

Central Council for Research in Ayurveda & Siddha

MINISTRY OF HEALTH & FAMILY WELFARE
(GOVERNMENT OF INDIA)



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



**ANNUAL REPORT
1982-1983**

**MINISTRY OF HEALTH AND FAMILY WELFARE
(Government of India)
NEW DELHI**

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INTRODUCTION

The Central Council for Research in Ayurveda and Siddha (CCRAS) has been formulating and executing research programmes on scientific lines in Ayurveda and Siddha. It has also initiated, aided, assisted, developed and co-ordinated research programmes on fundamental and allied aspects of these oriental disciplines of Medicine. The research programmes of the Council have contributed to the development of newer drugs for the treatment of certain diseases. The commercialisation and marketing of an anti-malarial drug, developed by the Research Council during the year has been an important landmark in the short history of this Council. Five firms, namely, M/s Gudimani Enterprises, New Delhi; M/s Zandhu Pharmaceutical Works, Bombay; M/s Universal Ayurved, Nagpur; Dr. D. P. Awadhwal Seoni (M.P.) and M/s Aphali Pharmaceuticals Ltd., Bombay have been given licences by National Research and Development Council (NRDC) for production and marketing of *Ayush-64*. Out of them M/s Gudimani Enterprises, New Delhi have started the marketing of *Ayush-64* under the trade name "MaIcurin". In addition to this there are a few other patents which are in the process of commercialisation. Dr. D.P. Awadhwal Seoni (M. P.) and M/s Aphali Pharmaceuticals Ltd. Bombay has applied through NRDC for obtaining the licence for production and marketing of *Ayush-56*, an anti-epileptic drug. Efforts are continuing to develop newer combinations and assess their efficacy on experimental models as well as through scientific studies in patients. The importance of efforts made by the Council have further heightened due to the direct involvement of these systems in the national strategy to provide 'Health for all by 2000 AD' in pursuance of World Health Organisation (WHO) policy. The WHO has conducted workshops to assign a specific role to these oriental disciplines of medicare and practical aspects such as selection of therapeutic agents and procedures for certain diseases, have been initiated.

The Council has also made attempts to streamline and re-orient its research programme to make them more objective in order to derive maximum out-put within the existing facilities and available

manpower. A special paper entitled, "Research in Ayurveda-an Appraisal of Past Experiences, Present Status and Future Strategy" was drafted, examined and discussed in detail by the Scientific Advisory Committee. The research programmes for the year 1983-84 and 1984-85 for various research projects in progress under the Council were finalised. In doing so, it has been ensured that the programmes are able to give definite outcome in the stipulated period. Efforts have also been made to assign specific trial therapies for specific disease to be taken up for study. Studies on some important disease conditions such as *Hridroga* (Ischemic heart disease), *Kampavata* (Parkinson's disease) and *Vyanavata brdhi* or *Raktachap* (Hypertension) etc. have also been initiated during the year. Steps to evolve newer methods for the study of pharmacodynamics of Ayurveda and Siddha drugs have been considered. Attempts have also been made to work-out suitable methodology for Medico-Botanical Survey, Family Welfare and Literary Research. A Central Medicinal Plants Herbarium and Museum has been set up at the Central Research Institute for Ayurveda, New Delhi.

In order to formulate specific policy for the Council's publications i. e. periodicals and monographs, etc. an Editorial Board has been constituted.

The research activities of the Council could be broadly categorised into the following four groups :—

1. Clinical Research :

- (i) Clinical therapeutic trials: Evaluation of efficacy of selected single drugs, simple herbal preparations and herbe-mineral combinations.
- (ii) Health Care Research Services including Research Oriented Survey and Surveillance/Community/Tribal Health Care Research Programme.
- (iii) Screening of Oral Contraceptive Agents.

2. Fundamental Research :

- (i) Diet
- (ii) Prakriti
- (iii) Agni etc.

3. Drug Research :

- (i) Medico-Botanical Surveys; Identification/Location, Cultivation, Herbarium and Museum.
- (ii) Drug Standardisation.
- (iii) Scientific Investigations : Pharmacognocetical, Chemical and Pharmacological Studies.

4. Literary Research :

- (i) History of Medicine.
- (ii) Documentation/Publication
- (iii) Revival of Oriental Literature.

Clinical Research :

Clinical research programme in Ayurveda and Siddha have been persued mainly on the basis of the fundamental principles and details discussed in the classical literature of these systems. The research programmes (i.e. the diseases taken up for trial) during the previous years have been further continued though some newer clinical problems have also been taken up in this context. Important therapies consisting of single herbal drugs, simple herbal combinations, herbal and herbo-mineral compound preparations as well as specific procedures of treatment such as *Panchakarma therapy* has also been put to trial. The introduction of schedules of selected compound formulations as trial therapies is an important feature of clinical studies.

Efforts have been made to ensure that clinical therapeutic trials are conducted on the basis of suitable plan and experimental design which are to be evolved before starting the trials. For this purpose a key note for the preparation of blue print for clinical therapeutic trials, has been finalised and attempts are made to draft suitable technical blue print for these trials before starting them. There is added emphasis to adopt more and more objective methods for diagnosis and assessment of results. The clinical, bio-chemical, pathological, radiological and other suitable investigations required for this purpose are being further strengthened and augmented.

The diseases taken up for clinical trial in Ayurveda are *Amavata*, *Amlapitta*, *Parinamasula*, *Grahaniroga*, *Krimi*, *Svasa*, *Kasa*, *Madhumeha*, *Pama*, *Vicarcika*, *Kastartava*, *Rakta pradara*, *Apasmara*, *Unmada*, *Paksaghata*, *Grdhrasi*, *Kampavata*, *Switra*, *Visamajvara*, *Raktachapa* (*Vyunvata bridhi*) and *Hrdroga*. The important achievements of the research trials conducted are the study of effect of *Nirgundi taila*, *Sahacara taila*, and *Bhadradarvadi taila* in the treatment of *Amavata*, *Pakshaghata*, and *Grdhrasi* as internal and as well as external *Snehana*. The effect of *Sataphala ghrita*, *Mahatikta ghrita*, *Sootasekhara rasa*, and *Amasaya Sodhan* with *Apamarga*, *Satavari* and its combinations have been tried on patients of *Parinamasula*. *Avipattikara churna* alone and also in combination with other drugs have been studied on patients of *Amlapitta*. *Sunthi*, *Musta*, *Chitraka* and *Arka* have shown good effects on the patients of *Atisara*, *Pravahika* and *Grahaniroga*. *Kampillaka* has shown effect in the various types of *Krimiroga*. The studies of *Ayush-82* in *Madhumeha*, *Ayush-64* and *Sudarsana churna* with *Punarnavarista* in *Slipada* have demonstrated good effect. The effect of *Tuvaraka*, *Aragvadha* and other herbal combinations have been studied in the patients of *Pama*, *Vicarcika* and other *Twakrogas*. New trials such as the study of the effect of *Puskara mula* in the treatment of *Hrdroga* has also indicated good effect.

The clinical therapeutic trials in Siddha medicine have demonstrated efficacy of *Thambirachenduram* in *Vali gunmam* (*Peptic ulcer*), *Keezhanalli* and *Karisalai* in *Manjal kamalai* (*Infective hepatitis*), *Padiga linga thubar* and *Amaiodobarbam* in *Kazhichal* (*Dysentric disorders*), *Annebedi chenduram* in *Veluppunoi* (*Anaemia*), 777 oil in *Kalanjaga padai* (*psoriasis*), *Sivanaramirthem*; *Akasakarudan kizhangu churnam* in *Karappan* (*skin disorders*), *RGX/VK₂/SKX* etc. in *Putrunoi* (*Cancer*). Other studies such as *Koilyya/Avarai* in *Neerazhiyu* (*Diabetes mellitus*), *Pachonthisudar Thailam* in *Kakkai Valippu* (*Epilepsy*), *Gowri Chinthamani* and *Linga chenduram* in *Sandhi Vatha Soolai* (*Rheumatoid arthritis*) have also been conducted.

An important feature of the clinical research programme has been an increase in the number of clinical trials evaluation. The number of patients included in these studies has also shown substantial increase as compared to the previous year. The number of admissions in the In-Patients Department in Ayurveda and Siddha has also recorded a sizable increase from 2853 to 3090. The number of patients treated in the Out-Patients Department have also shown an upward trend.

Health Care Research Services :

The programme envisages compilation of health statistics as an aspect of Survey and Surveillance Programme; providing health care through Community/Tribal Health Care Research Programmes. All these three aspects have been pursued under the Council.

Research Oriented Survey and Surveillance Programme :

This programme emphasises the collection of data pertaining to the nature and frequency of prevalent diseases, food habits with regard to different seasons, customs and belief, natural resources, the standard and the type of treatment available to the rural folk. The Mobile Clinical Research Team visits each house one by one in the randomly selected villages and provide medical aid besides collecting the requisite data. Under this programme, fortyseven villages covering a population of 23,723 individuals were taken up and incidental medical aid was provided to 14,715 patients.

Community Health Care Research Programme :

Particularly in this programme, selected villages are adopted and visited periodically by the team of physicians. They provide suitable medical aid to the villagers for their illnesses, and try to educate them through group discussions/lectures, regarding the ways and means to be adopted for maintenance of health and prevention of diseases. The physicians also try to educate and acquaint the rural folk about the herbs locally available together with their uses so that many of the common ailments be treated by the locally available resources. During the period under review sixty villages with a population of 32,452 individuals have been covered and medical aid has been provided to 10,125 patients.

Tribal Health Care Research Programme :

Under this programme five Tribal Health Care Research Projects have been established, one each at Car-Nicobar in Andamans-Nicobar Islands; Ranka block, District Palamu (Bihar); Nawapura, District Dhule (Maharashtra); Rama, District Jhabua (Madhya Pradesh and Ziro (Arunachal Pradesh). Out of these, Tribal Research Project at Car-Nicobar has started functioning and at other places the projects are in the phase of acquiring necessary accommodation and staff for their proper functioning. The main objective of these projects is to work out appropriate strategy for health and medical facilities for areas inhabited by scheduled caste and scheduled tribe population.

The priority programme for these projects are control and treatment of *Visamajvara* (Malaria), *Kustharoga* (Leprosy), *Sambhogajany* or *Sansar-gajavikara* (Sexually transmitted diseases) and *Kuposhana Janya roga* (diseases due to malnutrition).

Medico Ethno-Botanical Research :

The efforts to locate and assess the quality and quantity of drugs available in different forest areas of the country have been continued further. During the reporting period 41 forest areas were surveyed and 7836 plant specimens were collected. In addition to this 16,993 herbarium sheets were mounted and 26 drug samples were added to the museum. The survey units have also supplied 226 drug samples to various Institutes/Centres for their research work. More than 500 new folk-lore claims have also been added to the existing collection and monograph covering about 2900 such claims have also been prepared. During the reporting year the council has made a start for the establishment of a Central Medicinal Plants Herbarium and Museum at Central Research Institute (Ayurveda) New Delhi.

The Council is also maintaining medicinal plants Gardens for experimental as well as mass scale cultivation. Efforts have been made to give a boost to the cultivation of medicinal plants. Therefore, the works of capital nature such as digging of well, construction of boundary walls, laying of pipe lines have been taken up at the Guggulu Herbal Farm Mangaliawas (RRI, Jaipur), RRC Jhansi and JNAMPG and H, Poona. In addition to the mass scale cultivation studies of Guggulu, Kesara and other medicinal plants are giving valuable information.

Drug Research :

Reproducibility of the results may only be expected from any or all of the research studies if the standardised drugs are used. Studies on preservations, containers and shelf life are also equally important to maintain the potentiality of the drugs. This has been very vividly stated by Sharangdhar :

गुणहीनं भवेद्वर्षाद्दूर्ध्वं तद्रपमौषधम् ।
मासाद्द्वयात्तथा चूर्णां हीनवीर्यत्वमाप्नुयात् ॥
हीनत्वं गुटिकालेहौ लभेते वत्सरात्परम् ।
हीनाःस्युर्षृततैलाद्या श्रृचतुर्मासाधिकान्तथा ॥
ओषध्यो लघुपाकाः स्युर्निवीर्या वत्सरात्परम् ।
पुराणाः स्युर्गुणैर्युक्ता आसवाधातवो रसाः ॥

शा० सं० पूर्वखण्ड/प्रथम अध्याय 51-53

Herbal drugs collected from the forest, when kept as it is, lose their efficacy after one year. The *Churnas* (Powder of drugs) becomes '*Veerya heen*' after two months time. The *Guttikas* and '*Avalehas*' start becoming '*Heenguna*' (less effective) after one year. '*Pakas*' like '*Ghrita, Taila*' start losing their properties after sixteen months time. The *Laghu paka* drugs lose all their properties after one year. The '*Asavas, Bhasmas*' (metal ashes) and *Ras* and *Uprasas* become more and more potent on prolonged storage.

Standardisation studies relating to phytochemical and pharmacognostical studies on single drugs, process of manufacture and standards of finished products were further continued. During the year 154 single drugs, methods of manufacture of five types of preparations and four finished products were studied and analytical standards were laid down for sixty-eight formulations used in Ayurveda. Under Siddha system of Medicine, twentyfour single drugs, four compound formulations were studied besides laying down analytical standards for twelve formulations used in this system of Medicine. Studies on preservation/containers and shelf life were also carried out under this programme.

The Council in its multi-central activities in the field of drug research has taken up pharmacognostical, chemical, pharmacological and toxicological research studies on a number of drugs used in Ayurveda and Siddha. Pharmacognostical studies includes detailed structural examination of the plant together with changes in the content of active principles depending on ecological variations, morphology of crude drugs including sensory characters both qualitative and quantitative, cell contents, Phyto-chemical and fluorescence analysis, behaviour of different extracts of drug material, physical constant values including ash and extractive values, dry matter and moisture content, total acidity and pH of cell Sap etc. During the reporting year six drugs used in Ayurveda and three drugs used in Siddha have been taken up for such studies.

The phyto-chemical investigation of herbal drug material have been helpful in evolution of many potent and useful drugs in the past. These studies have led to the isolation of active principles from *Pippali, Yastimadhu, Haridra, Nimba* etc. which have shown definite efficacy in pharmacological and clinical studies. Phyto-chemical studies on thirty two drugs used in Ayurveda and on nine drugs used in Siddha have been carried out during the period under review.

Pharmacological and toxicity studies play crucial role in the evaluation of drug preparations. During the reporting year twenty five single drugs, three coded drugs and seven compound formulations used in Ayurveda and ten drugs used in Siddha were investigated on experimental models for routine pharmacological screening for specific effects e. g. cardiovascular, hypolipidaemic, antipyretic, anti-inflammatory, analgesic, anti histaminic, C. N. S. depressant, antiulcer, adaptogenic etc. Toxicological studies have also been carried out in some drugs.

Literary Research :

The revival of ancient classical literature, medico-historical studies, collection, compilation and documentation of subjectwise references from ancient classical literature, published literature of Ayurveda, Siddha and other allied Modern Sciences are some aspects of literary research. Publication of research work in the form of research papers/articles in the **Journal of Research in Ayurveda and Siddha** (आयुर्वेद एवं सिद्ध अनुसंधान पत्रिका), **Bulletin of Medico-Ethno-Botanical Research** (चिकित्सा प्रजाति-वानस्पतिक अनुसंधान पत्रिका) and **Bulletin of Indian Institute of History of Medicine** (भारतीय आयुर्विज्ञान इतिहास संस्थान पत्रिका), **Publication of News-letter** (परिषद्-समाचार), covering the activities of the Council and **Publication of research Monographs and books** also form the part of these studies. To accelerate the studies undertaken, meetings of experts of **Medical History/Literary Research** were arranged to review and suggest measures to augment the literary research activities under the Council. Efforts to publish **Sanskrit/English version of *Sahsrayoga*** of Malayalam and critical edition of ***Astanga Sangrah*** have reached in the final stage. The documentation bulletin by documentation wing of **DPD New Delhi** has also contributed to the classification and propagation of research information.

During the year under report there has been an appreciable improvement with regard to the timely publications of various periodicals, news letters, research monographs etc. of the Council.

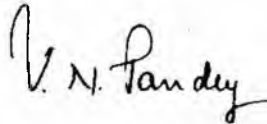
An Editorial Board and a Board of Referees have been constituted for each of the periodicals and more than 300 research papers have been examined and finalised.

The research papers submitted by research workers, for publication/participation have increased during the year. These are appended in the end of the report of research activities of Ayurveda and Siddha sections respectively.

To publicize the activities of the Council exhibitions are arranged. The exhibition arranged at Bombay on the occasion of 1st Conference of Indian Association of the Study for Traditional Asian Medicine attracted many distinguished visitors.

Family Welfare Research Programme :

The Council has been persuing the chemico-pharmacological and clinical screening of the oral contraceptive agents since beginning. The studies on other aspects of the Family Welfare such as maternity and child health care have also attracted the attention of Scientific Advisory Committee and steps have been initiated to take-up certain programmes on these as well. The on going programmes on the study of oral contraceptives have been given a new dimension after a symposium on Family Welfare and the subsequent meeting of experts. The clinical trials on *Ayush AC-4*, *K & J Capsules*, *Pipplayadiyoga*, *Hansaprabha*, etc. have been further continued. Pharmacological studies on *Rakta Chitraka*, *Banjhuri* etc. have also been continued further.



(V. N. PANDEY)

Director

10th November 1983.

ADMINISTRATIVE REPORT

Central Council for Research in Ayurveda and Siddha is a society registered under the Societies Registration Act. XXI of 1860 on 30th March, 1978. During the period under report ending 31st March, 1983, the membership of the Society and the Governing Body of the Council were as under :—

THE CCRAS GOVERNING BODY :

1. President : Shri B. Shankaranand, Union Minister for Health and Family Welfare.
2. Vice President : Mrs. Mohsina Kidwai, Union Minister of State for Health and Family Welfare (w. e. f. 30-1-83).
3. Official Members :
 1. Dr. S. S. Sidhu, Secretary, Union Ministry of Health and Family Welfare.
 2. Shri T. V. Antony (upto 16-7-82).
Shri P. P. Chauhan, (from 17-7-82 to 4-10-82).
Shri S.K. Sudhakar (w. e. f. 5-10-82)
Joint Secretary, Incharge of ISM, Union Ministry of Health and Family Welfare.
 3. Shri R. R. Gupta, Joint Secretary, (Financial Advisor) Union Ministry of Health and Family Welfare.
4. Member-Secretary : Dr. V. N. Pandey (w.e.f. 31-5-82 (AN))
Shri K. Venugopal (upto 31-5-1982 (AN))

5. Non-official Members :
1. Kvj. A. Majumdar
 2. Dr. S. T. Gujar
 3. Prof. S. N. Tripathi
 4. Dr. R. C. Shukla (expired on 5-11-82)
 5. Dr. (Mrs.) L. Shardamma
 6. Vd. A. D. Athavale
 7. Dr. S. Ghoshal
 8. Dr. Y. K. Sarin
 9. Dr. S. S. Gupta
 10. Dr. P. Gurusiromani
 11. Dr. V. Raghupati
6. Member : Director, National Institute of Ayurveda, Jaipur.

SCIENTIFIC ADVISORY COMMITTEE (AYURVEDA) :

1. Dr. S. T. Gujar — Chairman
2. Dr. R. C. Shukla — Member (Expired on 5-11-82)
3. Vd. Sita Ram Mishra — Member
4. Vd. K. S. Varier — Member
5. Dr. A. J. Baxi — Member
6. Dr. Y. K. Sarin — Member
7. Dr. S. S. Gupta — Member
8. Dr. R. M. Verma — Member
9. Director, CCRAS — Member-Secretary

SCIENTIFIC ADVISORY COMMITTEE (SIDDHA) :

1. Dr. V. Raghupathi — Chairman
2. Dr. J. R. Krishnamurthy — Member
3. Dr. S. Ghoshal — Member
4. Dr. R. Subramanian — Member
5. Director, CCRAS — Member-Secretary

The Scientific Advisory Committee (Ay.) met thrice and Scientific Advisory Committee (Siddha) met twice during the year. These Committees evaluated various research programmes/schemes of the Council and provided necessary guidance.

Organisational Network

There are 11 Central/Regional Research Institutes, 10 Regional Research Centres, 36 Research Units, 5 Tribal Health Care Research Projects, 1 Documentation and Publication Division, 12 family Welfare Research Units, 1 Research Project on Amchi System of Medicine, besides 2 Research Institutes, 9 Research Units in Siddha. Five of these were set up during 1982-83.

Budget Provision

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

	Actual expenditure 1981-82	Budget estimate 1982-83	Revised estimate 1982-83	Actual expenditure 1982-83
		(Rupees in Lakhs)		
Plan	120.99	148.00	151.75	149.31
Non-Plan	111.56	116.25	128.40	130.29
F.W. Research Schemes	5.13	9.77	9.32	7.90

Finance Committee

Under Rule 46 of the Rules, Regulations and Bye-laws of the Central Council, the Standing Finance Committee consisted of the following :

- | | |
|--|--|
| 1. Jt. Secretary (Incharge of ISM)
Ministry of Health & F. W. | Sh. T. V. Antony (upto 16-7-82)
Sh. P.P. Chauhan (17-7-82 to 4-10-82)
Sh. S.K. Sudhakar (w.e.f. 5-10-82) |
| 2. Jt. Secretary (F.A.) Ministry of Health and F. W. | Shri R. R. Gupta |
| 3. One Technical Member to represent Ayurveda | Dr. S. T. Gujar,
Chairman, SAC (AY.) |
| 4. One Technical member to represent Siddha | Dr. V. Raghupathi,
Chairman, SAC (S) |
| 5. Director of the Council | Dr. V. N. Pandey (w.e.f. 31-5-82 (AN))
Sh. K. Venugopal (upto 31-5-82) |

The Standing Finance Committee met twice and dealt with various financial aspects of the affairs of the Council.

Official Language Implementation Committee

The Official Language implementation Committee of the CCRAS reviewed the progress made in the use of Hindi for official purposes and made suitable recommendations for the progressive use of Hindi in the Council.

TECHNICAL REPORT - AYURVEDA

Abbreviations used for Institutes/Centres/Units

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

27.	Clinical Research Unit (Ay.), Kottakkal	CRUK
28.	Clinical Research Unit, Ayurvedic and Modern Team (2) under CDRS, Bombay	CDRSB
29.	Clinical Research Unit, Ayurvedic and Modern Team (2) under CDRS, Pune	CDRSP
30.	Clinical Research Unit, Ayurvedic and Modern Team (2) under CDRS, Varanasi	CDRSV
31.	Dietetics Research Scheme, R.A. Podar Ayurvedic College, Bombay	DRSB
32.	Panchakarma Research Scheme, R.A. Podar Ayurvedic College, Bombay	PRSB
33.	Amalgamated Units, Tarikhet	AUT
34.	Capt. Srinivasamurthy Drug Research Institute for Ayurveda, Madras	CSMDRIAM
35.	Jawaharlal Nehru Ayurvedic Medicinal Plants Garden Herbarium and Museum, Pune	JNAMPG&HP
36.	Clinical Research Unit under F.W.R.P. Ahmedabad	CRUFA
37.	Clinical Research Unit under F.W.R.P. Trivandrum	CRUFT
38.	Clinical Research Unit under F.W.R.P. Varanasi	CRUFV
39.	Clinical Research Unit under F.W.R.P. Bombay	CRUFB
40.	Pharmacological Research Unit under F.W.R.P. Jamnagar	Ph RUFJ
41.	Pharmacological Research Unit under F.W.R.P. Varanasi	Ph RUFV
42.	Pharmacological Research Unit under F.W.R.P. Bhubaneswar	Ph RUFB
43.	Pharmacological Research Unit under F.W.R.P. Trivandrum	Ph RUFT
44.	Pharmacological Research Unit, Grant Medical College and Haffkine Institute, Bombay	Ph RUB
45.	Pharmacological Research Unit, Calcutta	Ph RUC
46.	Pharmacological Research Unit, Lucknow	Ph RUL
47.	Pharmacological Research Unit, Varanasi	Ph RUV
48.	Pharmacological Research Unit, Jodhpur	Ph RUJ
49.	Pharmacological Research Unit, Rewa	Ph RUR
50.	Pharmacological Research Unit, Trivandrum	Ph RUT
51.	Toxicity Research Unit, Grant Medical College, Bombay	TRUB

52. Toxicity Research Unit, Jhansi	TRUJh
53. Chemical Research Unit, Calcutta	ChRUC
54. Chemical Research Unit, Varanasi	ChRUV
55. Chemical Research Unit, Hyderabad	ChRUH
56. Chemical Research Unit, Lucknow	ChRUL
57. Pharmacognosy Research Project, Calcutta	PcRPC
58. Indian Institute of History of Medicine, Hyderabad	IHHMH
59. Literary Research Unit, Thanjavur	LRUT
60. Documentation & Publication Division, New Delhi	DPDD
61. Tribal Health Care Research Project (Ay.), Andaman Nicobar	THCRPA
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.), Dhule	THCRPD
66. Preliminary Drug Standardisation Research Unit, Jamnagar	PSRUJ
67. Preliminary Drug Standardisation Research Unit, Varanasi	PSRUV
68. Research Project in Amchi System of Medicine, Leh	RPASML
69. Amla Cancer Hospital	ACH

CLINICAL RESEARCH

The Clinical research in Ayurveda under the Council may be broadly grouped as, 1) Clinical therapeutic trials vis-a-vis evaluation, 2) Studies relating to fundamental aspects of Ayurveda, 3) Field studies regarding Epidemiology and Health Care services. Among these the clinical therapeutic trials vis-a-vis evaluation have naturally received utmost attention since they directly contribute towards the development of standard Ayurvedic therapies for diseases. Since inception of this Council, studies on *Vatavyadhi*, *Parinamasula*, *Ama-vata*, *Apasmara*, *Switra*, *Stiroga*, *Twak roga*, *Vishamajwara* have been pursued and as a result of these studies, a number of therapies have been standardised. Most of these have been further continued during the year. Certain hitherto uncovered disease conditions such as *Hrd-roga* (ischaemic heart diseases), *Kampavata*, (Parkinsonism), *Raktacapa* (Hypertension), *Mutra Kricchra* etc. have been taken up for investigation.

Most of the trial therapies comprises of single herbal drugs and simple herbal combinations. In addition, phyto-chemical extracts of popular Ayurvedic drugs have also been taken up. The important addition to the therapies for various disease conditions have been the introduction of schedules of compound formulations. Only such preparations which are popular and widely used in clinical practice have been taken up for trial. The clinical research in depth is undertaken mainly through the Central Research Institutes, Regional Research Institutes. They are provided with hospital facilities. In addition Regional Research Centres and Research Units located at other institutions of Ayurveda also carry out clinical research programmes. The report presents results of studies carried out during the year 1982-83.

The clinical therapeutic trials have demonstrated the efficacy of the therapies which have been widely recognised. The development and marketing of *Ayush-64* an anti-malarial drug has been an important achievement. Similar efforts are under way to make available *Ayush-56* which has proved successful in the treatment of *Apasmara*. The efficacy

of *Puskaramula* in the Ischaemic heart diseases, *Sunthi* and *Chitraka* in *Grahani roga*, *Kampillaka* in the treatment of *Krimi*, *Tuvaraka* for the treatment of *Pama* and *Vicharchika*, *Bhallataka* for the treatment of *Gridhrasi* are some of the positive achievements of clinical evaluation of single drugs. Among simple herbal combinations, *Bhrahmyadiyoga* has been proved effective for the treatment of *Unmada* and *Hingutriguna taila* has been found useful in the treatment of *Vatavyadhi* and *Gulma*. The formulation under Code name *Ayush-82* has also shown encouraging results for the treatment of *Madhumeha*. The *Panchakarma chikitsa* consisting of *Snehana*, *Basti* etc., with *Nirgundi taila*, *Schachara taila*, *Bhadradarvadi taila*, have shown good effect in the treatment of *Pakshaghata*, *Gridhrasi* etc. *Snehapana* with *Indukanta ghrta* and *Mahatikta ghrta* have also shown encouraging results in the treatment of *Parinamasula*. Studies on androgenic effects of *Masa*, gastric acid secretory response of *Mudga*, *Kulatha* and *Godhuma* are some of the studies conducted on *Aharachikitsa* (Ayurveda) during the year.

The observations and results of clinical therapeutic trials have been presented in seventeen groups with each section representing certain diseases with similarity in etiopathogenesis and therapeutic approach. The details under each group have been provided with brief background of the previous studies on the particular group of diseases. The description of results on each of the treatment for each of the diseases is also indicated. Tables have been separately incorporated to give an information about the results. The report includes information about the patients who have completed the trial during the year 1982-83. The patients who have been continuing the trial on 31st March, 1983 have been excluded. Finally information highlighting the hospital statistics and other important data are annexed. A Statement showing the number of trials conducted, number of patients studied and participating projects during the year 1981-82 and 1982-83 have also been incorporated.

AMAVATA-SANDHIGATAVATA :

A number of joint diseases such as *Vatarakta*, *Amavata*, *Sandhigatavata*, *Krostukasirsa* etc. Caused due to vitiation of *vata* have been discussed in Ayurvedic classics. But the studies on *Amavata*—(rheumatoid arthritis) and *Sandhigatavata* (osteo-arthritis) have been taken up for therapeutic clinical evaluation vis-a-vis trials in the Council. Both these disease conditions are frequently observed and a number of preparations have been studied successfully in the treatment of

these conditions. The efficacy of *Bhallataka*, *Yastimadhu*, *Prasarini*, *Nirgundi* and *Aswagandha* has been demonstrated in the patients of *Amavata*. Classical preparations e.g. *Yogaraja guggulu*, *Vata gajankusa rasa*, *Rasnasaptaka kwatha*, *Maharasnadi kwatha* and *Panchakarma chikitsa* along with newer combinations e.g. *Sunthi guggulu* and *Nishind guggulu* has also been studied in past. The studies on *Sandhigatavata* have been conducted with *R. guggulu* and certain classical preparations e.g. *Yogaraja guggulu*, *Maharasnadi kwatha* etc. in past.

During the reporting year most of the trials on *Amavata* conducted during the previous year have been further continued in order to add sufficient number of patients. Certain other trials e.g. study of the effect of *Sudha guggulu*, *Guducyadi kwatha* at IPD level and the study of the effect of *Sinhanada guggulu* and a combination of *Vacadi gana*, *Haridradi gana* drugs and *Vettumaran gutika* at OPD level has been initiated. The study on the effect of *Rasonadi kwatha* has been concluded.

The trials of *Hingutriguna taila* and a schedule of preparations consisting of *Amavatari rasa*, *Godanti bhasma*, *Srng bhasma*, *Maharasnadi kwatha* and *Mahanarayana taila* has been initiated in the patients of *Sandhigatavata*.

The selection of patients, diagnosis and trial methodology has been based on Ayurvedic concepts. The objective methods of assessment of the effect e.g. functional tests, biochemical and pathological parameters were also adopted. The knee, ankle and wrist, joints were found affected frequently. Though most of the patients included in the trial have reported short history of disease, many chronic and disabled cases have also been put to trial. The X-ray of joints confirmed the diagnosis in many patients. The observations on the efficacy of treatment therapies are discussed separately for each trial. A table indicating the results at a glance is also appended for both the disease conditions.

AMAVATA :

1. Rasonadi kwatha :

CRIB

The observations on clinical efficacy of six weeks course of *Rasonadi kwatha*, a combination of *Rasona*, *Nirgundi* and *Sunthi* with *Baluka sveda* has been further continued on twenty-four patients. Most of the patients included in the study were females in age group of

21-30 years. The knee and ankle joints were found affected in most of the patients. The results of the treatment indicate definite efficacy of this preparation. The effect appears to be more pronounced in females than males and in patients with short history of diseases.

2. Sunthi-Guggulu :

CRIB

The trial of *Sunthi-guggulu* combination was continued with a view to study the effect of this combination. Out of thirteen patients included in the trial during the period, three have reported complete relief and five reported partial relief. Further, observations are in progress.

3. CRIA-6, Yogaraja Guggulu and Javitri Misrana :

IJKP

The studies to assess the comparative efficacy of a coded drug *CRIA-6*, *Yogaraja guggulu* and *Javitri misrana* along with *Rasnasaptaka kwatha* (common to all groups) has been further continued in three separate groups of patients. A fourth group of patients have been treated with other common Ayurvedic remedies. Out of total fifty-one patients in four groups twelve patients were treated with coded drug *CRIA-6*. Moderate relief was observed in seven patients in this group while one patient reported complete relief. Two patients have reported no relief and two patients discontinued the treatment. In the second group of twenty-two patients treated with *Yogaraja guggulu* and *Rasna saptaka kwatha*, three patients reported complete relief while four patients, each have reported marked relief and moderate relief. Out of the remaining patients, five reported mild relief, three patients reported no relief and three discontinued the study. The third group of twelve patients, put to the trial of *Javitri misrana* and *Rasnasaptaka kwatha* reported marked relief, moderate relief and mild relief in three patients each while remaining three patients discontinued the treatment. In the fourth group of five patients treated with other medicines, two patients reported marked relief and three patients discontinued the treatment. The observations indicate overall moderate efficacy of the trial therapies. The effect of the *Yogaraja guggulu* and *Rasna saptaka kwatha* has been found to be better than the other treatments.

4. Vacadigana, Haridradigana and Dasamularista, Pippalyasava, Vettumarana Gutika :

IIPC

Further studies to assess the comparative efficacy of three thera-

peutic regimen consisting of *Vacadigana* with *Saindhava* and *Indukanta Ghrta* in first group, *Haridradi gana* with *Saindhava* and *Satpala ghrta* in the second group and a combination of *Dasamularista*, *Pippalyasava*, *Vettumarana gutika* with *Satpala ghrta* in the IIIrd group has been continued. The observations on thirty-one patients in three groups of patients with the treatment mentioned above indicated comparatively better efficacy of the third group of medications. Out of eleven patients studied in this group three patients reported complete relief and four reported moderate relief. Two patients reported mild relief. The effect of first and second group of treatment have been relatively less since most of the patients studied reported mild relief. Complete relief has been noted in two patients in each group. These observations are in confirmity with the results reported earlier.

5. Simhnada Guggulu and Haridradigana, Vacadigana with Vettumarana Gutika : IIPC

A comparative clinical trial of the powder of drugs of *Vacadi gana* and *Haridradigana* along with *Vettumarana gutika* in first group and *Sinhanada guggulu* in second group has been initiated at OPD level. The overall results of both the treatments on thirty-eight patients appears to be satisfactory. Due to large number of drop outs (nineteen patients) in first group of patients, any indication regarding relative efficacy of treatments could not be given. Out of remaining six patients three patients reported complete relief while one patient each reported marked relief, moderate relief and no relief. In the second group, out of the thirteen patients, two patients reported complete relief, one patient reported marked relief while mild relief has been observed in four patients. No relief has been observed in two patients and four patients discontinued the treatment.

6. Nisinda Guggulu : RRIC

The trial of *N. guggulu* has been further continued during the year on thirty-five patients. It has been observed that the treatment with *N. guggulu* provides definite relief since twenty-two patients reported partial relief and eight patients showed complete relief. No relief was noted in one patient while four patients discontinued the treatment. Further studies are in progress.

7. Sunthi-Guduci : RRIP

The study of the effect of *Sunthi* and *Guduci* in the form of

powder has been further continued on seven patients. The treatment appears to have little effect since five of the seven patients studied did not show any improvement. Further studies are in progress.

8. Guggulu and Guducyadi Kwatha : RRIJ

The studies to assess the clinical efficacy of *Suddha guggulu* along with *Guducyadi kwatha* has been initiated. The observations on four patients indicate promising effect. Two patients reported complete relief while two patients showed marked relief. Further studies are in progress.

9. Curcumin : RRIG

The clinical observations on *curcumin*, an isolate from *Haridra* has been further continued and five patients have been studied during the year. The observations indicate mild relief in three patients while two patients did not show any improvement.

10. Amavatari Rasa etc : RRIG

The clinical evaluation of a combined schedule of medicines *Amavatari rasa*, *Godanti bhasma*, *Arogyavardhini*, *Sranga bhasma* and *Mahayogaraja guggulu* along with *Mahanarayana taila* for *Abhyanga* has been initiated on six patients. Two patients reported mild relief, three patients did not improve and one patient discontinued the treatment.

11. Yogaraja Guggulu etc : CRID

A clinical trial of *Yogaraja guggulu* along with *Nirgundi patra sveda* and certain other medicines on twenty-three patients showed mild relief in eleven patients and marked relief in five patients. No relief has been observed in three patients while the remaining four patients discontinued the treatment.

Table 1

Results of clinical therapeutic trials of Ayurvedic preparation on *Amavata* (Rheumatoid arthritis) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark, rel.	Mod. rel.	Mild rel.	No Dro- rel.	Drop out
1.	Rasonadi kwatha	CRIB	24	6	—	12 (PR)	—	2	4
2.	Sunthi guggulu	CRIB	13	3	—	5 (PR)	—	—	5
3(a)	CRIA-6 and Rasna saptaka kwatha	IHKP	12	1	—	7	—	2	2
(b)	Yogaraja guggulu, Rasna saptaka kwatha	IHKP	22	3	4	4	5	3	3
(c)	Javitri misrana, Rasna saptaka kwatha	IHKP	12	—	3	3	3	—	3
(d)	Others	IHKP	5	—	2	—	—	—	3
4(a)	Vachadi gana, Saindhava, Indukanta ghrta	IIPC	11	2	—	2	5	2	—
(b)	Haridradi gana, Saindhava, Satpala	IIPC	9	2	—	—	4	1	2
(c)	Dasamularista, Pippalyasava, Vettumaran gutika, Satpala ghrta	IIPC	11	3	—	4	2	1	1

(Contd.)

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop rel. out	
5(a)	Vacadi gana and Haridradi gana & Vettumaran gutika	IIPC	25	3	1	1	—	1	19
(b)	Singanada guggulu	IIPC	13	2	1	—	4	2	4
6.	Nisinda guggulu	RRIC	35	8.	—	22 (PR)	—	1	4
7.	Sunthi guduchi	RRID	7	—	—	—	5	2	—
8.	Shuddha guggulu, Guduchyadi kwatha	RRIJ	4	2	1	—	1	—	—
9.	Curcumin	RRIG	5	—	—	—	3	2	—
10.	Amavatari rasa, Godanti bhasma, Arogyavardhini, Mahayogaraja guggulu with Mahanarayan taila	RRIG	6	—	—	—	2	3	1
11.	Yogaraja guggulu and other medi- cines	CRID	23	—	5	—	11	3	4
Total			237	35	17	60	45	25	55

SANDHIGATAVATA :

1. Hingutriguna Taila :

CRIB

The clinical trial of *Hingutriguna taila* along with *Abhyanga* of affected part has been taken up. The observations on nine patients indicate complete relief in one patient and partial relief in four patients. The remaining four patients discontinued the treatment.

2. Amavatari Rasa etc. :

RRIG

A combination of *Amavatari rasa*, *Godanti bhasma*, *Arogya-vardhini*, *Srnga bhasma*, *Maharasnadi kwatha* internally and *Mahanarayana taila* for *Abhyanga* has been studied in seven patients. The effect of treatment has not been encouraging since four patients reported mild relief and three patients discontinued the treatment.

Table 2

Results of clinical therapeutic trials of Ayurvedic preparations on *Sandhigataavata* (Osteo-arthritis) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R	Mark. rel.	Mod. rel.	Mild rel.	No Drop rel.	Drop out
1.	Hingutriguna taila	CRIB	9	1	—	4	—	—	4
2.	Amavatari, Godanti, Arogya- vardhini, Srnga- bhasma, Maha- rasnadi kwatha, Mahanarayan taila	RRIG	7	—	—	—	4	—	3
Total			16	1	—	4	4	—	7

AMLAPITTA, ANNADRAVASULA AND PARINAMASULA :

In Ayurveda, these are covered under the diseases *Amlapitta*, *Annadrava sula* and *Parinama sula*. *Amlapitta* is caused due to vitiated *Pitta* and is characterised by bitter acid eructation burning sensation in epigastrium or sub-sternal area of chest, indigestion and constipation etc. The disease has been considered as non-ulcer dyspepsia or gastritis syndrome or hyperacidity in modern medicine. The pain which occurs before, during and after digestion, and remains constant before meals or after taking meals, has been termed as *Annadrava sula*. Another characteristic feature of this disease i.e. relief after vomiting relates it to gastric ulcer. The pain occurring during the course of digestion i.e. 2-4 hours after meals, have been termed as *Parinamasula*. This characteristic feature correlates with duodenal ulcer in modern medicine.

The Ayurvedic approach to the treatment has been extensively studied in recent past and a number of therapeutic trials have been reported. Certain single herbal drugs viz. *Satavari*, *Yastimadhu*, *Varuna*; herbal combinations viz. *Avipattikara churna*, *Tiladi gutika*, *Indukanta ghrta*, *Mahatiktaka ghrta* and *Sukumara ghrta* and herbo-mineral preparations e. g. *Sutasekhara rasa* etc. have been studied in the treatment of these diseases with promising results.

During the year under review many of the studies/trials conducted last year have been further continued. The assessment of the effect of *Satavari ksira paka* and a combination of *Satavari* has been taken up during the year. The selection of patients for study has been made on the basis of clinical picture discussed in Ayurveda. The laboratory investigations on blood, gastric-contents and radiological examination has also been done suitably. The effect of the treatment have been studied mainly on the basis of changes in clinical condition along with Fractional Meal Test (F. T. M.) studies in some cases.

The observations on different trials on these diseases have been discussed separately along with tabulated data on the efficacy of the treatments.

AMLAPITTA :

1. Avipattikara Churna

CRIB

The studies on the effect of *Avipattikara churna* along with a

graded dietetic regimen of milk, milk-chapati and normal diet has been further continued and twenty-six more patients have been included. The results indicate good response to the treatment since fourteen patients reported complete relief while three patients showed moderate relief. No relief was observed in one patient and eight patients discontinued the treatment.

2. Kamadudha Rasa etc.

RRIJu

The studies on the effect of *Kamadudha rasa* alongwith certain other drugs have been further continued. The two combinations of this preparation have been studied on 178 patients in two groups. The first group of 134 patients treated with a combination of *Kamadudha, rasa, Pravala pisti, Varata bhasma, Guduchi satva* and *Avipattikara churna* has shown moderate effect of treatment. Complete relief has been noted in seventeen patients, marked relief in thirty-seven patients while moderate relief and mild relief has been reported by nineteen and twenty-five patients respectively. The remaining thirty-six patients discontinued the treatment. In the second group, a combination of *Kamadudha rasa, Narikela lavana, Satavari churna, Guduchi churna* and *Avipattikara churna* has been tried on forty-four patients. The treatment in this group showed complete relief in ten patients, marked relief in eight patients, moderate relief in seven patients and mild relief in twelve patients. The remaining six patients discontinued the treatment and one patient did not show any improvement. The second group of treatment showed better efficacy.

Table 3

Results of clinical therapeutic trials of Ayurvedic preparations on *Amlapitta* (gastritis) at a glance :

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop outs	
1.	Avipattikara churna Dietetic regimen	CRIB	26	14	—	3	—	1	8
2 (a)	Kamadudha rasa Pravala pisti, Varata bhasma, Guduchi satva, Avipattikara churna	RRIJu	134	17	37	19	25	—	36
2 (b)	Kamadudha rasa, Narikela lavana, Satav- ari churna, Guduchi churna, Avipattikara churna	RRIJu	44	10	8	7	12	1	6
Total			204	41	45	29	37	2	50

ANNADRAVA SULA :

Sutasekhara Rasa and Sodhana Chikitsa :

CRIB

The clinical trial of the effect of *Suta sekhara rasa* preceded with a course of *Sodhana, vaman chikitsa* and without *Sodhana chikitsa* has been taken up on nine patients. The patients in both the groups have been put on a graded dietetic regimen of milk, milk-chapati and normal diet. In this small number of patients the effect of *Suta sekhara rasa* with *Sodhana chikitsa* has been good since all the four patients studied in this group reported complete relief. The patients trea-

ted with *Suta Sekhara rasa* without *Sodhana chikitsa* showed comparatively less effect since two patients each reported complete relief and moderate relief and one patient discontinued the treatment.

PARINAMASULA :

Suta Sekhara Rasa and Sodhana Chikitsa

CRIB

The studies to assess the efficacy of *Suta sekhara rasa* with or without *Sodhana chikitsa* have been further continued. The patients have also been provided a graded dietetic regimen consisting of milk, milk-chapati and normal diet during the course of treatment. The first group of twenty-four patients studied with *Suta sekhara rasa* showed complete relief in sixteen patients, moderate relief in three patients while five patients discontinued the treatment. The second group of twenty patients were given a course of *Sodhana chikitsa* before prescribing *Suta Sekhara rasa* showed complete relief in eleven patients, moderate relief in four patients and five patients discontinued the treatment.

2. Amashaya Sodhana with Apamarga Kwatha :

CRUH

The studies on the efficacy of *Amashaya Sodhana* with *Apamarga panchanga kwatha* has been further continued. The patients are subjected to a course of five stomach washes at an interval of three days. Out of seventy-nine patients studied during the year, nineteen patients showed complete relief and twenty-four patients reported mild relief. No relief was noted in three patients and remaining thirty-three patients discontinued the treatment.

3. Indukanta Ghrta and Mahatiktaka Ghrta:

CRUK

A course of *Snehapana* and *Shamana chikitsa* with *Indukanta ghrta* and *Mahatiktaka ghrta* has been further studied in two separate groups of patients. A third group of patients have been taken as control and provided placebo (glucose powder). The *Indukanta ghrta* has been tried on sixty-nine patients and complete relief has been noted in forty-four patients, while twenty-two patients showed partial relief and no relief has been observed in three patients. The patients treated with *Mahatiktaka ghrta* showed complete relief in forty-three out of sixty-six patients, while remaining twenty-three patients reported partial relief. The third group of fifty-four patients kept as control did not show any relief. Both the trial therapies showed good effect.

4. Yastimadhu :

CDRSB

The study on the effect of *Yastimadhu* has been continued further on five patients. The treatment showed complete relief in two patients and no relief in one patient while two patients discontinued the treatment.

5. Pippali-Haritaki Yoga :

RRIJ

The study of the effect of *Pippali Haritaki yoga* has been continued further on eleven patients. Complete relief has been observed in four patients and partial relief in two patients while five patients discontinued the study.

6. Satavari and its Combinations :

CRID

The clinical trial of *Satavari* and its certain combinations have been initiated on twenty-five patients of *Amlapitta*, *Parinamasula* and *Annadrava sula* in four groups. The first group of nine patients treated with *Satavari ksira paka* showed complete relief in two patients, marked relief and mild relief in one patient each. The remaining five patients discontinued the study. The trial of *Satavari yoga* (*Satavari*, *Yastimadhu*, *Rasanjana* and *Ela*) on eight patients resulted complete relief to one patient and marked relief and moderate relief in two patients each while one patient showed mild relief. The remaining two patients discontinued the treatment. The trial of *Satavari yoga* with herbo-mineral preparations *Kamadudha rasa* and *Sutasekhara rasa* on six patients showed complete relief in three patients, while one patient each reported marked relief, mild relief and no relief. The fourth group of two patients treated with other medicines showed complete relief and marked relief in one patient each. The effect of *Satavari yoga* with herbo-mineral preparation has been comparatively better.

Table 4

Results of clinical therapeutic trials of Ayurvedic preparations on *Perinamasula* (Duodenal Ulcer) at a glance :

S.No. Therapy	Institute/ Centre	Total Cases	Results						
			C.R.	Mark. rel.	Mod. rel.	Mild rel.	No rel.	Drop out	
1(a) Suta sekhararasa	CRIB	24	16	—	3	—	—	5	
(b) Suta Sekhararasa, Sodhana Chikitsa	CRIB	20	11	—	4	—	—	5	
2. Apamarga Panchanga	CRUH	79	19	—	—	24	3	33	
3(a) Indukanta ghrta	CRUK	69	44	—	22	—	3	—	
(b) Mahatiktaka ghrta	CRUK	66	43	—	23	—	—	—	
(c) Glucose	CRUK	54	—	—	—	—	54	—	
4. Yastimadhu	CDRSB	5	2	—	—	—	1	2	
5. Pippali Haritaki	RRIJ	11	4	—	2	—	—	5	
6(a) Satavari	CRID	9	2	1	—	1	—	5	
(b) Satavari yoga	CRID	8	1	2	2	1	—	2	
(c) Satavari yoga & herbo-minerals	CRID	6	3	1	—	1	1	—	
(d) Others	CRID	2	1	1	—	—	—	—	
Total		353	146	5	56	27	62	57	

ATISARA, PRAVAHIKA AND GRAHANI ROGA :

The diarrhoeal diseases have been covered in Ayurveda under disease entities like *Atisara*, *Pravahika* and *Grahani Roga*. The excessive passage of loose and watery stool have been termed as *Atisara*. This has been considered as diarrhoea. The frequent passage of small quantity of stools with mucus and blood along with griping pain has been designated as *Pravahika*. The clinical picture of this disease is similar to dysentery. The *Grahani roga* is a chronic disease, characterised by frequent passage of digested or undigested food with alternate spells of diarrhoea and constipation. The disease also results in loss of weight, weakness, indigestion and depression. The *Mandagni* has been considered to be the basic factor in the etiopathogenesis of this disease. As such the *Agnidipana* and *Pacana* drugs are recommended for their treatment. The disease has been considered as malabsorption syndrome or sprue syndrome in modern medicine.

