionate combinations other than the standard formulations (Ayurvedic Formulary of India) and to study whether there is variation in the composition and percentage of the constituents in formulation and derive a characteristic isolate from the standard formulation and their identification on the following formulations:-

Talisadi Curna, Dasmula Kvatha (prepared Kvatha), Candra prabha Vati, Dasamularista, Bhringaraja Taila, Laghuvisagarbha Taila, Agnitundi Vati, Chitrakadi Vati, Kalyanaka Guda, Laghumalati Vasanta Rasa, Ananda Bhairava Rasa, Tarunarka Rasa and Kancanara Guggulu.

iv) Studies on the process standardisation of taila, bhasma, avaleha, ghrita, guggulu.

v) Ancillary studies on shelf-life, preservatives etc.

The studies carried out during the year 1991-92 are:

Single drugs

Aragvadha (*Cassia fistula*)
Durva (*Cynodon dactylon*)
Vandhyavari (*Vicoa indica*)
Parijata (*Nyctanthes arborstrisis*)
Brihati (*Solanum trilobatum*)
Syonaka (*Oroxylum indicum*)
Bala (*Sida spinosa*)

Method of Manufacture

Kvatha Curna

Preliminary analytical values

Karpurasava
Dasamularista
Dasamula kvath curna
Dasamula taila
AYUSH 64

Detailed standardisation studies:

Karpoorasava
Dasamula

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

i) Studies on the process standardisation of rasa, bhasma, vati, gutika

ii) To evaluate detailed analytical studies of the formulations to find out the composition and percentage of the important ingredients used and to prepare the formulations in various different proportionate combinations other than the standard formulations (Ayurvedic Formulary of India) and to study whether there is variation in the composition and percentage of the constituents in formulation and to derive a characteristic isolate from the standard formulation and their identification on the following formulations:-

Kanakasava, Kantakari avaleha, Balajiradi kvatha (prepared

kvatha), Gokshuradi guggulu, Eladi ghrita, Samudradya curna, Somaraji taila, Tribhuvanakirti rasa, Lakshmivilasa rasa, Lavangadi vati.

iii) Studies on single drugs entering as composition of the formulations undertaken for study.

iv) Laying down analytical values (determination of metallic contents) for the market raw drug materials used in the preparation of bhasmas.

v) Ancillary studies on shelf-life, preservatives etc.

The studies carried out during the year 1991-92 are:

Single drugs:

Dhanvayasa (*Fegonia critica*)

Method of manufacture:

Avaleha

Detailed Standardisation:

Kanakasava
Kantakaryavaleha

5. **Drug Standardisation Research Project, Jamnagar**

i) Completion of the preliminary standardisation studies on the formulations of I and II Volumes of Ayurvedic Formulary of India.

ii) Studies on the process standardisation of bhasma, rasayoga, parpati and pisti.

iii) Laying down analytical values (determination of metallic contents) for the market raw drugs used for the preparation of bhasmas.

iv) To evaluate detailed analytical studies of the formulations to find out the composition and percentage of the important ingredients used and to prepare the formulations in various different propor-

tionate combinations other than the standard formulations (Ayurvedic Formulary of India) and to study whether there is variation in the composition and percentage of the constituents in formulation and to derive a characteristic isolate from the standard formulation and their identification on the following formulations:

Amritarista, Ashwagandhadyarista, Citraka Haritaki, Draksa avaleha, Yogaraja guggulu, Dadimadi ghrita, Saraswata ghrita, Saptasara kvatha (prepared kvatha), Vasacandanadi taila, Gandhaka vati, Lokanatha rasa, Hridayarnava rasa.

v) Studies on single drugs entering as composition of the formulations undertaken for study.

vi) Ancillary studies on shelf-life, preservatives etc.

The studies carried out during the year 1991-92 are:

Single drugs:

Punarnava (Sweta & Rakta) (*Boerhaavia diffusa*)
Kakamaci (*Solanum nigrum*)
Sankhapuspi (*Convolvulus microphyllus*)
Sahadevi (*Vernonia cinerea*)
Sringataka (*Trapa bispinnosa*)
Bakula (*Mimusops elengi*)
Nili (*Indigofera tinctoria*)
Sahacara (*Beleria prionitis*)
Kulatha (*Dolichos biflorus*)
Agnimantha (*Clerodendrum phlomidis*)

Method of Manufacture:

Rasa

Preliminary analytical values

Karpurasava
Jvarasani Rasa
Muktavidrumanjana Rasa
Lokanatha Rasa

Sarvajwarahara Lauha
Gojihvadi Kvatha
Mutravirecaniya Kvatha
Stanyajanana Kvatha
Sambukadya Taila
Brihat Candrodaya Makaradhuaja
Krimikuthara Rasa
Nidrodaya Rasa
Pancanana Rasa
Vajrakapata Rasa
Yakuti Rasa

Detailed Standardisation Studies

Karpurasava

6. **Drug Standardisation Research Project, Varanasi**

i) Completion of the preliminary standardisation studies on the formulation of I and II Volumes of Ayurvedic Formulary of India.

ii) Laying down analytical values (determination of metallic contents) for the market raw drugs used for the preparation of bhasmas.

iii) To evaluate detailed analytical studies of the formulations to find out the composition and percentage of the important ingredients used and to prepare the formulations in various different proportionate combinations other than the standard formulations (Ayurvedic Formulary of India) and to study whether there is variation in the composition and percentage of the constituents in formulation and to derive a characteristic isolate from the standard formulation and their identification on the following formulations:-

Vasakasava, Dantyadyarista, Agastya Haritaki rasayana, Amritsthana kvatha (prepared kvatha), Aroha bilva kvatha (prepared kvatha), Karunaradi kvatha (prepared kvatha), Triphala guggulu, Asoka ghrita, Pancagavya ghrita, Karpasasthyadi taila, Dugdha vati, Marichadi gutika, Candrakala rasa, Gaganasundara rasa, Caturjata curna, Pusyanuga curna.

The studies carried out during the year 1991-92 are:

Single drugs:

Punarnava (Sweta & Rakta) (*Boerhaavia diffusa*)
Khadira (*Acacia catechu*)

Analytical values

Kutajarista
Karpurasava
Agastyaharitaki Rasayana
Jvarasani Rasa
Muktavidrumanjana Rasa
Lokanatha Rasa
Sarvajvarahara Lauha

Detailed Standardisation Studies

Karpurasava
Kutajarista
Agasthya Haritaki Rasayana

LITERARY RESEARCH PROGRAMME

Indian Institute of History for Medicine, Hyderabad

The Institute has developed a specialised reference library comprising over 6500 volumes on diverse subjects related with History of Medicine including folk culture and allied subjects. This library gets all the Journals of repute on History of Medicine and their back sets are preserved with all care. There is a reprographic unit to supply copies of rare material sought for research. A biannual Bulletin of History of Medicine is published which is up-to-date. The Institute has six publications to its credit.

Dr. D.V. Subba Reddy Memorial Lecture, workshop on Literary Research, and Workshop on Rasa-Sastra were organised by the Council at Hyderabad on 23-24 January, 1992. The Institute did all the preparatory work and made all the local arrangements for these functions including reception and hospitality.

The Memorial Lecture was delivered by Prof. Lingam Suryanarayana, Vice-Chancellor of A.P. Health University, Vijayawada and was presided over by Padma Vibhushan Dr. Perugu Siva Reddy, President of National Academy of Medical Sciences A.P. who was the chief guest.

The workshop on Literary Research and the Workshop on Rasa Sastra were juxtaposed to the Lecture. These were attended by the Vaidyas and teachers of Ayurveda from all corners of the Country. They very much appreciated such an opportunity and participants requested the Council to make it a regular feature. They deliberated on all aspects of the subjects and recommended for creation of facilities for in depth research. Rasa-Sastra research was recommended to be created with vigour.

The Institute put up an exhibition delineating its achievements and functioning. The publications, photos, charts, drugs and equipment relating to Rasa-Sastra were exhibited.

Practical demonstration of Parad Bandhan creating Raseswar was given at this occasion.

Literary Research Unit , Madras

The Literary Research Unit functioning at Thanjavur has been

shifted to Dr. A. Laxmipati Research Centre for Ayurveda at Madras. During the reporting period 200 single drugs from *Sarabhendra Vaidya Kosha* have been taken up for botantical identification and writting for their theraputic uses along with the synonyms etc. The editing and compilation work is under progress. The manuscripts are as mentioned below:-

1. Netra Prakasika
2. Satasloki
3. Rasaraja Lakshmi
4. Dhanvantari Saranidhi
5. Navavidha Vaidyam
6. Palyapatya Vibodhan
7. Kumar Tantram
8. Netra Roga Nidanam
9. Cikitsamrita Sagar
10. Sarbhendra Vaidya Kosha (Plants)

DOCUMENTATION AND PUBLICATION DIVISION, NEW DELHI

The references from Brihattrayi, Laghuttrayi and other selected texts of Ayurveda and periodical publications were compiled on twenty drugs namely Audbhid Lavan, Usara Lavan, Kaca Lavan, Kaishore Kamya, Kharpar, Grih Dhoom, Godanti, Gomeda, Gairika, Garudapad, Kankana, Saileya, Gandadurva, Madhuka, Aklari, Klitakanam, Vandhuudur (SY) Tamra Churapadika, and Pulsani (SY).

Texual references from Brihattrayi, Laghuttrayi and from Journals of Ayurveda and allied sciences were campiled in respect to ojaksaya (Aids) and andhatva (Blindness).

The work of compilation of bibliography of research articles published in journals published from 1981-85 is nearing completion. These have been broadly caterised under clinical research, drug research and literary research.

The information relevant to Ayurveda and other medical systems have been compiled from newspapers, Bulletins and other Ayurvedic periodicals. Twenty six technical queries of different nature were also attended.

Vijheeya Arthaprakashika and Vakya Pradipika Teeka on Astang

Hridaya have been located from T.M. Oriental Manuscripts library and information collected on relevant vaidyamrita from Adyar library Madras and Jodhpur. Further, orders were placed for rare works Madhva cikitsa and Abhinava Cintamani. During the year Deerghayu on exchage and Indian Journal of Inf. Science on subscription were added and 87 other books were procured for library. The available rare books are being preserved using modern techniques. Efforts are also in progress to procure more rare books and manuscripts.

Photographic coverage of different meetings and conference held during the reporting period have been done. The microfilming facilities are being further strengthened. The xerox copying work covering 41219 pages and printing totaling 22,405 impression has been carried out.

Two conjoined issues each of the Journal of Research in Ayurveda and Siddha (1990, Vo. XI & XII & 1991, Vol. XIII) and Bulletin of Medico-Ethno-Botanical Research (Vol. XII & I to Vol. III) and Newsletter upto July-Aug. 1991 were published. Council's publications worth Rs. 39,898.86 were sold in exhibitions, conferences and symposia.