The trials on *Sunthi* and *Arka* conducted last year, has been further continued during the year. Other new drugs e.g. *Citraka* and *Nili* (*Indigofera enneaphylla*) has also been taken for trial during the year. The trials have been conducted mainly on the basis of Ayurvedic fundamentals and literary background. Certain pathological investigations on stool and blood have also been performed. The results are discussed hereafter.

ATISARA :

1. *Nili* (*Indigofera enneaphylla*):

RRIJ

The fresh juice of this drug has been put to trial on twenty-six patients of *Atisara*. The two days course of the drug provided complete relief in nine patients. Marked relief has been noted in five patients and mild relief in three patients. The remaining nine patients discontinued the study.

2. *Arka* (*Calotropis gigantea*):

RRCJ

The studies on the efficacy of *Arkamula tvak churra* has been continued further on forty-eight patients. The treatment showed good response since twenty-six patients reported complete relief while marked relief has been observed in nine patients and moderate relief in two patients. The remaining eleven patients discontinued the study.

3. Citraka (*Plumbago zeylanica*) :

CRID

The study of the effect of root powder of *Citraka* has been initiated on two patients, one patient reported complete relief while the other reported marked relief.

Table 5

Results of clinical therapeutic trials of certain Ayurvedic preparations *Atisara* (Diarrhoea) at a glance.

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No rel. out	
1.	Indigofera enneaphylla	RRIJ	26	9	5	3	—	—	9
2.	Arkamula tvak	RRCJ	48	26	9	2	—	—	11
3.	Citraka	CRID	2	1	1	—	—	—	—
Total			76	36	15	5	—	—	20

PRAVAHIKA :

1. Jatiphaladi Curna and Avartini Curna

CRID

The comparative clinical evaluation of *Jatiphaladi curna* and *Avartini curna* has been initiated on twelve patients in two groups. The effect of both these treatments have been good. Out of the seven patients treated with *Jatiphaladi curna*, four reported complete relief while one patient each reported marked relief, moderate relief and no relief. Out of five patients treated with *Avartini curna* three patients reported complete relief and one patient reported mild relief and while one patient discontinued the study.

2. Ghrt Karanja :

RRIP

Two patients put to trial on *Ghrt Karanja* showed marked relief.

3. Arka**RRCJ**

The trial of *Arkamula tvakurna* has been further continued on fifty-eight patients. The patients who completed the treatment showed good effect, thirteen patients reported complete relief, two patients reported marked relief and five patients reported moderate relief. One patient each reported mild relief and no relief respectively. The remaining thirty-six patients discontinued the study.

Table 6

Results of clinical therapeutic trials of Ayurvedic preparations on *Pravahika* (Dysentery) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop rel. out	
1 (a)	Jatiphaladi curna	CRID	7	4	1	1	—	1	—
(b)	Avartini curna	CRID	5	3	—	—	1	—	1
2.	Ghrt Karanja	RRIP	2	—	2	—	—	—	—
3.	Arka mula tvak	RRCJ	58	13	2	5	1	1	36
Total			72	20	5	6	2	2	37

GRAHANI ROGA :**1. Citraka :****CRID**

The clinical trials on the effect of *Citraka curna* has been initiated on eight patients. The observations indicated complete relief in three patients, marked relief in one patient and mild relief in two patients. Out of remaining patients, one patient discontinued the treatment and one patient reported no relief.

2. Sunthi :**CRIB**

The studies on the efficacy of *Sunthi curna* has been further continued on thirty patients. The effect of the drug has been quite evident since eighteen patients reported complete relief. Partial relief has been observed in eight patients and four patients discontinued the treatment. The treatment also induces increase in weight and haemoglobin. The effect of the treatment on infestative entamoeba histolytics and giardia lamblia is also noteworthy.

3. Musta :**RRIJ**

Further continuing the studies on this drug, two more patients have been studied. Both the patients reported partial relief.

4. Arka :**RRCJ**

The effect of *Arka muia tvak curna* has been further studied on seventy-seven OPD patients. Most of the patients in the trial i.e. fifty-two discontinued the treatment. Out of the twenty-five patients who completed the treatment, sixteen reported complete relief, and two reported marked relief. Five patients reported moderate relief and two did not show any improvement.

5. Ghrt Karanja :**RRIP**

The trial of *Ghrt karanja* has been initiated on one patient, who reported marked relief.

Table 7

Results of clinical therapeutic trials of Ayurvedic preparations on *Grahani roga* (Malabsorption syndrome) at a glance

S.No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop rel. out	
1.	Citraka	CRID	8	3	1	—	2	1	1
2.	Sunthi	CRIB	30	18	—	8	—	—	4
3.	Musta	RRIJ	2	—	—	2	—	—	—
4.	Arka	RRCJ	77	16	2	5	—	2	52
5.	Ghrt Karanja	RRIP	1	—	1	—	—	—	—
Total			118	37	4	15	2	3	57

OTHER UDARA VIKARAS

The studies on *Arsa*, *Krimi*, *Kamala*, *Gulma*, *Yakrit-vrddhi* and *Pandu* are the other diseases of *Annavaha srotosa* which have been taken up for study. The *Krimi roga* has been studied earlier. *Sigru*, *Kampillaka* etc. have been tried and the effect of the drugs is also being assessed in positive cases of intestinal parasites. The effect of *Arsari vati* on *Arsa* i.e. Haemorrhoids or piles has been continued further. The studies on the effect of *Arogyavardhini* in *Kamala* (jaundice) has been continued further. The study on the effect of *Hingutriguna taila* in the patients of *gulma* has been initiated. The studies on the effect of certain preparations on *Pandu* has also been initiated. The details of observations on each of these disease conditions are discussed separately hereafter.

KRIMI :

1. *Kampillaka* :

CRIB

The trial of *Kampillakaurna* in the dose of 1-2 gms, 2-3 times a day has been continued on twelve patients of round worm or hookworm infestations. The treatment provided complete relief in four patients, and partial relief in six patients while, two patients discontinued the treatment.

2. *Kampillaka* :

IHKP

The clinical studies on the patients of intestinal parasite infestations with hookworm, threadworm, round worm, *Entamoeba histolytica* and *Giardia lamblia* has been continued further on forty-four patients. The treatment provided complete relief in twenty-three patients, marked relief in four patients, moderate relief in one patient and no relief in three patients. The remaining thirteen patients discontinued the study.

3. *Kampillaka* :

RRCN

Out of the nine patients studied in this series, six reported complete relief, two reported marked relief and one reported moderate relief.

4. *Kampillaka* :

CDRSB

The studies have been continued further on seven patients. Four

patients reported complete relief and three patients did not show any improvement.

Table 8

Results of clinical therapeutic trials of Ayurvedic preparations on *Krimi roga* (worm infestation) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop out	
1.	Kampillaka	CRIB	12	4	—	6	—	—	2
2.	Kampillaka	IHKP	44	23	4	1	—	3	13
3.	Kampillaka	RRCN	9	6	2	1	—	—	—
4.	Kampillaka	CDRSB	7	4	—	—	—	3	—
Total			72	37	6	8	—	6	15

ARSA :

Arsari Vati :

IHKP

The studies on the efficacy of *Arsari vati* have been continued further on eighty-four patients. Most of the patients i.e. forty-seven patients discontinued the treatment while remaining patients who completed the treatment indicated varying degree of relief. Mild relief has been observed in fourteen patients, two patients showed marked relief, eight patients showed moderate relief, six patients showed complete relief while seven patients did not show any improvement.

KAMALA :

Arogyavardhini :

CDRSB

The studies on the effect of *Arogyavardhini* has been continued further on six patients of *Kamala*. The drug showed complete relief in four patients and two patients discontinued the study.

GULMA :

Hingutriguna Taila and Kankayanavati :

CRID

A study to assess the effect of *Hingutriguna taila* and *Kankayanavati* in the patients of *gulma* has been initiated. Out of eighteen patients taken up for study ten reported complete relief and one patient reported partial relief while four patients showed mild relief. The remaining three patients did not show any improvement. The effect of *Hingutriguna Taila* appears to be better than that of *Kankayanavati*.

YAKRTAVRDDHI

Sarpunkha, Rohitakalauha etc.

The trial of a combination of herbal and herbo-mineral preparations e.g. *Sarpunkha*, *Rohitaka lauha*, *Lokanatha rasa* along with *Arogyavardhini vati*, *Yakritaplihari lauha*, *Sankha bhasma* and *Kumaryasava* has been initiated on twelve patients. The treatment showed complete relief in five patients while three patients reported marked relief. The remaining four patients showed no relief.

PANDU :

Bhrngaraja (Ecliota Alba) and Vyosadi Curna :

IIPC

A controlled trial to assess the effect of *Bhrngaraja curna* and *Vyosadi curna* has been initiated in three groups on fifty-four patients. The two groups of patients have been provided above two treatments while the third group kept as control and provided placebo treatment. The results indicate complete relief in three patients and no relief in one patient in the group treated with *Bhrngarajna curna* while sixteen patients in this group discontinued the study. The patients treated with *Vyosadi curna* showed complete relief and mild relief in three patients each, while one patient each showed marked relief and moderate relief. The remaining twenty patients in this group discontinued the study. The control group of six patients treated with placebo showed complete relief in one patient and remaining five patients discontinued the treatment.

Table 9

Results of clinical therapeutic trials of Ayurvedic preparations on *Pandu* (anaemia) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop Out.	
(a)	Bhrngaraja curna	IIPC	20	3	—	—	—	1	16
(b)	Vyosadi curna	IIPC	28	3	1	1	3	—	20
(c)	Placebo	IIPC	6	1	—	—	—	—	5
Total			54	7	1	1	3	1	41

SVASA, KASA AND PRATISYAYA :

Among the various diseases of *Pranavaha srotasa* i.e. respiratory system *Tamaka Swasa* (*Bronchial Asthma*), *Kasa* (cough) and *Pratisyaya* has been taken up for clinical trails under the Council. Among the various types of *Svasa roga*, *Tamaka swasa* which manifests as paroxysmal attacks of dyspnea has been taken up extensively since beginning. *Kantakari*, *Srisa*, *Haridra* and *Swasa kesari* are some of the preparations which have been found effective in the treatment of *Tamaka swasa*, *Jirna kasa* and *Vatika kasa* i.e. tropical pulmonary eosinophilia have been studied in the past. The studies on *Pratisyaya* have been taken up.

Most of the trials initiated during previous year, has been continued further during the year. The Ayurvedic concepts and descriptions have been adopted as the main basis of trial methodology. Certain pathological and radiological investigations have been also done to have supporting evidence.

TAMAKA SWASA :

1. Pippali Vardhamana Krama :

CRID

A clinical trial of *Pippali* by increasing dosages gradually from five upto fifty *Pippali* and than reducing it to five *Pippali* a day

in the form of *Ksira paka* has been continued further. The patients have also been prescribed *Naradiya lakshmi vilasa rasa*, *Iribhuvana kirti rasa*, *Laghu Vasantamalti rasa*, *Srngā bhasma* and *Kantakari avaleha* as supporting therapy. The trial has been completed on forty-one patients during the period under report. The effect of treatment has not been significant since results indicate marked relief in five cases and mild relief in eighteen cases. The remaining cases have either discontinued the treatment or did not show any effect.

2. Svasa Kuthara Rasa etc. :

CRIB

A combination of *Svasakuthara rasa*, *Sitopaladi curna*, *Kanakasava* and *Citraka* or *Agastyā Haritaki avaleha*, has been tried on nineteen patients. Eleven patients showed complete relief while four patients showed moderate relief. One patient did not show any effect and three patients discontinued the treatment.

**3. Naradiya Lakshmi Vilasa Rasa Misrana and
Svasa Kuthara rasa Misrana :**

IHKP

Further studies on comparative clinical evaluation of *Naradiya lakshmi Vilasa misrana* (*Naradiya lakshmi vilasa rasa* one part and *Godanti bhasma* two parts) and *Svasa Kuthara rasa misran* (*Svasa kuthara rasa* one part and *Haridra* two parts) has been continued further on 155 patients in two groups. Both the treatments have been found to be reasonably effective.

Out of the seventy-one patients treated with *Naradiya lakshmi vilasa rasa misrana*, complete relief was seen in two patients, marked relief, in twenty-two patients, moderate relief in thirteen patients, mild relief in eight patients and five patients did not show any improvement. The remaining twenty one patients discontinued the treatment. The *Svasa Kuthara rasa misrana* has been tried on eighty-four patients. The results indicate complete relief in six patients, marked relief in thirteen patients while twelve patients each reported moderate relief and mild relief, but seven patients did not show any improvement. Thirty-three patients have discontinued the treatment and one patient died during the study.

4. Haridra Khanda :

RRIP

The studies on the evaluation of the effect of *Haridra khanda* has been further continued on 107 patients. The treatment showed

moderate effect. None of the patients could get complete relief, though thirty-two patients reported marked relief, thirteen patients reported moderate relief and twenty-eight patients reported mild relief. No improvement was observed in ten patients and nineteen patients discontinued the study.

5. Somalata Curna :

RRIL

The trial of *Somalata curna* has been initiated on three cases. The study is in progress.

6. Kantakari Curna :

RRIC

Further observations on the effect of *Kantakari* in the form of powder has been continued on nine patients. Marked relief has been noted in three patients and two patients reported mild relief. Out of the remaining four patients one patient did not show any relief and three patients discontinued the treatment.

7. Vasavaleha :

RRIJ

The studies on the assessment of the effect of *Vasavaleha* has been continued further on twenty patients. The treatment resulted in providing complete relief to three patients, marked relief to seven patients and mild relief to one patient. The remaining nine patients have discontinued the treatment.

8. Svasakuthara Rasa and Tala Sindura etc.

RRIJn

Comparative clinical evaluation of two schedules of herbo-mineral combinations have been taken up on 272 patients. Schedule 'A' consisting of a combination of *Svasakuthara rasa*, *Naradiya lakshmi vilasa rasa*, *Dhatri nisa curna*, *Somakalpa*, and *Kanakasava* has been studied on 168 patients. While Schedule 'B' consisting of *Tala Sindura*, *Somakalpa*, *Godanti bhasma* and *Bharangyadi kvatha* has been tried on 164 patients.

The Schedule 'A' treatment showed marked relief in thirty-eight patients, moderate relief in fifty-six patients, mild relief in twenty-six patients and no relief in three patients. The remaining forty-five patients discontinued the treatment. The schedule 'B' treatment provided marked relief in twenty-nine patients, moderate relief in thirty-six patients, mild relief in seventeen patients and three patients showed no relief. Eighteen patients did not continue the treatment and one patient died during the study.

Table 10

Results of clinical therapeutic trials of Ayurvedic preparations on *Tamaka Swasa* (Bronchial asthma) at a glance

S. No.	Therapy Institute/ Centre	Total cases	C.R.	Results						
				Mark. rel.	Mod. rel.	Mild rel.	No rel.	Drop out	Dead	
1.	Pippali Vardhana and others.	CRID	41	—	5	—	18	9	9	—
2.	Svasa kuthara, Sitopaladi curna	CRIB	19	11	—	4	—	1	3	—
3(a)	Kanakasava, Naradiya Lakshmi vilasa Rasa Misrana	IIKP	71	2	22	13	8	5	21	—
(b)	Svasa kuthara rasa Misrana	IIKP	84	6	13	12	12	7	33	1
4.	Haridra khanda	RRIP	107	—	32	13	29	14	19	—
5.	Somalata curna	RRIL	3	—	1	—	1	1	—	—
6.	Kantakari curna	RRIG	9	—	3	—	2	1	3	—
7.	Vasavaleha	RRIJ	20	3	7	1	—	—	9	—
8(a)	Svasakuthara rasa, N. lakshmi vilasa, Dhatri nisha curna, Somakalpa, Kanakasava	RRIJu	168	—	38	56	26	3	45	—
(b)	Tala Sindura, Somakalpa, Godanti, Bhrangyadi kvatha	RRIJu	104	—	29	36	17	3	18	1
Total			626	22	150	135	113	44	160	2

KASA :

1. Pippali Vardhamana krama :

CRID

The trial of *Pippali* in *Vardhamana krama* by increasing dosages from five upto fifty *Pippali* has been tried in twenty-nine patients. Other medicines e. g. *Naradiya lakshmi vilasa rasa*, *Kantakari avaleha* were also prescribed. Fifteen patients showed mild relief while marked relief was observed in seven patients. One patient showed complete relief and two patients showed no relief. The remaining four patients discontinued the study.

2. Kantakari :

RRIG

The trials of *Kantakari* has been taken up on eighty patients. The patients who completed the trial showed marked relief in thirty-four patients, twenty-four patients showed mild relief and eight patients did not show any relief. The remaining fourteen patients discontinued the study.

3. Svasakuthara combination :

ALURIM

A comparative trial of *Svasa kuthara rasa* in combination with *Hari-dra* and *Asvagandha* has been taken up. The effectiveness was compared with another group which was given Hetrazan, a known standard drug for this purpose. A total number of twenty-three patients have been studied in two groups. The result indicates clinical improvement as well as reduction in eosinophil counts. About sixty-six percent patients in both the groups showed complete relief while remaining patients also showed relief in varying degrees.

Table 11

Results of clinical therapeutic trials of Ayurvedic preparations on *Kasa* (cough) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop relief out	
1.	Pippali vardh- amana and others	CRID	29	1	7	—	15	2	4
2.	Kantakari	RRIG	80	—	34	—	24	8	14
3 (a)	Svasa kuthara combination	ALURIM	12	8	1	1	2	—	—
3 (b)	Hetrazan	ALURIM	11	8	1	1	1	—	—
Total			132	17	43	2	42	10	18

PRATISYAYA :

Pippali :

RRCG

The trial of *Pippali* in the form of *curna* has been continued on thirty-five patients. The therapy showed definite improvement in all patients. Complete relief was noted in five patients while marked and moderate relief has been noted in twelve and eighteen patients respectively.

MADHUMEHA :

The passage of sweet urine (like-honey) associated with excessive urination, excessive thirst and excessive appetite has been termed as *Madhumeha*. The disease is considered as Diabetes mellitus in modern medicine. The important features of the disease is persistent hyperglycaemia with or without glycosurea. The disease has been taken up for study since very beginning in the Council and single drugs e. g. *Bimbi*, *Mamajjaka*, *Bilva* and simple preparations e. g. *Dhatri nisa* have been found to be effective. The studies taken up during the previous year has been continued further. Though the methodology of clinical evaluation is based on Ayurvedic concepts and principles, the estimation of glucose in blood and urine along

with certain other investigations have been invariably done to measure these effects. The observations made during the year are discussed separately.

1. Ayush-82, Silajita :

CRID

The trial of *Ayush-82* a coded drug along with *Suddha Silajita* has been continued further on eighty patients. Certain other medicines have also been prescribed in some patients. The treatment showed excellent results in patients, since twenty-eight patients reported complete relief and thirteen patients reported marked relief. No relief was noted in only three patients. The remaining thirty-six patients discontinued the treatment.

2. CRIA-9 and Babbularista :

IIKP

The trial of *CRIA-9* and *Babbularista* has been continued further on thirty-one patients. The treatment did not show much effect since most of the patients who completed the trial showed only mild or moderate relief. Complete relief and marked relief has been noted in one patient each and no relief was noted in two patients. The remaining twelve patients discontinued the treatment.

3. Bimbi Curna

ALURIM

The trial of *Bimbi curna* has been initiated on twelve patients. Marked relief has been noted in three patients and one patient each reported mild relief and no relief. The remaining seven patients have been grouped as drop out.

Table 12

Results of clinical therapeutic trials of Ayurvedic preparations on *Madhumeha* (Diabetes mellitus) at a glance

S.No.	Therapy	Institute/ Centre	Total Cases	Results					
				C.R.	Mark. rel.	Mod. rel.	Mild rel.	No rel.	Drop out
1.	AYUSH-82+ Suddha Silajita	CRID	80	28	13	—	—	3	36
2.	CRIA-9+ Babbularista	IIKP	31	1	1	6	9	2	12
3.	Bimbi curna	ALURIM	12	—	3	—	1	1	7
Total			123	29	17	6	10	6	55

TVAK ROGA :

The diseases affecting skin have been discussed in Ayurveda under the different varieties of *Ksudra kustha* and *Ksudra roga*. Among the various varieties discussed in Ayurveda *Pama*, *Vicarcika*, *Kitibha*, *Vipadika* etc. commonly observed in practice have been taken up for study since beginning and drugs e.g. *Aragvadha*, *Nimba* etc. have been studied with promising results. The studies on these conditions taken up during the previous year have been continued further. Certain new trials on these diseases and some other conditions e.g. *Suksma sasyabhadha* - fungal infection, have also been initiated.

The studies have been mainly conducted on the basis of clinical parameters, though certain measurements have also been taken up suitably.

PAMA :

1. Patola Triphaladi/Panchatikta Kasaya :

IIPC

The trial of *Patola triphaladi kasaya* and *Panchatikta kasaya* along with external application of *Rasothmadi lepa*, *Tambuladi taila* and *Nalapamadi taila* has been initiated in three groups of patients. The trial has been conducted in three groups on 123 patients. The first group of patients have been provided with *Patola triphaladi kvatha* internally and *Rasothamadi lepa* for external application. The second group of patients have been provided with *Tambuladi taila* for external application along with internal medication with *Patola triphaladi kvatha*. The third group of patients have been provided the treatment with *Panchatikta kwatha kasaya* internally and *Nala Pamadi lepa* externally. The second group of patients showed excellent response since almost all the patients who completed full course have reported complete relief. The other treatment have also shown good response.

2. Tugaraka Churna :

RRCI

The study on the effect of *Tugaraka churna* has been continued further in fifty-five cases. The drug showed complete relief in thirty patients and partial relief in thirteen patients. Four patients reported mild relief and remaining eight patients discontinued the study.

Table 13

Results of clinical therapeutic trials of Ayurvedic preparations on *Pama* (Scabies) at a glance

S. No.	Therapy	Institute/ Centre	Total Cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop out	
1(a)	Patola, Triphaladi Kvatha, Rasothmadi Lepa.	IIPC	43	12	3	2	3	1	22
(b)	Patola, Triphaladi Kvatha, Tambuladi taila.	IIPC	40	19	6	—	—	1	14
(c)	Pancatikta Kasaya, Nalapamadi lepa.	IIPC	40	14	2	—	—	3	21
2.	Tuvaraka churna	RRCI	55	30	13	—	4	—	8
Total			178	75	24	2	7	5	65

VICARCIKA :

1. Patola Triphaladi Churna, Pancatikta kvatha :

IIPC

The study on the effect of *Patola triphaladi churna* and *Pancatikta kvatha* in two groups of patients along with *Rasothmadi lepa* and *Tamboladi taila* as external application has been initiated in forty-six patients. The group of patients treated with *Patola triphaladi churna* showed better effect since ten patients reported complete relief and four patients showed marked relief. The *Pancatikta Kvatha* has been found to be relatively less effective.

2. Aragvadha :

RRIT

The studies on the effect of *Aragvadha* in the form of *Kvatha* for internal use and in the form of *Keram* for external application has

been continued further on 305 patients. The treatment has been found effective since seventy-four patients reported complete relief and eighty-four patients reported moderate relief. No effect was found in three patients. The remaining 144 patients discontinued the treatment.

3. Tuvaraka Curna/Mahamaricadi Taila : RRCT

The trial of *Tuvaraka curna* internally and *Mahamaricadi taila* externally has been initiated in thirty patients. The regimen has been found to be quite effective as could be seen by observing complete relief in fifteen patients, marked relief in five patients and mild relief in three patients. The remaining seven patients have discontinued the study.

Table 14

Results of clinical therapeutic trials of Ayurvedic preparations on *Vicarcika* (eczema) at a glance.

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C. R.	Mark. rel.	Mod. rel.	Mild rel.	No rel.	Drop out
1. (a)	Patola Triphaladi curna Rasothamadi lepa Tambu- ladi, taila.	IIPC	30	10	4	—	—	3	13
(b)	Pancatikta Kvatha Rasothmadi lepa, Tam- buladi taila.	IIPC	16	1	4	—	—	—	11
2.	Aragvadha kvatha, Aragvadha keram.	RRIT	305	74	—	84	—	3	144
3.	Tuvaraka curna, Mahamarichadi taila.	RRCT	30	15	5	—	3	—	7
Total			381	100	13	84	3	6	175

DADRU (Psoriasis) :

Nimbatiktam/Lajjalu Keram :

RRIT

The studies on the assessment of the efficacy of *Nimbatiktam* powder internally and *Lajjalu keram* externally has been continued further on fifty-four patients. The regimen has not been found very effective, since moderate relief could be observed in eleven cases and forty-one cases discontinued the treatment while two patients reported no relief.

VIPADIKA :

Aragvadha/Nimbatiktam :

RRIT

The trial on the effect of internal administration of *Aragvadha kvatha* and external application of *Nimbatiktam* powder with coconut oil has been taken up in 215 patients. The effect of the treatment has been good as could be seen by definite improvement in almost all the patients who completed the full course of treatment. Fifty-three cases reported complete relief and partial relief has been noted in fifty-eight patients. 102 patients have been grouped as drop out and no relief has been observed in two patients.

SUKSMA SASYABADHA (Fungal infection) :

Aragvadha/Rasoathamadi lepa :

RRIT

The studies on the effect of *Aragvadha Kvatha* internally and *Rasoathamadi lepa* externally has been initiated on 244 patients. Complete relief and partial relief has been observed in fifty-two patients each and five patients did not show any improvement. The remaining 135 patients discontinued the treatment.

TVAK ROGA :

1. Kaishore Guggulu Etc. :

CRID

The trial of *kaishore guggulu* and *Arogyavardhini* with *Manjisthadi kvatha* internally and of *Jatyadi taila*, *Maricadi taila*, *Kajjalikodaya Malhara* or *Gandhakadi malhara* externally has been taken up on twenty-two patients. Other medicines have also been prescribed

suitably if required. The treatment showed complete relief in fourteen patients. Moderate relief and mild relief was noted in three patients each, while two patients discontinued the treatment.

2. Arogyavardhini Vati etc :

RRJJu

A combination of *Arogyavardhini vati* and *Gandhaka vati* as internal medication and *Tuvarka taila* and *Gandhak a Malhara* as external application, has been clinically studied on fifty-eight patients. Out of the fifty-eight patients, nine patients reported complete relief. Marked and moderate relief has been noted in twelve patients each, while twenty patients reported mild relief and the remaining five patients discontinued the treatment.

3. Gandhaka Rasayana :

RRIP

The clinical efficacy of *Gandhaka rasayana* has been studied on seventy-nine patients. The treatment does not appear to show much effect since none of the patients reported complete relief and most of the patients i. e. sixty-seven discontinued the treatment. Out of the remaining patients, four patients reported marked relief, while three patients each reported moderate relief and no relief and two patients showed mild relief.

4. Gandhaka Druti :

RRCJ

The trial of *Gandhaka druti* in *Tvak roga* has been continued further. The drug has been found to be reasonably effective since complete relief has been observed in twelve out of thirty-five cases and nineteen cases showed marked relief.

Table 15

Results of clinical therapeutic trials of Ayurvedic preparations on *Tvak roga* (skin diseases) at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C. R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop rel. out	
1.	Kaishore guggulu etc.	CRID	22	14	—	3	3	—	2
2.	Arogyavar-dhini etc.	RRIJu	58	9	12	12	20	—	5
3.	Gandhaka druti	RRCJ	35	12	19	2	—	—	2
4.	Gandhaka Rasayana	RRIP	79	—	4	3	2	3	67
Total			194	35	35	20	25	3	76

STRI ROGA :

The diseases of female genital system have been covered under *Stri roga* and *Yoni Vyapada* in Ayurveda. *Sveta pradara*, *Rakta pradara* and *Kastartava* have been studied under the Council earlier. The studies on *Sveta pradara* and *Rakta pradara* corresponding to *leucorrhoea* and functional uterine bleeding respectively have been continued further. In addition, studies on *Kastartava*-(dysmenorrhoea) and *Yoni Vyapada* have also been taken up. The observations and results of these trials have been discussed separately.

KASTARTAVA :

Pusyanuga Curna/Pratapalankeshwara Rasa :

CRID

The clinical evaluation of three months course of *Pusyanuga curna* and *Pratapalankeshwara rasa* has been taken up on thirty-two patients. All the patients complained about pain in abdomen and inguinal

region. Most of the patients suffering from the disease have been in the age group of 21-30 years. The treatment provided excellent response since seventeen of the thirty-two patients reported complete relief while fifteen patients reported marked relief.

RAKTA PRADARA :

1. Chandrakala Rasa and Dhatriyadi Curna :

CRID

A comparative clinical evaluation of *Chandrakala rasa* and *Dhatriyadi curna* has been initiated on thirty-two patients in two groups. Other drugs e. g. *Praval pisti* and *Satavari ksira paka* were also prescribed in certain cases. Both the treatments taken up for trial have been found to be quite effective. But the effect of *Dhatriyadi curna* has been relatively better as compared to *Chandrakala rasa*. Out of the seventeen patients treated with *Chandrakala rasa* eight patients reported complete relief while three patients each reported marked relief and mild relief. The remaining three patients have been classified as drop outs. The study of *Dhatriyadi curna* in fifteen patients showed complete relief in nine patients, while three patients showed moderate relief. Mild relief and no relief has been observed in two patients and one patient respectively.

2. IIKC-1, IIKC-2 and Panca Valkalakvatha :

IIKP

A comparative clinical evaluation of two coded preparations of IIKC-1 and IIKC-2 with or without *Uttarabasti* with *Panca valkala kvatha* and *Jatyadi taila picu* has been taken up. The study has been conducted on thirty-eight patients in four groups. Out of twelve patients treated with IIKC-1, one patient showed complete relief, two patients showed moderate relief and one patient each showed mild relief and no relief respectively. The remaining seven patients have been grouped as drop outs. The only patient treated with the formulation IIKC-1 along with *Uttara Basti* and *Picu* has discontinued the treatment. IIKC-2 studied on nineteen patients showed complete relief in five patients, marked relief in one patient, mild relief in four patients and no relief in two patients while seven patients discontinued the treatment. The group treated with IIKC-2 along with *Uttara Basti* and *Picu* showed moderate relief and mild relief in two patients each and no relief in one patient. One patient discontinued the study. The effect of the coded drug IIKC-2 appears to be more pronounced than the treatment with the coded drug IIKC-1. No comments on

the role of *Uttara basti* with *Pancavalkala kvatha* and *Picu* with *Jatyadi taila* could be given, since the patients treated in two groups are less and are not comparable.

3. Lodhra, Godanti, Sarkara :

RRIJu

The study on the effect of the combination of *Lodhra curna*, *Godanti bhasma* and *Sarkara* in equal parts has been initiated in the patients of *Rakta pradara*. The treatment appears to be moderately effective. Complete relief has been observed in five patients, while twenty-one patients reported marked relief and eleven patients discontinued treatment.

4. Vatativak Curna :

RRCJ

The trial has been initiated on five patients. Out of the five patients, one patient reported marked relief while remaining four patients discontinued the treatment.

Table 16
Results of clinical therapeutic trials of Ayurvedic preparations
on *Rakta Pradara* (functional uterine) bleeding at a glance

S. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No rel.	Drop out
1a.	Chandra- kala rasa	CRID	17	8	3	—	3	—	3
1b.	Dhatryadi curna	CRID	15	9	—	3	2	1	—
2a.	IHKC-1	IHKP	12	1	2	—	1	1	7
2b.	IHKC-1, Pancavalkala kvatha & Jat- yadi taila	IHKP	1	—	—	—	—	—	1
2c.	IHKC-2	IHKP	19	5	1	—	4	2	7
2d.	IHKC-2, Pancavalkala kvatha & Jat- yadi taila	IHKP	6	—	—	2	2	1	1
3.	Lodhra, Godanti & Sarkara	RRIJu	41	5	21	2	1	1	11
4.	Vata tvak curna	RRCJ	5	—	1	—	—	—	4
Total			116	28	28	7	13	6	34

SVETA PRADARA :

Kukkutanda Tvak Bhasma and Pusyaanga Curna :

CRID

A comparative evaluation on the effect of *Kukkutanda twak bhasma* and *Pusyanuga curna* has been initiated in two groups of patients. The patients were also prescribed *Uttarabasti* with *Triphala kvatha* or *Dasamula kvatha*, *Punarnava kvatha* and *Picu* with *Jaryadi taila*, *Nirgundi taila*, *Dhatryadi taila*. Other medicines e.g. *Dasamula kvatha*, *Kai-shore guggulu* and *Arogyavardhini vati* were also prescribed to some patients. So far twelve patients have been included in this trial. Both the treatment show definite efficacy. However, relative efficacy may be assessed only after further study.

2. Lodhra Godanti and Sarkara :

RRIJn

The trial on the combination of *Lodhra, Godanti* and *Sarkara* has been further continued on ninety-one patients. The treatment showed moderate efficacy since out of the patients who completed the course of treatment thirty-eight patients reported marked relief and twenty-four patients reported moderate relief. Only five patients reported complete relief. Out of the remaining cases, twenty-one discontinued the treatment, one patient reported mild relief and no relief was seen in two cases.

3. Vata Tvak Curna :

RRCJ

The trial of *Vata tvak curna* has been further continued on seventy-four patients. The effect of the drug on the patients who completed the stipulated course of treatment showed moderate efficacy of treatment. Out of the thirty-four patients who completed the, course, thirteen reported marked relief, fifteen patients reported moderate relief and one patient reported mild relief while forty patients discontinued the treatment.

4. Amalaki Guggulu and Triksiri Kvatha :

RRCV

The clinical trial of *Amalaki-guggulu* internally and *Uttara basti* with *Triksiri kvatha* has been initiated on thirty-six patients. The results show excellent effect of the regimen, since all the patients who underwent the trial have been completely relieved.

5. Musali Khadiradi Curna, Chinnaruhadi Curna and Cinacaphalabija Curna : IPC

Studies on the comparative efficacy of *Musali khadiradi curna* with *Chinnaruhadi curna* and *Musali khadiradi curna* with *Cinca phala bija curna* has been initiated on eighty-nine patients in two groups. The effect of the combination of *Musali khadiradi curna* with *Chinnaruhadi curna* showed relatively better effect. Out of the sixty-two patients taken in this group, thirty-four patients discontinued the trial and have been grouped as drop out cases. Out of the remaining patients, seven patients were completely relieved, nine patients showed marked relief, five showed moderate relief and six showed mild relief while one patient did not show any effect. In the other group the effect of treatment has been relatively less since only two patients reported complete relief, eight reported marked relief, four reported moderate relief and two each reported mild relief and no relief respectively. The remaining nine patients discontinued the treatment.

Table 17

Results of the clinical therapeutic trials of Ayurvedic preparations on *Sveta pradara* (Cleucorrhoea) at a glance

Sl. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop out	
1.(a)	Kukkut- anda Tvak bhasma	CRID	5	1	1	1	—	1	1
(b)	Pusyanuga curna	CRID	7	—	4	2	—	1	—
2.	Lodhra Godanti Sarkara	RRIJu	91	5	38	24	1	2	21
3.	Vata Tvak curna	RRCJ	74	1	13	15	3	2	40
4.	Amalaki Guggulu Triksiri kvatha	RRCV	36	36	—	—	—	—	—
5.(a)	Musali khadi- radi curna and Chinna ruhadi kvatha	IIPC	62	7	9	5	6	1	34
(b)	Musali khadiradi	IIPC	27	2	8	4	2	2	9
Total			302	52	73	51	12	9	105

YONI VYAPADA

Kaishore guggulu etc. :

CRID

A schedule of treatment consisting of internal medication with *Kaishore guggulu, Kancanara guggulu, Tankan bhasma* and *Pradara-taka loha* along with *Uttara basti* with *Dasamula kvatha* or *Pancaval-kala kvatha, Triphala Kvatha* depending upon the type of disease i.e. *Vata, Pittaja* and *Kaphaja* has been initiated. The trial on twenty-five patients conducted so far indicate good response to the treatment, since fourteen patients reported complete relief, two patients reported marked relief, four patients reported moderate relief and three patients reported mild relief. One patient got no relief and one discontinued the study.

SLIPADA

The disease is characterised by three distinct stages. In the first stage the individuals are infested with microfilaria without any clinical manifestations. Subsequently the disease manifest by recurrent attacks of lymphadenitis characterised by acute attacks of fever with chill, swelling of affected parts. Heaviness and chylurea may also occur in certain patients. This recurrent attacks of lymphadenitis result in chronic hard and persistent swelling of the part. The disease may effect any part of the body but the legs are most frequently affected and become hard like stone. This is the stage from which the name *Slipada* has been derived. The treatment of this disease at the stage of infestation with microfilaria will prevent the manifestation of disease. In later stage the treatment is only palliative and in final stage the disease is considered as incurable. The trials on disease has been taken up earlier and *Nityananda rasa, Sakhotaka* and *Ayush-64* has been studied. The trials taken up earlier have been continued further. The measurements of swelling and study of microfilaria has also been taken up in addition to the observations on clinical features of the disease.

1. Sudarsana Curna/Ghan Vati and Punarnavarista :

CRIB

The trial of *Sudarsana Curna* or *Sudarsana ghana vati* along with *Punarnavarista* has been continued further on twenty-nine patients of *Slipada*. Only those patients who have been suffering from the disease for more than one year and where swelling has become stationary has been included in this trial. The effect of this treatment on

such chronic irreversible swellings have been significant, since thirteen patients reported complete relief and twelve patients reported partial relief with substantial reduction in swelling. No relief has been observed in two patients while other two patients discontinued the study.

2. **Ayush-64**

CRIB

The trial of *Ayush-64* tablets in the acute attacks of filariasis has been initiated and twenty-three patients have been taken up for the study. The treatment results in rapid clinical improvement. Complete relief has been noted in seventeen patients and partial relief was observed in the other four patients, who completed the course of treatment. The remaining two patients discontinued the study.

3. **Ayush-64**

RRCN

Another study on the effect of *Ayush-64* has been continued further on two patients. One patient reported moderate relief while other patient discontinued the study.

4. **Ayush-64, Suddha Guggulu and Sakhotaka :**

RRCV

The trial of a combination of *Ayush-64*, *Suddha guggulu* and *Sakhotaka* has been taken up on sixteen patients and all the patients showed mild relief.

5. **Ayush-64**

RRIE

One patient put to trial on *Ayush-64* showed mild relief.

Table 18

**Results of clinical therapeutic trials of Ayurvedic preparations
on Shlipada (filariasis) at a glance.**

Sl. No.	Therapy	Institute/ Centre	Total cases	Results					
				C.R. rel.	Mark. rel.	Mod. rel.	Mild rel.	No Drop rel. out	
1.	Sudarsana Curna/Ghana- vati	CRIB	29	13	—	12	—	2	2
2.	Ayush-64	CRIB	23	17	—	4	—	—	2
3.	Ayush-64	RRCN	2	—	—	1	—	—	1
4.	Ayush-64 Suddha guggulu Sakhotaka	RRCV	16	—	—	—	16	—	—
5.	Ayush-64	RRIP	1	—	—	—	1	—	—
Total			71	30	—	17	17	2	5

MANASA ROGA (APASMARA/UNMADA etc.

The *Apasmara* and *Unmada* are the chief disease entities discussed in *Ayurveda* under mental diseases or *Manasa roga*. The studies on these two disease conditions have been taken up in the past and *Ayush-56* has been found to be effective in the treatment of *Apasmara*. The studies on many aspects of *Unmada* have also been conducted. The efficacy of *Brahmyadi yoga* has been well recognised. In addition *Manasa mandata* or Mental retardation has also been studied and effect of *Mandukaparni* in its treatment has showed good results. The *Manodvega* or anxiety neurosis, a burning problem of society has also been taken up. During the year the studies on the effect of *Ayush-56* in the treatment of *Apasmara* has been further continued. The studies on the role of *Brahmyadi yoga* in the treatment of chronic *Unmada* has been initiated. The observations on these are reported separately.

APASMARA :

1. Ayush-56 :

CRID

The studies on the effect of *Ayush-56* a coded drug has been continued further on fifty-one patients. Most of the patients who completed the treatment showed moderate relief while four patients reported complete relief and twenty-eight patients discontinued the study.

2. Ayush-56, Brahmi Ghrta :

HKP

A comparative clinical evaluation of *Ayush-56* and *Brahmi ghrta* has been initiated on forty-two patients in two groups. The effect of both the treatments have been evident since the patients under trial either showed mild relief or marked relief. The *Ayush-56* has been found to be relatively more effective than *Brahmi ghrta*.

3. Ayush-56 :

RRIC

The studies on the efficacy of *Ayush-56* has been continued further on 150 patients. The results indicate good response since sixty-one patients reported complete relief and fifty-five patients reported marked relief while thirty-four patients did not show any relief.

4. Ayush-56 :

RRCJ

The observation on eight patients showed complete relief in one patient and one patient did not show any improvement. The remaining six patients discontinued the treatment.

5. Ayush-56 :

RRIJ

The observations on the effect of *Ayush-56* has been continued further on six patients. One patient showed mild relief while other five patients discontinued the study.

6. Ayush-56 :

ARUB

In another trial, out of the sixteen patients put on *Ayush-56*, five showed mild relief, two showed moderate relief and one patient reported marked relief while remaining eight patients discontinued the treatment.

Table 19

Results of clinical therapeutic trials of Ayurvedic preparations on *Apasmara* (epilepsy) at a glance

Sl. No.	Therapy	Instt/ Centre	Total cases	Results					
				C. R.	Marked relief	Mode. rel.	Mild rel.	No rel.	Drop out
1.	Ayush-56	CRID	51	4	—	19	—	—	28
2a.	Ayush-56	IKP	27	—	12	—	15	—	—
2b.	Brahmi Ghrta	IKP	15	—	5	—	10	—	—
3.	Ayush-56	RRIC	150	61	55	—	—	34	—
4.	Ayush-56	RRIJ	6	—	—	—	1	—	5
5.	Ayush-56	RRCJ	8	1	—	—	—	1	6
6.	Ayush-56	ARUB	16	—	1	2	5	—	8
Total			273	66	73	21	31	35	47

UNMADA :

1. *Brahmyadi yoga* :

ARUB

A double blind controlled clinical trial to assess the effect of *Brahmyadi yoga* in patients of chronic *Unmada* has been initiated in three groups. The patients in 1st group have been prescribed *Brahmyadi yoga* 12 gm. a day for first thirty days and 16 gm. a day from thirty-first to seventy-fifth day. The second group of patients have been prescribed chlorpromazine 300mg. a day for first three days and 450 mg. a day for thirty-first to seventy-fifth day. The third group of patients were prescribed placebo in 12 gm. for the first thirty days and 16 gms thirty-first to seventy-fifth day. The precribed *Brahmyadi yoga* showed definite efficacy though the effect is less pronounced than chlorpromazine. The cases treated with placebo did not show much effect.

Table 20

Results of clinical therapeutic trials of Ayurvedic preparations on *Unmada* (chronic senizophtrenia) at a glance

Sl. No.	Therapy	Instt/ Centre	Total cases	Results					
				C. R.	Marked relief	Mode. rel.	Mild rel.	No Drop out	
1.(a)	Brahm-yadi yoga	ARUB	23	—	4	4	5	10	—
(b)	Chlor-promazine	ARUB	23	—	13	1	2	7	—
(c)	Placebo	ARUB	20	—	2	—	3	15	—
Total			66	—	19	5	10	32	—

2. Lakshna Samucchaya :

ARUB

The studies to identify and assess the clinical features of *Unmada* have been continued further on thirty-one more patients during the year according to modified plan. The Ayurvedic physician, Psychologist and Psychiatrist jointly interviewed the patients as per pre-defined plan of study. Conclusions may be drawn only after completion of targeted number of patients.

MANASA MANDATA :

Ayushman VIII:

ARUB

Studies on *Ayushman VIII* a coded drug for the treatment of Mental retardation has been continued further. The patients suffering with moderate and severe mental retardation in the age range of four to nine years have been included into the trial. The study is not yet concluded since targeted number of sixty patients have not been completed. During the year, five more patients have completed the trial.

MANODVEGA:

Alurimco :

ALURIM

A controlled clinical trial of Alurimco a coded drug a combination of *Mandukaparni*, *Yasti* and *Jatamansi* 28 m in the proportion of 1:1:2 and with 16 drops of 101 *Paka ksirabala taila* has been taken up. The trial is conducted as a double blind study with modern drug diazepam and placebo as control. The trial has been completed on seven patients during the reporting period. The study is continuing.

VATA VYADHI :

The diseases of specific nature as a result of vitiated *Vata* have been termed as *Vata Vyadhi*. These cover a wide variety of neurological and rheumatic diseases. Though eighty varieties of such diseases are mentioned in literature, we generally find *Paksaghata*, *Khanja*, *Pangu*, *Grdhrasi*, *Sarvanga vata*, *Kampa vata*, etc. in common practice. *Paksaghata* or *Paksavedha* signifies loss of function of one half of the body. Paralysis of one of the lower extremities have been termed as *Khanja* and if both the lower extremities are affected it is known as *Pangu*. The characteristic pain beginning from hip through the posterior part of the thighs and legs has been termed as *Grdhrasi* (Sciatica); *Sarvanga vata* is characterised by pain and dysfunction of generalised nature. The trembling of body limbs with resulting in tasculation, tingling etc. have been termed as *Kampavata*. This condition has been considered equivalent to Parkinson's disease. The term *Saisaviya Vata* has been coined to indicate the paralysis due to poliomyelitis in children.

The clinical therapeutic trials have been taken up since the very beginning. A number of single drugs, herbal combinations, herbo-mineral compounds and therapeutic procedures e. g. *Pancakarma chikitsa* has been clinically studied. The studies so far conducted indicated therapeutic efficacy of *Asvagandha*, *Prasarini*, *Bhallataka*, *Yogaraja gugulu*, *Rasnasaptaka Kvatha* and *Maharasnadi Kvatha*. The effect of *svedana*, *snehana*-internally and externally, *virecana* and *Abhyanga*, etc. using a number of preparations have also been found clinically effective.

During the year under review further studies on certain *vata vyadhis* e.g. *Paksaghata*, *Grdhrasi*, *Khanjan* and *Pangu* and *Saisaviya vata*

has been continued. Many of the studies/trials conducted during the previous year have been continued further. The trial of certain drugs has been initiated for the treatment of *Kampa-vata* (Parkinsonism). The studies have been conducted mainly on the basis of Ayurvedic fundamentals and concepts.

PAKSAGHAT:

1. Hingutriguna Taila :

CRIP

The studies on the role of *Hingutriguna taila* along with *Abhyanga Sveda* has been further pursued on eleven patients. The treatment provided complete relief in one patient and partial relief in four patients. The remaining six patients discontinued the treatment. The effect of the drug on the function of selected muscle groups have also been significant.

2. CRIA-6 and Yogaraja Guggulu with Rasna Saptaka Kvatha: IIKP

The efficacy of a coded drug *CRIA-6* and *Yogaraja guggulu* along with *Rasna saptaka kvatha* and *Snehana* and *Svedam* has been continued further on forty-four patients in three groups. The first group of fifteen patients treated with coded drugs *CRIA-6* and *Rasna saptaka kvatha* showed marked relief in one patient, moderate relief in two patients and mild relief in seven patients. One patient did not show any improvement while four patients discontinued the treatment. In the second group, twenty-five patients have been provided treatment with *Yogaraja guggulu* and *Rasna saptaka kvatha*. In this group one patient reported marked relief, two patients showed moderate relief, eleven patients reported mild relief while no relief was reported by three patients. The remaining eight patients did not show any improvement. The third group of four patients treated with other drugs showed marked relief and moderate relief in one patient each and two patients did not continue the treatment. Though the overall effect of the treatments has not been encouraging, the patients treated with *CRIA-6* and *Rasna saptaka kvatha* showed better efficacy.

3. Nirgundi Taila, Sabachara Taila and Bhadrardarvadi Taila : IIPC

The comparative efficacy of internal/external *Snehana* with three different *Taila* preparations have been studied further in three groups of patients. The course of treatment consists of internal adminis-

tration of 20 ml *taila*, *Abhyanga* with 40 ml, *Matravasti* with 60 ml and *Picu* and *Nasya* of respective *taila* preparation every day. Such a treatment was continued for thirty days. If there was improvement to the tune of 30%, or more, further treatment with the same regimen was continued for another thirty days. In cases where gain has been less than 30% then the second course of treatment consisting of *Snehapana* of 50 ml on 1st day and increasing it daily by 50 ml has been continued for seven days or till *Samyak Sneha* is noted. After *Snehapana*, *Bashpa sveda* was given for three days and then *Virecana* was given with 30 ml. of *Eranda Taila*. Third stage of treatment was provided if the gain is below 15% by the second stage of treatment. In the third stage a course of *Yogavasti* consisting of five *Snehavasti* and three *Kasaya vasti* was given.

The observations have been conducted in three groups on seventy-one patients. Out of the twenty-two patients treated with *Nirgundi taila*, two patients reported marked relief, four patients reported moderate relief and mild relief has been noted in eight patients. No relief has been observed in three patients and five patients discontinued the treatment. In the second group, *Sahacara taila* was given to thirty patients and one patient showed marked relief, nine patients each showed moderate relief and mild relief, two patients did not show any improvement and nine patients discontinued the treatment. The third group of twenty-one patients was treated with *Bhadradarvadi taila*. The treatment provided marked relief in three patients, moderate relief in four patients, mild relief in eight patients and no relief in five patients. One patient discontinued the treatment. The overall effect of the treatment can be considered satisfactory and encouraging in view of the prognosis of the disease. The relative efficacy of the treatments may be worked out after further studies, though *Bhadradarvadi taila* appears to have better efficacy.

Table 21

Results of clinical therapeutic trials of Ayurvedic preparations on *Paksaghata* (Hemiplegia) at a glance

Sl. No.	Therapy	Institute/ Centre	Total Cases	Results					
				C.R.	Marked relief	Mode rel.	Mild rel.	No rel.	Drop out
1.	Hingu- triguna taila	CRIB	11	1	—	4	—	—	6
2.(a)	CRIA-6 Rasna saptaka kvatha	IHKP	15	—	1	2	7	1	4
	(b) Yogaraja guggulu Rasnasap- taka	IHKP	25	—	1	2	11	3	8
	(c) Others	IHKP	4	—	1	1	—	—	2
3.(a)	Nirgundi taila	IIPC	22	—	2	4	8	3	5
	(b) Sahacara taila	IIPC	30	—	1	9	9	2	9
	(c) Bhadra- darvadi taila	IIPC	21	—	3	4	8	5	1
Total			128	1	9	26	43	14	35

Pancakarma Chikitsa:

PRUB

The efforts to assess the efficacy of *Pancakarma* measures on the treatment of *Paksaghata* and other associated diseases has been continued further on thirty-seven patients. The effect of *Vamana*, *Vire-*

canas, Nasya, Basti, Pinda Sveda, Raktamoksana and *Sirovasti* has been evaluated separately. The overall effect of the treatment has been encouraging since complete relief has been noted in two patients, five patients reported marked relief, eleven patients reported moderate relief and thirteen patients reported mild relief. No relief has been noted in six patients. Thus it is seen that most of the patients showed improvement. The effect of *Virecana* and *Basti* appears to be relatively more pronounced.

Table 22

Results of clinical therapeutic trials of Pancakarma Chikitsa on Paksaghata (Hemiplegia) at a glance

Sl. No.	Therapy	Institute/ Centre	Total Cases	Results					
				C.R.	Marked rel.	Mode. rel.	Mild rel.	No rel.	Drop out
1.	Vamana	PRUB	12	1	1	4	3	3	—
2.	Virecana	PRUB	6	—	1	5	—	—	—
3.	Nasya	PRUB	5	—	—	—	4	1	—
4.	Basti	PRUB	6	—	3	—	2	1	—
5.	Pinda Sveda	PRUB	5	1	—	2	2	—	—
6.	Rakta Mokskna	PRUB	2	—	—	—	1	1	—
7.	Sirobasti	PRUB	1	—	—	—	1	—	—
Total			37	2	5	11	13	6	—

KHANJA AND PANGU :

Sahacara Taila, Nirgundi Taila and Bhadra Darvadi Taila : IIPC

The clinical trial of the effect of a course of *Pancakarma* chikitsa consisting of *Snehapana, Abhyanga, Avagaha* and *Matravasti* in the first stage of 30 days of treatment with *Sahacara Taila, Nirgundi Taila*

and *Bhadradarvadi Taila* and *Kvatha* of the drugs entering in preparation of *Taila* for *Avagaha* has been continued further. The treatment with above requirements is continued further if the gain is more than 30%, otherwise second stage of treatment is prescribed. The second stage of treatment consists of *Snehapana* in *Vardhamana Krama* starting with 50 ml and increasing its dosage by 50 ml per day for seven days. This is followed by *Baspa sveda* for three days and *Virecana* by *Eranda taila*. The third stage of treatment has been initiated if the gain is less than 30% by second stage of treatment. The third stage of treatment consists of *Yoga vasti*, five *Sneha vasti* and three *Kasaya vasti*.

The trial has been conducted on thirty-three patients in three groups. The first group of twelve patients treated with *Sahacara taila* showed marked relief in three patients, moderate relief in two patients, mild relief and no relief in one patient each while five patients discontinued the treatment. The second group of ten patients treated with *Nirgundi taila* showed marked relief in four patients and moderate relief in two patients. Out of remaining patients one patient died and three patients discontinued the treatment. The third group of eleven patients treated with *Bhadradarvadi taila*, showed marked relief and moderate relief in three patients each while one patients showed mild relief. The remaining four patients discontinued the treatment.

Table 23

Results of clinical therapeutic trial of Ayurvedic preparations on *Khanja Pangu* at a glance

Sl. No.	Therapy Institute/ Centre	Total Cases	Results						
			C.R.	Mark. rel.	Mode rel.	Mild rel.	No rel.	Drop out	Death
1.	<i>Sahacara taila</i> IIPC	12	—	3	2	1	1	5	—
2.	<i>Nirgundi taila</i> IIPC	10	—	4	2	—	—	3	1
3.	<i>Bhadradarvadi taila</i> IIPC	11	—	3	3	1	—	4	—
Total		33	—	10	7	2	1	12	1

GRDHRASI

1. Sahacaradi Taila and Bhadradarvadi Taila :

IIPC

A course of *Pancakarma chikitsa* consisting of *Snehapana*, *Abhyanga*, *Avagaha* and *Matravasti* with *Sahacaradi taila* and *Bhadradarvadi taila* has been put to trial in two groups of patients. The *Kvatha* of drugs used for preparations of *Taila* are used for *Avagaha*. A third group of patients have been prescribed *Snehapana* with *Bhadradarvadi taila* in increasing dosages starting with 50 ml on first day and increasing it by 50 ml per day for seven days. This was followed by a course of *Baspasveda* for three days and *Virecana* with *Eranda taila*.

During the period under report twelve patients have been studied. The *Bhadradarvadi taila* showed good response since two patients reported complete relief and one patient reported marked relief. The *Sahacaradi taila* induced complete relief, moderate relief and mild relief in one patient each while remaining two patients have been grouped as drop out. The *Bhadradarvadi Taila Vardhamana Krama* showed moderate relief in one patient and mild relief in one patient.

2. Bhallataka and Guggulu Silajita with Rasasindura :

CRID

A comparative clinical evaluation of two treatments *Suddha Bhallataka* and a combination of *Suddha guggulu*, *Silajita* with *Rasasindura* has been initiated on twenty-three patients in two groups. Though both the treatments were found effective, the effect of *Bhallataka* has been more pronounced. Out of the sixteen patients treated with *Bhallataka*, nine patients showed complete relief, two patients showed marked relief, three patients showed moderate relief and one patient showed mild relief. The remaining one patient did not show any improvement. Out of the seven patients treated with the other combination, three patients each reported complete relief, moderate relief and one patient showed no relief.

3. Hingutriguna Taila :

CRIB

The Clinical trial of *Hingutriguna taila* has been continued further on twelve patients. Complete relief has been recorded in five patients and three patients reported partial relief. No relief was observed in one patient and three patients discontinued the treatment.

Table 24

Results of clinical therapeutic trials of Ayurvedic preparations on *Grdhrasi* : (Sciatica) at a glance.

Sl. No.	Therapy	Instt/ Centre	Total cases	Results					
				C. R.	Marked relief	Mode. rel.	Mild rel.	No Drop out	
2(a)	Guggulu+ Silajit+ Rasa sindura	CRID	7	3	—	3	—	1	—
(b)	S. Bhallataka	CRID	16	9	2	3	1	1	—
3.	Hingutriguna	CRIB	12	5	—	3	—	1	3
1.(a)	Sahacara taila	IIPC	5	1	—	1	1	—	2
(b)	Bhadradarvadi taila + Snehapana	IIPC	4	—	—	3	1	—	—
(c)	Bhadradarvadi taila	IIPC	3	2	1	—	—	—	—
Total			47	20	3	13	3	3	5

SAISAVIYA VATA :

Sahacharadi Taila, Nirgundi Taila and Bhadradarvadi Taila : IIPC

The studies on the efficacy of a course of *Pancakarma chikitsa* consisting of *Snehapana*, *Abhyanga*, *Matravasti*, *Pinda sveda* with *Sahacharadi taila*, *Nirgundi taila* and *Bhadradarvadi taila* has been continued further on seventeen patients in three groups. The drugs used for *Taila* preparation have been used for *Pinda sveda* or *Patra Pinda sveda*. The overall effect has not been encouraging. The patients treated with *Bhadradarvadi taila* showed better results. Out of the five patients treated with *Bhadradarvadi taila*, four showed mild relief and one patient showed moderate relief. The *Nirgundi taila* induced marked relief and mild relief in one patient each, three patients

showed no improvement and one patient discontinued the treatment. *Sahacharadi taila* showed mild relief in two patients and no relief in three patients, while one patient discontinued the treatment.

Table 25

**Results of clinical therapeutic trials of Ayurvedic preparations
on *Saisaviya vata* (Poliomyelitis) at a glance.**

S. No.	Therapy	Instt/ Centre	Total cases	Results					
				C. R.	Marked rel.	Moderate rel.	Mild rel.	No rel.	Drop out
1.	Sahacharadi taila	IIPC	6	—	—	—	2	3	1
2.	Nirgundi taila	IIPC	6	—	1	—	1	3	1
3.	Bhadradarvadi taila	IIPC	5	—	—	1	4	—	—
Total			17	—	1	1	7	6	2

KAMPAVATA (Parkinsonism) :

Asvagandha, Akarakarabha, Atmagupta and Parasikayavani : ARUB

A controlled study to assess the comparative efficacy of *Asvagandha*, *Akarakarabha*, *Atmagupta* and *Parasikayavani* has been started in five groups of patients using a known modern drug as control in one group. The trial has been initiated on twenty-three patients in five groups. The overall effect of treatments have been significant since marked relief has been observed in thirteen patients and moderate relief was noted in four patients. No relief has been observed in five patients and one patient discontinued the treatment. Comparative efficacy of different treatments can be assessed only after further studies.

SARVANGA KUPITAVATA :

Bhadradarvadi Gana Kvatha :

IIPC

The study of the effect of *Bhadradarvadi gana kvatha* along with *Abhyanga* with *Tila taila* has been initiated on fifteen patients. The

patients who completed the treatment showed significant response since the treatment provided complete relief in five patients and marked relief in one patient. The remaining nine patients discontinued the treatment.

KATI SULA AND OTHER VATAVYADHIS :

Hingutriguna Taila :

CRIB

The study of the effect of *Hingutriguna taila* on the patients of *Katisula* and patients of other *Vatavyadhis* has been taken up on twenty-eight patients. Complete relief has been observed in eight patients, while nine patients reported partial relief and five patients did not show any relief. The remaining six patients discontinued the treatment.

SWITRA :

Switra or *Kilasa* signifies the disorders of pigmentation covered under *Vitiligo*. The disease is non-contiguous in nature. Certain therapies have been put to trial in the treatment of this disease. Out of many attempts, *Ayush-57*, a coded drug (for external application), has been found to be effective in substantial proportion of patients. The studies on the efficacy of *Ayush-57* and other drugs like *CRIA-9*, *Kakodumbara* has been continued further during the year. The results are discussed separately.

CRIA-9, Ayush-57 :

IHKP

The trial of *CRIA-9* internally and *Ayush-57* externally has been continued further on sixty-three patients. The regimen does not show much effect since most of the patients who completed the trial showed mild improvement. Complete relief was noted in one patient while marked relief and moderate relief has been noted in nine and five patients respectively. No relief has been noted in seven patients while twenty-five patients discontinued the study.

Nimba Pancanga-Gajalindajadi Vati and Dhatriyadi Curna Avagulbi-jadi curna:

IIPC

A trial of two sets of medications, one consisting of *Nimba pancanga curna* with *Gajanindajadi vati* and the other consisting of *Dhatriyadi curna* with *Avagulbijadi curna*, has been initiated in two groups on ten patients. The effect of treatments is evident on patients who completed the study.

Ayush-57:**RRIC**

The observations on the effect of *Ayush-57* on 230 patients (178 old and 52 new) has been continued further during the year. Complete relief has been observed in thirty-nine patients while nine patients showed moderate improvement and thirty-one patients showed only mild relief. The remaining 151 patients either did not show any improvement or has been grouped as drop out.

Kakodumbara :**CDRSP**

The observations have been continued further on nine patients. One patient who completed treatment showed marked improvement while other eight patients discontinued the study.

Table 26

**Results of clinical therapeutic trials of Ayurvedic Preparations
on *Svitra* (Vitiligo) at a glance**

S. No.	Therapy	Instt./ Centre	Total Cases	Results					
				C.R.	Marked relief	Moderate rel.	Mild rel.	No rel.	Drop out
1.	CRIA-9 & <i>Ayush-57</i>	IHKP	63	1	9	5	16	7	25
2(a)	Nimba Panchanga Gajanin-dajadivati	IIPC	4	—	1	—	—	—	3
(b)	Dhatrya-di curna, Avagulb-yadi curna	RRIC	6	—	1	1	—	—	4
3.	<i>Ayush-57</i>	RRIC	230	39	—	9	31	151	—
4.	Kakod-umbara	CDRSP	9	—	1	—	—	—	8
Total			312	40	12	15	47	158	40

JVARA-VISAMAJVARA :

The clinical studies on *Visama jvara* (Malaria fevers) have been conducted under the Council and certain preparations have been tried clinically. The coded drug *Ayush-64* has been found to be effective in the treatment of this disease. The effect of this drug has also been seen on malarial parasite-*Plasmodium vivax*, in a series of clinical trials taken up by various research projects under the Council. The preparation has been patented and made available to five pharmaceutical firms for commercial production.

The studies on this coded drug has been further perused on smear positive as well as smear negative patients of malarial fevers. Few centres have also taken up comparative assessment of its efficacy with chloroquin and certain other Ayurvedic preparations. Efforts have also been made to assess the effect of *Ayush-64* on other types of fevers as well.

1. Ayush-64 :

CRID

A clinical trial of *Ayush-64*, a coded drug has been continued further on twenty-six patients. The blood smear of twenty patients in this series has been positive for malarial-parasite. The treatment provided complete relief in fourteen patients and marked relief in four patients. The drug induces disappearance of parasite and clinical relief with in three to five days of treatment with four tablets thrice daily.

2. Ayush-64, Chloroquin:

HKP

The trial of the *Ayush-64* in both types of patients i. e. with positive blood smear as well as with negative blood smear has been continued. The drug induced complete relief in three patients out of eight patients with positive blood smear. The remaining patients either did not improve or have been grouped as drop out. Among the forty-nine patients with negative blood smear the preparation induced complete relief in sixteen patients and mild relief in one patients. No response was observed in six patients whereas twenty-six patients discontinued the treatment. Both the patients treated with chloroquin (with positive smear) showed complete relief.

3. Ayush-64 :

RRIG

The trial of *Ayush-64* has been taken up on sixteen patients. The effect does not appear to be significant in this series. Seven patients did not show any improvement while two patients reported complete relief and one patient reported marked relief. Six patients discontinued the study.

4. Ayush-64:

RRIG

The trial of *Ayush-64* has been taken in smear positive as well as smear-ve patients. Out of twelve smear positive patients, four reported complete relief, three reported marked relief, while two patients each reported no relief, and mild relief respectively. One patient discontinued the study. Out of forty-six patients with negative blood smear fourteen showed complete relief while twenty-five patients showed marked relief. Mild relief has been noted in five patients and two patients discontinued the study.

5. Ayush-64, Mamajaka Ghanavati:

RRIJu

The trial of *Ayush-64* and *Mamajaka ghanavati* has been taken up on 154 patients in two groups. Out of fifty-nine patients treated with *Ayush-64*, thirty-two showed complete relief while twelve patients did not show any relief and fifteen patients discontinued the treatment. Out of the ninety-five patients treated with *Mamajaka ghanavati*, thirty-three showed complete relief while sixteen patients showed no relief and remaining forty-six patients discontinued the study.

6. Ayush-64:

RRCI

The trial of *Ayush-64* has been continued further on thirty-three patients including eleven patients with positive blood smear. Complete relief has been observed in twenty-two patients while no relief has been observed in three patients and eight patients did not continue the treatment.

7. Ayush-64:

RRCJ

The trial of *Ayush-64* has been further pursued on twenty-seven patients including five patients with positive smear. Two patients with positive smear reported complete relief and no relief in three patients. Out of twenty two patients with -ve smear, six patients reported complete relief while four patients reported marked relief and one patient did not show any improvement. The remaining eleven patients discontinued the treatment.

8. Ayush-64:

RRCN

Out of the twelve patients taken for trial of *Ayush-64*, six patients showed complete relief while one patient did not show any relief. The remaining five patients did not continue the treatment.

9. Ayush-64:

ALURIM

The trial of *Ayush-64* has been taken up on forty-five patients. Complete relief was noted in thirteen patients while twenty-one patients did not show any relief and eleven patients discontinued the treatment.

10. Ayush-64:

RRCH

The clinical trial of *Ayush-64* has been continued further on 101 patients. No investigations on malarial parasite were taken up. The treatment provided good response, since forty-nine patients were completely relieved. Moderate relief in seventeen patients, mild relief in three patients, and no relief in six patients was observed. The remaining twenty-six patients discontinued the treatment.

Table 27

**Results of clinical therapeutic trials of Ayurvedic preparations
on *Visamajvara* (Malarial fever) at a glance**

Sl. No.	Therapy	Instt/ Centre	Total Cases	Results					
				C.R.	Mark. rel.	Mode rel.	Mild rel.	No rel.	Drop out
1.	Ayush-64	CRID	26	14	4	—	—	1	7
2(a)	Ayush-64	IHKP	8	3	—	—	—	1	4
(b)	Ayush-64	IHKP	49	16	—	—	1	6	26
(c)	Chloroquin	IHKP	2	2	—	—	—	—	—
3.	Ayush-64	RRIG	16	2	1	—	—	7	6
4(a)	Ayush-64	RRIG	12	4	3	—	2	2	1
(b)	Ayush-64	RRIG	46	14	25	—	5	—	2
5(a)	Ayush-64	RRIJu	59	32	—	—	—	12	15
(b)	Mamajaka ghanvati	RRIJu	95	33	—	—	—	16	46
6.	Ayush-64	RRCI	33	22	—	—	—	3	8
7(a)	Ayush-64	RRCJ	22	6	4	—	—	1	11
(b)	Ayush-64	RRCJ	5	2	—	—	—	3	—
8.	Ayush-64	RRCN	12	6	—	—	—	1	5
9.	Ayush-64	ALURIM	45	13	—	—	—	21	11
10.	Ayush-64	RRCH	101	49	—	17	3	6	26
Total			531	218	37	17	11	80	168

OTHER VARIETIES OF JVARA:

Ayush-64:

RRIG

The trial of *Ayush-64* has been taken up on eighty-seven patients suffering from other varieties of *Jvara*. Thirty-three patients reported moderate relief and six patients reported marked relief, while twenty-five patients did not show any improvement and twenty-three patients discontinued the treatment.

RAKTACAPA And HRDROGA :

The diseases of Cardiovascular system has not found place earlier in our programme. Though certain studies on hypolipidemic and anti-atherogenic activity of *Guggulu*, its fractions and *Arogyavardhini vati* have helped, indirectly in the treatment of such patients. The study on the effect of *Karavira* and its clinical application in patients of congestive cardiac failure may be considered as an effort in this direction. The studies on *Raktacapa* (hypertension) and *Hrdroga* (Ischaemic heart diseases) have been initiated during the year, with an attempt to cover a vital area with Ayurvedic approach of treatment. The results on observations on these studies are given separately hereafter.

RAKTA CAPA :

Sarpagandha Ghanvati, Prabhakararasa etc.:

CRID

The clinical efficacy of a set of Ayurvedic medicines consisting of *Sarpagandha ghanvati*, *Prabhakararasa*, *Brahmivati*, *goksuradi guggulu* and *Chandraprabhavati*, have been tried in seven patients of *Raktacapa*. Marked relief was observed in two patients and moderate relief in three patients while one patient showed mild relief and one patient discontinued the study.

2. Jyotismati and Asvagandha etc.:

IIPC

The clinical trial of certain drugs have been initiated on twenty-seven patients in three groups. The first group of eight patients treated with the powder of the root and seed of *Jyotismati* showed marked relief in one patient and moderate relief in two patients while remaining five patients discontinued the treatment. In the second group, seven patients were treated with *Asvagandha curna*, *Satavari curna*, *Sankhapuspi* and *Japa*. One patient each reported complete relief and marked relief while four patients discontinued the study. In the third group twelve patients were treated with medicines of both the groups and moderate relief and mild relief was noted in four and two patients respectively, while six patients discontinued the study.

Table 28

**Results of clinical therapeutic trials of Ayurvedic preparations
on Raktacapa (Hypertension) at a glance**

Sl. No.	Therapy	Instt/ Centre	Total cases	Results					
				C.R.	Marked relief	Moderate rel.	Mild rel.	No Drop rel. out	
1.	Sarpagandha, Prabhakara- rasa, Brahmi Vati, Goksu- radi Guggulu, Chandra Prabha	CRID	7	—	2	3	1	—	1
2a.	Jyotismati	IIPC	8	—	1	2	—	—	5
b.	Asvagandha Satavari, Sankhapuspi and Japa	IIPC	7	1	1	—	—	1	4
c.	Jyotismati, Asvagandha, Satavari, Sankhapuspi and Japa	IIPC	12	—	—	4	2	—	6
Total			34	1	4	9	3	1	16

HRDROGA :**Puskaramula :****CDRSV**

The studies on patients of heart diseases characterised by dyspnoea, palpitation, precordial pain, heaviness in chest have been taken up. Certain patients with history of myocardial infraction were also included. The trial of *Puskara mula* in the form of powder has been conducted. All the forty patients treated with this drug showed clinical improvement. The cholesterol and other lipids of blood showed gradual reduction. The E. C. G. findings also corroborated

the clinical improvement. Complete recovery has been observed in 50% of patients after four to six months of treatment. The remaining patients also showed definite improvement.

MUTRAGHATA-MUTRAKRICCHA:

The clinical trials on certain urinary disorders have been conducted under the Council. The effect of *Varuna*, *Kulatha*, *Trina pancamulla kvatha* has been demonstrated in the treatment of *Asmari*, and related disorders. The studies of certain preparations in the treatment of *Mutra-kriccha* (dysurea) and *Mutraghata* (suppression of urination) has been initiated during the year. The observations are discussed hereafter.

1. Goksuradi Guggulu and Kaishore Guggulu etc: CRID

A clinical trial to assess the comparative efficacy of two combinations of Ayurvedic drugs has been taken up on eighteen patients in two groups. The first group of seven patients have been treated with *Goksuradi guggulu*, *Chandraprabha vati*, *Sveta parpati* and *Trna pancamula kvatha*. Four of these patients showed mild relief and one patient reported marked relief, while two patients could not complete the treatment. The second group of seven patients were treated with *Kaishore guggulu*, *Silajita* and *Jatyadi taila* (for external application). Three patients in this group reported complete relief and moderate relief was observed in five patients while one patient showed mild relief. The remaining two patients discontinued the study.

2. Chandraprabha Vati : RRIL

The trial of *Chandraprabha vati* has been initiated.

VRANA :

The treatment of various types of *Vrana* have been dealt in Ayurveda but trials to assess the clinical efficacy of certain drugs have been only recently initiated. The study of the efficacy of certain drugs taken up during last year have been continued further.

Arogyavardhini, Kaishore Guggulu etc. : CRID

The studies on the clinical efficacy of internal administration of *Arogyavardhini* and *Kaishore guggulu* along with external use of *Jatyadi*

taila, *Nirgundi taila* and *Ksara taila* for dressing has been continued further on forty-six patients. Complete relief has been noted in twenty-four patients while ten patients reported moderate relief. One patient showed marked relief. The other eleven patients discontinued the treatment.

NETRABHISYANDA :

The clinical studies on *Netrabhisyanda* has been taken up during the previous year following epidemic of this disease. Certain remedies have been put to trial. *Netra bindu* has been found reasonably effective. Further studies have been continued.

Netra Bindu, Nisajala :

RRCH

The trial of *Netra bindu* and *Nisajala* has been continued further in two groups of patients. Out of the twenty-nine patients treated with *Netra bindu*, ten reported complete relief and five patients showed marked relief, while twelve patients discontinued the treatment and two patients did not show any improvement. The *Nisajala* has been tried in thirty-three patients. This treatment resulted complete relief in thirteen patients, marked relief in six patients, mild relief in two patients and no relief in seven patients, eleven patients discontinued the treatment.

AHARACIKITSA :

Considering the crucial role of diet in causation and treatment of diseases and maintenance of positive health, certain observations/trials have been taken up. The main thrust of these attempts have been to evolve the therapeutic diet for certain diseases e.g. *Jalodara*, *Grahani roga* etc. and also to assess the properties of certain food articles as discussed in Ayurveda. The Biochemical investigations required to assess any particular effect of a dietary article has been adopted suitably. During the year studies conducted during the previous year are continued further.

Masa :

DRUB

The studies to assess the effect of *Masa* on serum Pseudocholinesterase have been continued further. The observations on ten regular *Masa* eaters (families consuming 750 gm or more *Masa* per head per month) and ten noneaters (families consuming less than 200 gm

of *Masa* per head per month) showed relatively less values of serum pseudocholinesterase in regular *Masa* eaters. The difference is statistically significant ($P < 0.05$). The observations on body weight, blood pressure have also been taken. Further studies on the role of *Masa* in etiology and treatment of *Vatavyadhi* has been suggested.

Kulattha etc. :

DRUB

Comparative study to assess the gastric acid secretion induced by *Godhums Mudga* and *Kulattha* has been continued further on six volunteers. The response to 30 gm of test meal prepared with three cereals showed that the response to the *Kulattha* and *Mudga* is relatively more than *Godhums*. The effect of *Kulattha*, and *Mudga* which is more or less equal has been attributed to their protein content.

Beeturea :

DRUB

Further studies on appearance of colouring pigment of beet root, 'betarin' has been continued on six patients recovered from inter-current illness. The patients have been administered 50 gm of smashed beet after over night fasting. Samples of urine were collected before administration of the beet and then at hourly interval for seven hours. Appearance of colouring substance was noted after one hour while peak concentration was seen after two hours as studied by optical density of urine. Further studies are in progress.

Table 29

Statement showing number of trials conducted, number of patients studied and participating projects during 1981-82 and 1982-83.

Sl. No.	Disease	No. of trials		No. of patients		Participating projects
		1981-82	1982-83	1981-82	1982-83	
1.	Amavata, Sandhigata vata	8	11	157	237	CRIB, RRIC, IIKP, IIPC, RRIJ, CRID, RRIJ
	a) Amavata					
	b) Sandhigata vata	2	2	73	16	CRIB, RRIJ
2.	Amlapitta, Annadrava sula	2	2	136	20	CRIB, RRIJ
	Parinama sula	—	1	—	9	CRIB
	a) Amlapitta	—	1	—	—	—
	b) Annadrava sula	5	6	335	353	CRUK, CRUH, CRIB, RRIJ, CDRSB, CRID
	c) Parinama sula					
3.	Atisara, Pravahika and Grahani roga	1	3	41	76	RRCJ, RRIJ, CRID
	a) Atisara	1	2	35	72	RRCJ, CRID, RRIJ
	b) Pravahika	3	4	71	118	CRIB, RRIJ, RRCJ, CRID, RRIJ
	c) Grahani roga					

(Contd)

1	2	3	4	5	6	7
4.	Other Udara Roga					
	a) Kirmi	4	4	66	72	CDRSB, RRCN, IIKP, CRIB
	b) Arsa	1	1	53	84	IIKP
	c) Kamala	1	1	32	6	CDRSB
	d) Gulma	—	1	—	18	CRID
	e) Yakrt vriddhi	—	1	—	12	CRID
	f) Pandu	—	1	—	54	IIPC
5.	Svasa, Kasa and Pratisyaya	8	8	440	626	RRJU, IIKP, RRU, CRIB, CDRSV, RRIC, CRID, RRIG, ALURIM, RRIC
	a) Tamaka svasa					RRCH, RRIG, CRID
	b) Kasa	2	3	35	132	RRI
	c) Pratisyaya	1	1	22	35	RRI
6.	Madhumeha	3	3	97	123	IIKP, CRID, RRIC
						ALURIM
7.	Tvakroga	—	2	—	178	RRI, IIPC
	a) Pama	—	3	—	381	IIPC, RRIT, RRCI
	b) Vicarcika	1	1	9	54	RRIT
	c) Kitibha (Psoriasis)	—	1	—	215	RRIT
	d) Vipadika	—	1	—	244	RRIT
	e) Suksmasaya Bada	—	1	—	194	RRIT
	f) Other Tvak roga	6	2	263		RRIT, RRCJ, RRIC, RRIP

(Contd.)

	1	2	3	4	5	6	7
13. Jvara, Visama Jvara							
a) Visama-Jvara	10	9	313	531	IIK P, CRID, CRIB, RRIJ RRIG, RR CJ, RRCH, RRCN, ALURIM		
b) Jvara	—	1	—	87	RRIG		
14. Rakta Capa, Hrdroga							
a) Rakta capa	—	2	—	34	IIPC, CRID		
b) Hrdroga	—	1	—	40	CDRSV		
15. Mutra Kriccha, Mutra Ghata	—	2	—	19	CRID, RRIJ		
16. Vrana	1	1	55	46	CRID		
17. Netrabhisyaada	2	1	531	62	RRCH, CRID		
18. Abara cikitsa	3	3	15	32	DRUB		
19. Other discontinued trials							
a) Manovchara	1	—	176	—	RRIJ		
b) Siraha sula	1	—	70	—	RRIJu		
c) Rajyakasma	1	—	21	—	RRIJu		
d) Medoroga	1	—	4	—	CDRSP		
e) Prakriti	1	—	37	—	ALURIM		

	1	2	3	4	5	6	7
8. Striroga							
a) Kastartava	1	1	1	41	32	IIKP	
b) Rakta pradara	3	4	132	116	IIKP, RRIJ, RRCT, CRID		
c) Sveta pradara	2	5	187	302	RRIJ, RRCT, CRID, RRCV, IIPC		
d) Yoni vyapada	2	1	—	25	CRID		
9. Slipada	3	4	34	71	CRIB, RRCN, RRCV		
10. Manasa Roga							
a) Apasmara	4	6	181	273	CRID, CRIB, ARUB, RRIC, IIKP, RRIJ, RRCT		
b) Ummada	1	1	51	97	ARUB		
c) Manasa mandata	1	1	12	5	ARUB		
d) Manodvega	1	1	6	7	ALURIM		
11. Vata Vyadhi							
a) Paksaghata	4	4	230	165	CRIB, IIKP, IIPC, PRUB		
b) Khanja & Pangu	1	1	19	33	IIPC		
c) Gradhrasi	2	3	22	47	IIPC, CRIB, CRID		
d) Saisaviya Vata	1	1	28	17	IIPC		
e) Kampavata	—	1	—	23	ARUB		
f) Other Vata vyadhi	2	2	29	43	CRIB, IIPC		
12. Svitra	3	4	300	312	IIKP, RRIC, CDRSP, IIPC		

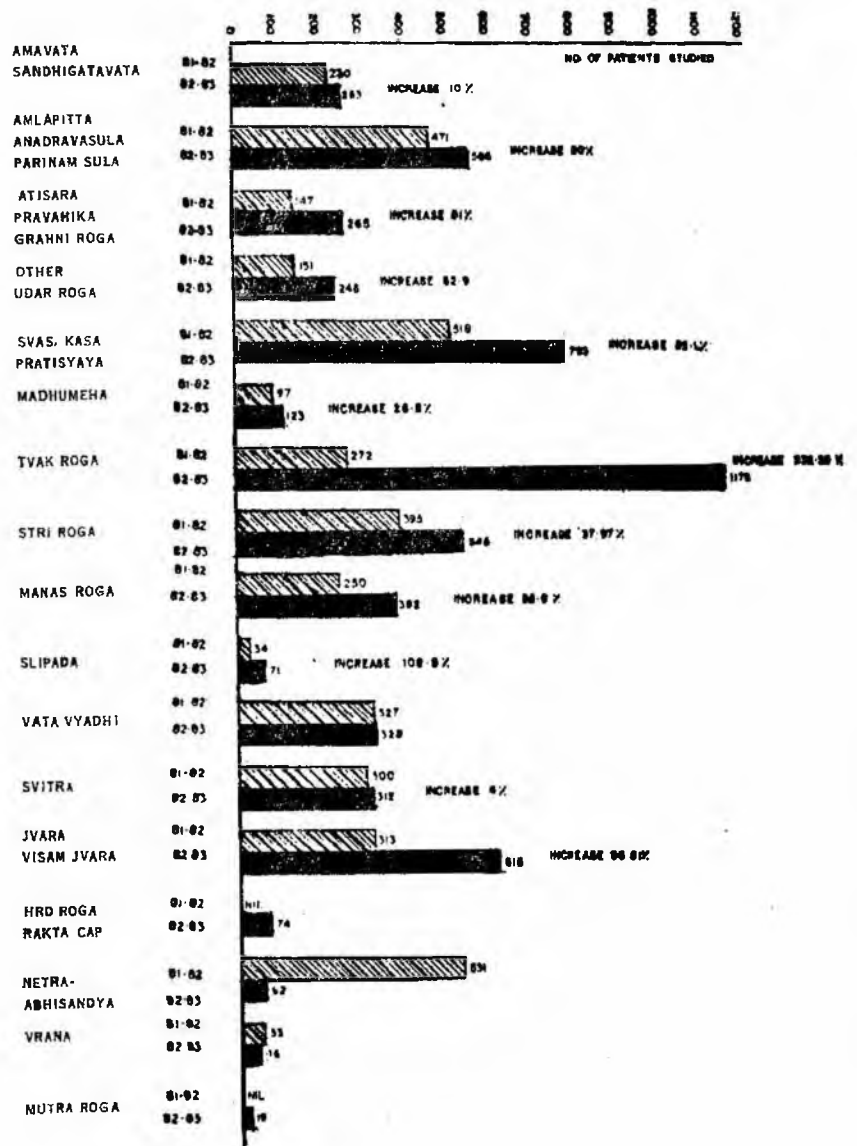
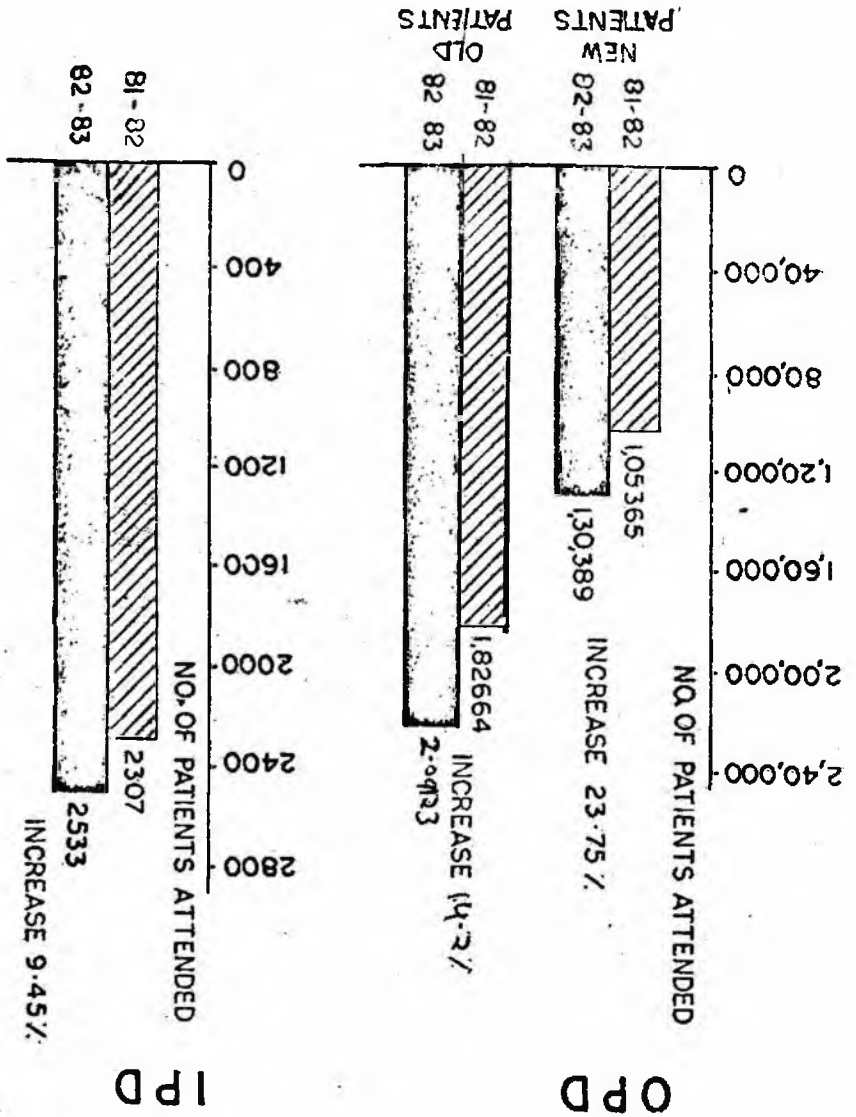


Table 30.
Statement of Patients Attended at O. P. D., Admitted/Discharged in the
I. P. D. during 1982-83

Sl. No.	Centre	Patients attended at OPD		Total	Patients attended at IPD		Bed occupancy %
		New	Old		Admitted	Discharged	
1.	IIC, Patiala	10418	9354	19772	383	373	46.33
2.	CRI, Delhi	14800	28332	43132	488	480	56.15
3.	IIP, Cheruthuruthy	9605	27010	36615	170	178	79.12
4.	CRI, Bhubaneswar	8567	8618	17185	351	319	55.17
5.	RRJ, Calcutta	3634	17023	20657	69	67	53.83
6.	RRJ, Jaipur	2989	3044	6033	162	151	44.61
7.	RRJ, Lucknow	12231	16069	28300	Nil	Nil	IPD started on 27-12-82
8.	RRJ, Gwalior	6935	5490	12425	143	143	39.17
9.	RRJ, Junagadh	4301	11709	16010	108	113	33.55
10.	RRJ, Patna	4274	7174	11448	120	120	64.76
11.	RRJ, Trivandrum	5200	20108	25308	77	82	76
12.	RRC, Bangalore	2274	4149	6423	Not established		
13.	RRC, Nagpur	3203	10326	13529	Not established		
14.	RRC, Vijayawada	5678	7375	13053	73	66	41.7
15.	RRC, Jammu	8377	10881	19258	Not established		
16.	RRC, Hastinapur	10574	10323	20897	12	12	

Bar Graph Showing Number of Patients Treated at OPD and IPD Level During 1981-82 and 1982-83



	1	2	3	4	5	6	7	8	
				OPD not started functioning					
17. RRC, Gauhati			8296	9693	17989	Not established			
18. RRC, Jogindernagar			1072	855	1927	Not applicable			
19. RRC, Jhansi			3635	584	4219	Not established			
20. RRC, Itanagar			2956	738	3694	Not established			
21. RRC, Sikkim			749	—	749	24	24	Not applicable	
22. ALURIM, Madras			131	187	318	36	24	30.2	
23. ARU, Bangalore			—	—	—	214	216	82	
24. CRU, Kottakkal			—	—	—	79	79	Not applicable	
25. CRU, Hyderabad			100	81	181	105	76	Not applicable	
26. PRU, Panchakarma, Bombay			—	—	—	14	14		
27. CDRS, Bombay			390	—	390	3	3		
28. CDRS, Varanasi			—	—	—	—	—		
Total			1,30,389	209123	339512	2533	2461		

Table 31
Statement Showing the Pathological Investigation carried out during the
period under review

Sl. No.	Type of investigation	CRID	CRIB	IIPC	IIKP	RRIC	RRIP	RRIL	RRIG	RRIJ	RRIJ _u	RRIT	RRCI	RRCJ	RRCV	RRCB	CRUH	CRUK	ALURIM	ARUB	CDRSB	RRCJ	PRSB
1.	Blood	2146	3648	2837	4334	1604	301	185	689	381	1986	909	181	402	1927	206	73	102	525	64	116	-	105
2.	Stool	2068	1839	395	913	606	198	16	310	323	366	49	177	165	234	70	53	260	116	-	338	304	105
3.	Sputum	112	-	2	-	10	-	6	175	34	46	-	-	-	4	-	-	-	-	-	-	-	-
4.	Semen	41	-	-	3	-	-	-	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	M.P. Test	-	4	-	106	-	-	-	259	-	-	-	66	-	-	-	-	-	204	-	-	-	-
6.	R.A. Test	-	-	48	-	29	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.	Widal Test	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.	Mantoux Test	11	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
9.	Urine	2219	1430	767	1316	478	138	37	376	341	484	373	68	166	1072	165	73	194	127	4	243	-	105
10.	VDRL	18	38	137	-	37	-	-	2	-	-	22	-	-	-	-	-	-	-	-	-	-	-
11.	Prothrombin Test	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.	Chloroquine & Salicy labext Test	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.	Cytology Papsmear & Mack Test.	38	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	Blood sugar	2492	120	451	310	432	-	-	9	-	71	122	-	-	-	-	-	-	86	-	-	-	105
15.	Blood Urea	980	-	213	249	27	-	-	4	-	25	-	-	-	-	-	-	-	41	-	-	-	105
16.	S. Protien	905	-	408	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.	S. Globulin	905	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.	S. Albumin	905	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.	S. Bilirubin	393	-	4	264	12	-	8	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-
20.	S. Alk. Phos.	609	-	2	360	-	-	-	-	-	-	-	-	-	-	-	-	-	44	-	-	-	-
21.	S. acid Phos.	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.	Thymol turbidity	119	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	31	-	-	-	-
23.	S. cholestrol	1214	210	423	248	36	-	1	-	5	38	-	-	-	-	-	-	-	110	-	-	-	105
24.	S. uric acid	697	-	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
25.	S. Creatinine	527	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-
26.	S.G.O.T.	734	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	-	-	-
27.	S.G.P.T.	734	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	-	-	-
28.	F.T.M.	108	251	-	-	4	-	2	-	-	-	-	-	-	-	59	26	89	89	-	89	-	-
29.	Microfilaria	-	759	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.	Blood grouping	-	-	30	-	17	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.	BT & CT	-	-	79	-	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32.	Vanden Berg Reaction	-	-	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33.	Total Plasma proteins	-	-	-	05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34.	Icterus index	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35.	Sperm analysis	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36.	Rh. Factor (Blood)	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	28	-	-	-	-
37.	Glucose Tol. Test	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.	Urine Sesitivity & Culture	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39.	Vaginal Smear	-	-	-	-	-	-	-	-	-	-	-	-	142	-	-	-	-	-	-	-	-	-
40.	Skin scrapping and Nasal smeir for Hasan S. Bacilli	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Cont.....

Table-31

S. No.	Type of investigations	RRIU	RRCV	ALURIM	ARUB	CDRSB
41.	Latex fire for Ph arthritis	3	—	—	—	—
42.	Total protein	—	—	38	—	—
43.	A/G Ratio	—	—	34	—	—
44.	Total Lipids	—	—	59	—	—
45.	S. Triglycerides	—	—	67	—	—
46.	C. S. F.	—	—	—	52	—
47.	Lev. fuc. test	—	—	—	8	60
48.	A.U. Atigen	—	—	—	—	4
49.	OVA Count	—	—	—	—	114
50.	S. Phospholipids	—	—	46	—	—
51.	Total Eosinophilic count	—	—	22	—	—
52.	17 Ketosteroides	—	—	37	—	—
53.	17 Hydroxy corticoid sterpodes	—	—	36	—	—
54.	VMA	—	—	37	—	—
55.	Urine creatinine	—	—	37	—	—

RESEARCH ORIENTED SURVEY AND SURVEILLANCE PROGRAMME

Research Oriented Survey and Surveillance Programme is intended to provide medical aid to the people of the selected villages or tribal area besides studying their Socio-economic/health status and personal habits. These efforts also cover imparting of knowledge to the people regarding ways and means for maintenance of positive health and prevention of diseases. The use of locally available herbal and other material for the relief of sickness is also propagated in the population under study. These programmes are categorised broadly into three major aspects viz. compilation of Health Statistic in randomly selected villages and tribal areas. Community Health Care Research Programme in the selected villages, and Tribal Health Care Research Programme. The details of the methods of approach and observations under each of the programmes are discussed separately.

Health Statistics :

Under this programme the information is recorded in respect of each individual of the randomly selected villages in the prescribed proforma. Proforma 'A' covers the information regarding personal and socio-economic aspects of the individuals. If the person is found sick the information regarding his illness is recorded in detail in Proforma 'B'. The details about the location, climatic condition and other relevant information about the selected villages is recorded in Proforma 'C'. In case any pathological investigations are carried out on the diseased persons or the healthy individuals the details are recorded in Proforma 'D'. The persons found sick during the course of survey are provided treatment and the details are recorded. These studies are carried out through Mobile Clinical Research Units attached with various Institutes/Centres under the Council and also located at certain other Institutions of Ayurveda. During the year under report 19,781 individuals from forty-two villages have been studied and medical aid has been provided to 10,865 patients. The diseases of *Anuvah srotas* such as *Atisara*, *Udarasula*, *Ajirna*, *Amlapitta*, *Twak roga*, *Kasa*, *Swasa* etc. were observed by almost all the centres located in various parts of the country. Certain pathological investigations on blood, stool, and urine have also been conducted by many centres. The details may be seen in the Table 32 and 34.

Table 32

Statement of work carriedout during 1982-83
Under Service Oriented Survey and Surveillance Research Programme

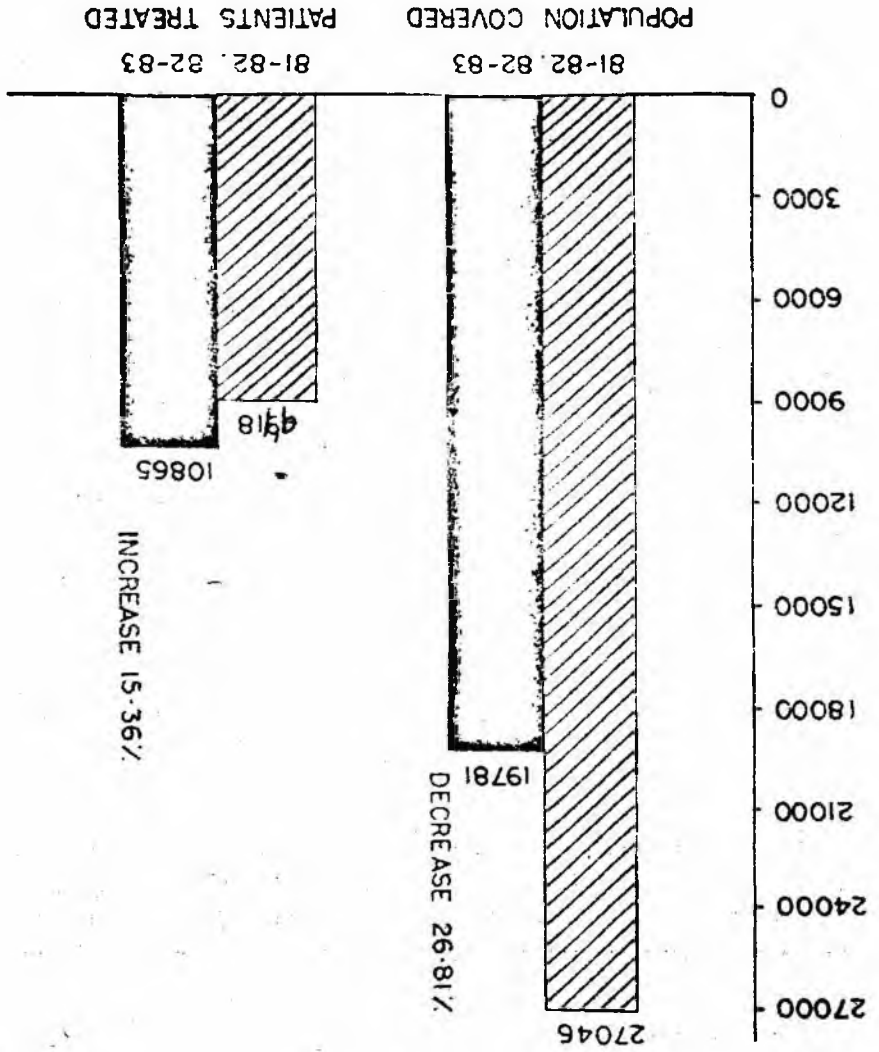
1	2	3	4	5	6
Name of the Institute/Centre	No. of villages covered	Population covered	Name of the villages covered	No. of patients treated	Name of the common diseases
IIIK, Patiala	5	2,000	Kaali, Mehdipt, Namsu, Hirdapur, Jalalpur	1088	Jwara, Kasa, Atisara, Arsa, Kandu, Pratishtaya, Mukhroga, Pradara, Swasa, Sirahshool, Sandhishhoola, Udarshhoola, Yakrit vikar, Vatavyadhi.
IIP, Cheruthuruthy	1	285	Viruppakka	009	Amavata, Vataroga, Jwara, Kasa, Katisula, Twakroga, Udarasula, Vata vikara.
CRI, Bhubaneswar	2	1519	Lakshminarayanpura, Bhartipur	708	Amlapitta, Jwara, Kasa, Krimi, Kandu, Mukhroga, Sandhisula, Udara-

(Contd.)

RRC, Vijayawada	1	1211	Atmakur	255	Atisara, Galasundika, Hrdroga, Kasa, Koshtabaddhata, Rajadosha, Swasa, Sirahsula, Twakroga, Udar Sula, Vatavyadhi, Dourbalya, Sweta pradara.
RRC, Gauhati	1	0198	Chakardoh	442	Agnimandya, Amlapitta, Atisara, Jwara, Kasa, Krimi, Pandu, Pradar, Pratisyaya, Twakroga, Vataroga, Vishamajwara
MCRU, Jamnagar	1	0422	Padana	147	Atisara, Kasa, Krimi, Katsula.
RRC, Itanagar	3	0267	Papu, Nirjulli, Lekhi	034	Not indicated
RRC, Bangalore	1	0888	Nagavara	2192	Atisara, Amlapitta, Gridhrasi, Jwara, Kasa, Kandu, Netaroga, Pandu, Swasa, Sirahsula.

(Contd.)