AMCHI RESEARCH UNIT, LEH:

This Unit has published a book entitled "Amchi Pharmacotherapeutics". A survey tour was conducted covering the areas of Khardunga-lapas for collection of medicinal plants. About 60 plants were collected and identified. The Unit has also attended O.P.D. patients in the Unit.

FAMILY WELFARE RESEARCH PROGRAMMES

The Clinical trials of few selected herbal and herbomineral preparations in fertile female volunteers and phytochemical fractionations alongwith experimental, pharmacological and toxicological screening of plant drugs with potential antifertility action are the areas covered under the family welfare research programmes. This work is being executed through 8 separate clinical research unit for family welfare and at two other research Institutes/Centres under Council. For phytochemical, pharmacological and other toxicological studies four Units are provided alongwith two other toxicological research projects.

CLINICAL STUDIES:

The clinical studies of Ayush AC-IV, Pippalyadi yoga and K capsule are taken up for evaluation of their antifertility activity, while the Vandhyavari is being screened for its potential of inducing permanent sterlity. The evaluation of the spermicidal effect of Neem Oil before coitus is also under investigation. These studies are taken up at Family Welfare Units (Clinical) located at Lucknow, Jaipur, Trivandrum, Calcutta, Patiala, Bombay, Ahmedabad and Varanasi; CRI Delhi and ALRCA Madras. The results of each of the trial drug alongwith the place of study are tabulated herewith.

Result of clinical trials of Ayurvedic preparations as Contraceptive (garbha nirodha)

Units	No. of cases		Pregnancy		Reasons for Drop out			
	New	Old	Drop out	Drop failure	Side effects	Other	Total Drop out	Cases continuing at the end of year
1	2	3	4	5	6	7	8	9
Ayush AC-IV								
Lucknow	16	77	-	-	-	6	6	87
Jaipur	13	-	1	-	-	12	13	nil
Trivandrum	51	-	1	-	-	5	6	45

1	2	3	4	5	6	7	8	9
Madras	31	8	-	-	1	12	13	26
Calcutta	2	-	-	-	-	1	1	1
Delhi	8	4	-	1	1	2	4	8
Patiala	24	3	4	-	1	17	22	5
Bombay	43	11	5	-	-	11	16	38
Pippalyadi Yoga:								
Calcutta	11	11	-	2	1	15	18	4
Ahmedabad	52	19	5	1	-	14	20	51
K Capsule:								
Varanasi	25	51	-	4	-	8	12	64
Neem Oil:								
Delhi	10	3	-	-	-	1	1	12
Vandhyavari:								
Delhi	3	6	-	-	-	1	1	8
Trivandrum	13	6	-	-	-	2	2	17
Bombay	63	245	-	2	-	-	-	306
Ahmedabad	-	35	2	4	-	9	15	20

CHEMICO-PHARMACOLOGICAL STUDIES:

Chemico-pharmacological studies under the Family Welfare Research Programme are being conducted to study the antifertility potential of Ayurvedic herbal and mineral drugs for males and females separately, alongwith their toxicity studies. For this purpose, four pharmacological research units located at Bhubaneshwar, Jamnagar, Trivandrum and Varanasi alongwith the toxicity research projects under the Pharmacological research located at Bombay and Jhansi are also involved in this programme.

These studies are broadly directed towards the study of anti-implantation effect of the drugs on first 10 days of pregnancy in albino-rats and their estrogenic effect for assessment of their antifertility potential for females. The studies on the antifertility potential of these drugs in males have been conducted through their effect on epididymis reserve and maturation of sperms in rats. The bio-chemical investigations and histopathological examinations are also taken up for this purpose. The toxicity studies of these drugs cover acute toxicity, sub-

acute toxicity and chronic toxicity. The observations conducted on drugs are reported separately for each type of experimental activities.

1. **Antiimplantation effect:**

The effect of seven drugs on first 10 days of pregnancy in rats, has been investigated under this programme at the chemico-pharmacological research projects at Bhubaneshwar, Trivandrum, Varanasi and Jamnagar. The details of the observations may be seen in the Table below:

Antiimplantation effect of Ayurvedic drugs

S. No.	Drug/part/ext.	Dose(mg/kg)	Effect (%)	Project
1.	Ghrita Kumari (*Aloe barbadensis*) Aqueous ext. of leaves	50 100 200	20 50 90	PhRUFB
2.	Gunja (*Abrus precatorius*)			
	a) Aqueous ext. of seeds	50 100 200	40 50 100	PhRUFB
	b) Ethanol ext. of seeds	100		PhRUFT
3.	Khadira (*Acacia catechu*) Aqueuous ext. of heart wood	100 200	33 50	PHRUFJ
4.	a) Tankana (Borax) b) Tankana (Borax)	25 50	14.29 50.00	PhRUFJ PhRUFB
5.	Nirgundi (*Vitex negundo*) Aqueous ext. of leaves	200	50	PhRUFB
6.	Arjuna (*Terminalia arjuna*)			
	a) Aqueous ext. of bark b) Alcoholic ext. of bark	50 50 100	60 60 60	PhRUFV
7.	Vandhyavari (*Vicoa indica*) Whole plant total ext.	upto 2000	Nil	PhRUFT

2. **Estrogenic effect:** This study has been taken up at Chemico-Pharmacological Research Project at Bhubaneshwar on Ghritkumari, Gunja, Khadira, and Nirgundi. All these drugs have shown anti-progesterone activity of varying degree.

3. **Antifertility effect in the male albino rats:** For this purpose 6 drugs Ghritkumari, Gunja, Tankana, Khadira, Nirgundi and Arjuna have been investigated in varying dose levels at Bhubaneshwar, Trivandrum, Jamnagar and Varanasi. The observations may be seen in the Table below:

Antifertility effect of Ayurvedic drugs in male rats

S. No.	Drug/Part/ext.	Dose (mg/kg.)	Effect	Project
1	2	3	4	5
1.	Ghrita Kumari *(Aloe barbadensis)*	100 200	None	PhRUFB
2.	Gunja *(Abrus precatorius)* Ethanol ext. of seed	150 300	None Reduction in fructose level in seminal tubule and prostate suggest, anti-spermatic activity. Histo-pathological studies in process.	PhRUFT
	Aqueous suspension	500	No significant change on weight of sex organs	PhRUFJ
3.	Tankana (Borax) aqueous susp.	100 200	Slight decrease in sperm concentration and motility. No significant change in weight of sex organs	PhRUFJ
4.	Khadira *(Acacia catechu)* Aqueous ext. of heart wood	50 100 200	No significant change	PhRUFB
5.	Nirgundi *(Vitex negundo)* Aqueous ext. of leaves	50 100 200	No significant change	PhRUFB
6.	Arjuna *(Terminalia arjuna)* Alcoholic ext. of bark	50	No significant change	PhRUFV

4. **Toxicity studies:** Acute and subacute toxicity studies of five drugs i.e. Ghritkumari, Gunja, Tankana, Khadira, Nirgundi and Hansprabha have been taken up. The acute toxicity studies on subacute toxicity studies have been conducted in varying dose levels. None of these drugs showed any acute toxicity effect upto 48 hours with a dose level of upto 5000 mg. per kg. The subacute toxicity studies on ethanol extract of Gunja in 2 dose levels i.e. 150 mg. and 300 mg. per kg. body weight has been taken up for a period of 8 weeks at PhRUF Trivandrum and their histological and bio-chemical investigations are under process. The investigations on subacute toxicity of Tankana have also been conducted at Trivandrum in 3 dose levels 100 mg., 200 mg. and 400 mg. respectively. These studies show mild toxicity as evidenced by increase in bio-chemical parameters e.g. serum creatinine S.G.O.T. S.G.P.T., alkaline phosphatase in dose of more than 200 mg. per kg. The 15 days treatment with 100 mg /kg. of Hansprabha did not produce any bio-chemical or histopathological changes (TRU, Jhansi). The acute and subacute toxicity studies conducted at TRU, Bombay indicate LD_{50} of more than 4 gm/kg. in mice. The subacute toxicity studies in dose of 500 mg/kg. and 1 gm/kg. orally for four weeks did not show any toxicity.

PUBLICATIONS/PARTICIPATIONS

I. PUBLICATIONS

Name of the Author	Title of the paper	Name of Journal	Date of Publication
A. Clinical and Basic Research			
Agarwal, R.G. *et al.*	Periodical analysis of tribhuvan kirti rasa	Aryavaidyan Vol. IV, pp. 238-244	May, 1991
Geetha, A. *et al.*	Action of Pusyanuga Curna in Rakta Pradara (Dysfunctional Uterine bleeding)	JRAS, Vol. XII 104-107	March-June, 1991
Gouri Devi, M. *et al.*	Treatment of Parkinson's disease in Ayurveda (Ancient Indian system of medicine).	Journal of the Royal Society of Medicine	August, 1991
Jha, S.D. & Ruhil, S.D.	Ya Rog Chikitsa Anusandhan Ka Sanskshipt Vivaran	Ayurveda Mahasammelan Patrika, 7-9 (No. I)	Jan., 1992
Mehandale, V.V.	Madhumeha, Sathi Ayurvedatil Vihar Chikitsa	Madhumitra	May, 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Mukherjee, G.D.	The Pathology of the disease vis-a-vis the kriya kala and srotas system	Journal of Integrated Medicine, I (II)	1991
Nair, P.R.C. *et al.*	Svitra (Vitiligo) and its response to certain Ayurvedic Medicines	JRAS, XII (No. 1 & 2) pp. 108-114	1991
Nair, P.R. *et al.*	Clinical evaluation of Prabhanjan vimardanam taila and Sodhana therapy in the treatment of Gridhrasi (Sciatica)	JRAS, XII (No. 1 & 2) pp. 19-32	1991
Namboodiri, P.K.N. *et al.*	Comparative effect of JJ Taila Internal/External on Pakshavadha	JRAS, XII (No. 1&2) pp. 41-46	1991
Pandey, P.N. *et al.*	An epidemiological survey on microfilaraemia in the villages around Bhubaneswar with therapeutic effect of AYUSH-64	JRAS, Vol. XII (1-2), 33-40	1991
Pandey, P.	Kala-azar	Sachitra Ayurveda	June, 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Pandey, P.N. and Das, U.K.	Therapeutic assessment of Shakhotaka ghana vati on Slipada (Filariasis)	JRAS Vol. XI (No. 1-4) 31-37	1990
Pandey, P.N. & Prem Kishore	Effect of Ayush-64 and Saptaparnaghana vati on microfilaraemia	JRAS, Vol. XII No. 3-4 pp. 145-150	1991
Pandey, V.N. & Sharma, K.D.	Nadi Pariksa ki Vijananika Pristha Bhumi	Abhinandan Granth of Vd. B.D. Triguna	1992
Pandey, V.N. & Sharma K.D.	Vrikka roga aur unka Ayurvediya upchaar - ek anusandhan paraka drishtikon	Ayurveda Vikas Vishesanka	October-March, 1991
Prem Kishore, Dash, S. & Nanda, M.C.	An introduction to Abhinava Cintamani on - an Ayurveda treatise from Orissa	Ancient Science of Life Vol. X, pp. 64-69	1990
Prem Kishore, Padhi, M.M. Nanda, G.C.	Ayurvedic literature from Orissa - Overview	Ancient Science of Life Vol. X, No. 2, pp. 132-136	1990