1	2	3	4	5	6
RRI, Patna	2	0745	Lodipur, Suitampur	1172	Atisara, Jwara, Kasa, Krimi, Kandu, Katula, Pratishyaya, Swasa, San- dhivata, Twak roga, Udararoga.
RRI, Calcutta	1	0538	Hatiara	193	Amlapitta, Amavata, Gulma, Jwara, Kasa, Krimi, Pradara, Swasa, Twakroga, Atisara.
RRI, Jaipur	3	1563	Heerapura,	453	Swasa, Kasa, Krimi, Twakroga, Udarsoola, Yakrit vikar, Pradar, Vrana, Vatavyadhi.
			Chatarpura		
			Dantali		
CRI, Delhi	2	0796	Allipur, Bakoli	989	Not indicated
RRC, Jhansi	1	0638	Garhmu	438	Atisara, Ajeerna, Amla- pitta, Jwara, Kasa, Kandu, Karna srava, Twak roga, Udarshoola, Vishama Jwara.



Bar Diagram showing population covered and patients treated under Survey and Surveillance Screening Programme during 81-82 and 82-83.

	1	2	3	4	5	6
RRC, Jammu	2	0937	Sedhara, Bajalata	985	Twakroga, Udarsula, Vatavyadhi, Vrana, Atisara, Amavata, Amlapitta	
RRI, Junagadh	1	0979	Vadala	667	Jwara, Kasa, Pratishtyaya, Udarschoola, Udarkrimi, Vrana.	
RRC, Nagpur	2	2441	Hingna, Warora	426	Atisara, Ajecma, Jwara, Kasa, Krimi, Pratishtyaya, Twakdosha, Udarschoola, Vrana, Vatavyadhi.	
RRC, Sikkim	5	3269	Rumtek, Lindox, Nandok	077	Atisara, Arsh, Amlapitta, Jwara, Kasa, Pratishtyaya, Swasa, Udarschoola, Vatavyadhi	
RRC, Hastinapur	2	1527	Rathora, Kankarkhera	46	Atisara, Jwara, Kasa, Krimi, Pratishtyaya, Twakroga.	
RRC, Jogindernagar	6	985	Kotalli, Reur, Chauki, Chandraya		Not indicated	

Total : 42 19781 10865

Krimifoga, Soola, Kasa, Pratishtyaya, Kandu, Pradhra, Katsunia etc.

COMMUNITY HEALTH CARE RESEARCH :

Under this programme certain villages are adopted. These selected villages are visited by the team of physicians periodically. The villagers are provided suitable medical aid for their illnesses. Efforts are also made to educate them, the ways and means to be adopted for maintaining positive health and prevention of preventable diseases. The use of locally available herbal and other material for medicine is also propagated and villagers are motivated for treatment of their illnesses with these drugs. This programme has been conducted in sixty villages through various research centres and Institutes. Medical aid was provided to 10,145 patients during the study. Efforts have also been made by certain centres to work out details of possible clinical use of medicinal plants growing in certain selected villages.

Table 33

Statement of Work carried out during 1982-83 Community Health Care Research Programme

Name of the Institute/Centre	No. of villages covered	Population covered	Name of the villages covered	No. of patients treated	Name of the common diseases
IIP, Cheruthuruthy	1	4056	Attoor	769	Not indicated
RRI, Calcutta	1	0789	Bhaghampur	798	Amlapitta, Gulma, Jwara, Kasa
RRI, Patna	2	3000	Sultanpur Kushpar	Not indicated	Not indicated
RRC, Gauhati	1		Telahia	1000	Not indicated
RRI, Jaipur	2	0470	Saiwada, Natala	524	Atisara, Jwara, Kasa, Karnaroga, Kandu, Mukhroga, Prathiyaya, Swasa, Twakroga, Vatavyadhi.
IIK, Patiala	2	2300	Chaura, Noorkheri	545	Not indicated
CRI, Bhubaneswar	3	Not indicated	Phulnakhara Adalia, Ama Saowal, Andharua	1150	Amlapitta, Jwara, Kasa, Kandu, Mukhroga, Slipada, Sandhisula, Twakroga, Var- na.

(Contd.)

1	2	3	4	5	6
RRC, Nagpur	2	0650	Khandala, Lawa	0339	Jwara, Kasa, Pratihyaya, Sandhishoola, Vrana, Vatavy adhi.
ALURIM, Madras	7	10800		1522	Atisara, Jwara, Kasa, Krimi, Karnaroga, Pandu, Slipada, Udarashool, Twakroga, Vata-vyadhi.
RRC, Gangtok	2	1556	Penlong, Lingsay	0009	Jwara, Krimi, Swasa, Twakroga.
RRC, Jogindernagar	6*				
RRC, Hastinapur	1	80			
Total	60	32452		10,125	

* The medical check up of the school students was carried out in these villages and necessary medicines were provided.

1	2	3	4	5	6
RRC, Jhansi	2	2190	Garhmanu, Kot	493	Atisara, Jwara, Kasa, Krimi, Vranaroga, Kandu, Sandhishoola, Twak roga, Varma.
Tarikhet	25	6000	Duhhana, Soni, Bhadui, Namala, Deolikhhet, Dabar, Mateja, Saukhola, Tarikhhet, Kuharada, Bena, Dadhuli, Sirmidi, Pipali, Sarana, Thapla, Bisora, Timta, Gangora, Khaphulti, Thakulari, Maphana, Eradi, Badhana, Jeyodakhala.	2499	Agnimandya, Amlapitta, Adhmana, Atisara, Bharma, Jwara, Kandu, Krimi, Kasa, Katisula, Pradara, Swasa, Udarsula, Varuna, Varavyadhi.
RRC, Jammu	3	0451	Gameeri, Shalpur, Bijji	0971	Jwara, Amavata, Udarvikara, Kasa, Amlapitta, Daurbalya, Atisara, Prista Sula.

Bar Graph Showing Population Covered and Medical Aid Provided Under Community Health Care Research Projects During 1981-82 & 1982-83

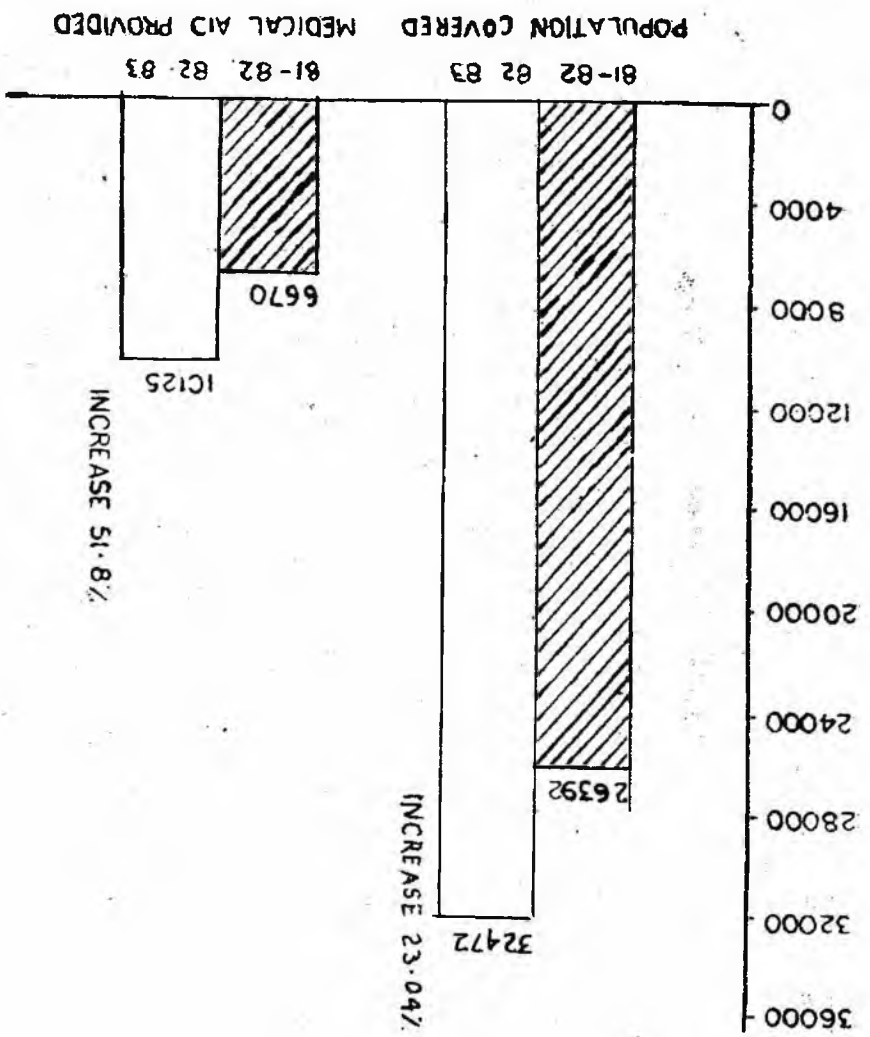


Table 34
Statement showing Investigations carried out under Service Oriented Survey and
Surveillance Research Programme, Community
Health Care Programme

Type of Invest- gation	CRIB	IKP	RRIC	RRIP	RRIG	RRCGa	RRCJ	RRCV	RRCB	MCRJ	ALURIM
Blood	731	423	48	18	81	52	226	147	82	4	18
Stool	57	33	6	3	—	50	15	—	10	—	116
Urine	41	37	6	—	—	50	7	7	21	3	7
Mai. Parasitic	41	33	—	—	—	—	—	—	—	21	7
L. F. T.	—	2	—	—	—	—	—	—	—	—	—
Blood sugar	—	—	5	—	—	—	—	—	—	—	—
Rh. Factor	—	—	—	—	—	—	—	—	—	—	—

TRIBAL HEALTH CARE RESEARCH PROGRAMME

In order to provide service oriented health care facilities to tribal people, five tribal health care research projects have been established. The main objective of these projects is to work out appropriate strategy for health and medicare facilities for inhabited people of scheduled caste and scheduled tribes. The priority programme for these areas are control and treatment of *Visamajwara* (malaria), *Kusthuroga* (leprosy), Sambhogajany or Sansargajavikara (sexually transmitted diseases), *Udara krimi* (intestinal parasite infestation) and *Kuposhana Janya roga* (diseases due to malnutrition). The identification of prevalent diseases in the area collection of information about socio-economic status of the area and personal habits with special reference to their relationship with incidence of diseases and study of the local practices of medicare are other important aspects of this programme.

During the year under review, the efforts were made to ensure functioning of these units by providing accommodation, posting of staff and providing other ancillary facilities. The activities of each of these centres are discussed briefly below :

Ziro (Arunachal Pradesh) :

The project has started functioning at RRC (Ay), Itanagar. Certain tribal areas have been surveyed by the team of the project efforts are underway to acquire suitable accommodation for the project in the area of its location.

Car Nicobar (Andaman and Nicobar Island) :

The project has been provided accommodation in the area of operation. The officer posted at the project has taken up steps to start functioning of the project.

Ranka Block, Distt. Palamu (Bihar) :

The project has started functioning after arrangement of accommodation. Steps have been initiated to provide medical aid to the tribal people.

Nawapur, Distt. Dhulae (Maharashtra) :

Steps have been taken to find accommodation and to post staff for the project.

Rama Block, Distt. Jhabua (Madhya Pradesh) :

The arrangement for accommodation and posting of staff are in process.

MEDICO BOTANICAL SURVEY

It is a well-known fact that the drug (*Dravya*) is the primary tool of the entire research programme. It is therefore of paramount importance to survey, procure drugs and arrange supply agencies for the material required for research purposes. Hence survey of medicinal plants occupies a pivotal position in the field of drug research. This programme of the Council was also a point of discussion during the tenth meeting of the Scientific Advisory Committee (Ayurveda) held on the 9th and 10th August, 1982 at Central Research Institute (Ayurveda) New Delhi and the achievements made by the different survey units of the Council during the last one decade were evaluated. It was emphasised during the discussions that the survey units located in different States have made their regional plant collections and it is now the right time for the Council to take steps for the establishment of a Central Herbarium and Museum at New Delhi which may house the representative specimens of the plants/drugs collected from the different parts of the country.

Establishment of Central Museum and Herbarium

It is evident that the Ayurveda and Siddha therapy is absolutely dependent on the genuine products obtained from herbal, animal and mineral origin. Though the identification of various animal and mineral products is not much of a problem but there is great confusion among those coming from plant sources. A large number of species have been put under *Brahmi*, *Bhringraja*, *Pasanabheda*, *Nirbisi*, *Karu*, *Punarnava*, *Guggulu*, *Mamira* or *Pitamula* etc. but the right species of plant has not yet been determined. Similarly true source of *Somarasa* and many ingredients of *Astawarga* are still unknown. The plants found mentioned in the literature and used in the preparation of medicines are to be critically examined and their authenticity determined. The proposed Central Herbarium and Museum, New Delhi shall be of immense use for this purpose. During the reporting year the Council has made a start for the establish-

ment of a Central Herbarium and Museum at Central Research Institute (Ayurveda), New Delhi.

Aims and Objects of Medico Botanical Survey

The Medico-botanical survey programmes of the Council have now been concentrated upon the collection of the plants used in Ayurveda and Siddha systems of Medicines and efforts have been made to cover the following aims and objects :

1. Preparation of exhaustive lists of plants used in Ayurveda, Siddha and other systems from the literature.
2. Determination of their areas of distribution from various flora, floristic records, manuals and herbaria.
3. Location of rich pockets by referring to various herbaria and floristic records.
4. Listing of plant drugs of doubtful identity for detailed study.
5. Region wise resources evaluation of medicinal plants.
6. Standardisation of harvest and post harvest technology.
7. Study of channels of availability such as Tribal cooperatives, trade centres etc.
8. Collection of herbarium specimens and plant parts used in medicine for chemical, clinical and pharmacognostical evaluation.
9. Collection of specimens and drug portion of the parts mentioned in the *Ayurvedic Formulary Part I* published by the Ministry of Health and Family Welfare, New Delhi.
10. Efforts are also being made to list the drugs mentioned in *Charak*, *Sushrut* and various Nighantus and to evolve a pattern of classification of these drugs. The drug lists worked out are as follows :

1. Drugs mentioned in <i>Vedas</i>	150
2. Drugs mentioned in <i>Charak</i>	536
3. Drugs mentioned in <i>Sushrut</i>	573
4. Drugs mentioned in <i>Astanga Hridaya</i>	902

5. Drugs mentioned in <i>Dhanwantri</i>	750
6. Drugs mentioned in <i>Bhavaprakasa</i>	450
7. Drugs mentioned in <i>Madan pala</i>	480
8. Drugs mentioned in <i>Kaiyadva</i>	450

The above mentioned drug samples are to be collected and placed in different *ganas* and *vargas*. The commentators have further added several drugs with the passage of time. Therefore, the Medico-botanical Survey Units of the Council have to perform a herculean task to collect samples of such drugs which are found growing throughout India and to undertake their qualitative and quantitative estimation.

The brief resume of the work undertaken by the different Medico-botanical Survey Units of the Council during the year 1982-83 is reported as under :

Following areas were surveyed during the period under review.

1. Khasia hills of Maghalaya.
2. Damuk division of Bihar.
3. Khorwad coastal areas, Jamnagar-Salya, Khambaliyas, Mangoral coasts, Visabidar forest and Jhakabad alja, Bhavnagar coastal areas of Gujarat.
4. Tilel valley of Gurez forest area and Trikutta hill area of Jammu and Kashmir.
5. Corrdu district, Bannerghatta, Bangalore range of Karnataka.
6. Munnar forest hills, Nilumbu forest division and Trivandrum division of Kerala State.
7. Betul in Hoshangabad, Arsi and Chandari forest area of Madhya Pradesh.
8. Ragoh range of Gondia forest division and Palandor, Priadoh forests of Maharashtra State.
9. Nowrangpur forest division, Koraput and Phulbani district and Baligura forest division of Orissa.

10. Banswara, Kota, Ajmer, Jaipur forest divisions of Rajasthan State.
11. Manjkhali, Baisheti, Kunnati, Bansurisera district and Lakhmandal, Gurther, Gorghat, Kwansi, Saharia, Newi and Samalatar forest areas of Utter Pradesh.
12. Central forest division of West Bengal State.

During the course of survey work, the Medico-botanical Survey Units have tried to collect plant specimens and the plant parts used in Indian Systems of Medicine. The samples have been preserved in their Regional Herbaria and drug samples displayed in the Museums. During the course of survey work, the parties have also collected drug samples as required by different Institutes/Centres. On the basis of the drug samples collected and the previous forest records, the units have also undertaken to analyse these samples and have prepared lists of such drugs which are of immense economic importance. The frequency of occurrence of such plants has also been worked out by these units.

Andhra Pradesh

RRCV

The Medico-botanical Survey Unit at Vijayawada (Andhra Pradesh) has mounted 3490 plant specimens for herbarium, eight drug samples were collected and supplied to different Centres/Institutes. The centre has also reported to have discovered a new drug called as Indian squill and named it after Nagarjunacharya, its full name is *Urginea Nagarjuna* Hemadri etc. Swahari. The Unit has also collected abundently/commonly growing economically important herbs in their area, out of which the main drugs are *Gunja*, *Atibala*, *Khadira*, *Apamarga*, *Vasa*, *Bilwa*, *Bhunimba*, *Brahmi*, *Raktapunarnava*, *Arka*, *Mandukparni*, *Bhargangi*, *Talamuli*, *Swetasariva*, *Kutaja* and *Kampillaka* etc.

Arunachal Pradesh

RRCI

The Survey Unit at Itanagar (Arunachal Pradesh) has collected sixty-seven plant specimens. Frequently occurring plants in their areas are reported as *Dronpushpi*, *Vijaya*, *Brahmi*, *Apamarga* and *Isabgola* etc.

Assam**RCGa**

The Survey Unit at Gauhati (Assam) has collected 2725 plant specimens and has mounted 3460 sheets for herbarium. The unit has also reported the commonly growing herbs of economic importance in Assam State which include *Apamarga*, *Vacha*, *Punarnava*, *Karanja*, *Arka*, *Paribhadra*, *Nimba*, *Katphala*, *Pippali* and *Tagara* etc. The unit has also reported the occurrence of some important drug plants from Khasia hills which include *Vidanga*, *Daruharidra*, *Vacha*, *Manjistha*, *Katphala*, *Tamalaki Prasrini* and *Madanaphala* etc.

Bihar**RRIP**

The Survey Unit at Patna (Bihar) has collected more than 1250 herbarium specimens and six museum samples. The plants collected during the reporting year indicated economically important and of common occurrence drugs like *Salaparni*, *Kutaja*, *Anantmula*, *Prisniparni*, *Lodhra*, *Bharangi*, *Bhallataka*, *Sankhpushpi*, *Citraka*, *Murga*, *Bhrad-goksur*, *Atibala*, *Bhumyamalaki*, *Kampillaka*, *Sahadevi*, *Kantakari*, *Dronapuspi*, *Mandukaparni*, *Saptaparnai*, *Swarnakshri*, *Shallaki* and *Patha* etc. The unit has also collected about 27kg of the Drug samples for supply to the clinical units.

Gujrat**RRIJu**

The Survey Unit at Junagadh (Gujrat) has collected sixty-seven plant specimens and mounted 230 sheets for the Herbarium. Twenty drug samples were added to the museum. The unit has collected thirty-eight items in the form of roots, stems tubers, leaves, flowers etc. and supplied the same to the different Centres of the Council. During the course of survey of the coastal areas of Gujrat, the unit has reported the occurrence of some important plant, species growing there which include *Krisnamusali*, *Pugiphala*, *Narikela*, *Dronapushpi*, *Dugdika* and *Aswagandha* etc.

Himachal Pradesh**RRCJo**

The Survey Unit at Jogindernagar (H. P.) has reported the collection of drugs from the local forests for the purpose of clinical use which include *Kampillaka*, *Daruharidra*, *Satavari*, *Vidarikand* and *Manjistha* etc. The unit has also collected four drug samples weighing about 10 kg for supply purpose.

Jammu and Kashmir**RRCJ**

The Survey Unit at Jammu (J&K) has added 2452 plant specimens to the Herbarium. Fifteen drug samples were supplied to the different research centres of the Council. The specimens mentioned in the *Ayurvedic Formulary*, Part I have been collected and their availability/economics in the area has been reported. These includes *Ajgandha*, *Apamarga*, *Aswagandha*, *Eranda*, *Kampillaka*, *Changeri*, *Jalapipali*, *Daruharidra*, *Dughdika*, *Devadaru*, *Dhatura*, *Dhataki*, *Nagabala*, *Patha*, *Raktapunarnava*, *Renuka*, *Vijaya*, *Shatavari* and *Hingupatri* etc.

Karnataka**RRCB**

The Survey Unit at Bangalore (Karnataka) has collected 500 plant specimens for the Herbarium. Three drug samples weighing about 4160 kg were supplied to different units. During the course of survey work, the unit has collected information about the commonly growing herbs in the area which include *Amalaki*, *Atibala*, *Bharangi*, *Brihati*, *Bilva*, *Bhringraja*, *Gambhari*, *Gojihya*, *Gunja*, *Kutaja*, *Mandukaparni*, *Masaparni*, *Nirgundi*, *Palas*, *Rasna*, *Sariva*, *Shalmali*, *Tejapatra*, *Twak*, *Vansha*, *Varuna* and *Vidari* etc.

Kerala**RRIT**

The Survey Unit at Trivandrum (Kerala) has mounted 512 plant specimens for the Herbarium and accessioned about 1,385 plants. The unit has collected about thirty seven drug samples for supply purposes to different Centres of the Council. During the course of survey work the unit has collected information about the economics of some commonly growing medicinal plants in their area which include *Musali*, *Patola*, *Lodhara*, *Mandukaparni*, *Daruharidra*, *Kuberakashi*, *Brahmi*, *Krisnasariva*, *Jati*, *Vibhitaka*, *Pippali*, *Kutaja*, *Vidanga* and *Kampilluka* etc.

Madhya Pradesh**RRIG**

The Unit at Gwalior (Madhya Pradesh) has mounted about 1500 herbarium specimens and thirty-seven were accessioned. The unit has collected nine drug samples for supply to the different Centres/Institutes. During the course of survey work the unit has collected information about the occurrence of some economically important and commonly

growing herbs in the area which include *Nagbala*, *Shankhpuspi*, *Varuna*, *Tulsi*, *Sahadevi*, *Bhringraja*, *Dhalura*, *Khadira*, *Mundi*, *Sariva*, *Argavadha*, *Sahadevi*, *Krisnasariva*, *Shalparni*, *Ama'aki*, *Bakuchi*, *Arjuna* and *Punarnava* etc.

Maharashtra

RRCN

Survey Unit at Nagpur (Maharashtra) has mounted 150 plant specimens for the Herbarium and three drug samples were collected for supply purposes. During the course of survey work the unit has reported commonly growing economic medicinal plants in the area including *Karanja*, *Bhallataka*, *Khadira*, *Vidanga*, *Pippali*, *Krisnasariva*, *Arka*, *Bibhitaka*, *Amalaki* and *Mahanimba* etc.

Orissa

CRIB

The Survey Unit at Bhubaneswar (Orissa) has mounted 1608 plant specimens for Herbarium and 138 were accessioned. Sixteen drug samples were collected for supply purposes. The unit has reported the occurrence of some commonly growing economic herbs in the area which include *Haritaki*, *Chakramarda*, *Prishniparni*, *Bhunimba*, *Patha*, *Bhallataka*, *Apamarga*, *Amalaki*, *Jyotismati*, *Swetkutaja*, *Salparni*, *Manjishtha*, *Kampillaka*, *Satavari* and *Kutaja* etc.

Rajasthan

RRIJ

The Survey Unit at Jaipur (Rajasthan) has mounted 824 plant specimens for Herbarium. The unit has collected twenty-one drug samples for the purpose of supply to different Centres/Institutes. During the course of Survey work economics of some commonly growing herbs in the area are reported which include *Guggulu*, *Nimba*, *Avartani*, *Kantakari*, *Apamarga*, *Kankola*, *Ishwari*, *Satavari*, *Punarnava*, *Palasa*, *Arka*, *Vijaya*, *Patha*, *Varuna*, *Haridra*, *Dhatura*, *Ratanjot*, *Mahuva*, *Mandukaparni*, *Atmagupta*, *Amalaki*, *Bala*, *Sarpunkha*, *Nirgundi*, *Bilwa* and *Gorakhmundi* etc.

Sikkim

RRCG

The Survey Unit of Gangtok has mounted 658 plant specimens for the Herbarium. Drug samples were supplied to different Centres/Institutes. The unit has reported the occurrence of commonly

growing herbs in the area which include *Bikha*, *Jatamansi*, *Bhojpatra*, *Kutaki*, *Chirata*, *Nagdaun*, *Isabgol*, *Changari*, *Banapsa*, *Dhataki*, *Gambari*, *Dhatura*, *Pasanbheda* and some *Astawarga* plants etc.

Uttar Pradesh

RRCJh

The Survey Unit of Jhansi (U. P.) has collected about forty-one drug samples for supply to different units/Centres. Some of the commonly growing economic herbs reported from the area are *Satawari*, *Aswagandha*, *Punarnava*, *Arjuna*, *Sankhpuspi*, *Madhuyashti*, *Aswagandha*, *Arkpatri*, *Guduchi*, *Brahmi*, *Gokshura*, *Danti*, *Ulatkambhak*, *Dronpushpi*, *Kakamaci*, *Vidhara* and *Amlaki* etc.

Tarikheth

AUT

The Survey Unit at Tarikheth (U. P.) has collected about 2,782 plant specimens during the course of Survey work and accessioned about 2,449 sheets. The unit has collected information about some commonly growing economic herbs in the area and reported the occurrence of *Punarnava*, *Salparni*, *Lajjalu*, *Bhringraja*, *Lodhara*, *Katphala*, *Chitrak*, *Jalpippali*, *Kampillaka*, *Dronapushpi*, *Langali*, *Shalparni*, *Vijaya*, *Sehadevi*, *Haridra*, *Mandukaparni*, *Manjistha*, *Pashanabheda*, *Guduchi*, *Eranda*, *Vaca*, *Brihati* *Patha*, *Palasa*, *Godanti*, *Sigru*, *Hanspadi*, *Parpatka*, *Vidari*, *Kutaj*, *Kantakari*, *Amalaki*, *Sirish*, *Kanchanara*, and *Kakoli* etc.

West Bengal

RRIC

The Survey Unit at Calcutta (West Bengal) has mounted 250 herbarium specimens and accessioned another 250 plants. The unit has collected seventeen drug samples weighing about 174 kg. for supply purposes. During the course of survey work some commonly growing herbs were noted which are of economic importance in the area. These include *Gunja*, *Khadira*, *Rasna*, *Apamarg*, *Vasa*, *Bimbi*, *Palsa*, *Arka*, *Kasmarda*, *Chakramarda*, *Mandukaparni*, *Patha*, *Aparijita*, *Bimbi*, *Varuna*, *Sankapushpi*, *Haridra*, *Tagarbheda*, *Snuhi*, *Langli*, *Sariva*, *Dronapushpi*, *Bakula*, *Karanja*, *Bakuchi*, *Kantakari*, *Arjuna*, *Guduchi*, *Patola* and *Nirgundi* etc.

Location Map Showing Various Medico-Botanical Survey Units of CCRAS.



FOLK MEDICAL CLAIMS

The study and assessment of local practices of medicine has played important part in the development of many new drugs. The development of Ethno-botany in recent years as a specialised subject and the evolution of Ethno-medicine further denotes the importance of such studies. Ayurveda has realised the importance of such observations since the earliest times and the role of cowherds, shepherds in location and identification of drugs has been noted. The efforts to collect and study such claims have been made. The Council has made intensive studies in various parts of the country through its Medico-botanical survey teams and mobile clinical research teams. The efforts made during the period 1971-82 have resulted in collection of about 3000 such folk medical claims.

After careful scrutiny and examination of these folk medical claims about 2900 claims have been selected and compiled in the form of a monograph entitled 'Folk Medical Claims'. The information regarding local, classical and scientific names of the plants, parts used in the diseases with the methods of preparation/administration and place of collection has been arranged separately for each State. An index of diseases for which treatment has been claimed has also been compiled for ready reference.

These efforts were continued further during the year and more than 500 new folk medical claims have been compiled during the year 1982-83. These observations cover treatment of various types of diseases such as *Atisara*, *Pravahika*, *Krimi*, *Jwara*, *Kasa*, *Vatavyadhi*, *Vrana* etc. The treatment of bites by insects and reptiles etc. also find place in these collections. It is interesting to note that most of the drugs utilised for such practices are known and used in Ayurvedic therapy. There are some folk-lore claims relating to anti-fertility, which require further intensive research.

Table 35

The Number of Folk Medical Claims recorded in various States and Union Territories.

Sl. No.	State/ Union Territories	Instit./Centre	No. of folk medical claims
1.	Orissa	CRIB	97
2.	Bihar	RRIP	41
3.	Gujarat	RRIJ	17
4.	Madhya Pradesh	RRIG	45
5.	Rajasthan	RRIJ	223
6.	Kerala	RRIT	17
7.	Arunachal Pradesh	RRCI	13
8.	Assam	RRCGa	14
9.	Sikkim	RRCG	4
10.	Jammu and Kashmir	RRCJ	25
11.	Himachal Pradesh	RRCJo	1
12.	Maharashtra	RRCN	8
13.	Karnataka	RRCB	4
14.	Uttar Pradesh	AUT	30
Total :			539

PHARMACOGNOSTICAL STUDIES

A large number of medicinal plants growing in India including those cultivated and wild forms are used in Ayurvedic system of Medicines for the treatment of different ailments and there is a significant percentage of these plants which are yet to be recognised, identified and properly evaluated. Proper identification, authentication and evaluation of the crude drugs from different viewpoints are the main objectives of Pharmacognosy, a rapidly expanding science. Starting with the source, collection/cultivation, identification and commercial aspects, pharmacognosy has entered into the vast field of chemistry of cell contents and the method of their formation in nature. This study is of considerable help and importance in evolving the pharmacopoeial standards for single drugs in order to overcome the controversy and confusion that exists regarding their proper identity/authenticity due to synonym and use of one and the same name for more than one drug and also for identifying the possible substitutes and adulterants.

The Council in its multi-centred activities in the field of drug research is maintaining five Pharmacognosy Research Units located at Calcutta, Delhi, Lucknow, Jammu and Poona. These units in the past have taken up the pharmacognostical research studies on a number of drugs used in Ayurveda with the object to evolve standards for single drugs so that genuine and authentic drug material can be made available for research and Pharmaceutical industry. The study includes the detailed structural examination of the plant together with changes in the content of the active principles depending on ecological variations. This comprehensive task includes different criteria, viz. morphology of crude drugs including the sensory characters, cell and tissue structures, both qualitative and quantitative, cell contents, phytochemical and fluorescence analysis, behaviour of different extracts of the drug materials, physical constant values including ash and extractive values, dry matter and moisture content, total acidity and pH of the cell sap, specific gravity, swelling factors, estimation of sugar, nitrogen, protein, fats and oils

etc. of the crude drugs. The other important feature of this study includes the analysis of powdered drugs which is of immense value to check adulterations, since detection of genuine sample and its adulterants is extremely difficult if available in the form of powder.

The allotment of drugs for the Pharmacognosy work has been done taking into account the other drug based programme being undertaken by the Council's units e. g. the drugs allocated for clinical studies etc. Moreover, the substitute/adulterant drugs and drugs which have future scope of utilisation in the Ayurveda and Siddha Systems of Medicine, have been taken up for this work. By and large, the pharmacognosy work being done under the Council shall be utilised for laying down some standards for the Ayurvedic Pharmacopoeia.

During the year under review the brief resume of the pharmacognostical studies carried out are reported below :

1. Dhataki (*Woodfordia fruticosa* Kurz) Flower : PRUC

Woodfordia fruticosa is a leafy shrub widely distributed throughout India. Leaves are opposite, in whorls of three sessile, ovate-lanceolate. Flowers numerous, in short 2-15 flowered cymes, Calyx with a small campanulate base and a long slightly curved bright red tube which is slightly contracted above the included capsule. Petals slightly longer than the calyx-teeth, narrowly linear, fruit is capsule. Seeds cuneate-obovoid, brown and smooth.

The dried flowers are an astringent tonic in disorders of the mucous membranes, haemorrhoids and in enlargements of the liver; also considered a safe stimulant in pregnancy.

Morphology of the flower is very characteristic by the structure of its sepals which are in the form of a calyx tube and having very minute accessory sepals. Petals are very insignificant in the form of small out growths inside the mouth of the calyx tube. Stamens are curved inside.

Epidermal cells of the calyx tube are thick and pitted-walled, embedded with few starch grains and provided with stomata, papillae, covering and glandular trichomes. Covering trichomes are present in both the sepals and petals, but the glandular trichomes are very few on the

calyx tube. Cells forming the endothecium of the anther are with characteristic secondary wall thickening. Pollen grains are prolate, tricolporate and with inframicro-reticulation, seeds show pitted epidermal cells with solitary tetragonal crystals of calcium oxalate and long narrow thick-walled pitted fibres. Vessels with spiral and scalariform thickenings and thick-walled pitted fibres are observed in the vascular strand. Pigments and spheroidal cluster crystals of calcium oxalate are noted in the parenchyma cells. Alkaloid, tannin, sugar, fat, protein, mucilage, lignin, cutin and suberin are present in the crude drug.

Different tests of purity of the flower samples would indicate the fact that the dried flowers contain 4.156% total ash, acid-insoluble ash value being at low level. The 80% ethno extract of flower powder shows faint fluorescence only under long U. V.

2. Katphal (*Myrica nagi* Thunb.) Stem-bark

PRUC

The plant *Myrica nagi* Thunb. is a small or moderate sized evergreen tree found in subtropical Himalayas from Ravi eastwards to Assam and in Khasi Jaintia, Naga and Lushai Hill at an altitude of 900-2100 m. The bark of the plant is rough, brownish grey, young shoots, petioles and inflorescence tomentose. Leaves crowded towards the ends of the branches and entire. Male spikes 7.5 mm. long, arranged racemously on a common axillary stalk. Female spikes axillary, erect. Drupe 10 mm. long, ellipsoid, scaly flesh red, composed of spindle-shaped fleshy fibres radiating from the rugose stone.

The stem bark is acrid, bitter, pungent, useful in 'vata' 'kapha', fever, asthma, urinary disorders, piles, bronchitis, throat complaints, tumours, anaemia, chronic dysentery, ulcers; a good snuff in headache, useful for ophthalmic and other eye diseases.

The bark is uneven externally with longitudinal and transverse cracks, scaly and cream in colour. Inner surface is comparatively smooth. Outer surface is reddish in appearance. Outer bark is characterised by thin-walled parenchyma cell, some of the parenchyma cells filled with brown coloured cell content, patches of slightly thickened cells with small pits, patches of pitted phloem fibres and sclerenchyma fibres. Inner bark is provided with alternate radial rows of phloem fibres and rays. Rays are also filled with cell

contents. Simple and compound starch grains are observed solitary or in groups. Resinous substance in the form of brown mass is present in the cell cavity of the inner bark. Alkaloid, tannin, sugar, fat, protein, mucilage, lignin, Cutin and suberin are present. Powdered drug behaves differently with water, acid and alkali.

Different tests of purity of bark samples show that the dried bark contain low percentage of moisture, total and insoluble ash values. The dry matter content and water-soluble extractive value are at higher level. Specific gravity, ethanol soluble extractive etc. give some diagnostic value for identification of the sample. Ethanol extract of the sample shows no fluorescence under U. V. radiation.

3. Sahadevi (*Vernonia cinerea* Less.) : Whole Plant PRUC

Vernonia cinerea is an erect, rarely decumbent herb, found throughout India. Leaves petioled, broadly elliptic or lanceolate, flowering heads small, about twenty flowered, 6 mm. diam. in lax divaricate terminal corymbs; flowers pinkish violet. Involucreal bracts linear-lanceolate, awned, silky on the back. Achenes 1.25 mm. long, oblong, slightly narrowed at the base, clothed with appressed white hair.

The plant is sweet, cold, tonic, stomachic, astringent, cures 'tridosha', asthma, bronchitis and the flowers cures fevers.

Morphological observations of the different parts show that the plant is tap rooted. Stem is slightly ridged and furrowed. Leaves are dorsiventral, simple with some morphological variations and the flower is a capitulum inflorescence.

Microscopic examination shows that the root is characterised by large parenchyma cells containing cluster crystals of calcium oxalate, thick-walled pitted rectangular cells and profusely pitted vessels. Stem is characterised by covering and glandular trichomes, collenchyma, large thick-walled pitted cells, short spirally and scalariformly thickened vessels. Leaf is characterised by the epidermal cells provided with covering and glandular trichomes, single layer of palisade, parenchyma cells containing small spheroidal cluster crystals of calcium oxalate and quantitative microscopic data of the leaf. Flowers can be identified by the involucre of bracts having very long covering trichomes with worthy basal cells and

elongated inner epidermal cells. Petals with different type of trichomes, stamens with pollen cavity, spear shaped anther and characteristic pollen grains, seed with different type of covering trichomes, pappus and thick walled pitted cells at the base and apex are noteworthy. Alkaloid, tannin, saponin, sugar, starch, calcium oxalate, fat, protein, mucilage, oleo-resin, lignin, cutin and suberin are present in almost all the parts with few exceptions. Behaviour of the powdered drug with dilute alkali solution is notable.

Different tests for purity would indicate the fact that the leaves contain lower amount of dry matter and the roots contain a greater amount of dry matter. Moisture content, on the other hand shows just reverse distribution. The flowers contain a very low amount of total and acid insoluble ash as well as extractive values in ethanol and water. The ash value is found to be maximum in the root samples. Ethanol-soluble extractive value is at higher level in the leaf samples. Leaves are very thin as revealed by its lower amount of dry matter content per unit area. Total alkaloid content in the whole plant is also found to be very low. Preliminary fluorescence analysis of different extracts (in dilute H_2SO_4) show maximum fluorescence in the flower samples under long U. V. radiation. The samples under short U. V. radiation show faint fluorescence. The seeds of *Vernonia anthelmintica* may often be used as substitute or adulterant for the drug Sahadevi (*V. cinerea* Less.)

4. **Tejovati** (*Zanthoxylum armatum* D. C. Syn. *Z. alatum* Roxb. *Z. hostile* Wall) Fruit.

The plant *Zanthoxylum armatum* is a shrub or small to moderate sized tree, upto 6 m. high with dense foliage and is distributed in hot valleys of the sub-tropical Himalayas, Trans-Indus, Punjab alongwith the foot of the Himalaya upto 5000ft., young shoots glabrous, stem and branches armed with sharp and strong prickles; bark corky, pale brown and deeply furrowed; leaves alternate, 2.5–11 cm. long more or less serrate, glabrous, the midrib often remotely prickly beneath, petiole and rachis narrowly winged, the rachis often bearing prickles; flowers polygamous, yellow, very small in lateral panicles; calyx 6-8, 1 mm. long; stamens 6-8, yellow about twice as long as calyx. The fruit is small 3-5 mm. in diameter, tubercled, pale red to reddish brown in colour, ultimately splitting in two halves, having characteristic pleasant smell and aromatic

taste. The seeds are small, ovoid, 2-2.5 mm. in diameter and shining black in colour.

In Ayurveda, the fruit of the drug *Tejovati* is reported to cure pain, tumors, abdominal troubles and is considered useful in eye and ear diseases, leucoderma, asthma, troubles of spleen, as anti-inflammatory, anti-pyretic, anti-diabetic, anthelmintic, expectorant and bitter tonic.

The transverse section of the fruit through pericarp shows a single layered epicarp consisting of dirty brown cells having slightly thick walls. A few stomata were also seen in this region. It is followed by mesocarp consisting of 12-20 layers of parenchymatous cells. The cells are circular to polygonal, thick walled and somewhat compressed. Numerous oil glands and fibre-vascular bundles are also scattered in this region. The fibre-vascular bundles are mostly confined in the inner region of the mesocarp. The phloem consists of sieve tubes, companion cells and phloem parenchyma. The xylem shows tracheids, fibre-tracheids and fibres. All these elements are thick walled and lignified. The tracheids are elongated with blunt to tapering ends. Their walls show simple pits and spiral, reticulate and scalariform thickenings. The fibre-tracheids and fibres are elongated thick-walled with narrow lumen and simple oblique pitted. Some of the fibres are bifurcated. It is followed by endocarp which has loosely attached cartilaginous tissue on the inner side of the mesocarp. Its transverse section shows very compactly and radially arranged stone cells having thick, lignified and simple pitted walls.

The powdered drug under microscopic examination shows epicarp cells with ranuculous stomata, stone cells, fragments of vascular elements and mesocarp cells with oil glands.

Preliminary phyto-chemical tests shows the presence of alkaloids, oil, flavonoids, saponins, tannin, resins, reducing sugar, triterpenoids and sterols.

Total ash, acid insoluble ash, water soluble and alcoholic soluble extractives are 0.37%, 6.50%, 14.10%, 13.975% respectively.

5. *Talispatra* (*Abies webbiana* Lindl and *Taxus baccata* L.) RRCJ

Two plants namely *Abies webbiana* Lindl and *Taxus baccata* Linn. are considered as the drug *Talispatra* of Ayurveda; leaves of *Abies webbiana* are used as carminative expectorant, stomachic, tonic, astrigent and antispasmodic while the leaves of *Taxus baccata* are considered emmenagogue, sedative, antispasmodic, carminative, expectorant, stomachic and tonic.

Abies webbiana Lindl. : It is a stunted and gnarled evergreen tree with dense cylindrical crown, and is found in Sikkim and Bhutan at 560 to 825 m. Young shoots usually clothed with short brown hair. Branched, pendulous branchlets stout, stiff, spreading horizontally. Bark smooth on young stems, dark brown to grey and exfoliating into long and narrow scales in old trees. Cones always erect, oblong or cylindrical, dark-purple when ripe; scales deciduous.

The T. S. of leaf of the plant shows the epidermis consisting of relatively thick-walled cells and is covered by a thick cuticle. Hypodermis is of fibre-like sclerified parenchymatous cells except in the areas below the stomata. The mesophyll is of palisade tissue and parenchymatous cells. Two resin ducts are present in the mesophyll towards the lateral sides of the leaf. In the centre there are present two vascular bundles which lie very close to each other. The xylem is on the adaxial side and phloem on the abaxial side. The vascular bundles are surrounded by transfusion tissue and consists of tracheids and parenchyma cells. In the transfusion tissue, close to the phloem, there are certain cells that have dense cytoplasm and are somewhat similar to albuminous cells. The vascular bundles and the transfusion tissue are surrounded by a sheath of relatively thick-walled cells, the endodermis.

Preliminary phyto-chemical tests shows the presence of steroids and terpenoids, phenols, flavonoides and comurains in the leaf. The percentage of petroleum ether, benzene, chloroform and methanol extracts are 2.5, 5.0, 3.8 and 11.5 respectively. Flowers usually dioecious, axillary. Male flowers: a pediceled whorl of 38 anther cells on peltate scales. Female flowers: a single erect ovule surrounded by a disc, at the apex of a scally peduncle. Fruits: an ovoid berry, the disc developing into a fleshy covering which overtops and nearly conceals the compressed wings olive-green seed.

The T.S. of leaf shows the epidermis consisting of large cells, covered by a thick cuticle. Mesophyll consists of both palisade tissue and parenchymatous cells. Resin ducts are absent. Vascular bundle is single in the centre just below the midrib with xylem towards adaxial side and phloem towards abaxial side. Transfusion tissue surrounds the whole vascular bundle and consists both of parenchyma and tracheids. Endodermis is poorly distinct.

Preliminary phytochemical tests shows the presence of alkaloids, reducing sugars, glycosides, resins and tannins in the leaf of *T. baccata* Linn. The percentage of total ash, water soluble ash, water insoluble ash, acid soluble ash, acid insoluble ash, petroleum ether, 90% ethanol and distilled water extracts are 3.20, 9.70, 90.30, 87.50, 12.50, 2.08, 23.00, and 12.88 respectively.

6. Satpala (*Euphorbia dracuuculoides* Lamk.) Stem and Leaves :

JNAMPGH

The plant *Euphorbia dracuuculoides* Lamk is a glabrous erect herb with slender erect branches and is distributed throughout India. The leaves are sessile broad and lanceolate. Involucre is broadly turbinate or campanulate. Fruit is smooth capsule. Seed is 1/8 inch long elipsoid, rounded at the base with an arillode at the oblique depressent apex. In Ayurveda the dried leaves and seeds of the plants are slightly aromatic and considered stimulant, astringent, anthelmintic, laxative and employed as a cure for skin diseases.

Microscopically both epidermis of the leaf exhibit dome shaped or conical projections papillae giving the appearance of circle in the centre of lumen of each cell. Presence of stomata on both epidermis in an important character as in other allied species, the same has been reported to occur only on upper surface. Lower epidermal cells are strikingly larger. Transection is isobilateral structure with thick waxy cuticle. Vascular bundle is surrounded by distinct bundle sheath of thin walled colourless cells. Latex is highly variable, white and full of starch grains of unusual shapes being rod to boat shaped. Laticiferous ducts in transection and maceration are clear and distinct (when treated with hot solution of sodium hydroxide imparting green black colouration). Simple laticifers are non articulated, branched and have non-lignified walls.

Microscopy of the stem shows uniseriate medullary rays filled with starch grains and pericyclic fibers loosely arranged in an interrupted ring. Laticiferous ducts are clear and distinct. Simple laticifers are non-articulated branched and generally seen in pericyclic and phloic region. Latex is variable with full of starch grains of unusual shape being rod to boat shaped.

The powder of the drug shows the presence of oil drops, fatty substances, starch, laticifer, lignin, phloem and sieve elements and sugars when treated with different reagents.

CULTIVATION

Since time immemorial many species of the medicinal and aromatic plants are found growing wild in the forest and are being utilised in the natural occurrence. The plants are found scattered and it is difficult as well as uneconomical to collect and to process these plants. Besides there is a large demand for certain plant products to cater the need of growing pharmaceutical industry. Therefore, it is necessary to cultivate the medicinal plants on large scale. The Council has also initiated steps for developing medicinal plant gardens/farms for experimental and as well as mass scale cultivation of medicinal plants which find use in the Ayurveda and Siddha Systems of Medicines.

It is a well-known fact that with the increase of demand for the medicinal plants and collection of many species of the plants being done in a haphazard way, many plants have reached at the verge of extinction and these need to be preserved and cultivated.

The cultivation of medicinal plants, broadly has some problems which are to be tackled in order to obtain an economical yield of good quality in respect of each product. The agro-climatic and ecological conditions must be suitable for the successful cultivation of medicinal plants. The soil, its depth and its capacity to retain moisture and above all the pH, status of macro or micro nutrients are to be studied. Development of method of propagation are to be worked out looking into the cost involved, convenience of plantation and establishment of plants. Almost every crop is subject to attack of one or other type of insects, pests and diseases. In case these points are not taken into consideration and proper conditions for cultivation are not provided, it is possible that the active principle content of the medicinal plants may vary and the end products will be of substandard quality. The mass scale cultivation of medicinal plants has further become important because of the fact that very little attempt has hitherto been made to assess the natural resources systematically. The resources which are being exploited today is

usually to the stress of demand and being done without any planned approach. In many cases plants of a forest range or division are collectively sold for a lump sum amount and not regarding the quantity or value of individual items from a forest. Our country has different climatic and geographical situations and the medicinal plants are growing right from the high Himalayas to deserts, plains and coastal areas. The demand of plants growing in the high Himalayas and in difficult areas has resulted in the adulteration of many species. This can also be checked only by the systematic and mass scale cultivation.

Looking into the above facts, the Council has taken up experimental/mass scale cultivation of medicinal plants in different regions e.g. Jhansi (U. P.), Mangaliawas (Rajasthan), Poona (Maharashtra) and Ranikhet (U. P.). This programme is being continued for about last one decade. The aim of this programme is to provide quality drug material in adequate quantity for research/pharmaceutical purposes. In the first stage experimental cultivation of the plants is undertaken by employing latest available agro-chemical techniques and other scientific methods. Thereafter, on the basis of the experience obtained, the mass scale cultivation of the herbs is planned. So far the results obtained are quite encouraging and there is an immense scope for the Council to extend this programme further.

Briefly, the experimental cultivation programme have the following objectives :

1. Cultivation of drug plants under various altitudinal, climatic and soil conditions and to determine whether these can be best propagated.
2. Studies to find out ways and measures to increase the active principle content and the yield by using suitable manures, fertilisers and plant hormones.
3. Studies relating to introduction of exotic medicinal plants and propagation.
4. Study of the diseases produced by pests, fungi etc. and to devise measures for their control.
5. Production of good quality of seeds through selection and hybridization and

6. Study of the suitable conditions for collection, curing and storage of various vegetable products used in medicine.

The cultivation programme carried out during the period under review is provided hereunder :

Regional Research Centre, Jhansi :

Regional Research Centre, Jhansi has about 45 acres of the land under its possession for cultivation purposes. The whole area of land consists of sandy, porous and rocky soil. This land has been virtually divided into three main blocks 'A', 'B' and 'C'. The area of block 'A' and 'B' is about 16 acres and being utilised both for experimental and active mass scale cultivation.

The land of block 'A' is being presently utilised mostly for mass scale cultivation with the plants such as *Guggulu (Commiphora mukul)*, *Madhuyeshti (Glycyrrhiza glabra)*, *Danti (Baliospermum montanum)*, *Mandukaparni (Centella asiatica)*, *Jalanimba (Bacopa monnieri)*, *Tulasi (Ocimum sanctum)*, *Bhawalabarua (Rauwolfia canescens)*, *Bakuci (Psoralia corylifolia)*, *Sarpagandha (Rauwolfia serpentina)*, *Rasna (Pluchea lanceolata)*, *Trivrit (Operculina turpethum)*, *Gandhprasarni (Paedaria foetida)*, *Arkapatri (Tylophora indica)*.

The block 'B' land has about 140 medicinal plants presently under experimental cultivation. About 110 species are grown in pots and polythene bags in the green house and maintained throughout the year.

The block 'C' which has an area of about 29 acres is almost barren and full of ditches and hillocks. Steps have been initiated to utilise this land for mass/experimental cultivation of some medicinal shrubs and small trees which are not endangered of grazing and also need not much of attention for their maintenance. Steps have also been initiated to construct a boundary wall around block 'C' and undertake mass scale cultivation thereafter. The Plants which are being cultivated presently on experimental basis are *Madhuyeshti (Glycyrrhiza glabra)*, *Tulasi (Ocimum basilicum)*, *Bakuci (Psoralia corylifolia)*, *Satavari (Asparagus spp.)*, *Ghritkumari (Aloe barbadensis)*, *Ulaakambala (Abroma angustata)*, *Sarpagandha (Rauwolfia serpentina)*, *Aswagandha (Withania somnifera)*, *Guggulu (Commiphora mukul)*, *Shoop babul (Acacia spp.)*

During the reporting period the Centre has supplied 48 species of medicinal plants in the quantity ranging from 2 kg. to 340 kg. (680 kg. Appox.) to Central Research Institute (Ay.), Punjabi Bagh, New Delhi for use in OPD and IPD. The produce of about 26 medicinal species has been utilised for the OPD of Regional Research Centre, Jhansi.

The Centre has also initiated steps to increase the yield and active principle contents of medicinal plants by adapting different agro-chemical techniques.

The Regional Research Centre (Ay.), Jhansi has also initiated steps for ledgering of the medicinal plants mentioned in the Ayurvedic Formulary Pt. I published by the Ministry of Health and Family Welfare, New Delhi. Forty-four such plants are already being grown on the experimental blocks of the Centre eg. *Babula* (*Acacia arabica* Willd.), *Khadira*/*Khaira* (*Acacia catechu* Willd.), *Babula* (*Acacia* spp.), *Bilwa*/*Bel* (*Aegle marmelos* Corr.), *Sirisa* (*Albizia lebeck* Benth), *Saptaparna* (*Akstonia scholaris* R. Br), *Kadamba*/*Bhed* (*Anthocephalus* spp.), *Nimba* (*Azadirachta indica*), *Kanchnara* (*Bauhinia variegata* Linn.), *Priyala* (*Buchanania lanzan* Spreng.), *Palasa* (*Butea monosperma*), *Lata Karanja* (*Caesalpinia bonducella*), *Aragavadha* (*Cassia fistula*), *Nimbu* (*Citrus limon*), *Guggulu* (*Commiphora mukul*), *Varuna* (*Crataeva nurvula*), *Simsapa* (*Dalbergia sissoo*), *Amalaki* (*Embllica officinalis*), *Udumbara* (*Ficus racemosa* Linn), *Karpasa* (*Gossypium herbaceum*), *Kutaja* (*Holarrhena antidysenterica*), *Madhuka* (*Madhuca indica*), *Amra* (*Mangifera indica*), *Mahanimba* (*Melia azedarach* Linn), *Sigru* (*Moringa oleifera*), *Karavira* (*Nerium indicum*), *Shyonak* (*Oroxylum indicum*), *Karanja* (*Pongamia pinnata*), *Dadima* (*Punica granatum*), *Salmali* (*Salmalia malabarica*), *Asoka* (*Saraca indica*), *Jambu* (*Syzygium cumini*), *Saka* (*Tectona grandis*), *Arjuna* (*Terminalia Arjuna*), *Bibhitaka* (*Terminalia belerica*), *Nirgundi* (*Vitex negundo*), *Harsingar* (*Nyctanthes arbortristis*), *Kutaja Bhed* (*Wrightia tomentosa*), *Maljhan* (*Bauhinia* sp), *Karaunda* (*Carissa carandas*), *Dhataki* (*Woodfordia fruticosa*).

Steps are also being initiated to add some more plant species of Ayurvedic Formulary list.

Guggulu Herbal Farm, Mangaliawas, Rajasthan :

The Guggulu Herbal Farm, Mangaliawas near Ajmer has an area of about 140 acres of land which is located on a hilly terrain comprising of hills, hillocks and plain. The farm is about 5 kms. away

from the main village. Soil is sandy and saline in nature. The soil erosion is of surface and gully type. The average rain fall in the area is about 25"-40" and the humidity is low. Presently 1/3rd of the land is under mass cultivation with *Guggulu* plantation and several other medicinal plants species. The rest of the 2/3 area is under natural vegetation consisting of various medicinal plants species. During the period under report about 1251 *Guggulu* plants and 5807 *Guggulu* cuttings were planted for experimental cultivation. The total number of *Guggulu* plants presently under mass scale cultivation are 18115 bringing the total number to 25173. Twenty-seven species of important medicinal plants mentioned in Ayurvedic Formulary Part-I are also being grown in different beds for experimental as well as mass scale cultivation e. g. *Karanja* (*Caesalpinia bonduc*), *Ghrithkumari* (*Aloe vera*), *Satawari* (*Asparagus racemosus*), *Langli* (*Gloriosa superba*), *Sarpunkha* (*Tephrosia purpurea*), *Sarayak* (*Barleria prionitis*), *Sallaki* (*Boswellia serrata*), *Ingudi* (*Balanitis roxburghii*), *Amalaki* (*Embllica officinalis*), *Karavira* (*Nerium odorum*), *Pita Karaveera* (*Thevetia peruviana*), *Argvadha* (*Cassia fistula*), *Sinsap* (*Dalbergia sisso*), *Babbula* (*Acacia nilotica* and *Acacia senegal*), *Bahubar* (*Cordia myxa*), *Sirisa* (*Albizia lebbek*), *Tintini* (*Rhus mysorensis*), *Karavera* (*Capparis decidua*), *Mahanimba* (*Melia azedarach*), *Nimba* (*Azadirachta indica*), *Badari* (*Zizyphus jujuba*), *Snuhi* (*Euphorbia nivulia*), *Arka* (*Calotropis procera*), *Eranda* (*Ricinus communis*) *Gokshuru* (*Tribulus terrestris*) and *Guggulu* (*Commiphora berryii*). Besides maintenance of the farm and plantation work, certain experimental trials have also been conducted for extracting maximum yield of *Guggulu* gum by adopting different parameters. Some experiments have also been undertaken on different species to study growth, germination, regeneration and adaptation. Special measures have been adopted to increase the number of plants per unit area, active principle contents by using different manures, fertilisers and plants hormone treatment. A new technique has been successfully developed for raising the *Guggulu* plants through stem cuttings since the growth of the plants raised through seeds is very slow. This technique has also been adopted in raising other gum yielding plants such as *Boswellia serrata* and *Commiphora berryii*. 100% germination was observed in *Lata Karanj* when soak treatment was given to the seeds. Studies were also undertaken for the introduction of exotic medicinal plants. About 2480 *Guggulu* plants have died up due to severe drought condition, termite infestation and tapping. About 39.7 kg. *Guggulu* gum, 10 kg. dry fruit of *Hingut* and 3.5 kg. seeds of *Kat-karanj* were collected during the period.

**Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium,
Poona:**

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Poona has been largely engaged in cultivation of medicinal plants at experimental level. A Museum and Herbarium are also maintained. The garden has under its possession about nineteen acres of land for cultivation project. About half of this total area is nothing but murum rock indented by extensive crates and a patch of alkali soil and about 1/3rd of this rocky area is the slope of the hill. About ten acres of the land is presently under experimental and large scale cultivation with different medicinal plants.

The garden besides undertaking its routine maintenance, regeneration and transplantation etc. is maintaining 322 medicinal plants. The rocky portion of the garden has been taken up for progressive plantation of *Guggulu*, *Ghritha Kumari*, *Bilva*, *Madanaphal* etc. Besides this, fifty-nine medicinal plants have been cultivated in different plots, both for experimental and mass scale cultivation. Some of the important plants are *Gunja* (*Abrus precatorius* L.), *Sariva* (*Hamidesmus indicus* BR.), *Vanapalandu* (*Urginea indica* Kunth), *Arkapatri* (*Tylophora indica* (Burm. f.) Merr.), *Guduci* (*Tinospora cordifolia* Willd), (*Cymbopogon citratus* (DC) Stapf.), *Ushira* (*Vetiveria zizanioides* (L) Nash), *Brihati* (*Solanum violaceum* Ortega), (*Ocimum kilimandscharicum* Guerke), *Vaca* (*Acorus salamus* L.), *Shatavari* (*Asparagus racemosus* Willd), *Bhutika* (*Cymbopogon martini* Roxb Wats), *Sarpagandha* (*Rauwolfia serpentina* Benth ex. Kurz.), *Pitabhringaraja* (*Wedelia chinensis* Merrill.), *Yastimadhu* (*Glycyrrhiza glabra* L.), *Vasa* (*Adhatoda zeylanica* Medic), *Isabgol* (*Plantago ovata* Forsk), *Isabgol* (*Plantago psyllium* L.), *Ishwari* (*Aristolochia indica* L.), *Mandukaparni* (*Centella asiatica* (L.)), *Urban danti* (*Baliospermum montanum* Muell Arg.), *Brihati* (*Solanum torvum* Swartz), *Sadabahara* (*Vinca rosea* L.), *Kantakari* (*Solanum surattense* Burn. f.), *Tulasi* (*Ocimum sanctum* L.), *Ghritha-Kumari* (*Aloe barbedensis* Mill), *Shalaparni* (*Desmodium gangeticum* DC), *Aparajita* (*Clitoria ternatea* L.), *Arka* (*Calotropis gigantea* L. R. Br. ex. Ait.), *Aswagandha* (*Withania somnifera* E. Br.), *Citraka* (*Plumbago zeylanica* L.), (*Plumbago capensis* Thumb), *Nirgundi* (*Viter negundo* L). About twenty medicinal plants have been introduced in the garden during the period under review. About forty medicinal species were grown in pots and polythene bags in the garden's green house and maintained throughout the year. The garden also partly meets the drug requisitions of the research

projects and has supplied seven species of medicinal plants to different Institutes/Centres of the Council for research purpose. About twenty-five medicinal plants, crude drugs, seeds and cuttings were collected by the Institute during different tours conducted to the areas of Bhimashankar, Khandila, Aliba and Seemagarh. A total of nineteen medicinal plants have been introduced into the Institute's Herbarium. 125 photographs of medicinal plants in the reproductive stages have been taken. About eighty folklores have been collected from Bhimashankar area.

Amalgamated Units, Tarikhet :

The Medicinal Plants Garden at Ranikhet has a total area of about 7.89 acres land including the Saffron farm for cultivation project. Presently the garden is laid out in 2.5 acres of land by terracing the slope. The garden, has mainly the experimental block, arboretum block, extension block and rocky portion. The garden is situated at an altitude of 1700 meter on Western hilly slope of Ranikhet (Kumaon hills) and surrounded by vegetation of Pine trees, *Cedrus deodara*, oak trees and few *Rhododendron* sps., *Berberis* sps., *Rubus* sps. etc. The main activities of the garden is to study the possibilities of cultivation of medicinal plants from wild sources by studying their adaptability in the climatic conditions of Ranikhet. growth, flowering and fruiting etc. The plants of tropical, sub-tropical temperate regions and exotic plants have been successfully raised. The observations on these plants were systematically taken on adaptation, growth, flowering and fruiting etc. The up keep of the garden also provides the opportunity of identifying accurately a number of plants which could not be otherwise found either in fruiting or flowering during the excursion. The garden also provides facilities for introducing scarcely distributed species for sustaining scientific work.

During the period under review the garden has successfully maintained about 200 medicinal species of herbs, shrubs, trees and climbers, besides introducing about forty plants of alpine, sub-alpine and arid zones in the garden. Regular observations were systematically taken on their adaptability, growth, flowering and fruiting etc. Special attention was paid on the cultivation of *Yastimadhu* (*Glycyrrhiza glabra* and *Rudraksha* (*Elaeocarpus ganitrus*)). Special measures/techniques were adopted for evolving of an ideal agro-techniques for propagation of *Yastimadhu* (*Glycyrrhiza glabra*) *Mentha* sps., *Pyrethrum* (*Chrysanthemum cinerariacfolium*), *Rakt chitrak* (*Plumbago*

zeylanica), *Banapsha* (*Viola serpens*) and *Tagara* (*Valeriana wallichii*). The experiment conducted on these plants showed satisfactory growth and are successfully raised. Certain special techniques have also been undertaken to increase the number of plants per unit area under experimental cultivation and also their active principle contents.

Propogation of *Tejovati* (*Zanthoxylum alatum*) through stem cuttings has shown negative response due to 80% mortality. Experiments have also indicated that *Digitalis* (*Digitalis lanata* and *Digitalis purpurea*) could be propagated successfully for large scale cultivation through stem cuttings. Experimental trials are in progress to increase the yields and active principle content of *Vacha* (*Acorus calamus*) and *Pippali* (*piper longum*) by using different fertilisers, manures and plant hormone treatment. Exotic plants such as *Pudina* (*Mentha arvensis*) and *Calandula officinale* have been successfully raised. The garden has supplied about fifteen medicinal species (live plants and cuttings) to Indian Medicine pharmaceutical Corporation Limited, Mohan for propagation/plantation of plants of Ranikhet origin to see the adaptabilities/growth of the plants in climatic conditions of Tarai/Bhabar area.

The Saffron research farm is situated in a western slope of Ranikhet hill at an altitude of 1810 meter. Experimental work and research investigations on cultivation of *Saffron* were continued. The activities were carried out mainly at Ranikhet while small observations have been made at Chamma, Dharamgarh and Tarikhet. At the main farm at Ranikhet, the carry over of 5, 22, 899 corms from previous year increased to 5, 37, 498 corms of large medium and small sizes.

As against normal trifold stigma, flowers with tetrafid and penta-fid stigma were collected on many occasions amongst the 13, 139 flowers collected. The number is highest since inception within a year. Trials/study of possibilities of propagation of *Saffron* through eye buds (corm cuttings); study of effect of colchicine on *Saffron* corms; repetitive trial on effect of cold stratification on corms of *Saffron*; study on effect of uprooting the corms during dormancy period; study of the effect of manganese through manganese dioxide on *Saffron*; study of effect of urea on *Saffron*; are in hand. Old plantings of *Saffron* have continued to flower. Deterioration in corms has not occurred.

CHEMICAL STUDIES

Phyto-chemistry is an important aspect of drug research. Such studies have contributed to the development of several plant products which have shown definite clinical efficacy. The studies on herbals used in Ayurveda were started in a big way in the first half of this century. These efforts were organised under a multi-disciplinary programme—Composite Drug Research Scheme in the year 1964 and are being continued further under the Council. These studies led to the isolation of many principles from *Pippali*, *Yastimadhu*, *Haridra*, *Nimba* etc. which have shown definite efficacy in various pharmacological and clinical studies. The trial of *Nimbidin* (*Nimbatiktam* and *Curcuma*) in patients suffering from psoriasis and arthritis have shown definite efficacy. Presently the work on chemical investigations on the plants are being conducted through Institutes, Centres and Units located at Calcutta, Delhi, Lucknow, Hyderabad, Varanasi, Madras and Trivandrum.

The phyto-chemical investigations on thirty-two plants have been taken up during the year 1982-83. Certain significant observations and results on these studies are reported here.

1. Atibala (*Abutilon indicum*) : ChRUH

An oil was obtained from the petroleum ether extract of the roots of the above plant which was methylated and subjected to gas liquid chromatographic separation, showed the presence of fatty acids with following carbon skeleton—C₈, C₁₀, C₁₂, C₁₄, C₁₆, C₁₇ (unusual fatty acid) C₁₈, C_{18:1}, C_{18:2}.

2. Akarakara (*Anacyclus pyrethrum*) : ChRUH

Methanol extract indicated the presence of 5 spots on TLC examination, which did not respond to the usual colour tests. Column chromatography did not yield any single compound in isolable quantity. Hence further work on this plant was discontinued.

3. *Ardisia littoralis* (used as adulterant for *Embelia ribes*): RRIT

From the seeds of *A. littoralis*, one organic crystalline compound m. p. 142-144° was isolated. The compound is found closely related

to the hydroxy benzoquinone like embelin, rapenone etc. Further work on identification awaits spectral analysis.

4. Potaki, Putika (*Basella rubra*) :

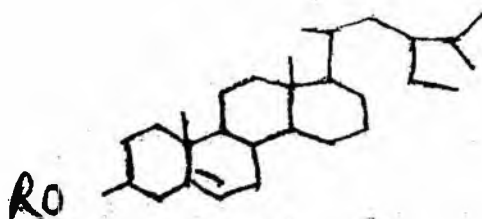
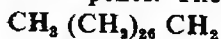
RRIT

Petroleum-ether and chloroform extracts of the whole plant gave positive test for terpene and indicated the presence of 5 & 7 components respectively. Methanol extract being phenolic in nature showed the presence of flavone glycosides along with 7 spots on the TLC examination. Further work is in progress.

5. *Buddleja (madagascariensis Lamk)* :

CSMDRIAM

Hexane and chloroform extracts of the shoot portion of the plant afforded n-octacosanol (I) β -sitosterol (II), β -sitosterol β , D-glucopyranoside (III). Elution with chloroform; methanol (9:1) gave 2 triterpenes. Their structural characterisation is underway.



(II) R = H

(III) R-Glucopyranoside

6. Palasa (*Butea monosperma*) :

ChRUH

Leaves, bark and roots were extracted successively with petroleum-ether (60-80°), benzene, chloroform and methanol. Usual colour tests indicated the presence of steroids and terpenoids in the petroleum-ether extract of all parts while glycosides, flavonoidal glycosides and anthocyanins in the other extracts. Further work is in progress.

7. Ajmoda (*Carum copticum*) :

ChRUC

Petroleum-ether extract of the seeds of the above plant afforded sulphur, m.p. 115-6°. Further work is in progress.

8. *Chloranthus officinalis* :

ChRUC

A solid, m.p. 115-6° has been identified as sulphur in the petroleum-ether extract of the whole plant. Other solid, m.p. 80-82° gave positive colour for triterpene. Further work is under investigation.

9. *Clerodendrum splendense* :

CRID

The benzene extract of the *C. splendense* afforded a solid, m.p. 152-53° which was identified as 24-S-ethylcholesta-5, 22, 25-trien-3- β ol by direct comparison with the authentic sample (CO-1R, CC-TLC, m.m.p.). Alcoholic extract furnished a yellow solid, m.p. 282-84°. Various spectra and diagnostic reagents established its structure as 6-O-methyl scutellerein (hispidulin). Ethyl acetate extract yielded another solid, m.p. 240°, which was assigned structure as 5, 7-dihydroxy-6-methoxy-4-O- β -D-galactosyl flavone (tentatively). Further work is in hand.

10. *Aparajita (Clitoria ternatea)* :

ChRUH

Dry roots were extracted with petroleum-ether, chloroform and methanol successively. Petrol and chloroform extracts showed the presence of steroids as well as flavones in the latter alongwith 4 and 3 spots in TLC examination respectively. Methanolic extract being phenolic in nature showed 6 spots in TLC. Further work on these extracts is in progress.

11. *Guggulu (Commiphora mukul)* :

ChREL

The extraction of the resin *G. mukul* was continued. The ethyl acetate extract (1.5 kg.) was prepared from the resin (5 kg). It was found that ethyl acetate extract was more active in lipid lowering activity than the petroleum-ether extract.

Petroleum-ether and ethyl acetate extracts were supplied to the pharmacology unit.

12. *Krishnasariva (Cryptolepis buchanani)* :

CSMDRIAM

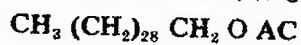
The leaves of the plant after extraction with chloroform were ex-

tracted with ethanol. After concentration it was extracted with ethyl acetate. On chromatography a compound was obtained, m. p. 175°. It answered the usual test for flavonoids and its characterisation is in progress. Two more compounds were isolated.

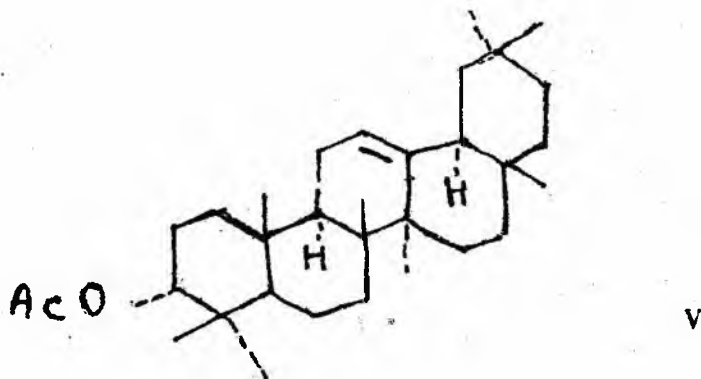
13. Kakodumbara (*Ficus hispida*):

RChHU

From the petroleum-ether (60-80°) extract of the bark of the above plant four compounds in the pure form have been isolated. These compounds were identified as n-triantanol acetate (iv), β -amyrin acetate (v), gluanol acetate and butyrosperanol acetate.



IV



14. Amlavetasa (*Garcinia pedunculata*):

ChRUC

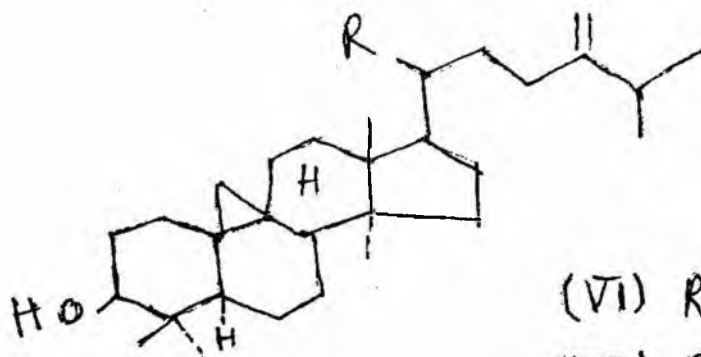
Chromatographic resolution of the petroleum-ether extract of *G. pedunculata* fruits has afforded a solid m. p. 45-47° and chloroform extract furnished a solid m. p. 242-44°. Elucidation of structures of the compounds is in progress.

15. Bauritha (*Heynea triguga*):

CSMDRIAM

Chloroform extract of the defatted leaves and flowers was chro-

matographed over silica gel column. Chloroform-ethyl acetate eluate (19:1) yielded 24-methylene cycloarten-3, 21-diol (VI), m.p. 167-68°. While chloroform-ethyl acetate eluate (9:1) gave a new triterpene acid, heynic acid (VII) m.p. 235-37°. Both answered the Salkowski test for triterpenes. Their structures were elucidated by the IR, NMR & Mass spectra alongwith their derivatives.



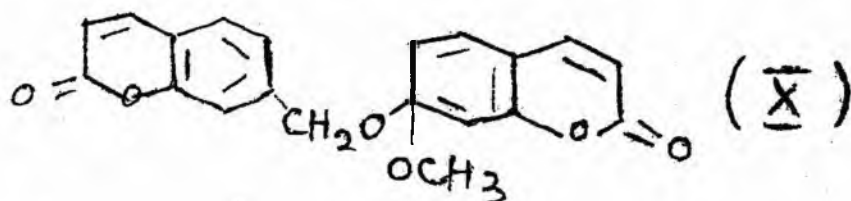
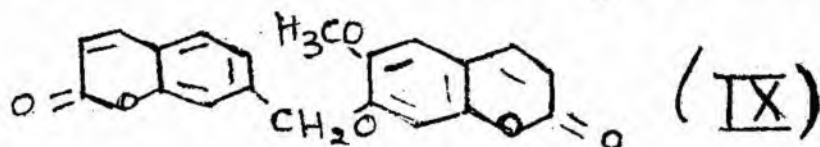
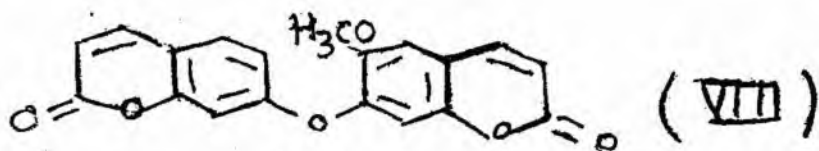
(VI) R = CH₂OH
 (VII) R = COOH

16. Nanja (*Lasiosiphon ericcephalus*):

ChRUC

A coumarin derivative m. p. 205-7° previously thought to be iasiocephalic VIII on further re-examination of the spectral data appeared to be different from iasiocephalin and structures (IX) or

X appears to be more probable for the compound.



17. **Madyantika** (*Lawsonia inermis*) :

ChRUH

Examination of the petroleum-ether (60-80°) extract of *L. inermis* has resulted in the isolation of β -sitosterol (11), while chloroform extract could not yield any compound in workable quantity. The work on the acetone extract is in progress.

18. **Dronapuspi** (*Leucas cephalotes*) :

CRID

Benzene extract on repeated chromatography furnished a solid, m.p. 131° identified as sitosterol while ethyl acetate extract yielded another solid, which is under investigation.

19. **Nagakesara** (*Mesua ferrea*) :

ChRUH

The essential oil obtained from stamens of *M. ferrea* was subjected to GLC studies and screened for anti-microbial and anthelmintic activity. The essential oil assayed is endowed with antibacterial activity. The results were compared with standard penicillin (100 units/ml.). The essential oil was also found to be more active than piperazine phosphate and hexylresorcinol against tape and hook worms respectively.

A new acidic component from *M. ferrea* stamens has been isolated.

20. *Mesua perittonouis* (used as adulterant for *Embelia ribes*):

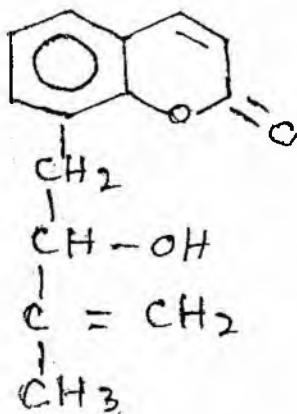
RRIT

On investigation with seeds of this plant it was found that the petroleum-ether extract contained an oil, two neutrals and one phenolic compound. Work on the characterisation and identification of the above compound is in hand. The methanol extract of the seed was also taken for investigation.

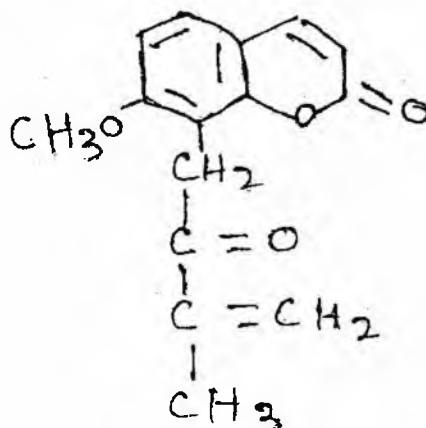
21. *Kamini* (*Murraya exotica*):

ChRUC

Absolute configuration of auraptinol (XI) the newly reported coumarin derivative from *M. exotica* at C-2' position has been determined and has been found to have 'S' configuration. In order to have more supportive evidence, to the assigned structure (XI), auraptinol has been converted to the corresponding acetate and also it has been oxidised to surrayone (XII).



(XI)



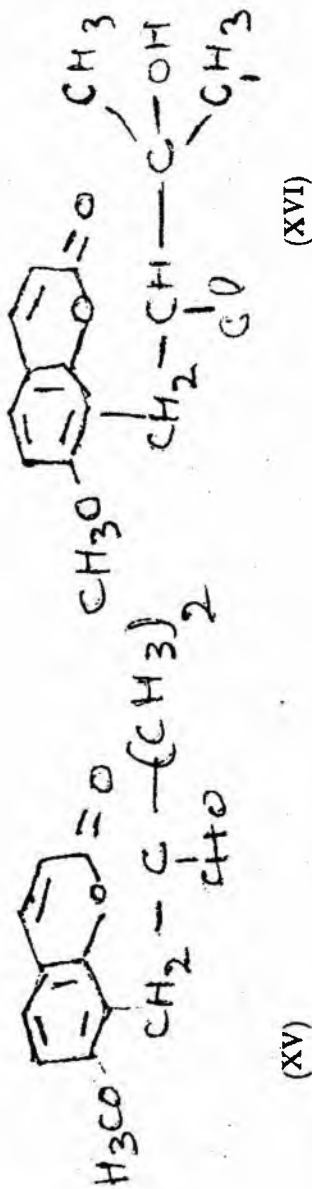
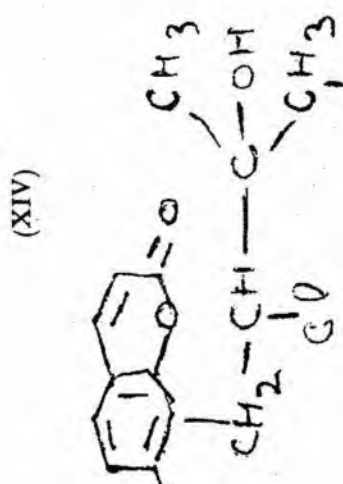
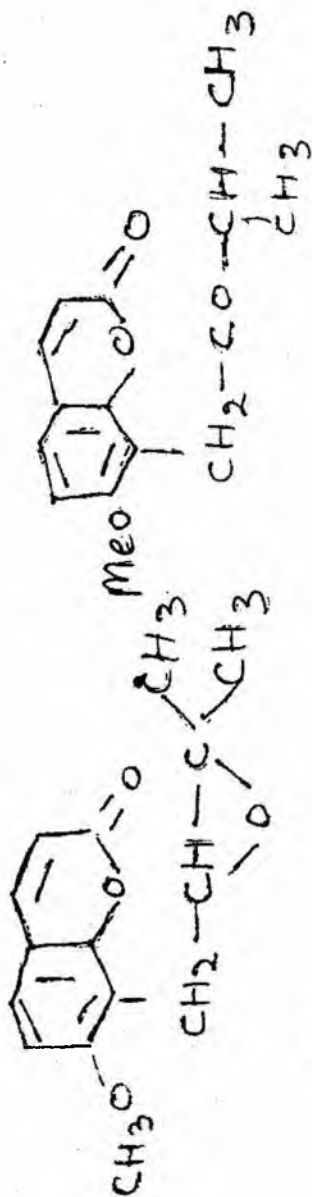
(XII)

Molecular Rearrangement of Osthol epoxide:

ChRUC

Action of pyridinium hydrochloride and trifluoroacetic acid on osthol epoxide (XIII) resulted in the isolation of rearranged products like isoauraptene (XIV), auraptinol (XI), 7-methoxy-8-(2-formyl-2-

methyl propyl) coumarin (XV) and a new product a chlorhydrin derivative (XVI). Identification of other three compounds is in progress.



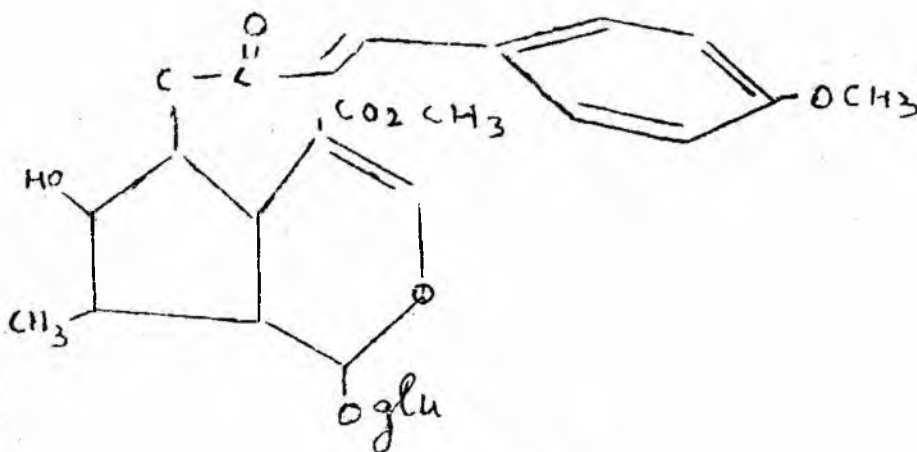
(XVI)

22. **Sephalika** (*Nyctanthes arbortristis*):

CSMDRIAM

Ethanollic extract of the coarsely powdered seeds was concentrated. The extract was taken up in H_2O and was shaken with ether, ethyl acetate and butanol respectively. Ethyl acetate extracted material with acetone afforded a compound, m. p. 218-20°.

The compound answered the test for sugar. This was found to be a glycoside. On acetylation it gave its acetate m. p. 85-87°. Tentative structure of the fridoid glucoside is given below (XVII). Further work is in progress.



(XVII)

23. **Kharjura** (*Phoenix dactylifera*):

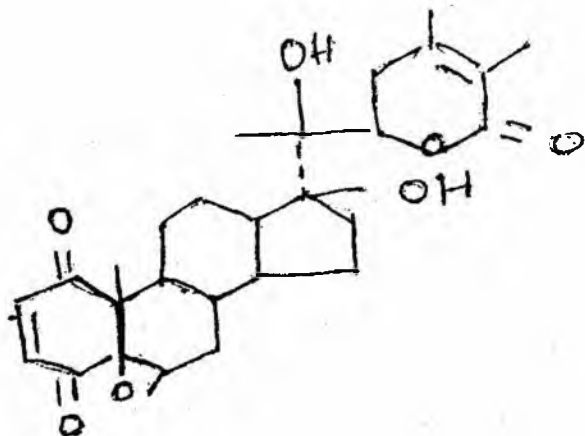
CRID

The fruits of the above mentioned plant were extracted with ethanol at room and boiling temperatures respectively. Several attempts were made to isolate some compounds by the column chromatography but in vain. Qualitative identification of free sugars and free amino acids were carried out in the ethanol extract of the fruits of the above mentioned plant. T.L.C. showed the presence of glucose and fructose as free sugars alongwith glycine, alanine and aspartic acid as free amino acids.

24. Tankari (*Physalis paruviana*) :

ChRUV

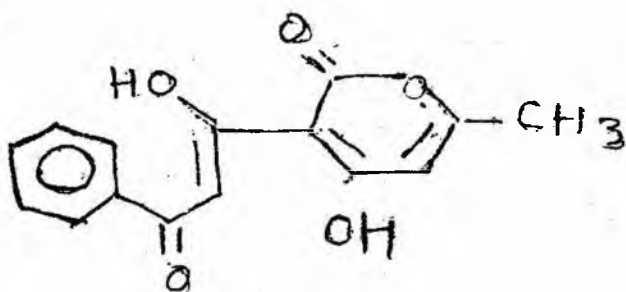
A new withanolide $C_{28}H_{36}O_8$, m. p. 247° has been isolated from the ether soluble portion of the ethanolic extract of the roots of the above mentioned plant. Modern spectral studies viz. IR, NMR and H Mass showed it to be 4-oxo-withanolide E. (XVIII).



25. Pacholi, Peholi (*Pogostemon heyneanus*) :

CSMDRIAM

Several flavonoids and two new compounds pogopyrones A & B were isolated from *P. heyneanus*. Structure of pogopyrone-A (XIX). m.p.141°, $C_{15}H_{12}O_5$ was established by the IR, U. V., HN. MR, C.M.R. and mass spectra alongwith X-Ray crystallography.



26. **Mulaka** (*Raphanus sativus*) :

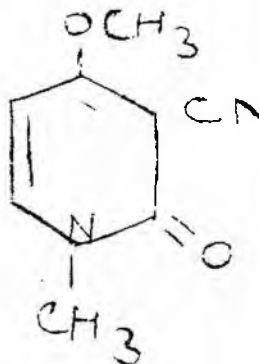
CRID

Extraction of *R. sativus* seeds was done with petroleum-ether and 90% aq. ethanol. Isolation of pure compounds from the later fraction are in progress.

27. **Eranda** (*Ricinus communis*) :

CSMDRIAM

Hexane extract of the dried leaves of the plant on column chromatographic separation afforded octacosanol (I) and β sitosterol (II) while chloroform extract furnished ricinine (XX) m.p. 199°. β sitosterol β -D glucopyranoside (III) was obtained from the mother liquor on chromatography. Methanol extract has given a phenolic acid m.p. 232° to be identified. Other flavonoid compounds are also under investigation for their identification.



(XX)

28. **Lodhra** (*Symplocos spicata*) :

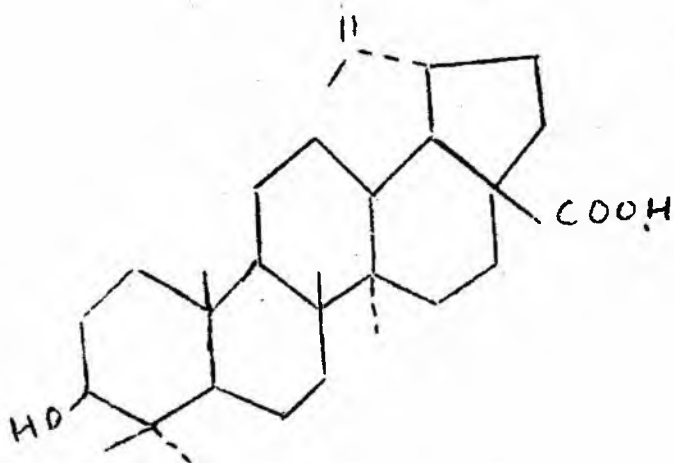
ChRUV

Petroleum-ether (60-80°) extract of *S. spicata* bark yielded steroid of m.p. 164-65°. Its structural characterisation is in progress. Efforts for isolation of additional glycosidic principles from the alcoholic extract of the plant are being made.

29. **Saka** (*Tectona grandis*) :

ChRUV

Chemical screening of the stem-bark of the plant yielded several triterpenoids and steroidal constituents. Petroleum-ether (60-80°) extract after removal of the solvent was column chromatographed which furnished solid, m.p. 158°. Structure determination of this solid is under investigation. One of the compounds isolated from the alco-



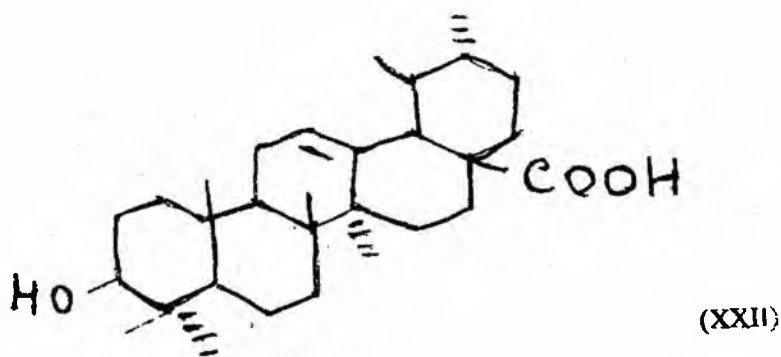
holic extract has been identified as betulinic acid (XXI) IR, NMR and mass spectral data were used to ascertain their structures.

Ethanollic extract of defated bark of *T. grandis* showed effect on experimental ulcer and gastric secretion.

30. **Banajwain** (*Thymus serpyllum*) :

ChRUC

The triterpenoid ursolic acid (XXII) m.p. 265° has been isolated from *T. serpyllum*.



31. *Uteleria salicifolia* : (Used as adulterant for *Hemidesmus*) : RRIT

The root of the plant has a fine aroma. 2-Hydroxy-4-methoxy benzaldehyde (responsible for the fine aroma) β -sitosterol, β -amyrin, lupeol and leucopelargoniolin were isolated.

32. Dhataki (*Woodfordia fruticosa*) :

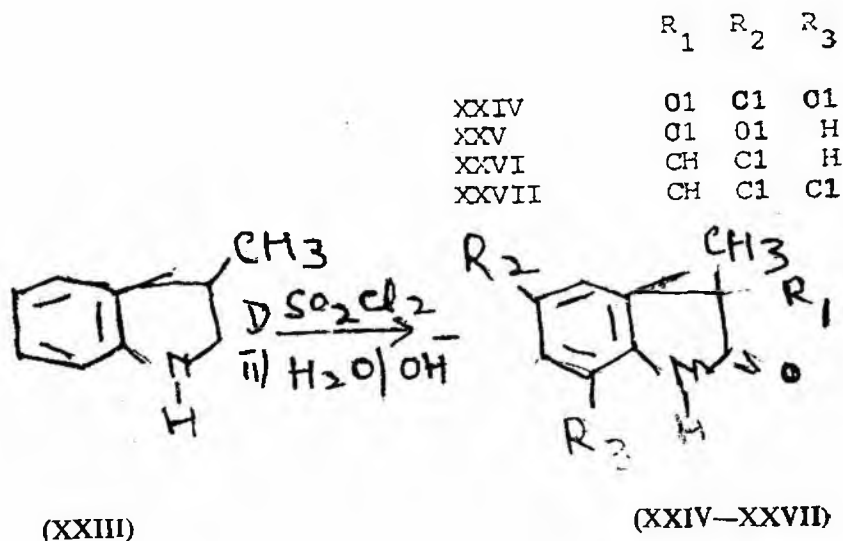
ChRUC

Compound A, m. p. 256-7° and compound B, m. p. 268-70° were obtained from the petroleum-ether extract of the flowers of the above plant over a column of silica gel. Further work is in progress.

Electrophilic substitution in Indoles : Reaction of 3-methyl indole with sulphuryl chloride :

ChRUC

Action of sulphuryl chloride on 3-methyl indole (skatole) (XXIII) has been studied. As many as four products (XXIV-XXVII) have been isolated and characterised on the basis of spectral data.



PHARMACOLOGICAL STUDIES

The Pharmacological investigations are of crucial importance for evaluation of Ayurvedic preparations. The studies on a number of single drugs and their various fractions/extracts have been carried out earlier in the Council. These studies have helped in the development of Ayurvedic therapies. Due to the change in emphasis from the study of single drugs and their fractions; Pharmacological studies on the compound Ayurvedic preparations were also taken up. Therefore studies on *Manduravataka*, *Lodhrasava*, *Dhanvantara gutika* etc. have been initiated.

The report presents the work conducted during the year 1982-83 by the various Pharmacological, Toxicity Units and Central Research Institute of the Council located at Bombay, Calcutta, Jodhpur, Lucknow, Meerut, Rewa, Trivandrum, Varanasi and Cheruthuruthy. Twenty-five single drugs, three coded drugs and seven compound formulations were investigated on experimental models for routine pharmacological screening, specific effects e.g. cardiovascular, hypolipidaemic, antipyretic, anti inflammatory, analgesic, anti-histaminic, C.N.S. depressant, anti ulcer and adaptogenic effects etc. Toxicological studies were also carried out on certain drugs during this period.

1. *Asvagandha* (*Withania somnifera.*) :

PhRUL

Drug was found to possess antistress (adaptogenic) activity but this effect did not seem to be mediated through hypothalamohypophysial adrenal axis, involved in stressful situation. Study on mice's brain showed it to be a potent agent, which augmented the S. D. H. enzymes levels of brain during stress. This indicates that during stress, the drug facilitates adaptation.

2. *Ayush-9* :

TRUB

This study was conducted in mice (Kasauli strain) of either sex, weighing between 18-22 gm. Five males and five females were used for each group. The suspension of *Ayush-9* was prepared with Tween-80, in distilled water. It was administered orally in the suspension form and animals were observed for seven days for any symptoms of toxicity and mortality. No symptoms of toxicity and

mortality were observed up to a dose level of 2 gm./kg. when administered orally in mice.

3.a. Ayush-64 :

TRUJh

In acute toxicity studies in rats, mice and rabbits it failed to show any mortality even in high doses (100 mg. to 10 gm./kg.) after twenty-four hours of its administration.

The anticonvulsant activity was studied by electroshock induced convulsion in albino rats. On the basis of observations, it appears that *Ayush-64* does not possess any significant anticonvulsant activity.

It decreased the tone and amplitude of the smooth muscle of rabbit intestine in vitro.

Ayush-64 showed the depressant action as evidenced by decreased rate, tone and amplitude on the frog's heart in doses of 200 mg. to 800 mg.

Surface anaesthetic effect was studied on rabbit's eye. Size of the pupil, corneal reflex, conjunctival reflex, light reflex and congestion was examined every few minutes. *Ayush-64* failed to show any significant activity on this parameter indicating absence of surface anaesthetic activity.

Ayush-64 was also studied for its action on central nervous system, in frogs. The drug was found to be devoid of any significant effect on C. N. S. It also failed to potentiate the pentobarbitone induced sleeping time.

b. Ayush-64 :

PhRUC

Isolated guinea pig atria was found to possess dose dependent negative chronotropic effect with the drug. On skeletal muscle preparation, viz. (a) frog rectus abdominis, the drug did not produce any change of muscular contractions either by itself or in presence of Ach even with a high dose of 1mg./ml. of bath concentration, (b) it also could not exhibit any change in muscular contractions of sciatic gastrocnemias preparation of frog following electrical stimulation to the nerve, (c) on rat phrenic nerve hemidiaphragm preparation, the drug did not cause any change in muscular twitches following electrical stimulation to the nerve.

It may, therefore, be concluded that the drug had no effect on mammalian skeletal muscle, neuromuscular junction or somatic nerve conduction.

4. *Bhanga (Cannabis indica)* :

PbRUL

In the previous studies the drug was found to possess antistress (adaptogenic) activity. In the present study the mechanism of anxiolytic effect of *C. indica* was explored as it binds with benzodiazepine receptors in brain as well as it has antistress potential due to its effect on brain succinic dehydrogenase.

5. *Bilwadi gutika* :

IIPC

Bilwadi gutika failed to suppress carageenin induced oedema formation. It did not produce marked effect against formaldehyde induced arthritis and also did not show any antipyretic effect.

6. *Dhanwantari gutika* :

IIPC

Dhanwantari gutika produced marked inhibition of granulation tissue formation and moderate suppression of formaldehyde induced arthritis in rats. It has no antipyretic effect.

7. *Dronapuspi (Leucas cephalotes)* :

PbRUJ

Ether extract of *L. cephalotes* was studied for its effect on C.N.S. by the following methods : (1) Spontaneous motor activity in rats (2) Pentobarbitone sleeping time (3) Effect on electroshock convulsion in rats (4) Effect on chemically induced seizing in rats (5) local anaesthetic activity in guinea pigs (6) Effect on conditional response in rats by cook's pole climbing method and (7) Antitremor activity against tremorine induced tremors. The extract in different doses ranging from 10 mg. to 1000 mg./kg. in adult rats, was found to be devoid of any positive effect on the above mentioned parameters.

8. *Gandha Marjara Virya (Civet)* :

PbRUT

A total quantity of 34.065 gm_w of civet was collected. The effect of civet in 300 mg. to 1 mg./ml. doses on isolated frog rectus abdominis muscle produced antiacetylcholine activity on skeletal muscle. Civet (100 mg. and 200 mg./ml.) antagonised the spasmogenic effect of histamine on guinea pig ileum. In doses of 100, 200, 400 and 800 mg./kg. orally it failed to produce any effect on rats rod test and to influence the anphetamine toxicity in mice. Civet (400 mg./kg.

orally) produced 59.6% inhibition of ascitic fluid in rats. In doses of 400 and 800 mg./kg. civet produced significant reduction in xylol induced ear oedema in mice. Effect on granuloma pouch is in progress. Biochemical studies on civet related to the fatty acid composition are also under progress.

9. **Kakodumbara** (*Ficus hispida*) : **PhRUR**

Alcoholic extract of the *F. hispida* was studied for its effect on rat intestine, rat uterus and on blood sugar levels. On rat intestine the effect of 1 μ g. acetylcholine was markedly potentiated with 40 μ g. of *F. hispida*. But the drug however did not cause any contractile response on rat uterus and did not cause any significant change in the blood sugar levels of rats as compared to control group.

10. **Kampillaka** (*Mallotus philippinensis*) : **PhRUR**

Alcoholic extract of *M. philippinensis* was studied for its effect on isolated heart, isolated rabbit ileum and rectus abdominis muscle of frog. It exhibited a marked depressent effect on the heart with 10 μ g. dose and completely stopped the heart. It has been observed to cause contractile responses on isolated rabbit ileum and on rectus abdominis muscle of frog. The aqueous solution (5 to 10%) was found to cause *miotic* effect on the pupil of rabbit's eye.

11. **Karnasphota** (*Cardiospermum halicacabum*) : **PhRUT**

Anti-inflammatory activity of *C. halicacabum* was studied in mice at 10 gm./kg. dose. It showed 70% anti-inflammatory activity. The drug did not show any toxic manifestations upto a dose of 30 gm./kg.

12. **Kapura tulasi** (*Ocimum kilimandscharicum*) : **PhRUL**

Effect of ethanol extract (70%) of *O. kilimandscharicum* on anoxic stress was studied on albino rats in hermetically sealed vessels. But it did not enhance the life span of these animals.

13. a) **Katuka** (*Picrorhiza kurroa*) : **PhRUV**

P. Kurroa is a reputed remedy for many chronic disorders i. e. asthma and rheumatoid arthritis in Ayurvedic system of medicine.