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
13	Ramu, M.G.	A controlled study of Ayurveda treatment in the acutely ill patients with schizophrenia (Unmada) - Rationale and result.	NIMHANS Journal	January, 1992
14	Reddy, K. *et.al.*	Management of Amlapitta (Hyperacidity) with compound drugs of Kapardika bhasma and avipattikara curna	Sachitra Ayurveda	September, 1991
15	Sharma, K.D. & Ghosh, S.	Amavata ka Ayurvedic upchaar - ek Sodha Paraka Dristikon	Ayurveda Mahasammelan Patrika	August, 1991
16	Sharma, P.C. *et al.*	Ayurveda Vanaspati (Eranda, Nirgundi)	Mah. Arogya Patrika	July, 1991
17	Sharma, P.C. *et al.*	Ayurvediya Vanaspati (Korphad, Karanja, Aele)	Mah. Arogya Patrika	September, 1991
18	Sharma, P.C. *et al.*	Ayurvediya Vanaspati (Shevga, Vekhanda, Halad)	Mah. Arogya Patrika	August, 1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
24	Singh, *R. et al.*	Puskara Guggulu - an anti-anginal and hypolipidemic agent in coronary heart disease (CHD)	JRAS Vol. XII, No. 1,2 pp. 1-18	1991
25	Sripathi Rao, T. *et al.*	Various approaches to Udarasula	Sachitra Ayurveda	July, 1991
26	Tiwari, L.C. *et al.*	Dadim (*Punica granatum* (Linn.)). A wonderful drug in traditional system of medicine.	Sachitra Ayurveda	June, 1991
27	Tiwari, L.C. *et al.*	Screening of some patent herbal drugs for potent therapeutic agents recommended for use for AIDS in Ayurveda	Sachitra Ayurveda	December, 1991
28	Uniyal, M.R. & Joshi, G.C.	Cancer ke upchar mein Paramparagat Ausadhi-Bichhu ghas	Sachitra Ayurveda	May, 1991
29	Uniyal, M.R. & Tiwari, L.R.	Anti-cancer drugs from U.P. Himalayas	Ancient Science of Life	July, 1992
30	Venkataram, B.S.	Right Ahara (food for bright Manas)	Ayurvijnana Vol. 14 (No. 12)	December, 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
B. Health Care Research			
Audichya, K.C. *et al.*	Role of traditional healers in Primary Health Care	Ayurveda Mahasammelan Patrika, Vol. 7, pp. 51-57	July, 1991
Mishra, D.D.	Paryavaran Pradushan Ek Abhishap - tatha tajjanya vikaro mein nimbark ka mahatva	Sachitra Ayurveda	April, 1992
Tiwari, L.C.	Bacha (*Acarus calamus linn.*) - A herbal tranquillizer and Brain tonic in Ayurveda.	Sachitra Ayurveda	April, 1992
C. Medico-Botanical Survey and Cultivation			
Badhe, P.D.	A study of medicinal and economic plants of Amravati division, Amravati circle.	BMEBR, Vol. XI 1-39	1990
Billore, K.V.	A note on the confused identity and nomenclature of *Commiphora* species.	BMEBR, Vol. XII, No. 1-2 87-90	1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
36	Chaudhary, B.G. *et al.*	Studies on identification of aspect of Vidhara beeja and its adulterants in Gujarat State.	BMEBR, Vol. XII (No. 1-2), 40-50	1991
37	Dey, D. & Das, M.N.	Pharmacognostic evaluation on bark, flower and fruit of *Moringa oleifera* Lam.	Indian Sci. Cong. Part III (Botany) Abst. No. 145, 77	January, 1992
38	Hemadri, K.	Contribution to the Medicinal flora of Sri Kakulam Distt. A.P.	Indian Medicine 3(1): 17-34	1991
39	Hemadri, K.	Tree plantation of medicinal importance through social forestry scheme in A.P.	BMEBR, Vol. XII (No. 1&2), 73-77	1991
40	Hemadri, K.	Discovery of Gomutra Silajit from Karnataka State	Indian Medicine 3(2-3), 15-16	1991
41	Joshi, G.C. *et al.*	Environmental degradation in Western Himalayan and some suggestion for conservation through natural resources.	Sachitraa Ayurveda (Paryavarana Anka) pages 520-525	Feb, 1992

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
42	Joshi, C. *et al.*	Conservation and large scale cultivation Strategy of Indian Ginseng (*Panax*)	Indian Forester Vol. 117 (No. 2)	Feb, 1991
43	Joshi, G.C. *et al.*	A preliminary ecological approach for the study of herbal wealth of high altitude Himalayas and their conservation strategy.	B.M.E.B.R., Vol. XI (No. 1-4), 96-102	1990
44	Majumder, R.	Some threatened medicinal plants from North Eastern Region of India	BMEBR, Vol. XII (No. 1&2), 12-16	1991
45	Mishra, R. Billore, K.V. and Chaturvedi, D.D.	Some anti-venom medicinal lores from tribal areas of Banswara.	B.M.E.B.R. Vol-XI (1-4). 112-115	1990
46	Pandey, C.	Procurement of Himalayan crude drugs for Ayurvedic Pharmacy	Sachitra Ayurveda pp. 196-201	September, 1991
47	Pandey, G. & Joshi, G.C.	Gujakarul (Ramkarela) Uttar Pradesh ke Himalaya kshetra ka aprasidha shaka	Sachitra Ayurveda pp. 581-582	March, 1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
48	Pandey, G.	Sharvisa Padap - Abhinava shodha ayama	Sachitra Ayurveda pp. 325-326	November, 1991
49	Pandey, G.	Adravyabhuta chikitsa smvedh tatha paddhati	Sachitra Ayurveda pp. 9-99	August, 1991
50	Pandey, G.	Vanaspatika vishana karmukata ka charokta vishta prayoga	Ayurveda Vikas pp. 18-21	August, 1991
51	Pandey, G.	Sanskrit Sahitya mein Paryavarana - Raghuvansha ka Paripareksbya	Sachitra Ayurveda pp. 483-485	February, 1992
52	Pandey, G.	Himalaya Paryavarana Tatha Vanoushadi Samvardana	Sachitra Ayurveda pp. 69-71	January, 1992
53	Pandey, G.	Vrikkaroga - Ayurvediya Mutramays Nigyana ke Pariprekshya	Ayurveda Vikas pp. 263-266	November, 1991
54	Pandey, G.	Study of Yajiapurushiya of Charaka with special reference to the efficacy of plant drugs.	Ayurveda Mahasammelan Patrika, pp. 41-45	July, 1991
55	Pandey, G.	Potential Inputs to psychosomatic approach	Aryavaidyan	June, 1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
57	Pandey, G.	Rudanti Katvarita panarprekshana-1	Ayurveda Mahasamelan Patrika	Sept, 1991
57	Pandey, G.	Ayurvediya Paraprekshyame Uttarakhands Himalaya ka vanaspatika srota	Ayurveda Vikas	March, 1992
58	Pandey, G.	Charakaiya Himalaya Darshan	Ayurveda Mahasammalen Patrika, pp 15-20	May, 1992
59	Pandey, N.K. *et al.*	Drug Potential and conservation notion of medicinal plants of western Himalayas	J.R.I.H. X: 3 pp 29-40	July-Sept, 1991
60	Pandey, V.N. *et al.*	An experiment in acclimatization of medicinal plants	B.M.E.B.R., Vol. XII, (No. 1&2), 51-72	1991
61	Pataskar, R.D. *et al.*	Jitasaya (*Hamiltonia suaveolens* Roxb.) a tribal remedy for diabetes	BMEBR, Vol. XI (1-4) 103-109	1990
62	Shankara, M.R. *et al.*	Folklore claims of some vaterinery receipes	Livestock Adviser Vol. 12	Dec., 1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
65	Sharma, P.C. *et al.*	'Kocha' (*Lepidagathes cristata* Willd). A traditional drug for measles	JRAS. Vol. XI (No. 1-4), 38-42	1990
67	Tiwari, K.C. *et al.*	Commercially neglected genus *Daphne* of Himalayas	BMEBR., Vol. XII 78-82.	1991
66	Yelne, M.B.	Pharmacognostic study of Brihati (*Solanum violaceum* Ort) Root and Fruit).	BMEBR. Vol. XI (1-4), 70-83	1990
	D. Pharmaceutical and Chemical Research			
68	Adibatti, N.A. *et al.*	A pyridine alkaloid from *Cerpagia juncea*	Phytochemistry 30(7), 2449	1991
69	Agarwal, R.G. *et al.*	Standardisation of Somaraji Taila	Ancient Sci. of Life	July-Oct, 1992
70	Barik, B.R. *et al.*	Premnazole, an isoxazole alkaloid of *Premna integrifolia* and *Gmelina arborea* with anti-inflammatory acivity.	Fitoterapia	1992

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
	Chatterjee, A. *et al.*	Electrophlic substitution of indoles: Part XI. Lewis acid induced reaction of skatole with benzil.	Heterocycles, 34(2) 259	1992
	Das, P.C. *et al.*	New Coumarino lignoids from *Hemedesmus indicus*	Indian J. Chem.	1992
	Joshi, P.C. *et al.*	Albiflorin-I, A coumerin from *Boenninghausenia albiflora*	Phytochemistry, 30 2094	1991
	Mandal, S. *et al.*	Hemidesminine-a-new coumarino-lignoid from *Henidesmus indicus*	Ind. J. Chem, 30 (B) 712	1991
	Mathuram, V. *et al.*	Occurrence of two new esters of 6-hydroxy- loganin in *Nyctanthes arbortristis*	J. Ind. Chem. Soc.	1992
	Mukhopadhyaya, C. *et al.*	11-Methoxy tetrahydroalstotrine-a heteroyohimbinoid alkaloid from *Vinca major*	Phytochemistry, 30 2447	1991
	Pandey, G.	Yavagu-Synthesis of Dietetics and Pharmaceutics	Sachitra Ayurveda pp 338-340	June, 1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
75	Pandey, V.N. *et al.*	Evaluation of some controversial Ay. drugs of Indian Pharmaceutical Industry	Hamdard Publication (Suddha Nidhi)	1991-92
76	Pattanshetty, J.K. *et al.*	Standardisation of Rasa Yoga Part-I	Aryavaidyan, IV pp 178-91	Feb., 1992
77	Pattanshetty, J.K.	Standardisation of taila-Part-II	Aryavaidyan	1992
78	Sasikala, E. *et al.*	Contribution on the Pharmacognostic anatomy of *Argyreia speciosa* Sweet, I-the leaf	Indian drugs 28 (1991), 403-407	1991
79	Saxena, R.B. *et al.*	Standardisation of Dhanvantari Taila	J. Ay. (Akola), No. 1	1991
80	Saxena, R.B. *et al.*	Study of Brhat Maricyadi Taila	Anandaviyatri IX (No. 1), 14	1991
81	Tewari, L.C. *et al.*	Chemical studies on Somarajee Taila	Sachitra Ay. pp 238-244	May, 1991