It was evaluated experimentally for its anti-inflammatory and anti-arthritic activity in rats and mice. The drug in doses of 50 mg./kg. to 200 mg./kg. showed significant inhibition of the paw oedema in albino rats (carrageenin induced). The drug (100 mg./kg. orally) was found to reduce the paw oedema in albino mice (SRBC-Challenge) significantly as well as against the immunological inflammation model involving cell mediated immunity (Bacillus pertussis induced paw oedema in albino rats). The drug inhibited the Nystatin-induced paw oedema in albino rats. Effect of its chronic administration on adrenal, spleen and thymus weights was studied in albino rats (in doses of 100 mg./kg. daily, orally) but the effect was insignificant. There was no evidence of gastric irritation. The drug (100 mg./kg.) significantly reduced the degranulation (mast-cell) induced by compound 48/80 in albino rats in vivo studies. In vitro studies the drug (10 mg./ml.) inhibited the compound 48/80 induced degranulation of mast cell but the effect was much less as compared to that seen during in vivo studies. Thus the results indicate that *P. kurroa* has a mast cell stabilizing activity and the effect is both direct and indirect through involvement of some other system in the body.

b) *Katuka (P. Kurroa)* :

PhRUL

The effect of *P. Kurroa* on succinate dehydrogenase (S. D. H.) enzymes in brain during physical stress, showed it to be an effective agent. The drug although increased the levels in normal unstressed animals but the effect was insignificant. This showed that during energy demand (stress) this drug facilitates adaptation.

14. *Lodhrasava* :

IPC

Lodhrasava is reported to produce sedation in patients. Pharmacological studies were undertaken to evaluate it for psycho-pharmacological effects. It is non-toxic up to 40 ml./kg. orally. When administered to naive mice it produced initial depression of spontaneous motor activity (SMA) followed by stimulation, however in mice undergoing habituation sessions before administration of drug it did not affect SMA. It produced mild antagonism of amphetamine induced SMA stimulation and stereotypy, weak inhibition of secondary conditioned response in rats. It lacks antidepressant and antiparkinsonism effect. It has no marked effect on diazepam and pentobarbitone induced sleep and did not affect muscle tone and balance in mice. It failed to afford protection against electro, pentylenetrazol and strychnine induced convulsions.

However it significantly delayed the onset of death due to strychnine. It did not produce analgesic effect when tested with analgesiometer but protected mice against acetic acid induced writhing. It did not affect rectal temperature in rats.

15. Madayantika (*Lawsonia inermis*) :

PbRUB

Toxicity studies were carried out in four extracts e.g. TNR/LIR/P, TNR/LIR/CH, TNR/LIR/P and TNR/LIR/CH (which were prepared as suspension in gum acacia (1.0%). None of the extracts showed any toxic effects. There was no mortality seen even at the end of seven days with doses of 500 mg./kg. and 1.1 gm./kg. orally.

Analgesic activity was studied by two methods :

(1) Tail plick to hot water and (2) writhing or Stretching syndrome induced by chemicals. Of the four extracts one extract viz. TNR/LIR/CH showed significant analgesic activity which was confirmed by both the methods.

16. Mandar (*Erythrina indica*) :

PhRUV

The plant bark is used for various liver disorders and decoction is said to depress the brain function in epilepsy. It is also taken as specific antidote to stretching poisoning. Studies were carried out to support the skeletal muscle relaxant effect. Effect of total alkaloidal fraction of *E. indica* on electrically stimulated phrenic nerve diaphragm preparation of rat was studied and the results indicate that there is a specific neuromuscular blocking effect of the *E. indica* alkaloids though there may also be a direct depressant effect on skeletal muscles up to 1 mg./kg. dose of the total alkaloids of the drug. It did not show any effect on the spinal reflex activity as indicated by lack of any effect on the knee jerk, recorded polygraphically.

Studies are in progress to elucidate the effects of total alkaloids by direct application micro-iontophoretically to the motor neurone in the cortex and the spinal cord.

17. Manduora Vataka :

IPC

It did not affect granulation tissue formation but possessed mild antipyretic effect.

18. **Mudga** (*Phaseolus mungo*):

PbRUR

Ether extract of the *P. Mungo* seeds furnished an oil which was used to study the antipyretic activity on albino rats in doses of 0.2 ml./180 gm. body weight intramuscularly. Thus the oily extract have shown significant antipyretic activity corresponding with paracetamol (20 mg./kg.).

19. **Nimbatiktam/Nimbidin** (*Melia azadirachta*) :

PbRUT

Nimbidin (40 mg./kg. p. o), prevented cysteamine hydrochloride induced duodenal lesions in rats. The drug (10 & 20 mg./kg.) when administered for twenty-eight days healed gastric lesions in dogs. In doses of 20, 40 and 80 mg./kg. when given orally, it significantly protected the gastric mucosa against necrosis by cysteamine. At 40 mg./kg. it afforded significant protection against the ethanol induced gastric necrosis and showed 50% inhibition of gastric secretory volume in rats. *Nimbidin* (40 mg./kg.) on intraperitoneal administration in rats showed 45% suppression of gastric secretory volume. In doses of 20, 40 and 80 mg./kg. it failed to produce anti-convulsant activity in rats. *Nimbidin* (500 mg./ml. dose level) blocked the spasmogenic effect of both 5-HT and nicotine (ganglion blocking effect). *Nimbidin* (300 mg./kg. p. o.) therapy in patients did not show any adverse effect on hexosamine content of gastric juice and in liver function tests. No toxic manifestations were observed.

Nimba extract (*Melia azadirachta*) showed (doses 1gm./kg.) 34.7% reduction in blood sugar in normal over night fasted animals and 15.8% fall in alloxanised animals, after three hours of its administration.

20. **Nirgundi** (*Vitex negundo*) :

HPC

General pharmacological screening was continued from the previous year. Cold aqueous infusion (CAI) of the roots stimulated spontaneous motor activity (SMA) at 60 minutes after administration of CAI of the roots, leaves and their aqueous extract (ACE) did not antagonise amphetamine induced SMA stimulation markedly. Alcoholic extract (ETE) of leaves failed to afford protection against electroconvulsions in rats. CAI of roots and leaves did not protect mice against pentylenetetrazol convulsions. CAI and petroleum-ether extract (PEE) of roots did not affect pentobarbitone sleep in mice.

CAI and toulene extract (TLE) of leaves prolonged the duration of sleep. CAI, ACE, methanol extract (ME) of roots and CAI of leaves did not affect muscle tone and balance in mice. CAI, ETE, TLE of leaves did not block secondary conditioned response and conditioned avoidance response in rats, n-butanol extract (BE) of leaves produced marked anti-inflammatory effect. CAI of roots and leaves failed to lower temperature in febrile rats.

ACE of leaves produced spasmolytic effect against acetylcholine induced spasm in rat colon. ME of roots potentiated acetylcholine effect on frog rectus abdominis muscle. ETE, BE and chloroform extract (CHE) of leaves produced cholinolytic effect. CAI of leaves and roots, ACE of roots produced marked potentiation of histamine induced contraction. BE, ETE of leaves and ETE of roots produced spasmolytic effect against histamine spasm in guinea pig ileum. CAI of roots had no effect on rat uterus. ETE of roots produced antagonism of oxytocin induced contraction. CHE and PEE of roots had no effect on rabbit atrium.

21. Puskaramula (*Inula racemosa*) :

PhRUL

I. racemosa reputed to be useful in pectoral lesions in the Traditional Indian Medicine was clinically evaluated in forty-five cases of chronic obstructive pulmonary disease. The drug produced massive expectoration and relieved bronchospasm in majority of cases. Most of the cases responded to the treatment as judged by relief from distressing symptoms and signs of the disease and improvement in pulmonary functions.

The drug appears to be effective due to its antihistaminic, antispasmodic, expectorant, and anti-inflammatory properties.

22. Sahacara (*Strobilanthes heyneanus*) :

HPC

Petroleum-ether extract (PEE) stimulated spontaneous motor activity (SMA), shortened pentobarbitone and diazepam induced sleep, did not protect rats against electro-convulsions and mice against pentylenetetrazol and strychnine induced convulsions. PEE potentiated amphetamine induced SMA stimulation, did not antagonise procloperazine catatonia, shortened duration of immobility when tested for antidepressant effect by behavioural despair method, did not affect exploratory behaviour. PEE and ethanol extract

(ETE) 90% produced analgesic effect when tested by radiant heat method and did not antagonise reserpine effects in mice. Cold aqueous infusion (CAI) depressed SMA, prolonged pentobarbitone sleep while ETE had no effect, both CIA and ETE protected rats against electroconvulsion, CAI delayed the onset of pentylenetetrazol and strychnine induced convulsions. ETE shortened the latency of onset of pentylenetetrazol convulsion and delayed onset of strychnine convulsions. CAI has no analgesic effect, did not effect muscle tone and balance, did not affect conditioned avoidance response in rats, blocked secondary conditioned response and did not affect retal temperature in rats. CAI produced marked inhibition of amphetamine induced stimulation of SBA and exploratory behaviour in mice. It did not antagonise prochlorperazine catatonia and lacks antidepressant effect.

CAI and ETE had no effect on frog rectus abdominis muscle and no effect on rabbit jejunum. CIA had no effect on rat colon, did not produce any effect on rat uterus. Petroleum-ether extract produced spasmolytic effect against acetylcholine spasm and produced moderate antagonism of oxytocin contraction.

23. *Silaras (Altingia excelsa)* :

PhRUL

Initially the drug showed adaptogenic activity which was further confirmed as it augmented the S.D.H. enzymes levels of brain during stress.

24. *Sajdhava and Tila Taila* (Rock salt in gingely oil) :

IIPC

In produced mild abortifacient effect on rats.

25. *Tamrabhasma* :

PhRUV

Studies on beneficial effects of *Tamrabhasma* (TMB) in experimental peptic ulcer and its mucus promoting activity in gastric section have already been done. Further studies on the protective effects of TMB against aspirin induced gastric ulcer in rats showed that the TMB inhibits the ulcer index, the results indicated a reasonably long duration of anti-ulcer effects of TMB which is an expected quality for any good anti-ulcer agent. Effects of TMB on gastric mucosal thickness showed that it counteracts aspirin-induced decrease of the gastric mucosal renewing capacity in albino rats. This property of

TMB can have special relevance in the healing of peptic ulcer. TMB selectively antagonises the gastric mucosal damage induced by aspirin without interfering with the anti-inflammatory action of the latter.

In albino rats effects of the currently used standard anti-ulcer drugs and that of TMB were compared on gastric mucus secretion and the protein content of the gastric juice in four hour pilorus ligation technique. TMB improved the mucosal barrier by promoting mucin activity while the potent anti-ulcer agents like H_2 receptor blocker and atropine etc. impaired the gastric mucosal barrier.

26. *Tinduka (Diospyros perigrina)* :

PhRUL

D. perigrina has been found to possess antistress activity. Study to evaluate its effect on brain enzymes eg. succinate dehydrogenase which is responsible for conversion and utilisation of energy in the brain cells also confirmed it to be an effective adaptogenic agent.

27. *Tavrta (Operculina turpethum)* :

PhRUR

The alcoholic extract of the root bark of *O. turpethum* was found to cause depressant effect on isolated frog heart, contractile response in rat intestine and the rectus abdominis muscle of frog. It also showed purgative action in rats. No anti-inflammatory effect was observed with this drug.

28. *Tulasi (Ocimum closimum)* :

PhRUL

O. Closimum at a daily oral dose (ethanol extract in peanut oil) of 200 mg./kg. enhanced the survival time of mice in hermitically sealed vessels. There was a regular increase in survival time in *O. closimum* treated groups from a control mean time of 183 minutes to 189, 208 and 212 minutes at the end of 1st, 2nd and 3rd weeks respectively.

29. *Tulasi (Ocimum sanctum)* :

PhRUL

Tulasi is considered to possess antistress activity. An attempt has been made to evaluate its effect on brain enzymes such as succinate dehydrogenase which is responsible for conversion and utilisation of energy in the brain cells.

O. sanctum was found to be a potent agent as it augmented the S.D.H. enzyme levels of the brain during stress (5 hr. swimming in mice).

30. **Tulasi (*Ocimum viride*) :** **PhRUL**

Alcoholic extract of the drug after evaporating the solvent, the residue, was mixed in peanut oil, was studied on rats for its anti-stress effect in hermetically sealed vessels. There was no increase in the survival time of these animals.

31. **Uadie Narika Lum (*Lodicea maldivica*) :** **PhRUT**

The drug (2gm./kg. dose) produced 37.18% reduction in blood sugar in normal rabbits and with (1.5gm./kg.) it produced 29.93% fall in blood sugar in alloxanised rats.

32. **Tambula (*Piper betle*) :** **PhRUT**

Effect of *P. betle* extract as an anti-venom agent was studied on mice (LD₅₀ of viper Russellii 10 mg./kg.) The drug (10 ml./kg. water extract) failed to produce any effect in mice.

33. **Ayush-56 :** **PhRUC**

Dose of 3000mg./kg. p. o. for 7 days could not produce any mortality in mice. Therefore LD₅₀ value was supposed to be more than the administered dose.

The compound in a dose of 1000mg./kg. p. o. in mice offered no protection against Leptazol (80mg./kg. i. p.) induced seizure. It prevented the hind limb extension of albino rats in MES tests in doses of 500 and 1000 mg./kg., p.o. The compound did neither caused any neuromuscular incoordination nor did it potentiate Phenobarbitone induced sleeping time in mice. The drug in a dose of 1000mg./kg., p.o. showed calmness in rats and mice which persisted for about three hours. The results so far obtained show that the compound has significant anti-convulsant action. It produces sedation.

The drug had no effect on normal blood pressure of anaesthetised cats. It showed negative chronotropic effect on both in-situ auricle and ventricle of cat. It showed stimulation followed by depression in both rate and amplitude of frog heart in-situ. In increased

dosage the heart stopped in diastole, but came back to normal after a few washings. On isolated guinea pig atria, the drug did not cause any chronotropic or inotropic effect.

The drug in a dose of 1 mg./ml. of bath fluid produced 30% inhibition on frog rectus abdominis. It produced no effect on neuromuscular preparation (sciatic gastronomies of frog). It therefore, suggests that the drug had no action on nerve conduction or on neuromuscular junction.

34. Compound PB :

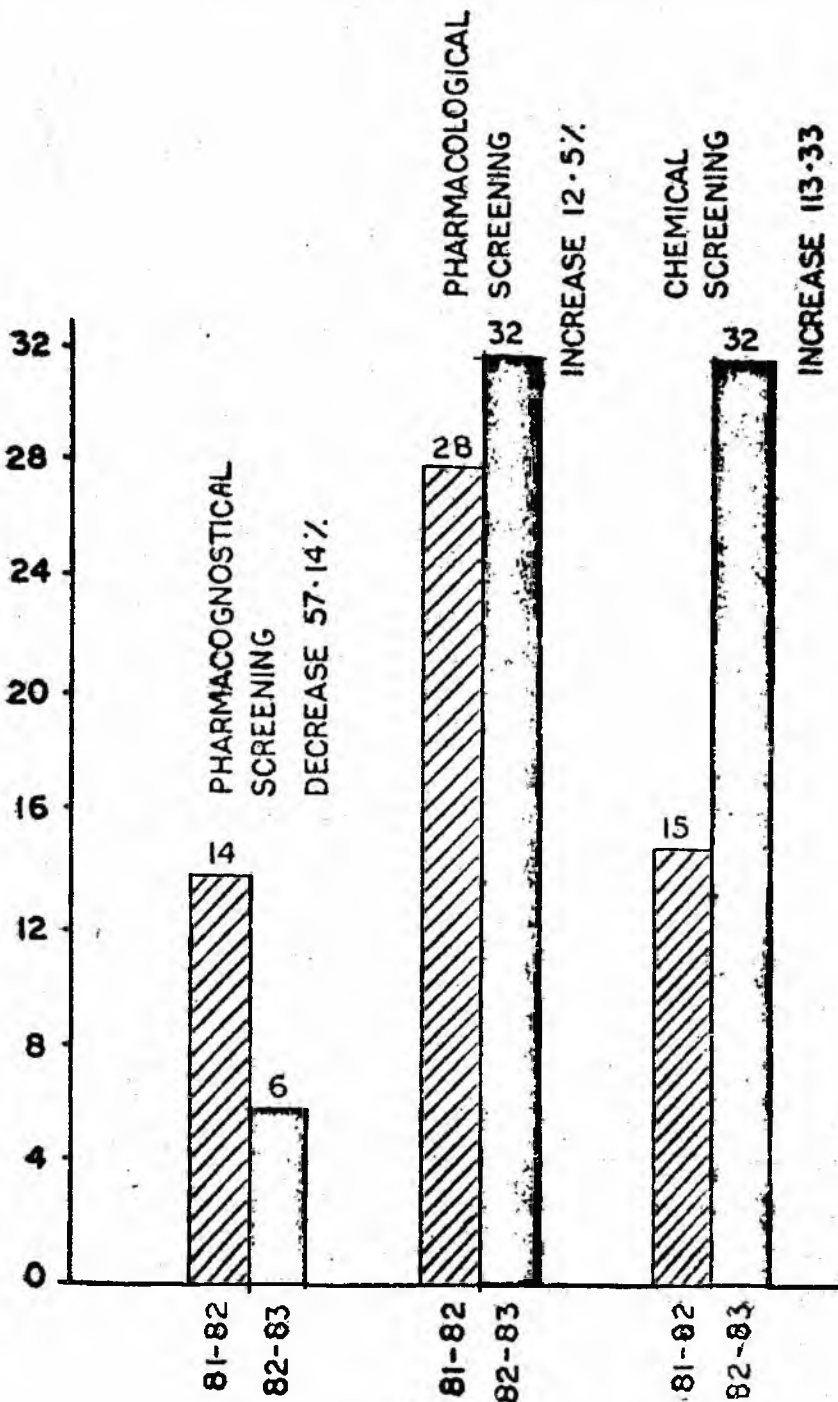
PhRUC

It did not show any significant effect on cat's blood pressure, respiration and intestinal movements. It also possessed no effect on auricle and ventricle in-situ of cats. It also had an effect on neuromuscular preparations (Isolated phrenic nerve hemidiaphragm of rat).

The compound PB₂ produced a dose dependent short sustained fall of blood pressure ranging from 20-30m.m. of Hg in anaesthetised cats. It enhanced the action of adrenaline both in intact and spinal cats. In auriculo-ventriculograms of cats too, the drug increased both the duration and pressure response of adrenaline but antagonised significantly the positive chronotropic action of the agonist. Further more, the compound antagonised isoprenaline induced tachycardia in auriculo-ventriculogram of cats and isolated guinea pig atria. Also the compound reversed the vasodepressor response produced by the classical Dale's reversal technique. In addition, the compound sometimes reversed the vasodepressor response of isoprenaline to pressure one. It also produced local anaesthetic effect in a form of conduction anaesthesia and corrected cardiac irregularities caused by aconitine.

All these observations go together and indicate that the compound has β adrenergic blocking activity.

Bar graph showing the drugs undertaken for Pharmacognostical, Pharmacological and Chemical screening during 1981-82 & 1982-83.



STANDARDISATION RESEARCH

Government of India has constituted the Ayurvedic Pharmacopoeia Committee for the preparation of Ayurvedic Pharmacopoeia. For this purpose, the Committee has selected about 400 formulations at first instance. The CCRAS has taken up research studies on these formulations. The preliminary standards for these compound formulations have been worked out and compiled in the form of a book. The work on single herbal drugs and other ingredients has been taken up for detailed study and standards for many single drugs have been worked out. Subsequently the Council has taken up studies on formulations further finalised by Ayurvedic Pharmacopoeia Committee.

During the period under report phyto-chemical and pharmacognostical studies on 154 single drugs, methods of manufacture of five categories of preparations and detailed standardisation studies on forty-one finished Ayurvedic formulations have been carried out. In addition, preliminary analytical standards for sixty-eight formulations have been laid down. Certain other studies e.g. studies on shelf-life etc. were also conducted. The drugs/preparations studied under each programme are enlisted separately.

Standardisation Research on Single Drugs :

The phyto-chemical and pharmacognostical studies to establish the identity of the following drugs were carried out :

Tamala patra (<i>Cinnamomum tamala</i>)	RRCB, PSRUJ
Aragvadha (<i>Cassia fistula</i>)	RRCT, PSRUJ
Vaca (<i>Acorus calamus</i>)	RRCB, CSMDRIAM, RRIT
Sankhapuspi (<i>Convolvulus pluricaulis</i>)	RRCB
Puskara mula (<i>Inula racemosa</i>)	RRCB, RRIT
Patola (<i>Trichosanthus cucumerina</i>)	RRCB, PSRUJ
Vidari (<i>Flagellaria indica</i>)	RRCB
Vidari (<i>Pueraria tuberosa</i>)	RRCB
Vidari (<i>Cycas circinalis</i>)	RRCB

Bala (<i>Sida cordifolia</i>)	RRCB, AUT
Rasna (<i>Pluchea lanceolata</i>)	RRCB, PSRUJ
Twak (<i>Cinnamomum zeylanicum</i>)	RRCB, RRIT
Tulasi (<i>Ocimum sanctum</i>)	RRCB
Vidanga (<i>Embelia ribes</i>)	”
Ankola (<i>Alangium salvifolium</i>)	PSRUJ
Arka (<i>Calotropis procera</i>)	CSMDRIAM, PSRUJ
Sugataka (<i>Trapa bispinosa</i>)	PSRUJ
Kamala (<i>Nelumbo nucifera</i>)	”
Puga (<i>Areca catechu</i>)	”
Harenuka (<i>Vitex negundo</i>)	”
Laksa (<i>Cocus lacca</i>)	”
Bilva (<i>Aegle marmelos</i>)	RRIT, PSRUJ
Rasanjana (<i>Berberis sp.</i>)	PSRUJ
Mahanimba (<i>Melia azadirachta</i>)	PSRUJ, CSMDRIAM,
Kutaja (<i>Holarrhena antidysenterica</i>)	PSRUJ
Nimba (<i>Azadirachta indica</i>)	”
Arjuna (<i>Terminalia arjuna</i>)	”
Gunja (<i>Abrus precatorius</i>)	”
Jivanti (<i>Leptadenia reticulata</i>)	”
Murva (<i>Marsdenia tenesissima</i>)	”
Dupapatra (<i>Nicotiana tabaccum</i>)	”
Patha (<i>Cissampelos pariera</i>)	CSMDRIAM, PSRUJ
Brahmi (<i>Bacopa monniera</i>)	PSRUJ, AUT
Agaru (<i>Aquilaria agallocha</i>)	”
Vridhadaruka (<i>Argyreia speciosa</i>)	PSRUJ
Nicula (<i>Baringtonia acutangula</i>)	”
Amlavetasa (<i>Rheum emodi</i>)	”
Sariva (<i>Hemidesmus indicus</i>)	”
Amlika (<i>Tamarindus indicus</i>)	”
Musta (<i>Cyperus rotundus</i>)	”

Naga kesara (<i>Maesua ferrea</i>)	HRIT, PSRUJ
Dhataki (<i>Woodfordia fruticosa</i>)	„
Dadima (<i>Punica granatum</i>)	PSRUJ
Lavanga (<i>Syzygium aromaticum</i>)	PSRUJ, RRIT
Talisa patra (<i>Taxus baccata</i>) (<i>Abies webbiana</i>)	CSMDRIAM, PSRUJ, CSMDRIAM
Kustha (<i>Saussurea lappa</i>)	CSMDRIAM, PSRUJ, RRIT
Katphala (<i>Myrica nagi</i>)	PSRUJ
Ela (<i>Ellettaria cardamomum</i>)	RRIT, PSRUJ
Sugandha bala (<i>Pavonia odorata</i>)	PSRUJ
Satavari (<i>Asparagus recemosus</i>)	PSRUJ, RRIT, CSMDRIAM
Apamarga (<i>Achyranthus aspera</i>)	CSMDRIAM
Haritaki (<i>Terminalia chebula</i>)	„
Methika (<i>Trigonella foenicum graeeum</i>)	„
Mayaphala (<i>Quercus infectoria</i>)	„
Manjistha (<i>Rubia cordifolia</i>)	„
Masa (<i>Phaseolus radiatus</i>)	„
Madhurika (<i>Foenicum vulgare</i>)	„
Mudga (<i>Phaseolus mungo</i>)	„
Madanphala (<i>Randia dumetorum</i>)	CSMDRIAM, RRIT
Sala (<i>Shorea robusta</i>)	CSMDRIAM
Draksa (<i>Vitis vinifera</i>)	„
Sali (<i>Oryza sativa</i>)	„
Kataka (<i>Strychnos potatorum</i>)	„
Jyotismati (<i>Celastrus paniculatus</i>)	„
Bakula (<i>Mimusops elengi</i>)	„
Yasti (<i>Glycyrrhiza glabra</i>)	„
(<i>Scoparia dulcis</i>)	„
Maha Nimba (<i>Melia composita</i>)	„
Rakta punarnava (<i>Boerhaavia diffusa</i>)	„

Vansa (<i>Bambusa bamboos</i>)	CSMDRIAM
Jambhu (<i>Syzygium cumini</i>)	"
Hapusa (<i>Sphaeranthus indicus</i>)	"
Palasa (<i>Butea monosperma</i>)	"
Nilotpala (<i>Kaempferia rotunda</i>)	"
(<i>Heynea trijuga</i>)	"
(<i>Pogostemon heyneanum</i>)	"
Parijata (<i>Nyctanthus arbortritis</i>)	"
Krisnasariva (<i>Cryptolepis buchanani</i>)	"
Agnimantha (<i>Clerodendrum phlomides</i>)	PSRUJ
Usira (<i>Vetiveria zizanioides</i>)	CSMDRIAM, PSRUJ
Asvagandha (<i>Withania somnifera</i>)	RRIT, PSRUJ
Lodhra (<i>Symplocos racemosa</i>)	CSMDRIAM
Lodhra (<i>Symplocos spicata</i>)	CSMDRIAM, AUT
Kantakari (<i>Solanum xanthocarpum</i>)	CSMDRIAM, RRIT
Ativisa (<i>Aconitum hetrophyllum</i>)	CSMDRIAM
Ransa (<i>Alpinia galanga</i>)	"
Kharjura (<i>Phoenix dactylifera</i>)	"
Sathi (<i>Curcuma zed oria</i>)	CSMDRIAM, AUT
Udumbara (<i>Ficus racemosa</i>)	CSMDRIAM
Elavaluka	"
Vidhara (<i>Cycas circinalis</i>)	"
Asthisamhari (<i>Cissus quadrangularis</i>)	"
Grahaduma (<i>Terminalia catappa</i>)	"
Lashuna (<i>Allium sativum</i>)	"
Babbula (<i>Acacia arabica</i>)	"
Ashwattha (<i>Ficus religiosa</i>)	"
Akarakarabha (<i>Anacyclus pyrethrum</i>)	"
Iswari (<i>Aristolochia indica</i>)	"
Aksodha (<i>Juglans regia</i>)	"
Visamusti (<i>Strychnos nuxvomica</i>)	"

Eranda (<i>Ricinus communis</i>)	”
Atasi (<i>Linum usitatissimum</i>)	”
Ubdi naikela (<i>Lodaeia maldivica</i>)	”
Divya (<i>Hordeum vulgare</i>)	”
Adhaki (<i>Cajanus cajan</i>)	”
Aragvadha (<i>Cassia fistula</i>)	”
Kulattha (<i>Dolichos biflorus</i>)	”
Samudra Narikela (<i>Buddelia madagascarensis</i>)	”
Eranda (<i>Ricinus communis</i>)	”
Pippali (<i>Piper longum</i>)	RRIT
Jatiphala (<i>Myristica fragrans</i>)	RRIT, AUT
Tamalapatra (<i>Cinnamomum tamala</i>)	RRIT
” (<i>Illicium griffithi</i>)	”
” (<i>Holeptelia integrifolia</i>)	”
” (<i>Alpinia calcarata</i>)	”
Tamalapatra (<i>Pseuderthia viscida</i>)	RRIT
Salaparni (<i>Desmodium gangeticum</i>)	”
Brhati (<i>Solanum indicum</i>)	”
Syonaka (<i>Oroxylum indicum</i>)	”
Patala (<i>Stereospermum suaveolens</i>)	”
Tagara (<i>Valeriana wallichii</i>)	”
Agnimantha (<i>Premna integrifolia</i>)	”
Velvarhuthima (<i>Pimpinella anicum</i>)	”
Katuki (<i>Picrorhiza kurroa</i>)	”
Bala (<i>Sida cordifolia</i>)	”
(<i>Concium fenestratum</i>)	”
Sunthi (<i>Zingiber officinalis</i>)	”
Hingu (<i>Ferula foetida</i>)	”
Isabgol (<i>Plantago ovata</i>)	”
Marich (<i>Piper nigrum</i>)	”
(<i>Capsicum fenestratum</i>)	”

Indravaruni (<i>Citrulus colcyntes</i>)	..
Devadaru (<i>Cedrus deodara</i>)	..
Agnimantha (<i>Premna latifolia</i>)	..
Gambhari (<i>Gmelina arborea</i>)	..
Chitrak (<i>Plumbago zeylanica</i>)	..
Trivrit (<i>Operculina turpethum</i>)	..
(<i>Strobilanthus heyneanus</i>)	..
Candana (<i>Santalum album</i>)	..
Haridra (<i>Curcuma longa</i>)	..
Sigru (<i>Moringa oleifera</i>)	..
Karkatasringi (<i>Quercus infectoria</i>)	AUT
Prasarini (<i>Paederia foetida</i>)	..
Atibala (<i>Abutilon indicum</i>)	..
Bhringraja (<i>Eclipta alba</i>)	..
Ardraka (<i>Zingiber officinalis</i>)	..
Tulasi (<i>Ocimum sanctum</i>)	..
Sarsapa taila (<i>Brassica campestris</i>)	..
Snuhi (<i>Euphorbia nerifolia</i>)	..
Haridra (<i>Curcuma domestica</i>)	RRIT

Standardisation Research-Method of Manufacture :

The following process were studied to establish the correct method of process of certain types of formulations :

<i>Rasa</i>	PSRUJ, AUT
<i>Arista</i>	CSMDRIAM
<i>Taila</i>	RRIT
<i>Sodhana</i>	..
<i>Lepa</i>	AUT

Standardisation Research-Finished Products :

Detailed standardisation studies were carried out on the following formulations :

<i>Jalodar rasa</i>	RRCB
<i>Dasamula taila</i>	"
<i>Asvagandha taila</i>	"
<i>Pancamrita loha guggulu</i>	"
<i>Trivikrama rasa</i>	PSRUJ
<i>Anu taila</i>	"
<i>Gandharva hasta taila</i>	"
<i>Arjuna ghrta</i>	"
<i>Mustakarista</i>	CSMDRIAM
<i>Draksadi vati</i>	"
<i>Abhayavati</i>	"
<i>Hingvadi taila</i>	RRIT
<i>Mahanarayana taila</i>	"
<i>Pippalyadi taila</i>	"
<i>Ksara taila</i>	"
<i>Maricyadi taila</i>	"
<i>Dineshalayadi taila</i>	"
<i>Dhanvantara taila</i>	"
<i>Pinda taila</i>	"
<i>Babularista</i>	AUT
<i>Kanta loha bhasma</i>	"
<i>Abhraka bhasma</i>	"
<i>Svarna maksika</i>	"
<i>Rasa sindura</i>	"
<i>Manahsila</i>	"
<i>Hartala</i>	"
<i>Mriddara shringa</i>	"

<i>Sankha jiraka</i>	AUT
<i>Suddha silajitu</i>	”
<i>Suddha tankana</i>	”
<i>Saindhava lavana</i>	”
<i>Dhatura patra swarasa</i>	”
<i>Arşakuthara rasa</i>	”
<i>Ganddhaka rasayana</i>	”
<i>Purna chandra rasa</i>	”
<i>Paradadi lepa</i>	”
<i>Trivanga bhasma</i>	”
<i>Prachetana vati</i>	”
<i>Amavatari rasa</i>	”

Standardisation Research - Analytical standards :

Analytical values for the following formulations were laid down :

<i>Brihat vidyadharabha rasa</i>	PSRUJ, PSRUJ
<i>Kanta vallabha rasa</i>	PSRUJ
<i>Mahalaksadi taila</i>	”
<i>Laghu puga khanada</i>	PSRUJ, PSRUV
<i>Vyaghri taila</i>	”
<i>Brihat sringarabhara rasa</i>	PSRUJ
<i>Kravyada rasa</i>	PSRUV, PSRUJ
<i>Yakrit plihari loha</i>	PSRUJ, PSRUV
<i>Gandhaka rasayana rasa</i>	PSRUJ
<i>Gulmakalanala rasa</i>	”
<i>Hemagarbha pottali rasa</i>	”
<i>Hemantha rasa</i>	”
<i>Hisika churna</i>	”
<i>Jalodararri rasa</i>	”

<i>Sri jayamangala rasa</i>	”
<i>Swasa kasa chintamani rasa</i>	”
<i>Mahavata vidhvamsana rasa</i>	PSRUJ, PSRUV
<i>Adarakhandavaleha</i>	PSRUJ
<i>Astangavaleha</i>	”
<i>Bahusalaguda</i>	PSRUJ
<i>Eranda paka</i>	”
<i>Vyaghri haritaki</i>	PSRUJ
<i>Panchamarita loha guggulu</i>	”
<i>Vatagajankusha rasa</i>	”
<i>Vajra kapata rasa</i>	”
<i>Sweta parpati</i>	”
<i>Tamra parpati</i>	”
<i>Sarpagandha ghanavati</i>	CSMDRIAM
<i>Guduchyadi ghana vati</i>	”
<i>Abhaya vati</i>	”
<i>Trina panchamula kwatha</i>	”
<i>Draksadi vati</i>	”
<i>Sukhavirechani vati</i>	”
<i>Bhuvaneshwara vati</i>	”
<i>Dantdhbedantaka rasa</i>	”
<i>Triphala mandura</i>	”
<i>Varatika bhasma</i>	”
<i>Arjuna ghrta</i>	PSRUJ
<i>Brihat aswagandha ghrta</i>	”
<i>Brihat chagaladya ghrta</i>	”
<i>Aswagandha taila</i>	”
<i>Bayuccavya saindhva taila</i>	”
<i>Dasamula taila</i>	”
<i>Guducyadi taila</i>	”
<i>Ksara taila</i>	”

<i>Kubja prasarini taila</i>	”
<i>Maha raskasa taila</i>	”
<i>Maha narayana taila</i>	”
<i>Pamcaguna taila</i>	”
<i>Laghu Visgarbha taila</i>	”
<i>Brihat maricyadi taila</i>	”
<i>Gandhakadya malahara</i>	”
<i>Pouadodi lepa</i>	”
<i>Sweta malahara</i>	PSRUV, CSMDRIAM
<i>Nayanamritanjana</i>	PSRUV
<i>Nagarjuna</i>	”
<i>Kravyada rasa</i>	”
<i>Mahajvaramkusa rasa</i>	”
<i>Momuatubhra rasa</i>	”
<i>Puspadhanva rasa</i>	”
<i>Sri Ramabana rasa</i>	”
<i>Purna caondra rasa</i>	”
<i>Smritisagara rasa</i>	”
<i>Sringarabhra rasa</i>	”
<i>Svachanda bhairava rasa</i>	”
<i>Tarakeswara rasa</i>	”
<i>Trivikroma rasa</i>	”
<i>Unmada gaja kasari rasa</i>	”

Standardisation Research-Miscellaneous-Studies :

The Standardisation Research Projects also carried out the following ancilliary studies :

1. Studied the shelf-life period of *Rajahpravartini vati* and *Vyaghri haritaki* (PSRUV)
2. Conducted the Microbiological screening of Honey, and

Plumbagin isolated from *Plumbago rosea* was studied to identify its anti-cancerous property, while *symplocos rasemosa* and *Vicoa indica*, were studied to establish its contraceptive potentiality. Some anti-Malaria's were also studied to identify the degree of effect (CSMDRIAM).

3. Carried out the studies on shelf life of *Ksaras*, besides the preparations of about thirty preparations (finished products) for the use in community Health Care Programme, undertaken by the Research Project (AUT).

LITERARY RESEARCH

Literary research is an important aspect of any research programme. Its importance has always been highlighted by various expert committees engaged in revival of Ayurveda. The Literary Research Programme under the Council has been planned and organised through the Indian Institute of History of Medicine, Hyderabad, Documentation and Publication Division, New Delhi and other research projects. The main objectives of these studies are to undertake medico-historical studies and collection of subject wise references from ancient classical literature, published literature in Ayurveda and modern Sciences. The revival and publication of the ancient classical literature, publication of *Journal of Research in Ayurveda and Siddha*, *Bulletin of Medico-Ethno - Botanical Research and News Letter*, research work in the form of articles/papers in *Journal/Bulletin* and special Monographs also fall in this category.

The publication of critical editions of *Bhela Samhita* and *Bhesaja Kalpana* are important achievements in this field. The work of translation of *Sarbhendra Vaidya Rainawali* from Tamil to Sanskrit, Hindi and English, *Cikitsamrta Sagara* from Tamil to Sanskrit, *Sahasra Yoga* from Malayalam to Sanskrit and Hindi and *Astanga Hridaya* from Sanskrit to Tamil are some other works which are in the final stages. The efforts to publish critical edition of *Astanga Sangraha* is also in the final stage.

1. Medico - Historical Studies :

(i) Snana (Bath):

IHMH

The references on Snana (bath) have been compiled from classical literature of Ayurveda, Yoga and Dharma Sastra.

(ii) Oral Medical History :

IHMH

The efforts to record oral information regarding medical history have been initiated. The officers and staff of the Institute made fifty visits and contacted twelve eminent physicians and other individuals. The interview of these persons were recorded and certain photographs were also collected.

iii) Unani Medicine :

IHMH

An article on 'Avicenna' was translated from Urdu to English. A Persian manuscript on pediatrics 'Allajul Atfal' was studied and a note was prepared. Further studies on biographies of physicians in Nizam dynasty are in progress.

2. Documentation :

i) Documentation Bulletin :

DPDD

Efforts were continued to compile and publish abstracts of research work in Ayurveda and Siddha. A total number of 378 papers were abstracted and published in four issues of *Documentation Bulletin*.

ii) Compilation of References on Single Drugs :

DPDD

References on eleven drugs have been compiled from *Brahattrayi* and other classical literature published in contemporary Periodicals and Journals and information on about twenty single drugs have been compiled from them.

iii) Compilation of References Regarding Diseases :

DPDD

Further work on compilation of references on diseases have been continued. The work on *Madhumeha* alongwith *Annadrava sula* and *Parinamasula* has been taken up. A write-up on *Amavata* including historical aspects was prepared. Compilation of Ayurveda and Siddha remedies for Malaria, Kalaazar and parasitic diseases has been completed. A write up on the drugs recommended for anti-fertility activities has also been prepared on the basis of various *materia medica*.

iv) Compilation of Council's Research Work :

DPDD

The compilation of drugs screened by Council's standardisation research programme has been taken up. The information regarding thirty six substitutes and adulterants have been compiled. The details of reserearch work completed under the Council are also being compiled.

Revival of Ancient Literature of Ayurveda :

DPDD

Certain rare books e.g. *Jalpakaipa Taru Teeka* on *Caraka Samhita*, *Vasavarajivam Yogacintamani* and *Indigenous Drugs of India* by Dr. Dey were procured. The manuscripts of *Ratna Prabha* commentary of Chakra Datta has been xeroxed.

3. Cikitsamrita Sagara and Sarabhendra Vaidyakakosa :

LRUT

The comparison of these two books with a manuscript in TMSSM Library has been continued further. The information regarding drugs occurring in *Sarabhendra Vaidyakakosa* from modern literature has been compiled for 1000 drugs.

4. Astanga Sangraha :

LRUJ

The work on critical edition of *Astanga Sangraha* is being continued further. The work on eighty-four chapters covering *Nidanasthana*, *Cikitsasthana*, *Kalpasthan*a and *Uttarasthan*a have been carried out. Further steps are being taken for its publication.

5. Sahasrayoga :

LRUJ

The Hindi translation of first seven chapters with 1255 formulations have been completed. This work is being processed further for publication as first part of the book.

6. Library and Reference Services :

The Council is maintaining two libraries at Documentation and Publication Division, New Delhi and at Indian Institute of History of Medicine, Hyderabad with substantial collection. A number of persons consulted these Libraries. Certain enquiries received from interested readers were also entertained and requisite information was furnished.

7. Photography/Printing Reprography :

These services are maintained at DPD, New Delhi and IIHM, Hyderabad. Assistance from these services are availed by the different centres and by other Programmes of the Council.

8. Publication :

The Council is publishing *Journal of Research in Ayurveda* and *Siddha* and *Bulletin of Medico-Ethno-Botanical Research* as quarterly publications from Documentation and Publication Division. In addition a monthly *News Letter* is also being published. *A Bulletin of Indian Institute of History of Medicine* is also being published quarterly from the Institute at Hyderabad. These publications have not been able to maintain their regular schedule of publication for some time. Efforts were initiated to clear the backlog, streamline these publications and improve the quality of papers published in them. Urgent steps were taken in this direction. A Board of Referees consisting of Seventy-five eminent Scientists and Scholars from various disciplines was constituted. The Editorial Board for these Publications and also for Monographs was constituted. The meeting of Editorial Board was arranged and definite editorial policies were finalised. During the period under report about 400 research articles were evaluated by Referees and about 200 of them were finally approved for publication. Further ten research articles were received and registered during the period. About thirty monographs pending for publication are also being examined. A catalogue of Council's publications was published. An issue of *Bulletin of Indian Institute of History of Medicine*, was published incorporating all the four numbers of Vol. X. The Council has also brought out the *Pharmacognosy of Indigenous Drugs* in two volumes.

RESEARCH SCHEME ON SCREENING OF CONTRACEPTIVE AGENTS

(FAMILY WELFARE RESEARCH PROGRAMME)

The Research Programme on Screening of Contraceptive Agents have been continued during the year under report. The studies have been carried out on two aspects viz. Clinical trial of the anti-fertility plants/plant products on human subjects to establish their known-anti-fertility potential and the Pharmacological studies on experimental animals to establish their anti-implantation, antioviulatory as well as the effects on oestrous cycle. The toxicity effects of the drugs are also studied before the same is taken up for clinical trials.

Clinical Trials :

In order to carry out clinical trials on anti-fertility plants/plant products, nine units are functioning presently under the Council; one each at Bombay, Calcutta, Jaipur, Lucknow, Madras, Trivandrum, Patiala, Varanasi and Ahmedabad. During the year under report the following drugs were taken up for detailed clinical trial and observation :

1. *Ayush AC-4* - A coded drug.
2. *K-Capsule*
3. *J-Capsule*
4. *Vidanga*
5. *Hansprabha* - a claim
6. *Genemises* - a claim
7. *Pipplayadi yoga*.

Ayush AC-4 :

This is a coded drug. The trial of this drug has been continued in the units functioning at Bombay, Calcutta, Jaipur, Lucknow, Madras, Trivandrum and Patiala. The drug was given in the dosage of two tablets twice daily for fifteen consecutive days starting from the 4th day of onset of the period of menstruation.

CRUFB

During the year under report 112 cases were added for the trial in addition to two cases which were continuing from the previous year. Out of these, forty-eight cases were continuing at the end of the reporting year. Sixty-six cases discontinued the studies due to various reasons. During the trial thirteen women became pregnant. Out of which three women conceived after 3rd cycle inspite of taking the drug regularly. This may be due to the drug failure. Remaining ten cases became pregnant due to the drug ommission. The side effects noticed were insignificant.

RRIC

During the year 1982-83, forty-nine cases were enrolled in addition to fifty-eight old cases continuing from the previous year. Out of 107 cases studied, forty-five cases were continuing the trial at the end of the year and the remaining sixty-two cases discontinued the studies due to various reasons. The studies showed encouraging results as out of 250 cases enrolled for the trial from the date of starting of the trial till the end of the reporting year, only fifteen pregnancies have taken place due to drug failure. No significant side effects were noticed.

RRIJ

291 subjects were interrogated with the object to select the individuals for inclusion into the study. Out of 291 cases, five cases were registered for the trial. Only one case was continuing at the end of the reporting year.

ALURIM

The unit has selected 144 volunteers during the reporting year, out of which seventy-two are in active trial and the remaining seventy-two discontinued the study in between due to various reasons. The side effects like abdominal pain, vomiting, leucorrhoea were noticed in only two cases. These side effects were not so severe as to warrant discontinuation of the drug. The results indicate that the overall failure is not very high. After the 10th cycle the failure rate is not high. Drop out due to drug failure is almost nil, after the 10th cycle. Absence of side effects after 10th cycle is also noteworthy.

IIKP

During the year, sixty-five new cases were enrolled for the study in addition to thirty-nine follow-up cases from the previous year. Out of 104 cases, seventy-seven subjects discontinued the study in between due to various reasons. Only twelve cases reported pregnancy due to drug omission. Twenty-seven subjects are still continuing the trial.

CRUFT

In all 5000 women have been contacted for the trial. Out of this only 129 cases were selected for the study during the period under report. The selected cases have undergone gynaec examination, detailed physical examination including check up of blood pressure and weight. The lab. investigations for the Hb, liver function tests, serum protein and serum cholesterol have also been carried out. The levels of serum enzymes remained almost the same indicating that the drug did not cause liver damage even upto twenty cycles. Action of the drug on genital metabolism such as serum cholesterol and serum proteins were also studied. About thirty-six cases which have completed twenty to thirty-seven cycles showed that the drug did not cause any adverse effect on serum cholesterol and serum proteins. The main side effects noticed were abdominal pain and dyspepsia. Out of 129 cases, eighty-four cases were continuing and the remaining thirty-five cases discontinued the study due to various reasons. Pregnancy occurred in two cases due to drug failure and in eighteen cases due to drug omission.

K-Capsule :

CRUFV

During the year, 1982-83, 181 cases were included in the trial. 174 cases are still taking the drug and seven cases discontinued due to various reasons. The pregnancy occurred in two cases. The drug was administered in the dosage of two capsules twice in a day with water for five days followed by one capsule twice for ten days from 5th day of menstruation.

J-Capsule :

CRUFV

Only thirty-two cases were administered the drug upto Sept. 82. The drug was given in the dosage of one capsule three times a day

for fifteen days from fifth day of menstruation. Out of thirty-two cases, five discontinued due to various reasons and twenty-seven were continuing the study. Except amenorrhoea in two cases, no other side effects were noticed. Not even a single case conceived.

Vidanga :

RRIC

Nineteen new cases were taken up for trial in addition to twenty-four old follow-up cases. Out of the total forty-three cases twenty-six cases discontinued the trial and eleven were continuing at the end of the reporting year. Pregnancy occurred due to drug failure in two cases and due to drug omission in four cases. The drug was administered in 500 mg. weight - one tablet twice daily with water for fourteen consecutive days starting from the 5th day of onset of the period. Drug causes temporary sterility i. e. it acts as a temporary anti-fertility agent for the month in which it is used. Side effects observed were insignificant.

Hansprabha - a claim :

RRIC

No new cases were added during the year. Sixteen old cases were followed up. Out of the sixteen cases, two cases left the trial due to conception during the 21st cycle of follow-up after completing the course of the drug for four months. Remaining fourteen are still under observation.

Genemise - a claim :

CRUFT

The trial on this drug was started only in November, 1982. One capsule was administered on the 6th, 13th and 21st day of menstrual period, half an hour after taking food. During the period of administration of the drug, till the commencement of next cycle period, the coitus was not allowed. According to the claimant three capsules would control birth for a minimum of six months period. Eight cases were selected for the study and three cases completed 2-4 cycles without pregnancy. Two cases reported that they felt increased appetite, tiredness and giddiness after taking the drug. Three cases reported pregnancy. More cases are to be studied for arriving at any conclusion.

Pipplayadi yoga :

CRUFA

During the period from 1st April to 31st March, 1983, 173-

cases were registered for the study. Out of 173 cases, 111 are still continuing the drug and rest of the women i.e. sixty-two discontinued due to various reasons. Since no pregnancy was reported by any subject, under trial, the drug may prove effective.

RRIC

The drug was discontinued in April 1978. Only nine follow-up cases were continued and out of these nine cases, seven are still continuing and two discontinued the study in between.

Chemico-Pharmacological study :

On the basis of previous experimental studies carried out under the Council to evaluate the anti-implantation and anti-ovulatory activities of *Plumbago rosea* and AC-4, further studies were carried out during the reporting year.

Plumbago rosea :

PhRUFB

Anti-implantation and anti-ovulatory effect of this drug was studied both in rabbits and albino rats. During the study the drug was given to copper acetate induced rabbits in three groups, in different dosage i. e. 50 mg./kg. body weight, 10 mg./kg. body weight and 200 mg./kg. body weight. Based on the promising results as an anti-ovulatory, its efficacy as an anti-implantation in rabbits was also studied and the results are quite encouraging. Anti-implantation effect was proved to be satisfactory even with the lowest dose given i.e. 50 mg./kg. body weight. This drug has also proved for its efficacy as an anti-implantation drug in the albino rats.

Dried root powder of *Plumbago rosea* was also administered to study its effect on oestrus cycle. After administration of 50 mg./kg. body weight for fifteen days (three cycles approx), 75% of females showed normal cycle during the treatment and the cycle was regular on withdrawal of the drug. In the doses of 100 milligram per kilogram body weight the females showed persistent leucocytic smears by tenth day of drug treatment and 30% of females observed after skipping of two cycles. However with the highest dose i.e. 200mg./kg. body weight the drug showed a typical diestrus smear as long as the drug continued and the recovery was 20 percent after twenty days from withdrawal of the drug treatment.

Ayush AC-4 :**PhRUFB**

In ovulation trials, it was found to inhibit 62.5% at the does of 50 ml. per kilogram body weight 75 % and 100 % at the dosage of 100 and 200 mg./kg. body weight respectively. However it was noted that unlike other drugs, *Ayush AC-4* produced oedema and congestion in the uterus of all the animals who received 200 mg./kg. body weight and to less extent in 100 mg./kg. body weight. The size of the uterus was notably larger.