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
82	Tewari, L.C. *et al.*	Phytochemical screening of certain Ayurvedic drugs used in Unani system of medicine	Aryavaidyan IX (No. 3) pp 181-188	Feb. 1991
85	Tripathi, V.K. *et al.*	Arjunolitin triterpene glycoside from *T. arjuna*	Phytochemistry, 31, p 349	1992
86	Vasanth, S. *et al.*	Ellagic acid from *Oxoxylum indicum* Vent	Indian drugs, 28(1), 507	1991
	E. Pharmacology			
87	Alam, M.M. *et al.*	Antibacterial activity of *S. cordifolia* Linn.	Indian Drugs, 28 (12), 570	1991
	Alam, M.M. *et al.*	Antifertility and abortifacient activities of vicolides A and D	Current Science	1992
89	Alam, M.M. *et.al.*	Anti-inflammatory and antipyretic activity of vicolides from *Vicoa indica* DC	Indian J. Expt. Bio. 30, 38	1992
88	Barar, K.V. *et al.*	Omiprazole: Prototype of a novel class of potent anti-ulcer agent	Current Mod. Pract.	Dec., 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
89 Chaduri, D. *et al.*	Pregnancy interceptive effect of *Piper betle* Linn.	Fitoterapia 9, 397	1991
90 Gopal, R.H. *et al.*	*In vitro* antimicrobial activity of *Vicoa indica*	Fitoterapia	1992
91 Jain, P. *et al.*	Third generation cephalosporins-The newer beta-lactamese stable antimicrobials.	Raj. Med. J.	Jan-April, 1991
92 Kuppurajan, K. *et al.*	Hypoglycaemic effect of *Coccinia indica* and Nishamalaki in Diabetes Mellitus	Ind. Med., Vol. 3 (No. 2-3)	April-July, 1991
93 Pillai, N.R.	Antidiarrhoeal activity of *Glycosmis cochinchinensis*-experimental animals	Fitoterapia	1992
94 Pillai, N.R.	Antidiarrhoeal activity of *Punica granatum* Linn. in experimental animals.	Int. J. Pharmacognosy	1992

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
95	Pillai, N.R. *et al.*	Some pharmacological actions of *Scindapsus officinalis* (Gajapippali).	JRAS., XI (1-4), 97-101	1990
96	Saxena, A.K. *et al.*	Effect of *Ocimum sanctum* (Tulsi) on physical performance during stress.	J. Pharmacol & Physio.	1992
97	Singh, N. *et al.*	A comparative evaluation of some anti-stress agents of plants origin.	Ind. J. Pharmacol. 23, 99	1992
98	Singh, N.	Effect of anti-stress plants on biochemical changes during stress reaction.	Ind. J. Pharmacol, 23, 137	1992
99	Singh, N. *et al.*	Effect of some anti-stress plant drugs on the intestine transit.	J. Bio. Chem. Res., 11 (Pt. 4)	1991
100	Vasanth, S. *et al.*	Biological activities of Limonoids	J. Sci. Ind. Res., 50 (11), 884	1991
	F. Family Welfare			
101	Rawal, J.H.	(i) Principal of Neonatal care in Indian System of Med. (ii) Traditional Practices of neonatal care in Ayurvedic perspective.	Neonatal Care	March, 1992

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
102	Rawal, J.H.	(i) Pipalyadi yoga as herbal contraceptive method. (ii) Population explosion and Indian system of medicine.	Sachitra Ay.	Nov., 1991
103	Audichya, K.C. *et al.*	Some ethno-medicinal plant in birth control	Jour. Ay. Vol. 8 (No. 1)	1991
	G. Miscallenous			
104 117	Ali, M.	Principles, Method and importance of literary Res. in History of Ayurveda.	BIIHM 21 (No. 2)	Jan., 1992
105	Ali, M.	Progress and Expansion of History of Medicine	BHHM	Oct, 1991
106	Ali, M. *et al.*	Medicinal Manuscript of Qutub Shahi period in Libraries of Hyderabad-Part-III	BIIHM, Vol. 21 No. 1	Oct, 1991
107	Prakasam, K.S.	Treatment of anaemia with special reference to iron in Ancient Indian Medicine. A Historical perspective	BIIHM, Vol. No. 2	21st Jan, 1992

	Name of the Author	Title of the paper	Name of Journal	Date of Publication
108	Agrawal, G.P. *et al.*	Erythropectin: a new dimension in the management of anaemia refractory to convential therapy	Raj. Med. J.	Jan-April, 1991
109	Hussain, S.A.	Medicine under the royal patronage of Asaflia kings	BIIHM	Jan, 1992
110	Kamaluddin, S.M. *et al.*	The Basic Principles of Unani Medicine	BIIHM, 21 (No. 1)	Oct, 1991
111	Laxmipuram and Srivatta, P.	Amanusa Syndroma	BIIHM	Oct, 1991
112	Mishra, D.D.	Palamu Ki Gharelu Aushadhiya	Booklet	Dec, 1991
113	Mahdihasan, S.	The term trila Prima of Paracelsus explained and justified.	BIIHM	Oct, 1991
114	Pandey, K.K.	Barsati phunsiya-(i) white Pumkin (ii) Jatyadi tail Nirman. (iii) Grishm Ritu Menetra Pakasha	Jeeviniya	May, 1991
115	Pandey, G.	AIDS roga me karkataka ki sambhavith upyogita	Sachitra Ayurveda	Aug, 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Rao, B.R.	Vagbhata in History of Medicine in India	INSAN, Delhi	1992
Sharma, P.C. *et.al.*	Kahi Ayurvediya Ahushadhe (Aadulsa, Parijata)	Mah. Arogya Patrika	April, 1992
Sharma, P.C. and Mahendale, V.V.	Kahi Ayurvediya Aushadhe (Durva, Kadu, Nimba)	Mah. Arogya Patrika	May, 1991
Tewari, V.P.	2000 Tak sabko swastha sewa pradan karna Ayurveda se sambhava	Ayurveda Vikas	1991
Trivedi, V.P.	Shehtoot, Palash, Phalsa	Jeevniya	1991

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II. PARTICIPATION

A. Clinical and Basic Research

Chopra, K.K.	Management of Anal Fissures with indigenous medicines.	'Up date on Piles-Fissure-Fistula' 1992 held at KEM Hospital, Parel, Bombay.	Jan., 18, 1992

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Chopra, K.K.	Contemporary development of Kshara Sootra therapy.	Update on Piles-Fissure Fistula, 1992, held at KEM Hospital, Parel, Bombay.	Jan. 19, 1992
Chopra, K.K.	Role of Agni in Samprapti of Pratishaya	Clinical meeting held at Poddar College on Clinical trial of certain Ayurvedic drugs in the management of Pratishaya.	Feb. 28, 1992
Chopra, K.K.	Kshar Sootra	All India Seminar on Kshara Sootra at Podar Ayurvedic College's Golden Jubilee Celebration.	July 7, 1991
Gourie Devi, M. *et.al.*	Treatment of Parkinsons disease in Ayurveda (ancient Indian System of Medicine)	Workshop on Rasashastra held at Hyderabad under auspices of CCRAS.	Jan., 1992
Joglekar, S.N.	Evaluation of diuretic effect of Sahachar.	National conference of Herbal Science organised by Herbal Academy.	Feb. 9, 1992
Kishore, P.	Clinical research in Ayurveda	Talk delivered at CRI (Ay.), Delhi.	

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Kishore, P.	Clinical trials of Ayurvedic drug preparations and Sodhana cikitsa in the management of Peptic ulcer (Valigunman)	Seminar on Valigunman CCRAS, Pondicherry	Feb. 14, 1992
Meenakshinathan, E.	Patho-physiology of peptic ulcer and a corelation with Siddha method.	Souvenir of National Seminar on valigunum	Feb. 14, 1992
Nair, R.B. and Nair, C.P.R.	Health implication of food carbohydrates and dietary fibre and diet in disease.	Workshop conducted by Ayurvedic College, Trivandrum.	Nov., 1991
Pandey, P.N.	Presented a paper on effect of Ayush-64 and Saptaparna Ghanavati on Microfilaraemia and set of standard herbomineral Ayurvedic drug in the treatment of Slipada (Filariasis)	National Workshop on Filariasis at RRI (U.M.) Madras	Jan. 20-21st, 1992
Pandey, V.N. and Kishore, P.	Role of certain indigenous drugs in the management of Jaundice and certain liver disorders.	National convention on Liver disorders	Sept. 14-15, 1992

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Reddy, K. Pratap	Research on Parinamasula	Seminar at Dhanwantari Jyanti celebrations at A.L. Govt. Ayurvedic College, Warrangal.	Dec.4, 1991
Reddy, K. Pratap, Nagalakshmi, V. (Mrs.) Gogte, Vishwanath.	Amalaki churna on Amalapitta Clinical study.	Seminar held at Banaras Hindu University, Varanasi.	Feb. 17-19, 1992
Shankara, M.R.	Participated in 'Workshop on 'Kashaya Kalpana' and 5 free rural clinical service camps (treating over 2500 patients). He also gave talks on 'Diet and Simple Medicines' and Domestic Medicines in Kitchenshelf.	Organised by the Ayurveda Academy Bangalore.	
Sharma, B.B.	Mechanism of drug action.	Clinical meeting held at Poddar College on 'Clinical trial of certain Ayurvedic drugs in the management of Pratishaya.	Feb. 27, 1992

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Sharma, B.B.	Application of Snehan & Swedan in day to day practice.	All India seminar on 'Role of Panchakarma in day to day practice at Podar Ayurvedic College Golden Jubilee Celebration	April, 4, 1991
Sharma, B.B.	Allergy and Bronchial asthma	Symposium on Allergy in Ayurveda by Rastriya Ayurveda Mandal at Bombay Hospital.	April, 21, 1991
Sharma, K.D.	Ayurvedokta Hridaya Vijnanam ek Sodha Paraka Adhyayana.	At a Seminar at Ladnu, Raj.	March 22, 1992
Sharma, K.D.	Uccha Raktachapa Vyadhi Ka Ayurvediya Anusandhana tamaka vivechana.	At a Janapada Ayurvediya Sammelan, Bulandashahr	Feb. 29, 92 to March 2, 92
Sharma, P.C.	Depletion of medicinal plants- A challenging problem of the present era.	National workshop on Dravyaguna, Banaras Hindu University, Varanasi.	Feb. 17, 1992