Anti-implantation activity was studied noth in rabbits and albino rats. The lowest dose schedule i.e. 50 mg./kg. body weight proved to be 83.33 percent effective in rabbits. In albino rats the anti-implantation effect of the drug was 56.66 and 73.33 and 80.00 percent with 50, 100 and 200 mg./kg. body weight respectively.

Observations on the effect of *Ayush AC-4* on oestrus cycle in albino rats proved to be 50 percent effective during the treatment for 15 days with the lowest dose i.e. 50 mg./kg. body weight. On withdrawal of the drug in majority of animals the cycle was again in short period. With higher dose 100 mg. and 200 mg./kg. body weight the desired onset of the effect was as early as cycle order became irregular and diestrus smear continued to be intensified in more and more animals as long as the treatment continued but the recovery to normal cycles on withdrawal of the drug was also satisfactory.

Hingu :**PhRUFJ**

During the period under report the pharmacological screening of Hingu was undertaken. The drug was screened for its anti-implantation effect, post-implantation effect, effect on oestrous cycle and gross teratogenic action. It has been found that the drug does not show any remarkable anti-implantation effect (31%) or post-implantation effect (46%). The drug did not show any effect on oestrous cycle and no gross teratogenic action was noticed.

Loranthus longiflorus* etc :*PhRUFT**

During the year 1982-83 the anti-fertility activity of *Loranthus longiflorus* (whole plant), *Anthocephalas cadamba* (Fruit) and *Wendlandia exserta* (whole plant), were studied. The drugs were screened

at different dosage levels administered orally from D1-D2 of pregnancy in adult female rats. There was no significant activity observed from the first two drugs. But *W. exserta* was found to have more than 60% anti-implantation activity at the dose level of 10ml./gm. From the oestrous cycle study it has been observed that there was no significant change in the first two drugs and in the third drug there was a significant prologation of oestrous phase. No abortifacient activities were observed with these drugs. The toxicity studies and sub-acute toxicity studies were conducted on the drugs. It produced mortality in 25% at the dose of 10 mg./kg. and 37.5% at the dose of 20 gm./kg. Work will be continued using lower doses. There was no significant reduction in the body weight and no significant alteration in the haemogram when compared with the control.

Japakusum :

PhRFV

Clinical trial of *Japakusum* was carried out in collaboration with the Clinical unit under Prof. P. V. Tiwari. Crude alcoholic extract of *Japakusum* flower was given to the ladies in the form of capsule, each capsule containing about 200 mg. of crude extract 27 cases are on regular supply of the drug.

Seminar :

During the year under report a Seminar on Family Welfare Research was organised.

PUBLICATION/PARTICIPATION IN SEMINARS etc.

Clinical Research :

Sl. No.	Author (s)	Article (s)	Published/ Participated	Year
1.	Ajay Shankar, Parsai M. R., Naqvi S. M. A., Jain J. P.	A clinical trial of Bharangi in cases of Tamak Swasa (Bronchial Asthma)	Journal of Research in Ayurveda & Siddha, Volume-1 Issue No. 4	October, '82
2.	Ajay Shankar, Parsai M. R., Naqvi S. M. A., Jain J. P.	A clinical trial of Apamarga (<i>Achy- ranthes asper</i>) in cases of Shoth	Journal of Research in Ayurveda & Siddha, Volume-1 Issue No. 4	October, '82
3.	Ajay Shankar, Prasai M. R., Naqvi S. M. A., Jain J. P.	A clinical trial of Bharangi in cases of Tamak Swasa (Some respiratory diseases)	Journal of Research in Ayurveda & Siddha, Volume-1 Issue No. 4	October, '82
4.	Banerjee, S. N.	Clinical studies on the role of Sunthi Guggulu Yoga in the treatment of Amavata-Rheuma- toid Arthritis.	-do-	12-11-1982
5.	Bansal N. K., Karnick C. R.	Narsingh Churna ka Shukranuo per Ek Saphal Adhyayan	Dainik Jagran	March, 83

- | | | | |
|---|--|--|-------------------------|
| 6. Bansal N. K.,
Karnick C. R. | Narsingh Churna ka
Shukranuo per
Ayurvedic
Adhyayan | Ayurvedic
Punaruthan
Visheshank
Page 41-104 | 1982 |
| 7. Bhaghavathy
Amma K. C.,
Nair D. R. N.,
Sundersanan,
Nair P. K. | Participated in the
Textbook
writerswork
shop (SILPASALA)
conducted by the
Govt. Ayurvedic
College, Trivandrum | 26-1-83 to
16-2-1983 | |
| 8. Dave K. J.,
Dave S. K.,
Chippa R. P.,
Chaturvedi
D. D. | Management of
various gastro-
intestinal illnesses
through indigenous
resources. | J. R. A. S. | Sent for
publication |
| 9. Dave S. K.,
Dave K. J.,
Mishra K. P.,
Chaturvedi
D. D. | Role of Pippali
Haritaki Yoga in the
management of
Shoola Roga (Colic) | J. R. A. S. | -do- |
| 10. Geetha A.,
Pillai K. G. B.,
Kurup P. B.,
Nair C. P. R. | Action of Patolaka-
turohinyadi kwat-
ham and Gopatma-
jadi keram on skin
diseases-A
Clinical trial | J. R. A. S.
Vol. 1
Issue No. 2 | June, 1980 |
| 11. Jain, J. P. | A clinical trial of
Kantakari (<i>Solan-
nam xanthocar-
pum</i>) in cases of
Tamak Swasa
(Some respiratory
diseases) | J. R. A. S.
Volume-1
Issue No. 3 | April, 1982 |

- | | | | |
|---|---|--|---|
| 12. Janakiramaiah | A pilot study on role of Brahmyadi Yoga in patients suffering from Chronic Unmada (Schizophrenia) | Journal of Science of Life, Vol. II, Issue No. 4 | April, 1983 |
| 13. Jopat, P. D. | Field experiences in combating Encephalities. | | 1982 |
| 14. Jopat, P. D. | <i>Tridax procumbens</i> Linn in Ayurvedic drug instead of Tincher Iodine | Talk delivered in Ayurveda, at Vijayawada | 1982 |
| 15. Joshi G. C.,
Tewari V. P.,
Joshi P. | <i>Geaster mammosum</i> -A Bactericidal fungus used in Himalayan folklore | Journal of Ethno-pharmacology, Elsevier Sequoia S. A. Switzerland | 1982 (Reprint received in January 1983) |
| 16. Kurup P. B.,
Rajasekharan S.,
Pillai K. G. B.,
Nair C. P. R. | Clinical study in scabies. | Vagbhata | Accepted for publication. |
| 17. Maurya D. P. S.,
Sharma B. B. | Haematological changes easinophilia | Council's Journal (Ready for publication) | |
| 18. Mukerjee, C.D. | Ayurvedic Drug for Mental Rehabilitation. | Indian Association for the Study of traditional Asian Medicine held at Bombay. | 6th, 7th, 8th & 9th March, 1983 |

- | | | | |
|---|---|---|---------------------------|
| 19. Nair P.R.C.,
Menon T.V.,
Vijayan N.P.,
Prabhakaran
V. A. | A comparative
study of Patola-
triphaladi and
Panchathiktaka
Kwatha yogas in
the treatment of
Pama. | Submitted
for publica-
tion in the
JRAS. | |
| 20. Nair P.R.C.,
Vijayan N. P.,
Madhavikutty P.,
Indirakumari S. | Astimajagata-
vata—A case
report. | Submitted
for publica-
tion in JRAS,
in Feb., 1983. | |
| 21. Nanda G. C.,
Tewari N. S.,
Prem Kishore | Clinical studies
on the role of
Sunthi in the
treatment of
Grahani Roga | Under
publication | |
| 22. Nanda G. C.,
Pandhi M. M. | Arsa (Haemorr-
hoids-Piles) | Seminar of
Government
Ayurvedic
Hospital,
Bhubanesh-
war. | 12-11-82 |
| 23. Pandhi M.M.,
Tewari N.S. and
Prem Kishore | Preliminary
Clinical trial of
Hingutriguna
Taila in Vatavya-
dhi | J. R. A. S. | Under
publica-
tion |
| 24. Pillai, N. G. | Complications &
Prognosis of
Raktasammarda | Annual Se-
minar condu-
cted by
Vasudeva
Vilasam
Nursing
Home,
Trivandrum. | 23-1-1282 |

- | | | | |
|--|--|--|---------------------------|
| 25. Prem Kishore,
Devidas K. V. | Clinical studies on
treatment of Ama-
vata-Rheumatoid
Arthritis with
Sunthi Guggulu. | J. R. A. S. | Under
Publica-
tion |
| 26. Prem Kishore,
Pandey P. N.,
Pandey S.N.,
Dash S.,
Devidas K.V.,
Shanthakumari
G. | Clinical study on
Parinamsula com-
parative clinical
evaluation of
Swarna Sutase-
kara Rasa and
Suta Sekhara
Rasa | J. R. A. S. | -do- |
| 27. Purushothaman
K.K., Mohan K.
& Sarada A. | Recent advances
in the role of tra-
ditional drugs in
the treatment of
cancer: A scienti-
fic assessment. | Asian confe-
rence on
Traditional
Asian
Medicine,
Bombay. | 6th-9th
March,
83 |
| 28. Ramu, M. G. | Presided over the
Symposium
on Apasmara and
Unmada. | Symposium was organi-
sed by the Diamond Jub-
ilee celebrations Comm-
ittee of Dr. Nori Rama-
shastry Govt. Ayurvedic
College, Vijayawada,
A. P. on 5th & 6th Feb.,
1983. | |
| 29. Reddy, K. P. | Common remedy
for Parinamasula
in primary health
care. | Paper presented in the
conference on the contri-
bution of practitioners of
Indian Medicine towards
Primary Health care
held at Banaras Hindu
University, Varanasi. | |

30. Rajagopalan, S.S. Seminar of 26th & convention 27th of medical March, research 1983 centres & Hospitals in India by Dr. A.L. Batra's Trust, at Vigyan Bhavan, New Delhi.
31. Rao, I. Sanjeeva Acid Pepsin disease. 1st National seminar on March, 1983 Acid pepsin disease held in Bombay.
32. Sannd B. N., Sharma B. B., Sharma H. B., Acharya D. S. J. Role of *Narikel lavana* in Amlapitta. Paper presented in the Scientific Research Seminar on Gastrointestinal disorders held at Gujarat Ay. University, Jamnagar in June-July, 1982.
33. Sannd B. N., Sharma B. B. Amlapitta ki Sugam Aevam Sasti Chikitsa-Narikel Lavana. Published in 'Charak Charcha' April-May, 1982 issue.
34. Seshadri C., Shetty B. R., Gowri N., Sitaraman R., Revathi R., Venkataraghavan S., Chari M. V. 'Biochemical changes at different levels of parasitaemia in plasmodium vivax malaria. I. J. M. R. Vol. 77 April, 83 pp. 437-442.
35. Shah, M. R. Kamla roga me purish pareekshan ka mahatava. Dhanvantari July, 1982.
36. Shah, M. R. Madhumeha-Ek Vihangavlokan Ayurveda. Vikas-Nov. 1982.

37. Sharma B. B.,
Sannid B. N.,
Sharma H. B. Chikitsamak kamla
roga-Samprapti/
Vivechana. Published in 'Charak
Charcha' April-May,
1982.
38. Sharma, B. B. Visarpa Roga ki Safai
Ayurveda Chikitsa
Ack Rogi Vritta. Published in 'Charak
Charcha' April-May,
1982 issue.
39. Sharma B. B.,
Sannid B. N.,
Sharma H. B. Narikel Lavana in
Amlapitta 'A
Clinical Study'. Accepted for publi-
cation in Nagarjun on
17.1.81.
40. Sharma B. B.,
Sannid B. N.,
Tumane H. H. The comparative
study of Ayush-64
and Chloroquine in
the management of
Vivax Malaria. Submitted for publi-
cation.
41. Sharma, B. N. Antomy of Guda :
reinterpreted. Nagarjun Vol. XXVI
No. 1 Sept., 1982
(pp. 1-3)
42. Sharma H. B.,
Sannid B. N.,
Sharma B. B. Rakta Pradar Published in 'Charak
Charcha' April-May,
1982, issue.
43. Sharma, H. B. Kashtartava-Nidan
Chikitsatmak
Vivechan. -do-
44. Sharma, B. B. Trial of Aush-64 in
the cases of Malaria. Paper presented in the
conference organised
by Punjab Vaidya Sa-
mmelan (Govt. emp-
loyees at Ludhiana) in
May, 1982.
45. Sharma, M. L. Krimiroga per Ek-
Ayurvedik Aushadh
Yoga Ka Adhyayan. Article selected for
presenting in Silver
Jubilee Seminar at
Gujarat Ayurved Uni-
versity, Jamnagar
June, 1982.

46. Sharma R. K.,
Dave S. K.,
Dave K. J.,
Audhichya K. C.,
Chaturvedi D. D. A retrospective
study of grahani
roga. Silver Jubilee Celeb-
rations of Gujarat
Ayurved University,
Jamnagar.
47. Sharma R. K.,
Chhipa R. P.,
Ratan Mishra Influence of Psych-
ological aspect in
general patients-II.
A review of 1976
cases. Nagarjun (sent for
publication).
48. Shetty B. R.,
Seshadri C.,
Sitaraman R.,
Rajagopalan V.,
Janki K.,
Venkataraghavan S. 'Treatment of tropical
Eosinophilia with an
Ayurvedic compound-
A clinical trial. Ancient Science of
Life Vol. 2, No. 4, pp.
194-198 of April,
1983 issue.
49. Singh N.,
Singh S. P.,
Vrat S.,
Kohli R. P.,
Sinha K. N. A clinical evaluation
of *Inula racemosa*
(Puskarmul) in cases
of Bronchial asthma,
and chronic spasm-
odic Bronchilias,
Bronchitis. Proc. of Asian confe-
rence of Traditional
Medicines, Bombay
on 6th - 9th March,
1983.
50. Singh V. K.,
Sharma M. P. Visamajwar (Malaria)
& its Ayurvedic treat-
ment. Journal of Scientific
Res. in Plant and
Medicines, Hardwar.
51. Singh V. K.,
Sarma M. P. Stholya aur Uski
Chikitsa. Sachitra Ayurved,
Patna.
52. Subhaktha P. K.,
J. P. Bikshapathi
T. & Jopat P. D. The role of minerals
& metals in Clinical
management of
Swasa 4th Annual Function
of Ayurved Sastragna
Parishad held on 12th
December, 1982.
53. Tyagi (Mrs.) R. K. — Attended seminar on
Madhumeha organised
and arranged under
the auspices of
Indraprasthiya Vaidya
Sabha.

54. Tyagi (Mrs.) R. K. — Attended Symposium of Family Planning held at Gujarat Ayurved University, Jamnagar held on June, 1982.
55. Warriar P. K., Effect of Indukanta Ghrita on Parinamasula. J. R. A. S. Sent for Publication
 Bhattachari P., P. N. & Bhaskaran K. P.

Health Care Research :

Sl. No.	Author (s)	Article (s)	Published/ Participated	Year
1.	Acharya D.S.J., Sannd B.N., Dixit P.S., Garg V.K., Kaushal M.	Role of Ayurveda in total health care.	Presented in first Asian conference on Traditional Asian Medicine held at Bombay, March, 1983	
2.	Acharya D.S.J., Chhipa R.P., Billore K.V.	Primary Health Care through Ayurveda-an experience of Pisangan Panchayat Samiti Health Survey.	Paper Printed.	
3.	Chaturvedi D.D., Chhipa R.P., Mishra K.P., Sharma Rajesh.	Establishment of Community Health Care Programme in Urban & Semi Urban areas-Problem and Prospect.	IASTAM-INDIA, Bombay. (6th-9th March, 1983, Presented by Dr. D.D. Chaturvedi).	
4.	Chhipa R.P., Mishra R., Saxena I., Acharya D.S.J., Chaturvedi D.D.	Bio-Medical-door-to-door survey of Langariwas	Accepted for publication in CCRAS Journal.	

5. **Chhipa R.P.,
Mishra Ratan,
Saxena I.,
Chaturvedi D.D.** Health Survey of Murlipura Village in Jaipur. Nagarjun (sent for publication.)
6. **Mukherjee G.D.** Role of Ayurveda in Rural Health Care. National Integrated Medical Association, West Bengal Branch held at J. B. Roy College, Calcutta. (23rd and 24th July, 1982).
7. **Mukherjee G.D.** Role of Ayurvedic Medicine in Modern time Indo-German Association at Max-Mueller Bhawan, Calcutta. (17-4-1982).
8. **Mukherjee G.D.** Ayurveda and its utility in the Society. West Bengal Medical Association held at Ayurved Mahavidyalaya Canteen, Midnapur. (9th, 10th, 11th April, 1982).
9. **Prem Kishore** Methodology of evolution of simple Herbal formula for Primary Medicare. IASTAM-INDIA Conference, Bombay. (6th to 9th March, 1983.)
10. **Venkataram D.S.** Manovikara (Mental disorders) as envisaged in Ayurveda. Asian Conference on Traditional Asian Medicine, Bombay, (6th to 9th March, 1983.)

Medico-Botanical Survey

Sl. No.	Author (s)	Article (s)	Published/ Participated	Year
1.	Audichya C.K., Sharma M.L., Chaturvedi D.D.	A prospective anti malarial indigenous drug	J.R.A.S.	Sent for publication
2.	Audichya K.C., Billore K.V., Joseph T.G. Chaturvedi, D.D.	Role of indigenous folk-remedies for certain acute illnesses in Primary Health Care.	Nagarjun	-do-
3.	Bhat A.V., Nesamany, S.	Folklore medical practice among the tribals of Idukki district.	Proceedings of the seminar on Medicinal Plants.	Published in 1982
4.	Bhat, A.V. Padmaja B., (Smt.) Lalitha Kumari, V.S. Indira, Ammal M.J., Nesamany S.	Botanical source of Daruharidra in Kerala and its Pharmacognosy.	Vaghbata	November, '82
5.	Billore, K.V. Hemadri, K.	A new species of <i>Moghania</i> St. Hill from western ghats, India.	Jour. Eco. & Texa. Bot. Vol. 3, 617	1982
6.	Billore, K.V.	A new species of <i>Triumfetta</i> L. from Maharashtra, India.	Jour. Eco. & Texa. Bot. Vol. 3 (pp. 620)	
7.	Billore, K.V.	An interesting case of teratology in <i>Achyranthus aspera</i> .	Ind. For.	Sent for publication

- | | | | |
|---|--|---|--|
| 8. Billore K.V.,
Hemadri K. | <i>Pimpinella rollae</i>
a new species
from Western
ghats (Sahyadri
ranges) Maha-
rastra. | Ind. For.
Vol. 108. (II) | 1982 |
| 9. Billore K.V.,
Mishra K.P.,
Chaturvedi D.D. | Rajasthan Ki
Vanoshadhiya-2. | Ayurved.
Vikas | Sent for
publica-
tion |
| 10. Billore K.V.,
Mishra Ratan,
Yadav B.B.L. | Some Traditional
Medicinal lores
from Mt. Abu. | IASTAM-
INDIA,
Bombay. | 6th-9th
March,
1983

(Present-
ed by Dr.
K.V. Bil-
lore.) |
| 11. Das, S.R. | Observation on
the elements of
the Bankura
forest division,
W. Bengal. | Indian
Forester,
Vol. 108. | 1982 |
| 12. Das, S.R. | On the medici-
nal properties
of <i>Ochna pumila</i>
Buch Ham. ex.
D. Don. | Bull. Eth.
Bot. Res.,
Vol. 2. | 1981 |
| 13. Joshi M.C.,
Audichya K.C. | Medicinal plan-
ts of the Raj-
pipla forests
(Gujarat State). | Bull. of Med.
-Eth. Res.,
Vol. 2 (2)
pp. 150-192 | 1981 |
| 14. Murthy K.R.K.,
Yoganarasimhan
S.N., Nair K.V. | Medico-botany
of Karnataka-II
(Observations
on plants from
Kanakapura range
forest, Bangal Distt. | My Forest,
12 (2); 43-58 | 1982 |

15. Murthy, K.R.K.	Studies on Medico-botany of Chikmagalur district-II	First Asian conference on Traditional Medicine, Bombay.	March, 1983
16. Murthy, K.R.K.	Medico-botany of Chikmagalur Distt.	34th Indian Pharmaceutical conference, Varanasi.	Dec., 1982
17. Narayanappa Murthy, K.S.N.	Folk-lore claims of Gastro-Intestinal disorders from Orissa State.	J.R.A.S.	Under Publication
18. Murthy, K.S.N.	Some plants used as Narcotics in Orissa	-do-	-do-
19. Nair, K.V.	Studies on South Indian Market drugs-II	34th Indian Pharmaceutical conference, Varanasi	Dec., 1982
20. Nair, K.V.	Studies on South Indian Market drugs.	First Asian conference on Traditional Medicine, Bombay.	March, 1983
21. Nair, K.V. Yoganarasimhan, S.N., Murthy, K.R.K., Mary, Z.	Studies on Market samples of South Indian drugs-I	Ancient Sc. Life., 2 (2); 71-78	1982
22. Yoganarasimhan S.N., Nair K.V., Murthy K.K.	A concept to improve stagnant Ayurvedic Materia Medica	Sent for the award of 'Hari Om' Gold Medal, Jamnagar.	

- | | | | |
|---|---|---|----------------|
| 23. Yoganarasimhan,
S.N. | Some observa-
tion on plants
used in Ayur-
veda from
Andaman &
Nicobar Islands | First Asian
conference
on Traditional
Medicine,
Bombay. | March,
1982 |
| 24. Yoganarasimhan,
S.N. | Medico-botany
of Andaman &
Nicobar Islands. | 34th Indian
Pharmaceutical
conference
Varanasi. | Dec.,
1982 |
| 25. Yoganarasimhan,
S.N. | Medicinal &
Aromatic plants
Abstracts
Vol. 3. (6) : 1981 | Curr. Sc.,
51 (14) : 715 | 1982 |
| 26. Yoganarasimhan,
S.N. | Cultivation and
utilisation of
Medicinal plants,
edited by C.K.
Atal&D.M. Kapur | Curr. Sc.,
51 (24) : 1161 | 1982 |
| 27. Yoganarasimhan,
S.N. | Cultivation &
Utilisation of
aromatic plants,
edited by Atal,
C.K. & Kapur,
D.M. | Curr. Sc.,
52 (4) :
190-191 | 1982 |
| 28. Yoganarasimhan
S.N., Subramanyam
K., Razi B.A. | Flora of Chik-
magalur Dis-
trict, Karnat-
aka, India. | International
Book Distri-
butors, Dehradun. | 1982 |
| 29. Yoganarasimhan
S.N., Togunashi
V.S., Govindaiah,
Murthy K.R.K. | Medico-Botany
of Tumkur
Distt., Karnat-
aka. | J. Eco. Tax.
Bot., 3 (2);
391-406. | 1982 |

30. Yoganarsimhan S.N., Chelladurai V., Togunashi V.S., Govindaiah, Murthy K.R.K. *Saurauia bracteosa* D.C.-a new taxa to Indian Flora from Andaman & Nicobar Islands. Curr. Sc. 51 (4) : 196-199 1982
31. Yoganarsimhan S.N., Togunashi, V.S., Chelladurai, V. Murthy, K.R.K., Govindaiah. *Chilocarpus sumainatanus* Yog.-a new taxa Apocynaceae to Indian flora from Andaman & Nicobar Islands. Curr. Sc., 51 (18) ; 902-904 1982
32. Yoganarsimhan S.N., Nair K.V., Govindaiah. Additions of the Flora of Bangalore district-II. My. Forest, 18 (1) : 1-3. 1982

Pharmacognosy :

S. No.	Author (s)	Article (s)	Published/ Participated
1.	Dey, D. & Das, M.N.	Pharmacognostic investigations of <i>Evolvulus alsinoides</i>	Pro. 69th Session Ind. Sc. Cong. Part III, Abst. No. 269. P. 126, 1982.
2.	Dey, D. & Das, M.N.	Pharmacognostic evaluation of <i>Carthamnus tinctorius</i> flower.	Presented at 34th Indian Pharm. Cong. Abst. No. B-8, Varanasi, Dec., 1982.
3.	Dey D. & Das M.N.	Pharmacognostic studies of stem-bark of <i>Bauhinia variegata</i> Linn.	Proc. 70th Ind. Sci. Cong. Part III. Abst. No. 373, P. 143.
4.	Dey D. & Das M.N.	Pharmacognosy of leaf and stem of <i>Barleria prionitis</i> Linn.	Proce. 70th Ind. Sci. Cong. Part-III Abst. No. 374, P. 144.

5. Dey, D. & Das, M.N. Drug identification by Pharmacognostic analysis of the fruits of Terminalia—a traditional medicine in India. Accepted for presentation in Asian Conference on Traditional Asian Medicine (IASTAM), 1983.
6. Mary Z., Pattan J.K., Yoganara. Pharmacognostical studies on *Flagellaria indica* L. (Flagellariaceae). J. Crude Drug Res. 1982.
7. Pattan J.K., Yoganara-simhan S.N., and Mary Z. Comparative studies on *Valeriana arnottiana* & *V. jatamansi* (Tagara) Indian J. Pharm. Sci. 45 (1), 31-33, 1983.
8. Sasikal B., Brindha P., Rukmani Sundaresan & Purushothaman K.K. Comparative Pharmacognostic studies on the bark and fruits of *Terminalia catagna* and *Terminalia chebula* Retz. Ind. Pharmaceutical Congress, Varanasi. 20th-23rd Dec., 1982.

Chemical Studies :

S. No.	Author (s)	Article (s)	Published/ Participated	Year
1.	Banerjee J., Ghosal N., Sarkar S. & Kumar M.	Studies on Rutaceae; Part II-Chemical Investigations of the Constitutions of <i>Atalantia wightii</i> , <i>Limonia crenulata</i> , <i>Feronia limonia</i> , <i>Citrus limon</i> and Synthesis of Luvangetin, Zanthyletin and Marmin.	Ind. J. Chem. 21 D, 496	1982

2. Darik D., Dey A.K., Das P.C., Chatterjee A. & Shoolery J.N. Coumarins of *Muraya exotica*-Absolute Configuration Aruaptenol. *Phytochem.* 22, 792 1983
3. Chatterjee A., Pandit U., Sarkar S. and Shoolery J.N. Studies on Indole Reaction Part I: Electrophilic substitution on 3-Methyl indole. *J. Ind. Chem.* (N.R. Dhar 90th Birthday issue) LIX 523. 1982
4. Das P.C., Chatterjee A., Patra B.B. and Dasgupta S.R. Use of *Piper nigrum* Linn and *Piper longum* (Fam: Piperaceae) Antimalarial drug. First Asian Conference on Traditional Asian Medicine Abst. No. C. 14. 1983
5. Hinguchi Ryuichi Kawaski Toshio, Biswas Momata, Pandey V.B., B. Biswanath Dasgupta. Triterpenoid saponins from the stem bark of *Symlalocos spicata*. *Phyto-chemistry* 21 (A) 907-910. 1982
6. Kotiyal J.P., Bhardwaj D.K. & Nair A.G.R. Myricetin 7,4-dimethyl ether & its 3-galactoside *Phyto-chemistry* Jan. '83 318.
7. Pandey V.D., Seth K.K., Bhattacharya S.K. Chemistry & Pharmacology of *Furmaria indica* alkaloids National symposium on Natural Product Chemistry, Bose Instt., 1983.
8. Pattanshetty J.K., Abraham Koshy, Raj P.V. Chemical examination of the stem bark of *C. Adansonii* *Indian J. Pharma. Sci.* Communicated, 1982.
9. Pattanshetty J.K., Raj P. V., Koshy Abraham & Holla, B.V. Comparative fluorescence and Chromatographic studies on the plants used as Vidari. *Ancient Sci. Life (Communicated)*, 1982.

- | | | | |
|-----|---|---|--|
| 10. | Purushothaman
K.K., Saraswathy
A. & Sarada A. | Structure of racemol A new coumarin from <i>Atlantia racemosa</i> . | Ind. Pharmaceutical Congress, Varanasi 20th-23rd, Dec., 1982. |
| 11. | Purushothaman
K.K., Sarada A.
Mrs. Mathuram
Venkatanarasimhan. | Structure of Heynic acid: terpene acid from <i>Heynia trijuga</i> Roxb. | Sent to Ind. Jour. of Chem. |
| 12. | Purushothaman
K.K., Kalyani-Duraiswamy. | Chemical examination of <i>Walsurea piscidia</i> Linn. | Ind. Pharmaceutical Congress, Varanasi 20th-23rd Dec., 1982. |
| 13. | Purushothaman
K.K., Sarada A.,
and Kalyani
Duraiswamy. | Structure of new sesquiterpene alcohol | Ind. Pharmaceutical Congress, Varanasi 20th-23rd Dec. 1982. |
| 14. | Purushothaman
K.K., Sarada A.,
and Kalyani
Duraiswamy. | Structure of new sesquiterpene. | Sent to Phyto-Chemistry. |
| 15. | Purushothaman
K.K., Sarada A.,
and Saraswathy A. | Structure of Sempervirenic acid, a diterpene acid from <i>Solidago Sempervirens</i> . | Sent to Phyto-Chemistry. |
| 16. | Purushothaman
K.K. | Chemistry of Ayurvedic drugs. | Symposium on Modern Aspects of Medical Chemistry. Jointly conducted by Ind. Chem. Society, Royal Soc. of Chemistry and Indian National science Academy at Loyola College, Madras. 26th Jan. 1983 |

- | | | | | |
|-----|---|--|---|------------------|
| 17. | Purushothaman
K.K., Sarada A. | Structure of
Heynic acid-A
new triterpene acid
from <i>Heynia trijuga</i> | Annual Sym-
posium in Che-
held at I.I.T.
Madras | 5th-6th
March |
| 18. | Purushothaman
K.K., Kalyani
Duraishwamy,
Sukumar E. | Structural eluci-
dation of two new
triterpene alcohol
acid from <i>Pristi-
mera germil</i> | Annual Sympo-
sium in Chemistry
held at I.I.T. Madras | -do- |
| 19. | Purushothaman
K.K., Sarada
A., Saraswathy
A. & Brindha P. | Chemical exami-
nation of an
unidentified drug. | -do- | -do- |
| 20. | Radhavakula T.,
Pattanshetthy,
J.K., Venkata-
ram B.S., Shan-
kara M.R., and
Abraham Koshy | Chemical exami-
nation of certain
Ayurvedic Ghri-
tas & tailas. | Bul. of Med
Ethno. Bot. Res.
2 (2): 250-259 | 1981 |
| 21. | Ramiah N.,
and Aravinda-
kshan Nair G. | Physico chemical
methods of
Identification
and estimation
of genuine and
substitute/adulte-
rant in the single
drug Mixtures-
Part-I <i>Hemidesmus
indicus</i> and
<i>Ichnocarpus fru-
tescens</i> in part-II
Identification of
Crude drug
Mixtures. | Journal of Scientific Re-
search in plants and Medi-
cines Vol. III, No. 2 & 3,
P. 57, 1982. | |
| 22. | Ramiah N. and
Thankamma A. | <i>Rubia cordifolia</i>
and its adulterant
in crude drug
mixtures. | Journal of Scientific Re-
search in Plants & Medi-
cines, Vol. III No. 4 p. 104
1982. | |

23. Ramiah N. & Thankamma A. Part III Estimation of *Rubia cordifolia* and its adulterant in the crude drug mixtures. Under publication in the same journal.
24. Ramiah N, Lizzy Palu & Thankamma A. Studies on the Methods of purification of drugs in Ayurvedic preparation Part-I. —do—
25. Ramiah N. and Aravindakshan Nair, G. Chemical Investigation of the Leaves of *Gynandropsis gynandra*. —do—
26. Sahai M., Neogi P., Ray A.B., Oshima Y., Hikino H. Structure of Witha peruvina B & C withanolides of *Physalis peruviana* root. Heterocycles 19, 37 1982

Pharmacology :

S. No.	Author (s)	Article (s)	Published/ Participated	Year
1.	Ahmad S., Kumar P., Dhala T.N., Singh N., & Kohli R.P.	An evidence for the role of succinate dehydrogenase enzyme in anti-stress activity.	Ind. J. Crude Drug Res. (USA)	Send for publication
2.	Bhargava K.P., Singh N.	Anti-stress activity of <i>Ocimum sanctum</i> Linn.	Ind. J. Med. Res. 73: 443-451.	1982

- | | | | | |
|----|---|--|---|---|
| 3. | Bhaskaran
Nair R., and
Santhaku-
mari G. | Antidiabetic activity
of the seed kernel
of <i>Syzygium cumini</i>
Linn. | Bull. Med.
Ethno. Bot. Res. | In press |
| 4. | Bhaskaran
Nair R., Bhat
A.V., Santha-
kumari G. | A comparative study
on the hypoglycaemic
activity of three
<i>Salacia</i> species. | Bull. Med.
Eth. Bot. Res. | In press |
| 5. | Dasan R.K.S.,
Pillai N.R., &
Alam M.M. | Experimental studies
on the antipyretic
activities of Mukka-
mukkatu Vati and
Gorachanadi Gutika | Asian con-
ference on Tra-
ditional Asian
medicine,
Bombay. | Accep-
ted but
not pre-
sented |
| 6. | Dennis T.J. | Anti-microbial &
anthelmintic activity
of essential oil of
<i>Mesua ferrea</i> Linn. | Flavour
Industry. | Commu-
nicated |
| 7. | Gupta S.S.,
Bhagwat A.W. | Cholenergetic acti-
vity of <i>Mallotus</i>
<i>philipinensis</i> . | Sent for Pub.
in Ind. Journal
of Pharmacology | 1983 |
| 8. | Hamsaveni R.,
Purushotha-
man K.K. | Activity of <i>Temi-
nalia chebula</i> against
yeast. | Ind. Pharma-
ceutical Con-
gress, Varanasi | 20th-23rd
Dec. '82. |
| 9. | Hamsaveni R.,
Krishnamur-
thy, Mohan V.,
and Meenakshi
Natarajan. | Analysis and Anti-
microbial activity of
Vetpalia oil. | First all Indi-
an Siddha
Medical con-
ference, (Spon-
sored by Govt.
of Tamil Nadu
and the Tamil
Univ., Tanjore). | 13th-14th
Feb., '82 |

- | | | | |
|---|---|--|--|
| 10. Hemsaveni R.,
Purushotha-
man K.K. | Anti-malarial acti-
vity of Saptha-
chada. | Asian confe-
rence-on Tra-
ditional Asian
Medicine
Bombay. | Accep-
ted but
not pre-
sented. |
| 11. Jain, P., Pen-
dse V.K.,
Singh K.P.,
Suthar S.D. | Anti-inflammatory,
anti-convulsant and
local anaesthetic
activity of clonidin—
a preliminary report | Indian Phar-
macol. | 1982 |
| 12. Maurya D.P.S.,
Goyal S.R. | Oestrogenicity of
seeds of Kalajaji
(<i>Nigella sativa</i>)
in female albino
rats. | Submitted to G.A.U.
Jamnagar | |
| 13. Maurya D.P.S.,
Sannid B.N.,
Ram Saroop. | Antidiuretic acti-
vity of Nardiya
Laxmi Vilas Rasa
Mishran in Albino
Rats. | Submitted for publication
in the Journal of Research
in Ayurveda and Siddha. | |
| 14. Maurya D.P.S.,
Goyal S.R.,
Ram Saroop. | Oestrogenicity of
seeds of Kalajaji | Submitted for publication
in the 'Nagarjun'. | |
| 15. Mohana K.,
Susan T., and
Purushotha-
man K.K. | Biological profile
of <i>Plumbagin</i> . | Sent for publication in
Journal of Ethno Pharma-
cology. | |
| 16. Maurya D.P.S.,
Sideigmi
H.H.S. | Studies on the
anti arrhythmic
activity of Agmaline
(<i>Rauwolfia serpen-
tina</i> Benth) | Submitted to IJMR, 1982 | |
| 17. Maurya D.P.S.,
Arora R.B. | Effect of Ajmaline
(<i>Rauwolfia serpen-
tina</i> Benth) on heat-
ing heart explant
culture of rat & pig. | Ready for publication | |

18. Maurya D.P.S. Pharmacological screening of Kalonji Under printing.
19. Mohana K., Purushothaman K.K. & Susan T. Drug Potential of Echitamine chloride in cancer chemotherapy. Sent to Jour. of Res. in Ayurveda and Siddha.
20. Mohana K., Purushothaman K.K. and Susan T. Biological profile of *Plumbagin* Workshop on Pharmacological and Biochemical approaches to Medicinal plants Kodaikanal (Sponsored by UNESCOP/COSTED) 12th-15th October, 1982
21. Mohana K., Purusothaman K.K. & Susan T. Drug Potential of Echitamine chloride in cancer chemotherapy. Ind. Pharmaceutical Congress, Varanasi. 20th-23rd Dec., '82
22. Pandey R.L., Goel R.K., Pathak N.K.R., Biswas M., Das P.K. Effect of *Tectona grandis* Linn. (Common teak tree) on experimental ulcer and gastric secretion. Ind. J. of Medical Res. 76, (supplement); 89 Dec., '82
23. Ravishankar B. Evaluation of compound Ayurvedic preparation for antiseptic, analgesic and anti-inflammatory effects. Presented in the XVth Annual Conference of Indian Pharmacological Society held at Chandigarh during 22nd to 24th Nov., 1982.

24. Ravishankar B., Sasikala C.K. Pharmacological evaluation of compound Ayurvedic preparation part C; Vettumaran Gutika (VTG) Accepted for publication in the 'Ancient Science of Life'.
25. Ravishankar B., Sasikala C.K. Pharmacological evaluation of compound Ayurvedic preparation part D Bilwadi Gutika. Accepted for publication
26. Santhakumari G., Bhaskaran Nair R., Verma R.R. Effect of guar (*Cyamopsis tetragonoloba* Taub) feeding on the lipid profiles hypercholesterolaemic rats and rabbits. *Planta Medica* 44, 1982 57.
27. Singh N., Kumar P., Ahmad S., Singh S.P., Kohli R.P. & Bhargava K.P. Anti-stress plant drugs-A new approach in the treatment of stress diseases. *Planta Medica* 43, 1982 138.
28. Singh N., Singh S.P., Nath R., Lata A., Kohli R.P., Bhargava K.P. *Withanin somnifera* (Ashwgandha) A rejuvenator herbal drug which enhances survival during stress (An adaptren) *Int. J. of Crude Drug, Res. (USA)* 20 (1) 1982
29. Singh N., Singh S.P., Sinha J.N., Shankar K. & Kohli R.P. Mechanism of cardio-Vascular action of *Terminalia arjuna*: *Planta Medica* (W. Germany) 45, 1982 192-104.
30. Singh N., Mishra N., Singh S.P., Gupta M.L. & Kohli R.P. An experimental evaluation of anti-viral potential of *Picrorhiza kurroa* (Kutaki) in guinea pigs. *B M E B R* In press

31. Singh N., Singh S.P., Nath R., Singh D.R., Kohli R.P. Prevention of urethane induced lungadenomas by *W. somnifera* (Dunal) In. J. of Crude Drug, Res. (U.S.A). Sent for Publication
32. —do— Anti-ulcerogenic effect of *Tectona grandis* Paper presented at XV Annual Conference of Indian Pharmacological Society at Chandigarh, Nov., 1982.
33. —do— Anti-inflammatory activity of an Himalayaen herb-Kutki (*Picrorhiza kurroa*) an experimental study. Paper presented at XV Annual Conference of Indian Pharmacological Society at Chandigarh, Nov., 1982.
34. —do— Scientific basis of the use of copper preparation in Indigenous System of Medicine. Paper presented at the 1st International Conference on elements in Health and diseases, Feb., 1983 New Delhi.
35. —do— Copper in peptic ulcer : an experimental appraisal of the Traditional tamrabhasma used in peptic ulcers syndrome. Accepted paper for presentation at the International conference on Elements in Health and Disease, New Delhi, Feb., 1983.
36. —do— A study on the effects of Tamrabhasma an indigenous preparation of copper in experimental gastric ulcers and secretions. Indian Journal of Expt. Biology (1983 in Press).
37. —do— Effect of *Tectona grandis* on experimental ulcer and gastric secretion. Ind. J. of Medical Research (1982).

Standardisation Research :

Sl. No.	Author (s)	Article(s)	Published/ Presented	Year
1.	Abraham Koshy.	Chemical examination of Ayurvedic Ghritas and Tailas	34th Indian Pharmaceutical conference, Varanasi.	Dec., 1982
2.	Abraham Koshy.	Standardisation of some Ayurvedic preparation.	First Asian Conference on Traditional Medicine, Bombay.	March, '83
3.	Alam, M.M. et al	Studies on Dhataki puspa used in asavas and arishtas	Ind. Pharmaceutical Congress, Varanasi.	20th-23rd Dec., 1982.
4.	Alam M. M., Dasan K.K.S., Rukmani B, and Ramar C. & Purushothaman K.K.	Studies on Mustakarishtha prepared according to textual and modified methods.		Sent to CCRAS.
5.	Alam, M.M., Dasan K.K.S., Rukmani B., and Purshothaman K.K.	Studies on Standardisation of Drakshadi Vati.		—do—
6.	Alam, M.M., Dasan K.K.S., & Purushothaman K.K.	Studies on the standardisation of Asavas and Arishtas.	Asian Conference on Traditional Asian Medicine, Bombay.	Accepted but not presented.

- | | | | | |
|-----|---|--|--|--|
| 7. | Ali Usman S. ,
Alam M., Dasan
K.K.S., Ramar
C. & Purushot-
haman K.K. | Experimental
studies on
fermentation of
Asawa and
Arishta (Draks-
harishta) | Ancient
Science of
Life. Vol. 2,
No. 3. | Jan., 1983. |
| 8. | Brindhya P.,
Sasikala, B. &
Purushotaman,
K.K. | Modern meth-
ods in the iden-
tification | Asian
Conference on
Traditional
Asian Medicine
Bombay. | Accepted
but not
presented. |
| 9. | Mishra K.P.,
Chaturvedi
D.D. | Aushadh pram-
anikaran evam
Rasayan Vigyan-
III | Ayurved Vikas | Aug., 1982. |
| 10. | Mishra K.P.,
Joseph T.G. | A note on the
study of market
sample of
<i>Swertia Chiraya-
ta</i> Buch. Ham.
ex. Wall. | B M E B R | Sent for
publicati-
on |
| 11. | Mishra K.P.,
Billore K.V. | Ayurvedyeya
aushadh Manki-
karan evam
Vanaspatic
Vigyan-IV | Ayurved Vikas | Sent for
publicat-
ion |
| 12. | Mishra K.P
Chaturvedi D.D. | Shilajit shodhan
prakriya &
Parikshan. | —do— | Nov., 1982 |
| 13. | Mishra K.P.,
Chaturvedi D.D. | Ayurvedyeya
aushadh Manki-
karan evam
Rasayan Vigyan | —do— | July, 1982 |
| 14. | Pattanshetty
J.K., & Jaya N.,
Abraham Koshy | Investigation on
the effect of life
time and packing
aid on certain
Ayurvedic
preparations. | | Sent for
'Hari Om'
Gold-Me-
dal award,
Jamnagar. |

- | | | | | |
|-----|---|---|--|-----------------------------------|
| 15. | Pattanshetty
J.K. | Investigation on
the effect of
time, packing
material & light
on certain
Ayurvedic
preparations | 34th Indian
Pharmaceutical
conference,
Varanasi. | Dec., 1982 |
| 16. | Rao R., Bhima,
Alam M.M.,
Shanmugadasan
K.K. & Purush-
othaman K.K. | Analytical
profile of
Ayurvedic
drugs used
in gastro
intestinal
disorders. | Nagarjun | June, '82 |
| 17. | Rao R. Bhima,
Natarajan R.K.,
Hemsaveni
Gopal R, et al | Shelf-Life of
some Tailas-A
preliminary
study | Ind. Pharma-
ceutical Congr-
ess, Varanasi. | 20th-23rd.
Dec. 1982 |
| 18. | Rao R. Bhima
Varadarajan T.V.
Purushothaman,
K.K. | Methodology to
detect spurious
preparation of
Asavas &
Arishtas | Asian confere-
nce on Tradi-
tional Asian
medicine,
Bombay | Accepted
but not
presented. |
| 19. | Saxena R.B.,
Dholakia M.V.,
Metha H.C. | Relation of
Surface tension
and viscosity of
Lohasava | Nagarjun | Jan. 1982 |
| 20. | Saxena R.B.,
Dholakia M.V.,
Mulia N.B.,
Daswani M.T. | Study of chemi-
cal Constituents
and fluoresc-
ence of Vaca | | Communi-
cated |
| 21. | Saxena R.B.,
Mehta H.C. | Study of Chemi-
cal Constituents
and
fluorescence of
Sanjivani Vati. | | --do-- |

22. Saxena R.B., Kinetic measurements of Swelling of Sanjivani Vati. -- do--
23. Saxena R.B., Dholakia M.V., Mehta H.C. Physico-chemical & fluorescence investigation of Puga. -- do--
24. Saxena R.B., Dhyani P.L., Mehta H.C. Standardisation of Tila taila and Pancaguna taila. Accepted for Publication in JRAS
25. Saxena R.B., Mehta H.C. Thermodynamics of Tila taila and Pancaguna taila. Sent for publication to Ancient Science of Life, Coimbatore (20.1.1983)
26. Saxena R.B. Kinetic and aspects of *invitro* thermodynamic disintegration of Sanjivani Vati. Sent for publication in 'Vagbhata' Trivandrum (23.3.83)
27. Sharma Rajesh, Mishra K.P., Chatruvedi D.D. Ayurvediya aushadh mankikaran prakriya ka praroop. Ayurved Vikas April '82

Literary Research :

Sl. No.	Author (s)	Article (s)	Published/ Presented	Year
1.	Govinda Reddy, C.	As observer	National Workshop on Cooperative Acquisition of Health Science Literature.	4th-6th Nov. '82.

- | | | | | |
|-----|--------------------------------------|--|--|-----------------|
| 2. | Hussain, S. A. | Physicians of Hyderabad during Nizam II & III | Bull. of the I. I. H. M., Vol. X. | 1980 |
| 3. | Kusuma K.,
Kumari | Tambula in Ayurveda (Telugu) | 4th Annual Function of Ay. Sastragna Parishad. | 12th Dec., 1982 |
| 4. | Mishra K. P. | Ayurveda mutra pariksha-Anusandhanatmak Vivechan. | Dhanwantari (Rakta-Mal-mutra Vishashank) | |
| 5. | Mukherjee G.D. | The History of Traditional Medicine and its relation with the Acupuncture. | Jadavpur University, Jadavpur, Calcutta. | 11th, Jan. 83 |
| 6. | Nesamany S.,
Bhat A.V. | Aragwadha | Vagbhata | Oct. 1982 |
| 7. | Pandey V.N. | Jaravyadhi Hara | | |
| 8. | Rao B. Rama,
Venkata, Reddy
M. | A note on Kriya Yoga. | Bulletin of the IIHM, Vol. X. | 1980 |
| 9. | Rao B. Rama | Bhishagratna Achanta Lakshmi pathi- His dedicated service to Ayurveda | Bull. of the IIHM. Vol. X. | 1980 |
| 10. | Rao B. Rama | Bath in Ayurveda, Yoga and Dharma Shastra | All India Oriental Conference Jaipur, Oct., 1982 | |
| 11. | Rao B. Rama | Water & Usahpana in Ayurvedic Literature. | Bull. of the IIHM, Vol.X | Sept., 1980 |

- | | | | |
|----------------------------------|--|---|-----------------------------------|
| 12. Rao, B. Rama, Sharma, C.R.R. | A note on the new Edition of Bhela Samhita. | Bull. of the IIHM, Vol. X., 1980 | |
| 13. Rao, B. Rama & Sharma C.R.R. | Additional material in Astanga Sangraha | Bull. of the IIHM, Vol. X., 1980 | |
| 14. Rao, B. Rama & Sharma C.R.R. | Urine in Ancient Ayurvedic Literature. | -do- | |
| 15. Rawal J.H. | 1. Swetpradar
2. Nasya EK Vihangavalokan
3. Balashosha | Niramay
-do-
-do- | Under Publication
-do-
-do- |
| 16. Sharma C.R.R. & Rao, B. Rama | A note on the new Edition of Bhela Samhita | Bull. of the IIHM, Hyderabad. | April, '82 |
| 17. Sharma C.R.R., Rao B. Rama | Urine in Ancient Ayurvedic literature. | -do- | -do- |
| 18. Sharma C.R.R. | Charaka Hrdroga Chikitsat Susruta Hrdroga Chikitsayah Vaisishtyam (Sanskrit) | Seminar on Hrdroga conducted by Ayurveda Academy, Vijayawada. | 30th Jan. 1983. |
| 19. Sharma C.R.R. | Swasthavritta in Ayurveda (Telugu) | Diamond Jubilee Celebration, Dr. N. R. S. Ayr. College, Vijayawada. | 6th Feb. 1983. |
| 20. Sharma C.R.R. | Ashtanga Sangraha Vaisishtyam (Telugu) | 103rd Dr. Achanta Lakshmipathi Jayanti Celebration. | 3rd March, 1983. |

- | | | | |
|------------------------------------|--|--|-------------------------|
| 21. Sharma K.D. | Rasayana Shilajita
in Ayurveda. | Ayurveda
Vikas | Nov., '82 |
| 22. Sharma K.D. | Sarpadaysavam | Swasthya | Feb.-
March
1983. |
| 23. Sharma K.D. | Netrabhishyanda
aur Ayurveda | Ayurveda
Vikas | Aug.,
1982 |
| 24. Sharma K.D. | Yoga aur Ayurveda | Swasthya | June or
Aug. 1982. |
| 25. Sharma S.K. | 3rd Edition of a
Text Book of
Shalya, (in two
Volumes). | Shalya
Vigyan | Jan.,
1983 |
| 26. Trivedi V.P.S. | Apasmar Vivechan | Under
Publication | |
| 27. Uniyal M.R. | Sanghitota Srava
Niodya ki Pahichan | Ayurveda
Vikas,
pp. 50-56 | April, '82 |
| 28. Uniyal M.R. | Manasik Tanao me-
in Upyogi kavchh-
arudraksha | Ayurveda
Vikas
p. p. 37-39 | June, '82 |
| 29. Uniyal M.R. | Vira Vinishchiya | Ayurveda
Vikas | July, '82 |
| 30. Uniyal M.R. | Shilajita Vivechan | Madhumeha
Vischanka
Ayurveda Vikas
p.p. 115-118 | |
| 31. Pandey V.N. | Ayurvediya
Upachar | | |
| 32. Sharma C.R.R.
& Rao B. Rama | Additional material
in Ashtanga
Sangraha | Bulletin of
the IIHM,
Hyderabad. | April, '82 |

Family Welfare :

Sl. No.	Author (s)	Article (s)	Published/ Presented	Year
1.	Audhichya K.C., Billore K.V., Chaturvedi D.D.	Medico-Botanical approach in Family Welfare.	Nagarjun	Sent of Publica- tion
2.	Chaturvedi D.D.	Literary evaluation of trial contracep- tives.	Symposium of Family Wel- fare CCRAS, N. Delhi.	May, 1982
3.	Geetha A.	A Clinical trial of Ayurvedic oral contraceptive.	—do—	May, 1982
4.	Geetha A. Anandavalli- Amma M., Subhedra Nair	An Ayurvedic drug for birth con- trol-A trial with Ayush AC-4.	Journal of Res. in Ayur- veda & Siddha	Dec., '80
5.	Mohana K., Susan T. and Purushothaman K.K.	Physalin as an an- tifertility agent.	Sent to CCRAS	
6.	Mohana K., Susan T. and Purushothaman K.K.	Antifertility acti- vity of vicolides.	Annual Sympo- sium in che- mistry held at I. I. T. Madras	
7.	Tewari P.V.	Clinical evalua- tion of Antifer- tility Property of <i>Embelia ribes</i> in Ayurvedic oral contraceptive.	J.R.A.S.	Under Publica- tion
8.	Tewari P.V.	-do-	XV Annual Conference of Indian Pharmacologi- cal Society, Chandigarh.	