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Sharma, P.C.	Tissue culture studies on Ayurvedic medicinal plants.	National conference on Herbal Science, Organised by Herbals Academy, Bombay.	Feb. 9, 1992
Sharma, P.C.	Model medicinal plant garden for rural development	4th World Congress, Holistic Approach Health for All at Bangalore.	Dec. 29, 1991
Sharma, P.C. & Mehandale, V.V.	Haridra (*Curcuna longa* Linn.) A Folklore remedy for malarial. from Rajasthan (Asbstract)	National workshop on Dravyaguna, BHU, Varanasi.	Feb., 1992
Yelne, M.B.	Medicinal lores for treatment of leucorrhoea and menorrhagia from Konkan areas of Maharashtra.	4th World Congress Holistic Approach Health for All, at Bangalore	Dec. 29, 1991
Yelne, M.B.	Cultivation of Shatavari (*Asparagus racemosus* Willd.)	National Conference on Herbal Science, Organised by Herbal Academy Madras.	Feb. 9, 1992

Name of the Author	Title of the paper	Name of Journal	Date of Publication
B. Health Care Research			
Ali, M.	Role of Unani Medicine in Primary Health Care Programme	National Seminar on Unani Medicine Organised by All India Unani Tibbi, Conf. Hyderabad.	Feb. 23, 1992
Tiwari, K.C. *et al.*	Traditionally used diets, foods, selection sources & practices - a case study.	Sodha Sansthan, Pantnagar held at Bareilly.	Feb. 23, 1992
C. Medico-Botanical Survey & Cultivation			
Audichya K.C. Billore, K.V. and Chaturvedi, D.D.	Herbs of Ayurvedic importance of Aravalis.	National Seminar of ecological restoration of Aravalli hill ecosystem of Rajasthan held at Ajmer.	March 25-27, 1992.
Bhat, A.V.	Vulnerable Medicinal Plants of Munner Forest Division Idukki District, Kerala	Symposium on rare/ endangeed endamic plants of Western Ghats sponsored by Kerala forest Division.	Oct. 30-31, 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Billore, K.V.	Conservation and restoration of the flora of Aravalli hills with special reference to medicinal plants.	National Seminar on ecological restoration of Aravalli hill ecosystem of Rajastan held at Ajmer.	March 25-27, 1992
Chaudhari, B.C. *et al.*	Botanical identity & Pharmacognostical study of commercial Parasika yavani in Gujarat.	43rd Indian Pharmaceutical congress held at Rajasthan.	Dec. 27-29, 1991
Chaturvedi, D.D.	*Commiphora wightii* (Arn.) Bhand, Guggulu-An over view	National Seminar on ecological restoration of Aravalli hill ecosystem of Rajasthan held at Ajmer.	March 25-27, 1992.
Hemadri, K. *et al.*	Medicinal plants used in Rasashatra & their distribution in A.P.	Workshop on Rasashastra held at Hyderabad under the auspics of CCRAS.	Jan. 1992
Joseph, T.C.	Medicinal Plants of Aravalis-A check list.	National Seminar on ecological restoration of Aravalli hill ecosystem of Rajasthan held at Ajmer.	March 25-27, 1992.

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Dey, D. & Das, M.N.	Pharmacognosy of bark of *Saraca asoca* (Roxb.)	Proc. 79th Ind. Sci. Cong. Part III Abst. No. 145, page 76	January, 1992
Mishra, R. Billore, K.V. and Chaturvedi, D.D.	Some endangered medicinal plant of Mt. Abu.	National Seminar on ecological restoration of Aravalli ecosystem of Rajasthan held at Ajmer.	March 25-27, 1992
Ramakrishnama-charya, S.	On the identity of Elavaluka.	National workshop, Varanasi	Feb. 17th-19th, 1992
Rao, B.R.	Medicinal plants of Madras city.	Workshop on medicinal plants, conducted by W.W.F. at CLRI, Madras.	Sept., 1991
Sukumar, E. *et al.*	On the putative Phytogenetic relationship of a frieselane beering taxa.	National Seminar on Angiosperm Taxonomy held at the Deptt. of Botany, Univ. of Calicut, Kerala.	Dec., 1991
Tewari, K.C.	Depleting plants of Western Himalayas and causes of thinking.	Sodh Sansthan, Pantnagar held at Bareilla.	Feb., 1992

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Yadav, B.B.L.	Need of conservation of one of the most endangered species *Commphora wightii* (Arn.) Bhand. in Rajasthan.	National Seminar on ecological restoration of Aravalli ecosystem of Rajasthan held at Ajmer.	March 25-27, 1992
Alam, M.M. *et al.*	On the comparative evaluation of three species of Bala.	43rd Indian Pharmaceutical congress, held at Goa.	Dec. 27-29, 1991
D. Pharmaceutical & Chemical Research			
Balkrishna, K. *et al.*	Straight chain constituents of *Vicoa indica* DC.	43rd Indian Pharmaceutical congress, held at Goa.	Dec. 27-29, 1991
Dholkia, M.V. *et al.*	Study of Dadimadi Ghrita.	Scientific Seminar held on the occasion of Silver Jubilee celebrations (1967-92) of Guj. Ay. University, Jamnagar.	1992
Dutta, S.K.	Standardisation of Rasayoga.	Workshop of Rasashastra, Hyderabad.	Jan., 92

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Joshi, P.C.	(+)-Albiflorin-3 from *Boenninghausenia albiflora*.	Proc. 79th Indian Science Congress, Part. III	1992
Joshi, P.C.	Albiflorin-3, a new coumarin from *Boenninghaussania albiflora*.	7th National Symposium on Recent Advances in organic chemistry (Kalyani University, W.B.)	1991
Mallick, B. *et al.*	Ferulasisin, a new sesquiterpenoid coumarin from *Ferula assafoetida* Regal.	28th Annual Convention of Chemists, Calcutta.	1992
Mandal, S. *et al.*	Vicoin-1, a new sesquiterpene lactone from *Vicoa indica* DC.	28th Annual Convention of Chemists, Calcutta.	1992
Pathak, N.N.	Methodology for study of controversial drugs.	National workshop on Dravyaguna, B.H.U.	Feb. 17-19, 1992
E. Pharmacology			
Emmannual, Z.A. *et al.*	Antisnake venom activity of the root bark of *Ehretia buxifolia* Roxb.	XII Annual conference of Indian Association of Biomedical Scientists. Madras Medical College.	Oct. 12-13 1991.

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Khanna, N.K. *et al.*	Early use of antibiotics in Trauma.	Symposium on Polytrauma Management.	Aug. 17-18, 1991
Khanna, N.K.	Burn: Pharmacological aspects.	2nd North-Zone short-terms Training course in Burn Nursing.	Nov. 25-Dec. 7, 1991
Pandey, G.	Control of blood pressure through indigenous drugs.	All India Ayurveda Symposium, Medical College, Bhilai (M.P.)	Oct., 1991
Pandey, G.	Significance of Prabhava in Pharmacolocal principles.	National workshop on Dravyaguna - I.M.S., B.H.U., Varanasi.	Feb., 1992
Patra, B.B. *et al.*	Studies on anti-inflammatory property of *Woodfordia fruticosa*.	North-East Regional Conf. Indian Pharmacological Society-II (Calcutta Branch)	1991
Patra, B.B. *et al.*	Further studies on the anti-inflammatory properties of alcoholic extract of *Premna integrifolia* on experimental models.	North-East Regional Conf. Indian Pharmacological Society-II (Calcutta Branch)	1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Rao, T. Sripathi	Biochemical basic of Madhura Rasa	Seminar held at Banaras Hindu University, Varanasi	Feb. 17-19, 1992
Saxena, A.K. & Singh, S.P.	Involvement of brain dopaminergic receptors in antistress activity of *W. somnifera* & *P. ginsing.*	Annual Conf. of Indian Pharm. Society, Ahmedabad.	Dec., 1991
F. Family Welfare			
Juker, S.R. (Mrs.) & Sharma, D.B.	Role of Herbs in Family Planning	National conference of Herbal Science.	Feb. 9, 1992
Rawal, J.H.	A clinical trial of Pippalyadi yoga as herbal contraceptive method.	IInd International Seminar, Kathmandu (Nepal)	Sept. 13-16, 1991.
G. Miscellaneous			
Bhat, A.V.	Trees for life.	Seminar on Trees for life, World Food day.	Oct. 16th, 1991
Bhat, A V.	Problem of Non-availability of genuine raw drugs and some corrective measures.	All Kerala Pharmaceutical Manufactures Association Conference.	15th Dec., 1991.

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Chopra, K.K.	Documentation & Presentation of work	Seminar on 'Methodology of Clinical Research in Ayurveda organised by Faculty of Ayurvedic Medicine, Univ. of Bombay.	Feb. 9, 1992
Hussain, S.A.	Pulse Reading	National seminar of Unani Medicine organised by All India Unani Tibbi. Conf. at Hyderabad	Feb. 23, 1992
Rao, B.R.	Some views based on the survey of medicinal manuscripts and practitioner.	Workshop literary and Rasa- shastra in Ayurveda, Hyderabad.	Jan. 23, 1992
Rao, T.S.	Scientific offshoots of Ayurveda.	National convention on Indigenous medical Education and Research and its relevance to National Health Need, at Coimbatore.	July 13-15. 1991

Name of the Author	Title of the paper	Name of Journal	Date of Publication
Reddy, K.	Improving Ayurvedic Research	National convention on indigenous medical education and research and its relevance to National Health Need, held at Coimbatore.	July 13-15, 1991
Shah D.C. *et al.*	Medical plants of Goa state used in Ayurvedic pharmaceuticals.	43rd Indian Pharmaceutical congress Panaji Goa.	Dec. 22-29, 1991.

III. TECHNICAL REPORT-SIDDHA

Abbreviations used for Institutes/Units

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

CLINICAL RESEARCH PROGRAMME

Clinical Research is being carried out on selected clirlical conditions by the Institutes/Units of the Siddha Medicine functioning under the Council. The Clinical conditions studied during the reporting year include Kalanjagapadai (Psoriasis), Putronoi (Cancer), Manjal Kamalai (Infective hepatitis), Sandhi Vatha soolai (Rheumatoid arthritis), Gunmam (Intestinal disorders), Venkuttam (Leucoderma), Velluppunoi (Anaemia) etc.

1. Vatha Soolai:

Vatha soolai is one among the 80 Vatha diseases described in Siddha texts. The RRI(S), Pondicherry is engaged in determining the efficacy of the drug Chanda marutham and Vathakesari thailam. 66 cases of Vatha Soolai were registered during the reporting year.

Results of clinical/therapeutic trial of Siddha preparation on Vatha Soolai

S. No.	Therapy	Total cases	Results				
			Comp. rel.	Mark. rel.	Mode. rel.	Mild rel.	LAMA
1.	Chanda marutham 130 mg. B.D. with honey.	21	8	10	-	2	1
2.	Vathakesari thailam external use	31	12	10	-	4	5
3.	Combination of 1 & 2	14	9	3	-	1	1
	Total	66	29	23	-	7	7

2. Oothal noi:

Oothal noi is described as one of the intestinal disorder. The study on this disease was taken up by the RRI(S), Pondicherry using Mandoorathi, Adai Kudineer and Vediuppu churnam. Out of 4 cases included into the study 2 cases got complete relief and 2 cases did not respond to the treatment.

3. Velluppunoi (Anaemia):

Clinical studies were conducted in cases of velluppunoi (Anaemia) at Regional Research Institute (Siddha), Pondicherry using Ayabringaraja Karpam at the dose level of 260 mg. with honey three times a day.

No side effect/toxic effects were noticed during or after the treatment. Following Table shows the details of treatment.

Results of clinical/therapeutic trial of Siddha preparations on Velluppunoi (Anaemia)

S. No.	Therapy	Total cases	Results				
			Comp. rel.	Mark. rel.	Mode. rel.	Mild rel.	LAMA
1.	Ayabringaraja karpam 260 mg c̄ honey TDS	14	6	5	2	-	1

4. Sarumanoigal (Skin disorders)

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

Results of clinical/therapeutic trial of Siddha preparations on Sarumanoigal (Skin disorders)

S. No.	Drugs	Total cases	Results				
			Comp. rel.	Mark. rel.	Mode. rel.	Mild rel.	LAMA
1	2	3	4	5	6	7	8
1.	Irunelli Karpam (130 mg. B.D.) c̄ Milk Karpan thailam (ext)	7	4	2	-	-	1

1	2	3	4	5	6	7	8
2.	Gandhaga Rasayanam (2 gm. B.D.) c̄ Milk Arugan thailam externally	5	4	1	-	-	-
3.	Combination of 1 & 2	6	3	2	-	-	1
	Total	18	11	5	-	-	2

5. **Gunmam (Intestinal disorders):**

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

Results of clinical/therapeutic trial of Siddha preparations Gunmam (Intestinal disorders)

S. No.	Drugs	Total cases	Results				
			Comp. rel.	Mark. rel.	Mode. rel.	Mild rel.	LAMA
1	2	3	4	5	6	7	8
1.	Uppu chendooram 130 mg TDS c̄ water	41	26	6	5	-	4
2.	Uppu chendooram 200 mg BD c̄ 30 ml of cabbage juice	60	42	10	6	-	2
3.	Kavikkal choornam one gm BD c̄ water	10	7	-	-	-	3
4.	Gunma gudori Mezhugu 1 gm TDS c̄ water	2	2	-	-	-	-
5.	Uppuchendooram and Gunmagudori Mezhugu	3	1	-	-	1	1
	Total	116	78	16	11	1	10

6. **Yanaikkalnoi (Filariasis):**

Yanaikkalnoi is described in Siddha texts as one of the diseases of Jwaramas. A pilot study was envisaged to prove the efficacy of Siddha drugs at the CRU(S), Trivandrum. Following Table shows the results of the treatment.

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

S. No.	Drugs/Dose	Total cases	Results				
			Comp. rel.	Mark. rel.	Mode. rel.	Mild rel.	LAMA
1.	Linga chendooram	20	13	4	3	-	-
2.	Nilavembu kudineer 30 ml. four times a day Thazhambu Mathirai	20	9	9	2	-	-
3.	Kakkattan Verpattai karkam (5 gm per on alternative days) Kakkattam ver choornam 130 mg BD c honey	20	11	6	3	-	-
4.	Tab. Hetrazan	20	8	8	4	-	-
	Total	80	41	27	12	-	-

7. **Eraippunoi (Bronchial asthma)**

Eraippunoi is one of the respiratory diseases described in Siddha literature. The efficacy of the drugs like Irunelli karpam and Swasakudori mathirai was studied by C.I.U.(S), Trivandrum; in 25 cases of Eraippunoi. The study showed complete relief in 18 cases and marked relief in 6 cases while remaining one case discontinued the study.

8. **Keelvayu:**

Keelvayu is one among the 80 vatha diseases described in Siddha

classics. The efficacy of Ayakantha chendooram, Sivanar amirtham and Amukkara choornam was studied by CRU(S), Trivandrum in 16 cases registered during the period under review. The study showed complete relief in 10 cases and marked relief in 5 cases while remaining one case discontinued the study.

9. **Kakkai valippu:**

Kakkai valippu (Epilepsy) is one of the four varieties of Valippunoigal described in Siddha literature. The efficacy of Panchondi Sudar thailam was studied at CRU(S), Palayamkottai. Six cases were registered during the period under review. Out of which 3 cases got marked relief and one case got mild relief and remaining two cases left against medical advise.

10. **Muraijwaram:**

Muraijwaram (Malaria) is one of the 33 varieties jwarangal described in Siddha texts. Trial drug Linga chendooram has been studied at CRU(S), Palayamkottai out of the 3 cases admitted one discharged as complete relief.

11. **Vellainoi (Leucorrhoea)**

Vellainoi (Leucorrhoea) described in Siddha texts is one of the magalir noigal. The CRU(S), Trivandrum using Chemparuthi Kashayam and Kukkil Parpam studied cases of Vellainoi admitted during the period under review. The study showed complete relief in 12 cases and marked relief in 7 cases while one case discontinued the study.

12. **Neerazhivu (Diabetes mellitus)**

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

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

S. No.	Drugs	Total cases	Results			
			MC	MO.C.	MC	LAMA
1.	Abraga Chendooram (200 mg. B.D.)	26	15	7	-	4
2.	Vangaparpam (20 mg. B.D.)	1	-	-	-	1
	Total	27	15	7	-	5

13 **Kalanjagapadai (Psoriasis):**

Kalanjagapadai (Psoriasis) has been taken up for study using a coded drug '777 Oil' formulated by the Central Research Institute (Siddha), Madras. Clinical trials were conducted at CRI(S), Madras and CRU(S) Safdarjang Hospital, New Delhi and CRU(S) Trivandrum, 10 ml. of oil milk was administered in two divided doses internally on all the 286 cases selected for study The patients were also advised to apply oil externally on the affected parts of the body. The details or results of the treatment are reported hereunder:-

Results of Clinical/therapeutic trial of Siddha preparations on Kalanjagapadai (Psoriasis)

S. No	Therapy	Instt./ Centre/ Unit	Total cases	Results				
				Comp. rel.	Mark. rel.	Mode. rel.	Mild rel.	LAMA
1	2	3	4	5	6	7	8	9
1.	777 Oil	CRI(S) Madras	246	16	91	75	26	38
2.	777 Oil	CRU(S) New Delhi	20	6	3	4	-	7
3.	777 Oil	CRU(S) TVM	20	16	2	-	-	2
		Total	286	38	96	79	26	47

14. **Putrunoi (Cancer):**

Putru is described in Siddha texts under the head of Virananoigal. This was described as Putru and named after the affected organ (i.e.) if the uterus is affected it is called Yonioutrunoi. The study was undertaken at Central Research Institute (Siddha), Madras to determine the efficacy of the Siddha drugs in the cases Putrunoi using the codes drugs RGX, VK2 and SKX. One gm. of these drugs were administered alongwith honey in two devided doses ulcers and tumors were dressed with Nithiyakalyani Kalkam and Panchainenai with thurusu. 30 cases of Putrunoi were studied during the reporting year. Reduction in the size and growth of the ulcer/tumours, reduction or arrest of the discharges and also reduction in pain was noticed in some of the cases.

15. **Manial Kamalai (Infective hepatitis)**

Manjal Kamalai was studied at Central Research Institute (Siddha), Madras. The choornam made of Athinathuram was administered in the doses 1 gm. two times a day with water in all the 17 cases selected for the trial. Salt and fat free diet was advised to all the cases included into the study. No side/toxic effects were noticed. The study showed complete relief in three and marked relief in four cases. Three cases got moderate relief while remaining seven cases discontinued the study.

16. **Sandhi Vatha Soolai (Rheumatoid arthritis)**

A study to evaluate the effect of Vanga Chendooram in the management of Sandhi Vatha Soolai was envisaged at Central Research Institute (Siddha), Madras. 200 mg. of the trial drug was administered two times a day with honey in all the 41 cases admitted during the period under review. Tamarind and chilli free diet with less salt was advised during treatment. Mynathylam was advised for use externally on the affected parts.

The study showed complete relief in 4 cases, marked relief in 17 cases, moderate relief in 8 cases and mild relief in 3 cases, while remaining nine cases discontinued the study.

17. **Valigunmum (Peptic ulcer):**

The study was under taken at Central Research Institute (Siddha), Madras to determine the effect of Nagaparpam in the cases of Valligunmam. The cases having pain in the abdomen in relation to food, discomfort in the epigastric region, nausea, vomitting, arucation and heamatamesis etc. were

selected for trial. The diagnosis was confirmed by FTM and barium meal X-ray reports. The trial drug was administered at the dose level of 200 mg. filled in gelatin capsules two times a day for 21 days. Omam bath was given to all the 49 cases admitted for study. The study showed marked relief in 12 cases and moderate relief in 24 cases, 22 cases showed mild relief while remaining 11 cases discontinued the study.

Out Patients/in-Patients Attendance

S. No.	Institute/Unit	No. of patient attended at OPD			Patients admitted at IPD
		New	Old	Total	
1.	CRI(S), Madras	7690	12363	20053	383
2.	RRI(S), Pondicherry	4099	8454	12553	134
3.	CRU(S), Palayamkottai	1046	3505	4551	-
4.	CRU(S), New Delhi	54	778	832	-
5.	CRU(S), Trivandrum	708	6800	7508	-
6.	DRS(MD), Madras	-	-	-	
	Total	13,597	31,900	45,497	517

HEALTH CARE RESEARCH PROGRAMME

Health Care Research Programme has been taken up through Mobile Clinical Research Units attached to Central Research Institute, Madras and Regional Research Institute, Pondicherry and Tribal Health Care Research Projects functioning at Tirupathur N.A.A. Distt. (Tamil Nadu) and Kalasa Chikamagalore (Karnataka).

A. Mobile Clinical Research Programme: MCRUSM

The team conducted study in the village Ramavaram and Adayalam Pattu during the reporting year and collected information on 3660 individuals. The data of the study carried out shows that individuals are suffering from one or the other diseases like Irumal, Eraippunoi, Pun, Prumkazhichal, Vellai, Vaeeruvali, Muttuvali, Thalaivali, Tholnoigal, Suram etc. and provided incidental medical aid to 2607 cases.

B. Tribal Health Care Research Programme: THCRPST

The team conducted Survey tours in the tribal pockets of Elagiri hills (i.e.) Kohar, Kohaiyur, Mettukaniyur, Pallakaniyur, Puththur, Paduvanur, Mangalam, Thayaloore, Punganur, Muththanur and collected health statistics on individuals, incidental medical aid was provided to the patients. Sarumanogal, Irumal, Pun/Nalpattapun, Sandhuvatham, Suram, Tholnoigal, Kudarpuzhuniogal are some of the diseases found prevalent in the area.

THCRPSK

The team conducted visits in the tribal pockets spread over 10 helmets (i.e.) Gamgam, Kudige, Kargadde, Hebbal Marasanige, Thalgodu, Samso, Basarikallu, Abbrukudige, Kaganclla and Jamble. Health statistics were recorded on individuals. The patients were suffering with different diseases like Suram, Tholnoigal, Pun/Nalpattapun, Kudar Puzhunoigal, Irumal etc. were provided incidental medical aid during the reporting year.

MEDICOBOTANICAL RESEARCH PROGRAMME

It is well known fact that the drug (Maranthu) is the primary tool of entire research programme. Survey of forest areas for procuring drugs and arranging supply of material required for research purposes occupies an important place. Medico-botanical Survey Unit functioning at Govt. Siddha Medical College, Palayammottai has taken up this task in 1971. For the last 20 years, the unit is engaged in studying the availability of the medicinal plants used in Siddha Medicine in the forest areas of Tamil Nadu, identification of the plant specimens, availability of genuine drugs including its substitute/adulterants etc.

During the reporting year, the survey unit has conducted two survey tours to Piramalai Pasumpon Thever and Valanadu and Tuticorin V.O.C. Dt. and collection tours in and around Tirunelvali Forest Division and herbarium specimens spread over 63 field book numbers 5464-5540 having importance in Siddha medicine belonging to 36 families, 75 genera and 82 species were collected and reported. 235 plants were mounted in the Herbarium.

Some of the plants specimens, collected for herbarium are Tara (*Mollugo oppositifolia* L.); Pazhukkam Pattai (*Anisochilus carnosus* Wall.); Sagadevi (*Vernonia cinerea* Less.); Karumpoolathi [*Kirganelia reticulata* (Poir) Baill]; Pasalai (*Portulaca oleracea* L.); Vallai chyaranai (*Trianthema portulacastrum* L.); Manoranjitham (*Artabotrys odoratissimus* R. Br.); Peechangu (*Clerodendrum inerme* Gaertn); Aarai (*Marsilea minuta* L.); Ottu (*Cymbidium aloifolium* (L.) Sw); Uzhil (*Albizia amara* Biov.); Karkovi (*Melothria heterophylla* (Lour.) Cogn.]; Kurthi poondu (*Waltheria indica* L.); Naikadugu (*Deoma aspera* Koknig); Potti (*Clausena willdenowii* W&A.); Jalapushpum (*Biophytum sensitivum* (L.) DC.); Eluthani poondu (*Lactuca runcinata* DC.); Upaththa (*Avicennia marina* Vierh); Maravizhuthi (*Cadaba trifolliata* (Roxb.) W&A]; Ponapathiri (*Stereospermum tetragonum* A. DC.); Peiathia (*Ficus hispida* L.); Thannirkod (*Cissus pallida* Planch); Karamkodi (*Derris benthamli* Thw.); Mussuttai (*Rivea hypocrateriformis* Choisy); Nirpulli (*Cyanotis axillaris* Roem. & Sch. f.); Pilavaram (*Mundulea suberosa* Benth.); Sitrallam Heracleum (*Dalbergia coramandellina* Prain); Kattu suriagandhi (*Vicoa indica* DC); Vedipala (*Cullenia excelsa* Wight); Kozhikal Imbooral (*Drymaria cordata* Willd.) etc.

Tubers of *Kaemferia rotunda* L.; flowering twigs of *Schefflera wallichiana* Harms; *Ceropegia* sp., *Elaeocarpus* sp., *Senecio* sp., etc.

Medicinal Plants Garden:

A small herb garden is being developed and maintained by the CRI(S), Madras to cater the need of raw (fresh) drugs to its pharmacy and hospital, 167 plants species are being maintained in the garden. Crude drugs both fresh and dry were supplied in different quantities to the pharmacy and hospital.

Herbarium and Museum:

A Central herbarium and museum is maintained at CRI(S), Madras. Samples were preserved in the museum. About 150 identified plant specimens are maintained in the herbarium section.

PHARMACOGNOSTICAL RESEARCH PROGRAMME

Pharmacognostical research programme is being carried out at pharmacognosy wing of DRS(MD), Madras. The study was conducted on the following plants during the reporting year:

1. Naval (*Syzygium jambos* (L.) Alst.)
2. Tura Poondu [*Mollugo oppositifolia* L.]

The study includes macro and microscopic characters (qualitative and quantitative), extractive values, inorganic qualitative test and preliminary phytochemical screening for the presence of different group of chemical compounds besides reporting of regional names distribution, description and medicinal values of the drug.

PHARMACOLOGICAL RESEARCH PROGRAMME

The Council engaged in pharmacological findings on Siddha drugs in the pharmacological section functioning at C.R.I.(S), Madras. The following work has been reported during the current year:

1. Thayir chundi choornam
2. Athimathuram
3. Naga parpam
4. Kadugurchini
5. Pavala parpam
6. Vanga churnam
7. Vallarai
8. Mookarathai
9. PSI - coded antifertility drug

A. Acute toxicity studies:

1) **Thayir chundi choornam (Albino mice):**

The drug suspended evenly in distilled water and administered in the doses of 25, 50, 100, 200, 500 and 1000 mg. per kg. body weight to different groups. One group was administered with distilled water which served as untreated control. The animals were observed for 72 hours for any toxic manifestations and mortality. The drug was found to be non-toxic upto the dose level of 1000 mg. per kg. body weight.

2) **Athimathuram choornam (Albino mice)**

The drug Athimathuram in suspended in distilled water and administered in the doses of 2000 & 3000 mg/kg body weight. One group received distilled water which served as untreated control. The animals were observed for 72 hours for any toxic manifestations and mortality. The drug did not show any toxic effects upto the dose level of 3000 mg. per kg. body weight.

3) **i) Nagaparpam (Albino mice):**

The drug Nagaparpam suspended in distilled water and administered in the doses of 25, 50 and 200 mg. per kg. body weight. One group received distilled water which served as untreated control. The animals were

observed for 72 hours for any toxic manifestations and mortality. Almost all the animals in the dose level of 200 mg. per kg. body weight showed depression upto 72 hours and subsequently there was 50% mortality within 72 hours in the same dose level. The study on higher doses is in progress.

ii) **Nagaparpam (Albino rats):**

The drug Nagaparpam suspended in distilled water and administered in the doses of 25, 50, 100, 500, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000 & 9000 mg. per kg. body weight. One group received distilled water which served as untreated control. The animal were observed for any toxic manifestations and mortality for 72 hours. The animals in drug group from 4000 mg per kg. body weight onwards showed depression for 48 hours and there was no mortality up to the last level of 9000 mg per kg. body weight. The study on higher dose is in progress.

5. **Pavala parpam (Albino mice):**

The Pavala parpam suspended in honey and administered in the doses of 3000 mg per kg. body weight. One group received honey which served as untreated control. The animals were observed for any toxic manifestations and mortality. The animals did not show any toxic effects in the dose level of 3000 mg. per kg. body weight.

6. **Vanga churnam (Albino rats):**

The drug Vanga churnam was suspended in distilled water and administered in the doses of 100, 200, 500, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000 and 9000 mg. per kg. body weight. One group received distilled water which served as untreated control. The animals were observed for 72 hours for any toxic manifestations and mortality.

B. Anti-inflammatory study:

1. Thayir chundi choornam (Albino rats)
   Carrageenin induced paw oedema

The drug suspended in distilled water and administered in the doses of 100, 500 & 2000 mg/kg. body weight. The paw oedema was induced by injecting 0.1 ml of 1% carrageenin suspended in 0.5% carboxy methyl cellulose in planter aponeurosis of right hind paw after 1 hour of drug

administration. One group of animals received distilled water and another group received phenylbutazone in the dose level of 100 mg. per kg. body weight which served as control and standard control respectively. The final volume of right hind paw was measured after 3 hours of carrageenin injection.

2. Athimathuram choornam (Albino rats)
   Carrageenin induced paw oedema study

The drug Athimathura Choornam suspended in distilled water and administered in the doses of 100, 250 & 500 mg. per kg. body weight. One group received distilled water which served as untreated control. Another group received phenylebutazone in the dose level of 100 mg. per kg. body weight which served as standard control. The paw oedema was induced by injecting 0.1 ml of 1% carrageenin suspended in 0.5% carboxy methyl cellulose in plantar aponeurosis region of right hind paw after 1 hour of drug administration. The final volume of right hind paw was measured after 3 hours of carrageenin injection. The data are to be analysed statistically.

3. Kadugurohini (Albino rats)

   Carrageenin induced paw oedema study

The drug suspended in distilled water and administered in the doses of 100, 250 & 500 mg per kg. body weight. One group received distilled water which served as untreated control. Another group received phenylbutazone which served as standard control. The paw oedema was induced by injecting 0.1 ml of 1% carrageenin suspended in 0.5% carboxy methyl cellulose in plantar aponeurosis region of right hind paw after 1 hour of drug administration. The final volume of right hind paw was measured plythysmographically after 3 hours of carrageenin injection. The recorded data is to be analysed statistically.

4. Vallarai (Albino rats)

   Carrageenin induced paw oedema study

The drug Vallarai suspended in distilled water and administered in the doses of 500 & 2000 mg per kg. body weight. One group received distilled water which served as untreated control. Another group received phenylebutazone in the doses of 100 mg per kg. body weight which served as standard control. The paw oedema was induced by injecting 0.1 of 1% carrageenin suspended in 0.5% carboxy methyl cellulose after 1 hour of

drug administration. The final volume of right hind paw was measured after 3 hours of carrageenin injection the data is being analysed statistically.

5. Mookarathai (Albino rats)

Carrageenin induced paw oedema study

The drug suspended in distilled water and administered in the doses of 250 & 200 mg per kg. body weight. One group received distilled water which served as untreated control. Another group received phenylebutazone in the dose level of 100 mg per kg. body weight which served as standard control. The paw odema was induced by injecting 1 ml of 1% carrageenin suspended in 0.5% carboxy methyl cellulose in the plantar aponeurosis region of right hind paw after 1 hour of drug administration. The final volume of right hind paw was record plythysmographically after 3 hours of carrageenin injection. The data is being analysed statistically.

C. ANTIFERTILITY STUDY:

Anti-implementation study with the coded drugs PSI
(Albino proven fertile rats)

Healthy albino proven fertile rats of either sex were selected and allowed to mate. The vaginal smear of each female rats was examined daily and the presence of spermatoza in clumpas in the oestrus phase of cycle was taken as day of pregnancy. The coded drug PSI suspended in distilled water and administered in the dose level of 1000 mg per kg. body weight from day 1 of pregnancy to day 9 of pregnancy. Laprotomy was conduced for each animal on D 10 and observed for the number of implants present in uterus and also for any regression and terategenicity of implants. One group received distilled water which served as untreated control. The animals were allowed to continue their gestation for the full term of 21 days till delivery. The number of pups delivered were recorded.

PHARMACEUTICAL/STANDARDISATION RESEARCH PROGRAMME

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

The drug standardisation research programme covering formulations enlisted in Siddha Formulary, Part-I of Govt. of India and single drugs entering into them was carried out at the following standardisation research Units:

1. DSRU(S) at CSMDRIA, Madras
2. DSRU(S) at RRI(DR), Trivandrum
3. DSRU(S) at RRC(Ay), Bangalore

A. List of plants/drugs on which phytochemical studies have been carried out (Analytical studies):

(1)	Ponthagarail *(Cassia occidentalis L)*	Whole plant	DSRUSM
(2)	Nattu Vilavirai (*Cassia obovata* Collad.)	Whole plant	DSRUSM
(3)	Pathiri (*Stereospermum suaveolens* DC.)	Stem Bark	DSRUSM
(4)	Kampetri (*Excoecaria agallocha* L.)	Wood	DSRUSM
(5)	Chemmulli (Substitute) (*Strobilanthes heyneanus* Nees)	Leaves	DSRUSM
(6)	Elikkathilai (*Ipomoea reniformis* Choisy)	Whole plant	DSRUSM

(7)	Kattamanakku (Red variety) (*Jatropha gossypifolia* L.)	Leaves, stem, root	DSRUSM
(8)	Kattamakku (Sumai) (*Jatropha curcas* L.)	Stem, leaves	DSRUSM
(9)	Koraikkizhangu (*Cyperus rotundus* L.)	Rhizome	DSRUSM
(10)	Vaadamalli (white variety) (Conpherina Sp.)	Flowers	DSRUSM
(11)	Akrottu (*Juglans regia* L.)	Shell, Kernal	DSRUSM
(12)	Kadalpasi Commercial Samph	Whole plant	DSRUSM
(13)	Noochi (*Vitex negundo* L.)	Roots	DSRUSM
(14)	Ilavoo (*Eriodendron anfractuosum* DC.)	Whole plant	DSRUSB
(15)	Anandimalli (*Mirabilis jalapa* L.)	Leaves, root	DSRUSB
(16)	Ponnumathai (*Datura metal* L.)	Whole plant	DSRUSB
(17)	Anaikatrazhai (*Agave americana* L.)	Leaves	DSRUSB
(18)	Elaikalli (*Euphorbia neriifolia* L.)	Whole plant	DSRUSB
(19)	Marulumathai (*Datura stramonium* L.)	Whole plant	DSRUSB

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

(1)	Pancatipakni curnam	DSRUSM
(2)	Tirikatukucuranam	DSRUSM
(3)	Tamiraccenturam	DSRUSM
(4)	Talagamattirai (inprogress)	DSRUSM
(5)	Padigalinga thuvar	DSRUSB
(6)	Kalarchi choornam	DSRUSB
(7)	Uppuchenduram	DSRUST
(8)	Vediuppuccurnam	DSRUST
(9)	Sanguparpam	DSRUST

C. Phyto-Chemical and Anotamical Studies:

(1)	Karunjurai (Chenkanththari) (*Capparis sepiaria* L.)	DSRU(S)M
(2)	Kadarpalai (*Argyreia speciosa* Sweet)	DSRU(S)M
(3)	Elaththalari (*Plumeria rubra* L.)	DSRSM

D. Pharmacognosy:

(1)	Isangu (Clerodendrum *inerme* Gaertn.)	DSRUM & DSRUST
(2)	Vayvilangam (*Embelia ribes* Burm.f.)	DSRUM & DSRUSB
(3)	Substitute (*Embelia robusta* C.B. Clarke)	DSRUSM
(4)	Kodikkakkattam (*Ipomoea hederacea*) (L.) Jacq	DSRUSM
(5)	Akrottu (*Juglans regia* L.)	DSRUSM
(6)	Korai (*Cyperus rotundus* L.)	DSRUSM
(7)	Sarakkonrai (*Cassia fistula* L.)	DSRUSM
(8)	Noochi (*Vitex negundo* L.)	DSRUSM
(9)	Azangil (*Alangium salvifolium* L.f.)	DSRUSB
(10)	Muthiyarkunthal (*Cuscuta reflexa* Roxb.)	DSRUST

Following single drugs that enter into the Siddha Formulary, Part-I have also been analysed and reported.

(1)	Vembu (*Azadirachta indica* A. Juss.)	DSRUSB
(2)	Manjal (*Curcuma aromatica* Salisb.)	DSRUSB
(3)	Shembagam (*Michelia champaka* L.)	DSRUSB

(4)	Mukkaratai (*Boerhaavia diffusa* L.)	DSRUSB
(5)	Thuthi (*Abutilon indicum* L.)	DSRUSB

The DSRU, Trivandrum has laid down physio-chemical values for 25 samples of 19 single drugs which are used in Siddha preparations. Thin layer chromatography (TLC) was done for different extracts of 14 single drugs.

PHARMACY

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

The pharmacy is engaged in the preparation of classical preparation mentioned in the Siddha literature and that are choosen for clinical trials in the Institute/Units of Siddha under the Council.

The drug requirement of the pharmacy is met by the medico-botanical survey projects and through the purchases from the local market.

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

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

During the reporting year, the pharmacy has prepared about 692.280 kg. of choornam, parpam, chendooraam, and 824.05 litre of oil based preparations.

The pharmacy has also supplied prepared medicines to the following Siddha Units under the Council. The list of Unit and Quantity of medicine supplied is as detailed below:-

S. No.	Name of the Unit	Quantity	
		Solid in kg.	Liquid in liter
1.	DRS(MD), Madras	-	7.1
2.	MCRU(S), Madras	20.0	-
3.	CRU(S), New Delhi	-	42.4
4.	CRU(S), Trivandrum	95.0	60.0
5.	CRU(S), Palayamkottai	4.2	-

LITERARY RESEARCH PROGRAMME

The Literary Research Programme is being carried out at Literary Research and Documentation Department, Madras. The work carried out during the period under review is as follows:-

Hand Book of Common Remedies in Siddha System of Medicine (IInd edition) (Revised and enlarged).

The book is printed and published during the seminar on Valigunmum (Peptic ulcer) held on 14th and 15th Feb., 1992. It is a compilation of commonly available simple therapy listed for the management of 40 different common diseases.

Transcription work of Agathiar Kalai gannam 1200 was compared with cudjan leaf manuscripts was completed. 650 poems of Dhakshinamoorthy with cudjan leaf manuscripts and completed in respect of transcription work. The work is in progress of the remaining poems.

Two of the Technical Assistants were allowed to attend the Workshop of Manuscriptology conducted by Institute of Asian Studies at Madras during the reporting year. Rs. 6547.75 were collected and deposited to the Council for sale of Council's publication during the reporting year.

PARTICIPATIONS

A. Clinical and Basic Research

1.	Rajagopal, S. Meenakahinathan, E. and Gopakumar, K.	A comparative study of Kavikal choornam & Athimathura choornam in the management of Gunmum.	Souvenir of National Seminar on Valigunmum.	Feb. 14th, 1992
2.	Rajalakshmi, S. Sivanandam, G. and Veluchamy, G.	The clinical study on the therapeutic efficacy of Thamira cheuduram in the treatment of Valigunman (Peptic ulcer)	Conference on 'Valigunmum' organised by CCRAS and held at Pondicherry.	Feb., 1992
3.	Rao, K. Chellanimal, R. and Veluchamy, G.	Associated (Medical Surgical) problems of peptic ulcer patients treated with P6 at CRIS.	Workshop on Valigunmum at Pondicherry.	Feb., 1992

B. Medico-Botanical Survey

4.	Chelladurai, V.	Save the Coctoid Euphrbia stands.	In the Project Design workshop for the conservation of Genetic resources of medicinal plants at Madras.	Feb. 2, 1991 to Sept. 4, 1991

C. Pharmacology

5.	Ghosh, D. and Veluchamy, G.	Pharmacological aspects of Thamira Chenduram.	Workshop on Valigunmum at Pondicherry (Feb. 1992 organised by CCRAS).

WORKSHOPS/SEMINARS/SYMPOSIA/ CONFERENCE/EXHIBITIONS

1. Shri Chandra Shekhar, Prime Minister of India, inaugurated the Conference on Cervical spondylitis at A.I.I.M.S., New Delhi on 26th April, 1991. The Council organised an exhibition highlighting its activities and achievements. A film prepared by Council and a book entitled "Sahastra Yoga" were released by the Prime Minister.

2. The National Convention on Indigenous Medical Education and its relevance to National Health were held on 13-15 July, 1991 at Coimbatore. The Director and some other Officers of the Council participated.

3. The Director and the Council's Officers participated in the second International Ayurvedic Conference held at Kathmandu, Nepal from 13th to 16th April, 1991.

4. The Council organised Dr. D.V. Subba Reddy Memorial lecture and Workshops on Literary Research in Ayurveda and Rasashastra at Hyderabad on 23, 24 Jan., 1992.

5. The Council organised a Seminar on Valigunman at Pondicherry on 15 2.92.

6. A National Conference on herbal Sciences was held on 9.2.92 at Bombay. The Director participated and felicitated.

VISITS OF VIP'S AND FOREIGN DIGNITARIES

1. Mr. Ocdovyunyamdavar, Counsellor, Embassy of the Mongolian Peoples Republic, New Delhi visited the Headquarters on 4.6.91.

2. Dr. Ram Briksh Sahu, Professor of Prasuti-Bala roga and Chief, Tribuvan University, Institute of Medicine, Kathamandu visited the Headquarters on 5.6.91.

3. Sri V.K. Mishra, Managing Director, Rastriya Vriksha Mitra Sahayog Ltd., Anand visited J.N A.M.P.G. & H, Pune on 5.4.91.

4. Dr. (Mrs.) Arya Yoshida, Norio Wasatra, Kunimasa Kaya and Michio Yano from Japan visited Headquarters on 29.8.91.

5. Mr. Michio Yano, Head of the Sanskrit Deptt., University of Japan visited again Headquarters on 8.9.91.

6. Hon. M.L. Fotedar visited ALRCA, Madras on 5.2.91.

7. Dr. Vaidya Nath Bhatt, WHO fellow from Nepal visited the Headquarters on 2.1.92 and was attached to CRI (Ay.), New Delhi for a month for orientation training.

ACKNOWLEDGEMENT

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

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

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

The Council places on record the efforts of Deputy Director (Tech.), all Programme Officers, Senior Scientific Assistant (Stat.), Asstt. Director (Coordn.), Accounts Officer and Publication Section staff members, specially Dr. D.P. Sharma, Asst. Research Officer (Chem.) for bringing out the Annual Report in the present form.