Total 234

TECHNICAL REPORT — SIDDHA

Abbreviation Used For Institutes/Units

Institutes/Units	Abbreviation
Central Research Institute, Madras	CRIM
Regional Research Institute, Pondicherry	RRIP
Clinical Research Unit, Palayamkottai	CRUP
Clinical Research Unit, New Delhi	CRUD
Drug Research Scheme (Multi-disciplinary)	DRSM
Drug Standardisation Unit, Madras	DSRM
Drug Standardisation Unit, Trivandrum	DSRT
Drug Standardisation Unit, Bangalore	DSRB
Survey of Medicinal Plants Unit, Palayamkottai	SMPP
Literary Research and Documentation Department, Madras.	LRDM

CLINICAL RESEARCH

Clinical Research in Siddha Medicine under the Council has been pursued for about a decade. A number of important disease conditions have been taken up for clinical studies. The therapeutic clinical trail of *Tambirachendooram* in *Valigunmam* and *Kovai elai Kalkam* in *Manjal Kamalai* have been conclusively found to be effective. The treatment of *Putrunoi* (cancer) by Siddha Medicine *Linga Chendooram* and coded drugs *RGX, SKX, STC, VKC* have also demonstrated significant effect. In addition, the trial of certain other Siddha medicines *Sandhivata Soolai, Kalanja Padai, Vallainoi, Kakkai valippu, Kazhichal, Venkuttam, Neerazhivu* are also taken up. During the year under review, further studies on the diseases mentioned above have been continued. These studies have been carried out through the Central Research Institute (Siddha), Madras; Regional Research Institute (Siddha), Pondicherry; Clinical Research Unit (Siddha), Palayamkottai; Clinical Research Unit (Siddha), New Delhi and Drug Research Scheme (Multi-disciplinary), Madras. These studies have been conducted mainly on the basis of fundamentals and details discussed in the literature of Siddha Medicine. Certain Bio-chemical, Pathological and Radiological investigations have also been taken up to ascertain the diagnosis and to provide quantitative/objective methods for the assessment of the effect of the trial therapy. The observations on these studies carried out during the year 1982-83 are presented separately for each disease. The description covering a brief background of the disease conditions, the effect of previous trial therapy, the trial methodology followed in each of the diseases are highlighted and finally the results of the treatments have been discussed. Tables have been given suitably to give an idea of results at a glance.

VALIGUNMAM (Peptic Ulcer):

Among the eight types of *Gunmam*, *Valigunmam* has been considered to be more important. This has been considered similar to Peptic ulcer-Duodenal ulcer and Gastric ulcer of Modern System

of Medicine. The disease occurs due to irregularities of food habits and also due to psychological factors. The trials on this disease for over a decade have conclusively established the efficacy of *Tambirachendooram* in its treatment. The selection of the patients for the trial is based on the clinical criteria such as pain in epigastric region alongwith nausea and vomiting. The patients with malignancy, intestinal T.B. are excluded from this trial. However, patients with partial pyloric obstructions are included in this trial. The diagnosis and the assessment of the results are based on F.T.M. and radiological investigations along with clinical diagnosis based on fundamentals of Siddha System of Medicine.

Thambirachendooram:

CRIM

During the year under report, seventy-eight patients of *Valigunnam* have been subjected to the trial of *Thambira chendooram* prepared with a juice of *Karunthulasi*. The treatment has been prescribed in three courses of seven days each. Each course consists of administration of drug *Thambirachendooram* in the dose of 45 mg. twice daily with honey before meal for 1st to 5th days. On the sixth day the medicine is stopped and patients are advised to apply paste of 50 gm. of *Omam* (*Ajivon*) seeds grinded in cow's milk, over the head and then after ten minutes they are advised to take bath with hot or cold water. On the 7th day, the patients are advised to massage the body with 50 ml. of *Jeeraga Thailam* (prepared by heating gieng-dly oil and adding the Cumin seeds in the oil) and then the patients are, advised to take bath. Similarly the 2nd and 3rd seven-day courses are provided. The patients are prescribed only blend diet during the entire twenty-one days course of the treatment. They are also advised to avoid taking tamarind, Chillies, spicy food, non-vegetarian diet during the course of treatment.

Most of the patients studied during the period under report are in the age range of 20-40 years and were having hyperacidity of mild or moderate degree before treatment. Some of them were also having normal acid pattern. The treatment provided reduction in acidity towards normalcy in most of the patients.

Table 36

Showing the observations on F. T. M. of the patients studied.

Acidity	Number of patients	
	Before treatment	After treatment
Normal	24	34
Achlorhydria	3	5
Low	—	1
Mild	39	31
Moderate	12	6
High	—	—
Not done	—	1
Total	78	78

Most of the patients treated with this course of treatment have been relieved after completing twenty one days course of treatment (92.30%), while complete relief has been noted only in 5.12% patients and the remaining two patients have been discharged otherwise. Effect of the treatment appears to be more pronounced in females in comparison to males.

Table 37

Showing the results of treatment in the patients of *Valigunmam* (peptic ulcer) at a glance.

Result :	Male		Female		Total	
	No.	%	No.	%	No.	%
Cured	1	1.69	3	15.79	4	5.12
Relieved	56	94.92	16	84.21	72	92.30
OWD (LAMA)	2	3.39	0	0	2	2.58

MANJAL KAMALAI (Jaundice) :

The clinical study on *Manjal kamalai* considered as jaundice due to infective hepatitis have been taken up since the very beginning. Certain herbal remedies such as *Karisalai*, *Keezhanelli samoolam*, *Amanakku elai* and *Kovai elai* have been taken up for therapeutic trial in this disease. The effect of the combination of *Karisalai* and *Amanakku elai* have been studied during the previous year. The biochemical parameters such as direct Vanden Bergh reaction have also been adopted for the assessment of the effect apart from clinical parameters. The disease appears to affect persons in every age group. But the incidence in the age range of 20-30 years appears to be more. The males have been affected more than the females.

Keezhanelli and Karisalai (K-3) :

CRIM

The clinical trial of combination of *Keezhanelli* and *Karisalai* has been taken up on sixty-one cases during the period under report. Both these drugs have been freshly obtained and administered in the form of *Kalkam* alongwith butter milk or water, twice daily. The cases of jaundice due to obstruction, worm infestation, gallstones, benign and malignant growth and haemolytic type have been excluded from the trial after radiological and other examinations. During the twenty-eight days course of treatment, patients were provided salt free diet. The treatment has been found to be reasonably effective in all the patients who completed the full course of treatment.

Table 38

Showing the result of the treatment in the patients of
Manjal Kamalai at a glance.

Sl. No.	Result	Male		Female		Total & Percentage
		No.	%age	No.	%age	
1.	Cured	12	27.91	5	27.78	17(27.86)
2.	Relieved	20	46.51	9	50.00	29(47.54)
3.	OWD (LAMA)	11	25.58	4	22.2	15(24.59)
Total		43		18		61

The effect of the treatment on the direct Vanden Bergh reaction (D. V. R.) has also been significant and consistent with the overall efficacy of the treatment. All the patients who were investigated for this test showed direct positive or delayed positive response, while after treatment majority of the patients showed negative response to the test.

Table 39

Showing the effect of the treatment on the D.V.R.

Sl. No.	Result	Before treatment		After treatment	
		No.	%	No.	%
1.	Positive	52	85.24	5	8.19
2.	Delayed positive	3	4.91	11	18.03
3.	Negative	—	—	33	54.09
4.	Not done	6	9.85	12	19.67
Total :		61		61	

KAZHICHAL (Dysentric Disorders) :

The clinical studies on the *Kazhichal* has been taken up since 1980 and efforts have been made to study the clinical efficacy of two preparations *Padiga linga thubar* for adults and *Amaiodu barbam* for children. The patients of dysentary have been taken up on the basis of the methodology described in Siddha System of Medicine. The treatment has been started after pathological examination of stool and blood.

Padiga Linga Thubar and *Amaiodu Barbam* :

CRUP

During the year under report, eight patients have been taken up for the study of the effect of *Padiga linga thubar* in the dose of 500 mg. three times a day with lime juice for adults and *Amaiodu barbam* in the dose of 100 mg. three times daily for children. All the patients were prescribed milk and bread during the course of treatment. The

treatment was continued till the patients got cured. The treatment has been found to be quite successful, since seven out of eight patients reported complete relief and only one patient reported marked relief.

VELUPPUNOI (Anaemia) :

The clinical therapeutic trials on *Annabedi chendooram* in the patients of *Veluppunoi* (anaemia) has been taken up in the year, 1980 and about 250 patients have been studied. The methodology for selection of patients is based on the fundamentals of the Siddha System of Medicine i. e. *Envagai Thervu* with other available modern parameters like pathological investigation on blood, stool, urine etc. The assessment of results have been done on the basis of investigations for haemoglobin percentage along with clinical parameters.

Annabedi Chendooram

CRUP

During the year under report the study on the effect of *Annabedi chendooram* have been continued further on ninety-two patients. The drug has been administered in the dose of 250 mg. three times a day with honey for a total duration of 40-50 days. Varying degree of effect have been observed in the patients who completed the full courses of treatment. Out of ninety-two, thirty patients reported complete relief, twenty-eight patients reported marked relief and fourteen patients reported moderate relief, while twenty patients discontinued the treatment. Certain toxic reactions such as burning sensation in the stomach, abdominal pain, loose motions and gingivitis have also been noted in certain patients. It is further observed that the treatment is effective in iron deficiency—Hypochromic Microcytic anaemia.

KALANJA PADAI (Psoriasis) :

The clinical studies on this disease have been initiated since the very beginning and the oil made out of *vetpalai* leaves and coconut oil have been put to clinical trial, as internal as well as external medication. The study have been continued as open preliminary trial. The diagnosis and assessment of the effect of the treatment have been based on Siddha fundamentals as well as modern parameters. The patients are also followed up after completion of treatment. The biopsy of the skin is also done in the beginning and

also during the course of treatment. Photographic record of the affected parts are also maintained.

777 Oil :

CRIM

The study on the effect of coded oil preparation 777 prepared from the leaves of *Vetppalai* and coconut oil has been continued further during the year and seventeen more patients have completed the trial. The drug was given in the doses of 15 ml. internally twice daily with milk. The same oil was also prescribed for external application. The treatment provided definite relief in all the patients who completed the treatment.

Table 40

Showing the results of the treatment in the patients of *Kalanja Padai* at a glance.

Sl. No.	Results	Male		Female		Total	
		No.	%	No.	%	No.	%
1.	Cured	0	0	0	0	0	0
2.	Relieved	11	78.57	2	66.67	13	76.47
3.	OWD (LAMA)	3	21.43	1	33.33	4	23.52
Total :		14		3		17	

VELLAINOI (Leucorrhoea) :

RRIP

Vellainoi or *Vellaitheetu* (Leucorrhoea) is one of the *Magalirnoigal* (Female diseases) described in the literature.

Padigram (Alum) in the form of pergam prepared in the process using white of an egg was used as trial drug. The drug was administered in the dose of 300 mg. three times a day followed by milk. *Kadukkai Kudineer* was used as *Peechu* (Douch) in all the selected cases.

It has been observed that the *Peechu* (Douch) given using *Kadu-*

kkai Kudineer, accelerates the process of cure. It has also been noticed that the treatment provides considerable relief in vaginal itching inflammation and ulceration of the vaginal valve. The cases treated were classified as cured if all the presenting symptoms disappear and relieved if 75% of the symptoms are relieved. The cases who left against medical advice were labelled as OWD. The cases discharged were advised to attend the OPD for follow-up studies. No side effects were noticed during the treatment and as well as at the time of follow up. During the period under review ninety-two cases of *Vellainoi* were admitted. Out of the ninety-two cases, fifty four cases were discharged as cured, twelve cases as relieved and the remaining twenty-six cases were discharged otherwise (OWD).

Parangipattai Pathangan :

RRIP

The drug *Parangipattai pathangan* was administered at the dose level of 200mg. two times daily in the selected cases. *Karappan thailam* was used for external application on the affected part. The criteria of evaluation was same as in the previous conditions. The discharged cases were advised to attend Out Patients Department for follow up purposes. During the period under review, ninety-four cases were admitted. Out of the ninety-four cases, sixty-six cases were discharged as cured, eleven as relieved and seventeen as otherwise (OWD).

PUTRUNOI (Cancer) :

The disease *Putrunoi* signifies the malignant growth of the various parts of the body. The trials of certain Siddha preparations have been taken up in the treatment of this disease since 1972. The effect of coded drugs *RGX*, *VK₂*, *SKX*, *Linga chendooram*, *Nithya-kalyanikalkam*, *Patchai ennai* etc. have been studied earlier. The effect of these drugs have been somewhat significant in the control of disease activities and certain complaints of the patients. The patients suffering from this disease are selected on the basis of clinical manifestations as well as other modern parameters including skin biopsy.

RGX/VK₂/SKX etc. :

CRIM

The study on the effect of the following regimen of treatment have been continued further on sixty-four patients.

RGX, SKX, VK₂

Linga chendooram

Nithyakalyani kalkam

Patchai ennai

Principal drug

Supporting drugs

For external application

Diet : In addition to the normal hospital diet, Eggs, Mutton, extra Milk, Fruits, like rich diet was also given.

The disease affects the females much more than the males. The patients above the age of 50 years are mostly affected with this disease. The female reproductive organs such as cervix uteri and uterus are most frequently affected with this disease. The involvement of stomach and rectum are also quite common.

The treatment provides significant relief in the disease and appears to have analgesic and anti-cancerous properties. The administration of green leaves *kalkam* of *Nithya kalyani* externally and *Linga chendooram* internally are observed to help the regression of the diseases.

These drugs reduce the serum mucoid level. In the cancer of cervix of the uterus, the pain and bleeding with bad odour gets stopped. As a result the patient is bestowed with prolonged longevity, with pain and sufferings being very much reduced. The patients are referred to Allopathic hospitals for radiation therapy and surgery to hasten the relief if found necessary.

Hence it is to be noted that the judicious combination of radiation or surgery on the above said drugs, go a long way in relieving the suffering of the patients.

SANDHI VATHA SOOLAI (Rheumatoid Arthritis) :

The diseases of joints are covered under *Sandhi vatha soolai* in the Siddha literature. The trial on this disease has been continued during the year. The patients taken up in the trial have been found suffering from rheumatoid arthritis. The trial methodology is based on the fundamentals of Siddha Medicine. Certain investigations on blood, stool and urine were conducted periodically for diagnosis and the assessment of results. The diagnosis of rheumatoid arthritis was confirmed by the detection of rheumatoid factor in the blood. Most

of the patients studied in the trial have been in the age range of 20-50 year. Females were found more prone sufferer in this disease.

Gowri Chinthamani And Linga Chendooram :

CRIM

The trial of *Linga chenduram* and *Gowri chinthamani* each in the dose of 300 mg. three times daily alongwith 500 mg. of *Thirikadugu* with honey internally, *Kukkil thailam* and *Mayana thailam* as externally was continued further. Thirty-four patients were included into the study during the year under report. Eighteen patients have been classified as relieved and sixteen patients have been discharged otherwise. Further studies are continued.

KAKKAI VALIPPU (Epilepsy) :

The clinical trials on *Kakkai Valippu* considered as epilepsy has been initiated last year and trial of *pachondhi sudar thailam* has been taken up on ten cases. The manifestation of this disease as per Siddha literature are stiffness of limbs, dryness of throat and fever during attacks. The selection of the patients for the trial have been made on the basis of clinical manifestation of the disease discussed in Siddha literature alongwith characteristic symptoms of epilepsy. 771 cases of this disease have also been treated at OPD level.

Pachondhi Sudar Thailam :

CRUP

The trial of *Pachondhi sudar thailam* have been continued further on seven patients. The drug has been administered in the dose of ten drops twice daily with ginger juice. Out of the seven patients who completed the trial at I.P.D. level, five patients showed marked relief and two patients showed moderate relief. Further studies are in progress.

NEERAZHIVU (Diabetes mellitus) :

The disease entity *Neerazhivu* of Siddha Medicine has been considered similar to diabetes mellitus. The clinical trials on this disease have been taken earlier and *Triphala* tablets, *Kadalazhinghil choornam* and *Abraga chendooram* have been studied. Out of these *Abraga chendooram* have shown good effect in most of the patients. The blood sugar level has also been brought down to normal in these patients. The effect of *Triphala* has also been reported to some

extent. The trials have been continued further during the year and certain other herbal medicines have been taken up. The diagnosis of the disease has been made on the basis of urine examination, blood examination for blood sugar and G. T. T. The assessment of the effect of the drugs has been made on the basis of improvements in Clinical manifestation and pencodical examination of urine and blood for sugar. Most of the patients studied were of the age of more than 30 years.

Koiyya/Avarai :

DRSM

The comparative clinical evaluation of *Koiyya* leaves and *Avarai* in the form of powder in the doses of 1 gm. thrice daily was taken up. The study has been conducted on twenty nine patients in two groups. The single blind trial has been conducted with *Koiyya* leaves on eleven patients and with *Avarai* on thirteen patients. Both these drugs affected only minimal fall in blood sugar level on prolonged use (upto 90 days). No significant clinical improvement has been noted with either drug. Further studies are in progress.

Abraga chendooram :

CRUD

Abraga chendooram was administered in the doses of 100 to 200 mg. filled in capsules two times a day after food, with water for six weeks. Out of the fifty-three cases studied during the period under review twenty-seven cases showed control of the condition and rest of the cases showed fair control only. The blood sugar level had come almost to normal in the cases that showed control. Follow up of 211 cases was in progress. It is observed that the cases treated with *Abraga chendooram* (200 mg.) did not show any rise in blood sugar even if the drugs are with drawn. However the cases are kept on balanced diet, 1800 calories. The study is in progress.

VENKUTTAM (Vitiligo) :

The clinical studies on this disease are taken in the Institute since last three years. This disease is considered to be one of the eighteen types of *Kuttams* described in Siddha literature and is comparable to Vitiligo in modern medicine. Certain medicines such as *Ponnimilai chendooram* and *Thanga parpam* have been studied earlier. The method of study i. e. diagnosis and assessment is based on

fundamentals of Siddha System of Medicine as well as modern clinical and pathological parameters including skin biopsy.

Kandankathiri Chooranam/Poovarasu Chooranam : **DRSM**

The trial of *Kandankathiri Chooranam/Poovarasu Chooranam* have been initiated in two separate group of patients as single blind study. The powder of *Kandankathiri* roots in the dose of 1 gm. twice daily alongwith external application of oil prepared from the same drug have been tried on nineteen patients, while the other drug *Poovarasu* have been tried in the form of powder on two patients. The observations conducted so far do not show any efficacy of the drug, though no untoward side effects or deterioration are noted.

Table 41

Statement showing number of trials taken up during 1981-82 and 1982-1983 and the number of patients studied

Sl. No.	Disease	Number of trials		Number of patients		Participating Projects.
		1981-82/1982-83	1981-82/1982-83	1981-82/1982-83	1981-82/1982-83	
1.	Valigunmam	1	1	94	78	CRIM
2.	Putrunoi	1	1	109	64	CRIM
3.	Manjal Kamalai	1	1	34	61	CRIM
4.	Sandhivatha soolai	1	1	32	34	CRIM
5.	Kalanjapadai	1	1	8	17	CRIM
6.	Vellai noi	1	1	82	92	RRIP
7.	Karappan	1	1	77	94	RRIP
8.	Velluppunoi	1	1	98	92	CRUP
9.	Kakkai valippu	1	1	10	7	CRUP
10.	Kazhichal	1	1	2	8	CRUP
11.	Venkuttam	1	1	1982 (O.P.D.)	19	DRSM
12.	Neerazhivu	2	2	1960 (O.P.D.)	77	DRSM, CRUD

Table 42

Showing the patients attended at O. P. D. and admitted in the IPD During 1982-83.

Sl. No.	Institute/Unit	Number of Patients attended at O P D			No. of patients admitted in IPD
		New	Old	Total	
1.	CRI(S) Madras	11955	17851	29806	254
2.	RRI(S) Pondicherry	6184	13059	19243	186
3.	CRU(S) Palayamkottai	1455	4285	5740	107
4.	CRU(S) New Delhi	—	—	264	—
5.	DRS(MD)Madras	—	—	185	4
Total :				55,238	551

Table 43

Cases treated together with the results in various clinical conditions during 1982-83.

Disease	No. of Cases admitted	Result			
		Cured	Relieved	OWD	Total
Valigunmam	78	4	72	2	78
Putrunoi	64	—	64	—	64
Manjal Kamalai	61	17	29	15	61
Sandhivatha	34	—	18	16	34
Soolai					
Kalanjapadai	17	—	13	4	17
Vellai noi	92	54	12	26	92
Karappan	94	66	11	17	94
Vellupponoi	92	30	42	20	92
Kakkai valippu	7	—	7	—	7
Kazhichal	8	7	1	—	8

HEALTH CARE RESEARCH

The work on Health Care Research Programmes is taken up through the Mobile Clinical Research Units attached to Central Research Institute (Siddha), Madras and Regional Research Institute (Siddha), Pondicherry. The teams of these units visit selected villages and take up compilation of health statistics as per prescribed proformae. The details about socio-economic and personal factors concerning each individual are recorded in proforma 'A'. If the individual is found sick the details of his sickness are recorded in proforma 'B'. The investigations on blood, stool and urine, if conducted for patients or healthy individuals are recorded in proforma 'D'. Proforma 'C' provides information about the details of geographical and other relevant information about the selected villages. In another set of villages health education, means of prevention of diseases etc. are propagated apart from providing incidental medical aid. The collection of folk-lore also form part of work taken up by these units. The work was taken up in twelve villages, with a total population of 13,857 individuals. 12,467 patients were provided medical aid. The details of work carried out during the year are discussed separately for both the units.

CRIM

The programme has been taken up in four randomly selected villages : Vanagram, Siva Bootam, Thandalam and Chinnasekkadu. The programme of collection of Health Statistics has been taken up in all the four villages and two villages have been completed. The work in Vanagram and Siva Bootam is partially completed. The team made 109 visits during the year and completed collection of health statistics of 2691 individuals during the year.

Table 44

Showing the details of work conducted on
Health Statistics.

S. No.	Villages	Total Population	Number of visits performed	Number of Individuals covered
1.	Vanagram	948	41	573
2.	Siva Bootam	660	24	429
3.	Thandaream	364	11	364
4.	Chinnasekkadu	1325	33	1325
Total :		3297	109	2691

During the visits, 3850 (1613 New) patients were provided medical aid. The pathological investigations on blood, stool and urine were conducted and seventy-seven samples were examined. Ten folk-lore claims were also collected.

During the period under review the units also conducted studies on *Karappan* and *Padarthamarai* under short-term programme.

KARAPPAN :

Twenty-two cases of Karappan were studied. The trial drug *Sivanar amistham* at the dose level of 200mg. followed by honey two times a day was administered in all the cases selected for trial. The pathological investigations relevant to this clinical trial were conducted before and after the treatment. Out of the twenty-two cases ten cases were completely relieved of the symptoms, eighteen cases were relieved of the major symptoms and two cases did not responded to the treatment. The study is in progress.

PADARTHAMARAI :

Twenty-two cases of *Padarthamarai* were studied. The trial drug *Akasakarudan kizhangu Chooranam* at the dose level of 500 mg. two times a day followed by water was administered in all the cases selected for study. The pathological investigations relevant to these

clinical conditions were done before and after the treatment. Out of the twenty-two cases studied sixteen cases were relieved of the major symptoms and the remaining 6 cases did not responded the treatment. The study is in progress.

RRIP

The mobile unit attached with Regional Research Institute, Pondicherry has carried out Survey and Sureillance Programme in Sembian Palayam and Kari Kalanpakkam. A brief report of work done is reported here under.

SEMBIYAN PALAYAM :

The total population of the village is 577. The village has no facilities like hospital, dispensary, public library etc. Only one primary school is functioning in the village. Agriculture is the main occupation of the villagers. The village is well connected with the city through buses. Paddy, ragi, groundnut, sugarcane . are the main produce of the village.

KARIKALANPAKKAM :

The population of this village is 2273. This village is having one, thirty bedded hospital with surgical facilities, one middle school, post office and a branch of State Bank of India. Agriculture is the main occupation of the villagers. Paddy, ragi, sugarcane, groundnuts and coconuts are the main produce of the village. The team conducted survey and collected information regarding Health Statistics, sex, Marital status, income, religion, addictions, food and dietic habits in respect of 1251 individuals during the period under review.

MEDICO - BOTANICAL SURVEY

Survey of Medicinal Plants is an important aspect of research. The study of quantitative and qualitative availability of medicinal plants used in Siddha Medicine has been taken up since 1971 through survey of Medicinal Plants Unit PallayamKottai. Fifty-two Tours were conducted till 31st March, 1982 and various fresh areas of the forest divisions e.g. Shencottai, Madurai North, Kanyakumari, Tirunalveli, Ramanathapuram, Tiruchinapalli, Tanjore, Ramnad, Salem, Vellore, Chingalput, Nilgiri, Coimbatore and Dharmapuri were explored.

Herbarium specimens comprising of 2535 field book numbers, three specimens of mineral origin and seven that of animal origin were collected. 2200 herbarium sheets were prepared and 370 crude drug samples were added to the museum.

During the reporting year various forest areas of Tirunalveli and Tanjore districts were surveyed. Herbarium specimens spread over to 352 field book numbers (2537 to 2888) were collected. Some of the important medicinal plants collected during the aforesaid tours are as follows :

Vengari (Pterocarpus marsupium Roxb.), Mulli (Solanum indicum L.), Eswarmooli (Aristolochia indica L.), Siruthekkku (Clerodendrum serratum Sp.), Kadukkai (Terminalia Chebula Retz.), Krishnapalai (Cryptolepis buchanani R & S.), Narivengayam (Urginia indica Wt.), Nilavagai (Cassia angustifolia Vahl.), Sarakonnai (Cassia fistula Linn.), Vilvam (Aegle marmelos Corr.), Nayuruzi (Achyranthes Aspera Linn.), Thottalvadi (Mimosa pudica Linn.), Pungu (Pongamia glabra Vent.), Sirunerunchil (Tribulus terrestris Linn.), Azhinjil (Alangium salvifolium

Wang.), *Keelzhanelli* (*Phyllanthus niruri* Linn.), *Nannari* (*Hemidesmus indicus* R. Br.), *Chinkodiveli* (*Plumbago rosea* Linn.), *Kayanthakara* (*Eclipta alba* Hassk.), *Venthamarai* (*Nelumbium speciosum* Willd.), *Kanmalpoo* (*Biophytum sensitivum* DC.), *Thumbai* (*Leucas aspera* Sp.), *Neermulli* (*Astercantha longifolia* Nees) etc.

Twenty-nine crude drug samples were collected and added to the museum. These include *Ilavangapattai* (*Cinnamomum zeylanicum*), *Vathavalli* (*Melothria heterophylla*), *Cheenthil* (*Tinospora cordifolia*), *Karunkuvalai* (*Monochoria vaginalis*), *Venthamarai* (*Nelumbium speciosum*), *Neeli* (*Indigofera tinctoria*), *Marukkarai* (*Randia dumetorum*), *Mavilingam* (*Crataeva religiosa*), *Thannirvittankizhangu* (*Asparagus racemosus*), *Punnai* (*Calophyllum inophyllum*), *Mahilam* (*Mimusops elengi*), *Korattai* (*Trichosanthes palmata*), etc. Seventeen drugs of vegetable origin were collected for supply to various research units of the Council.

In addition 1050 plant specimens were poisoned and 760 herbarium sheets were added to the Herbarium raising the total number to 2602. After establishment of Central Herbarium and Museum at Central Research Institute (Ayurveda) New Delhi, 199 herbarium sheets were sent to the herbarium.

Folk Medical Claims

Folklores and traditional practices of medicare have led to the discovery of many new drugs in past. The study of these practices are now developing into separate speciality. Folklores are being collected and exclusively studied and recently new term Ethno-medicine has been evolved to signify its importance. The collection of folk medical claims through Mobile Clinical Research Units and Survey of Medicinal Plants Units of Siddha has been taken up. During the year under report twenty-eight folklores have been collected by the said units. These claims cover treatment for many common ailments e.g. Cough, Cold, Fevers, Cuts, Rheumatic pains, Worms infestation, Abdominal pains, etc.

PHARMACOGNOSTICAL STUDIES

The pharmacognostical studies were conducted by the Pharmacognosy wing of Drug Research Scheme (Multi Disciplinary) Madras. Studies on leaves and stems of *Poovarasu* (*Thespesia populnea* Soland), *Kovai* (*Coccinia indica* Linn.) and leaves of *Pisonia morindaefolia* R. Br. have been carried out during the reporting year. A brief review of work done is reported.

Poovarasu (*Thespesia populnea* Soland) Leaf & Stem :

In Siddha system of Medicine, the leaf of the plant is used for the treatment of psoriasis, scabies, other skin diseases and rheumatism. The plant *Thespesia populnea* is a small evergreen tree, bark grey to brown, fissured and often knobby and fibrous, leaves broadly ovate, cordate, acuminate, entire. Stipules, subulate deciduous. Flowers yellow with purple base. Calyx cupular truncate, covered with minute peltate scales. Seeds ovoid and flat channeled.

Microscopically the leaf is dorsiventral and covered externally with characteristic peltate hairs. Multicellular capitate glandular hairs of various sizes and shapes are also found. Mucilage cells in the epidermis is fairly numerous, stomata ranunculaceous type and present on both surfaces. Midrib region is made up of both collenchyma and parenchyma cells. In the centre, an arc shaped vascular bundle accompanied by sclerenchyma cells is present. Some of the parenchyma cells contain clustered crystals. Secretory glands are also seen. Lamina contain single layered, compactly arranged, columnar palisade tissue and 4-6 layers of spongy tissue.

Transverse section of petiole through the distal end, generally exhibiting isolated 4-6 separate collateral bundles arranged in a circle. Outermost layer, epidermis is made up of a single layer, large barrel-shaped cells. It is covered by the cuticle. Cortical region consists of outer 6-8 layers of smaller collenchyma cells and inner larger, rounded 10-12 layers of thin walled parenchyma cells.

Secretary glands covered on either side by sclerenchyma cells. Pith is parenchymatous in nature.

Transverse section of stem reveals single layered epidermis consisting of rectangular cells and covered by a cuticle. 6-8 layered collenchymatous outer cortex is followed by tangentially elongated, thin walled 6-7 layers of parenchymatous inner cortex. Xylem forming a continuous ring, which is traversed by medullary rays. Vessels show simple perforation and is made up of phloem parenchyma, sieve cells and phloem fibres. Pith composed of thin walled parenchyma cells.

2. *Kovai (Coccinia indica L.)* Stem and Leaf :

Kovai is a perennial scandant much branched herb with simple leaves, bright green above, paler beneath, palmately 5-nerved, often with circular glands between the nerves, obtusely 5-angled or sometimes deeply five lobed, the lobes broad, obtuse or acute, apiculate more or less sinuate, toothed. Male flower is campanulate with glabrous calyx tube. Corolla pubescent inside, glabrous outside with acute triangular segments, staminal column is a glabrous capitulum of anthers, sub-globose. Female flowers with three subulate staminodes. Ovary and fruit are fusiform. Seeds obovoid, founded at the apex, slightly papillose much compressed and yellowish-grey.

Microscopically, the stem shows single, layered epidermis followed by a large collenchymatous cortex specially in the ribs, which is sometimes interrupted by patches of assimilatory tissue extending to the epidermis. Outer part of the cortex contain a ring of sclerenchyma. Pericycle containing a continuous ring of fibrous cells in very young stem, but the ring becomes discontinuous when older. Vascular bundles separated by broad strips of ground tissue and are bicollateral type. Five bundles are arranged in the outer and five in the inner circle. Vessels are narrow, perforations simple, tyloses common in old stems.

Leaf is dorsiventral in nature with multi-cellular hairs. Stomata confined to the lower side or present on both surfaces and of ranunculaceous type. In the mid-rib region a large bicollateral vascular strand is seen in the centre which is accompanied by a smaller upper one. Below the upper and lower epidermis 2-4 layers

of collenchyma cells are noticed. Transverse section of lamina shows a single layer of closely arranged columnar palisade tissue filled with chloroplast followed by 3-4 layers of loosely arranged rounded spongy tissues.

3. *Pisonia morindaefolia* R. Br. (Leaf) :

Pisonia morindaefolia R. Br. is an evergreen tree with ovate oblong leaves. Flower dioecious in large puberulous cymes. Fruits club-shaped, truncate, 5-cornered, squamose in nature.

Microscopically, the leaf shows a dorsiventral structure. Hairs are branched, stomata rubiaceous. Crystals occur as mixed styloids and raphides. Anamalous secondary thickening occurs in the axis. Phloem appear as island in the xylem mass. The innermost part of the conjunctive tissue often resemble true pith and thus the innermost secondary bundle as well as the leaf traces appear as medullary in origin. Cork arises in the outer part of the pericycle. Rays small and uniseriate. Fibres with small simple pits, usually equally numerous on both radial and tangential walls; included-phloem of the foraminate type present. The anamalous structure present in the stem observed even in roots.

CHEMICAL RESEARCH

Chemical studies were carried out by the Chemistry wing of the Drug Research Scheme (Multi Disciplinary), Madras. The leaves and pods of *Nilavarai* (*Cassia angustifolia* Linn); whole plant of *Seemai agathi* (*Cassia alata* Linn); *Avarai Chooranam*; Colour tests for organic compound present in the leaves of *Koiyya* (*Psidium guajava*), fruits of *Kandankathiri* (*Solanum xanthocarpum*); *Poovarasam Chooranam*, *Kandankathiri oil*; *Myna Thailam*; *Kadalazhinjil* (*Olax scandens*) were studied. A brief review of work done is reported as under .

Nilavarai (*Cassia angustifolia* Linn) :

The leaves and pods are important medicine for their cathartic properties. Mericyl alcohol, isorhamnetin, Kaempferol, rhein and emodin have been isolated alongwith two glycosides called sennoside A and sennoside B from the leaves of the plant.

Seemai Agathi (*Cassia alata* Linn) :

The whole plant of 2 Kg. was taken up, shade dried and coarsely powdered. A compound, n-octacosanol and β -sitosterol have been isolated and reported from the hexane extract of the plant. The chloroform extract of the plant yielded another compound as Physicion (1,8-dihydroxy-3-methoxy, b-methyl-anthraquinone).

Avarai (*Cassia auriculata* Linn) :

The bark of the plant is astringent and leaves and fruits are anthelmintic. Roots are used in the treatment of skin diseases. Recently a compound monacosam-6-one and monacosam have been isolated from the benzene extract of the plant pods.

Avarai Chooranam (*Cassia auriculata* Linn) :

The chooranam (Powder) made out of the leaves of *Avarai* (*Cassia auriculata* Linn) was chemically analysed. The qualitative analysis revealed the presence of phosphate, sulphate, chloride, Iron, calcium and potassium.

Koiyya (*Psidium guajava*) :

Colour tests for organic compounds present in the leaves of

Koiyya (Psidium guajava) were done. Hexane and CHCl_3 extract revealed the presence of steroid, triterpene and phenol where as the Alcohol extract showed the presence of Phenol, flavone and glycoside.

Kandankathiri (*Solanum xanthocarpum*) :

Colour tests for organic compounds present in the fruits of *Kandankathiri (Solanum xanthocarpum)* were done. Hexane and benzene and chloroform extracts showed the presence of Steroid, triterpene and alkaloid while the Alcohol extract showed the presence of Steroid and alkaloid only.

Poovarasam Chooranam :

The chemical analysis of *Poovarasam chooranam* was done. The qualitative analysis revealed the presence of phosphate, chloride, carbonate, iron and potassium.

Kandankathiri Oil (K-oil) and Myna Thailam :

The chemical analysis of *Kandankathiri* oil (K-oil) and *Myna thailam* were reported.

***Psonia aculiata* :**

The whole plant is subjected for the chemical examination. The colour tests showed the presence of steroid and triterpene. The hexane extract of the plant when subjected to column chromatography over silica gel, yielded octacosanol. The chloroform extract of the plant yielded Octacosanol, β -sitosterol and an unknown compound. The identification of the compound is under progress.

Kadalazhinjil (*Olax scandens*) :

The chemical analysis of the plant *Kadalazhinjil (Olax scandens)* was done. The qualitative analysis of the plant revealed the presence of chloride, sulphate, carbonate, iron, calcium and potassium.

PHARMACOLOGICAL STUDIES

The report presents the work conducted by the Pharmacological and Toxicity Units functioning at CRI (S), Madras and DRS (MD) Madras. *Vettilai ver chooranam*, 777 oil, *Gowrichinthamani Chendooram*, *Mayana thailam*, *Linga chendooram*, *Abraka Chendooram*, *Kandankathiri Tripala*, *Avarai Choornam*, *Ponnililai Chendooram*, were investigated on suitably designed experimental models for their alleged potentialities, specific effects like anti-inflammatory, anti-arthritis analgesic and antifertility effects. The acute and sub-acute toxicological studies were also conducted on these drugs. A brief review of the work done is reported as under :

1. *Vettilai Ver Chooranam* :

CRIM

(i) Antifertility studies :

The finely powdered drug was suspended in distilled water and administered orally in the doses of 100, 200 and 1000 mg./kg. body weight to proven fertile female albino rats from day first to day fifth of pregnancy. Laparotomy was done on day tenth of pregnancy under light ether anaesthesia. The size and number of implants were counted. The abdomen was closed and the animals were allowed to go for full term. On delivery, the number of pups were counted and observed for any deformities. The study is under progress.

(ii) Acute toxicity studies in mice :

Healthy adult albino mice were used for this study. The drug was suspended in distilled water and administered orally once in the doses of 6000, 7000, 8000, 9000 and 10,000 mg./kg. body weight in different groups, each group having six animals. One group received the vehicle only and served as untreated control. The animals were then observed for any toxic manifestations and mortality upto seventy-two hours. The drug showed 16.66% mortality, only in the dose of 8000 mg./kg. within the forty-eight hours of administration. The last two higher doses did not show any mortality. But there was marked depression observed through out the period of observation.

(iii) Acute toxicity studies in rats :

Healthy albino adult rats of either sex were selected and divided into two groups each having six animals. The drug was suspended in

1 distilled water and administered to one group in the doses of 6000, 7000, 8000, 9000 and 10,000 mg./kg. orally once. One group received the vehicle and served as untreated control. The animals were then observed for any toxic symptoms and mortality upto seventy-two hours. The drug did not show any adverse effects and mortality during the period of observation with any of the doses employed.

2. 777 Oil :

CRIM

(i) Anti-inflammatory study (Cotton pellet induced granuloma method) :

The drug 777 oil was studied for sub-acute phase of inflammation by cotton pellet granuloma technique. The drug was administered orally in the doses of 0.15 ml., 0.3 ml. and 0.6 ml./100 gm. orally for seven days. One group received orally the vehicle (coconut oil) and other group received phenylbutazone in a dose of 100 mg./kg. orally and served as control and standard groups respectively. Only 0.6 ml./100 gm. dose showed significant anti-inflammatory effect of 21.12% whereas the other two lower doses effects were not significant.

(ii) Analgesic studies (acetic acid induced writhing episode in mice) :

Adult healthy albino male mice weighing between 20-30 gm. were selected for the study. The drug was administered in the doses of 0.15 ml., 0.3 ml. and 0.6ml./100gm. orally once to different groups each consisting of six mice., with an untreated control group, receiving the vehicle (coconut oil) only. Analgin in a dose of 500 mg./kg. orally was administered to a group which served as a standard. The study is in progress.

(iii) Acute toxicity study :

The drug was administered in doses of 10, 20, 30, 40 and 50ml./kg. body weight orally once to different groups. One group received the vehicle (coconut oil) only in appropriate amount and served as untreated control. The animals were observed upto seventy-two hours for adverse effects and mortality. The drug showed 50%, 66.66% and 100% mortality in rats in the doses of 30, 40 and 50 ml./100gm. body weight respectively. The animals were also observed for the

following adverse effects such as hyperpnea, diarrhoea and piloerection. In mice, the drug showed 16.66% and 66.66% mortality in the doses of 40 and 50ml./100gm. body weight. The animals showed marked depression and piloerection during the period of observation.

(iv) Anti-inflammatory studies (Carrageenin induced paw oedema in rats) :

Oedema of right hind paw in albino rats weighing between 80-100 gms. was induced by injecting 0.1 ml. of 1% Carrageenin solution in 0.5% Carboxyl methyl cellulose in the plantar aponeurosis of hind paw. Paw volume was measured by Plethysmography. The drug was administered orally in the doses of 0.15ml., 0.3ml. and 0.6ml./100 gm. body weight. One group received coconut oil only and served as untreated control, while another group received phenylbutazone in a dose of 100mg./kg. and served as standard group. The drug showed significant anti-inflammatory activity of 18% and 24% in the dose of 0.15ml. and 0.3ml./100gm. respectively. The maximum dose of 0.6ml./100gm. did not show any activity.

(v) Anti-inflammatory studies (Granuloma pouch method) :

The drug 777 oil was studied for sub-acute phase of inflammation by granuloma pouch method. The animals were selected weighing between 100-150 gm. The granuloma pouch was produced on the dorsal surface of the animal after clipping the hairs. The drug was administered as such in the doses of 0.15ml., 0.3ml. and 0.6ml./100gm. body weight orally to different groups of animals. One group received phenylbutazone in a dose of 100mg./kg. orally (standard) and another group received coconut oil and served as untreated control. The drug showed significant anti-inflammatory effect in the doses of 0.3ml. and 0.7ml./100gm. body weight, whereas, the effects produced by 0.15ml./100 gm. dose level was not significant.

(vi) Formalin induced arthritis in rats :

Formalin arthritis in albino rats weighing between 100-120 gm. was induced by injecting subcutaneously in the right hind paw, under the Plantar aponeurosis with 0.1 ml./rat of 2% formalin solution on 1st and 3rd day. The drug (777 oil) was administered orally once daily in the doses of 0.15 ml., 0.3 ml. and 0.6 ml./100 gm. body weight

for ten days. A similar group received the vehicle only and served as untreated control group. The body weight and the linear cross section of the right ankle joint were recorded daily till 11th day. The anti arthritic effect shown by the lower dose (0.15 ml./100 gm.) was quite feeble (6%) whereas, the effects shown by the other two doses i.e. 0.3 ml., 0.6 ml./100 gm. were graded 15% and 19% and were statistically significant at $P < 0.02$ and $P < 0.01$ respectively.

vii) Analgesic studies (Hot plate response in mice) :

The drug as such was administered in the doses of 0.15 ml., 0.3 ml. and 0.6 ml./100 gm. body weight in male mice weighing between 20-30 gm., particularly those were quick in response on the hot plates. Initially, before the administration of the drug, and at every half an hour after drugging, the reaction time was recorded on hot plate maintained at $55^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$. Analgin in the dose of 500mg./kg. orally served as standard drug for the purpose of comparison. The drug showed significant graded analgesic activity in all the doses tried, reaching a maximum with respect to intensity and duration in the maximum dose of 0.6ml./100gm.

3. Gowri Chinthamani Chendeoram :

CRIM

i) Anti inflammatory study (Cotton pellet induced granuloma method):

The drug, *Gowri chinthamani* was studied for sub acute phase of inflammation by Cotton pellet induced granuloma technique. The drug was suspended in honey and administered in the dose of 100mg./kg. body weight daily for seven days. Sterilized cotton pellets were placed, one in each axilla and one in each groin surgically. On 8th day the animals were sacrificed. The pellets were dissected out and dried at 56°C temperature till the pellets weighed constant. The study is in progress.

ii) Analgesic study (Acetic acid induced writhing in mice) :

The drug suspended in honey was administered in the dose of 100, 500 and 2000mg./kg. body weight orally in different groups of animals with an untreated control group receiving vehicle only (Honey). Analgin in a dose of 500mg./kg. orally was given to another group which served as a standard group. All the animals were subjected to writhing by the injection of 3% acetic acid intraperitoneally in the dose of 300mg./kg. The number of writhings was counted for thirty minutes subsequently. The study is in progress.

iii) Sub-acute toxicity study :

The drug was suspended in honey and administered orally once a day for thirty consecutive days. The drug was administered in the dose of 250 and 2000mg./kg. body weight. Observation for body weight, feed and water intake and abnormal signs were recorded daily. One group received the vehicle only (Honey) and served as untreated control. The study is in progress.

4. *Mayana Thailam* :

i) Haemostatic study :

The rats were anaesthetised by I.P. injection of pentobarbital sodium in a dose of 40mg./kg. body weight. Laparotomy was done by crucial incision and the liver was exposed and lifted. An incision was made by a sharp scissor of 10-20m.m. length and 3-6mm width in the border of one of the lobes. The bleeding time was recorded for each animal by soaking the blood with a piece of blotting paper. The drug *Mayana thailam* was smeared on the cut surface of the liver just after the incision whereas, control group had distilled water smeared. The mean difference between the test and the control group compared by statistical methods had shown a positive haemostatic effect by significantly reducing the bleeding time.

ii) Anti-inflammatory study (Granuloma pouch) :

✓ The granuloma pouch was induced on the dorsal side of the rats weighing 100-120 gm. One group served as untreated control and received distilled water only whereas another group received phenylbutazone in the dose of 100mg. orally. The drug was applied by smearing through out the upper surface of the pouch thrice daily at a fixed time for seven days. On the eighth day, the animals were sacrificed and the volume of the exudate from the pouch was measured and recorded after extirpating the pouch carefully. The drug did not show significant anti-inflammatory activity.

5. *Linga Chendooram* (Acute toxicity study) :

CRIM

Linga chendooram a crude drug was suspended in 1% gum tragacanth

canth and administered in the dose of 5000, 6000, 7000, 8000, 9000 and 10,000 mg./kg. body weight orally once to different groups, each consisting of six rats. One group received the vehicle only and served as untreated control. The animals were observed upto seventy-two hours for adverse effects and mortality. The drug did not show any abnormal signs and mortality during the period of observation.

6. Abraka Chendooram (Acute toxicity study):

CRIM

The animals were deprived of food for four hours prior to drug feeding. The drug was suspended in 1% gum tragacanth and administered in the doses of 25, 50, 100, 250, 500 and 1000 mg./kg. body weight orally once. One group received the vehicle only and served as untreated control. The animals were observed for any adverse effects and mortality for seventy two hours. The study is in progress.

7. Kandankathiri :

DRSM

i) Acute toxicity studies :

Fresh samples of *Kandankathiri* (fruit) in fine powder form was collected locally and suspended in distilled water. The drug was administered in albino mice weighing between 20 to 30 gm. in the doses of 8000, 9000 and 10,000mg./kg. Each group consisted of 6 animals. The animals were observed for toxic symptoms and mortality upto seventy-two hours. The drug was found to be non-toxic in the above doses employed. The drug was administered in albino rats weighing between 100 to 150 gm. in the doses of 7000, 8000, 9000 and 10,000mg./kg. body weight orally once. The animals were observed for toxic symptoms and mortality upto seventy-two hours. The drug was found to be non-toxic in all the doses employed.

ii) Sub-acute toxicity studies :

The study was carried out in albino rats of either sex weighing exactly 100gm. The drug was administered in the doses of 100, and 1000 and 3000mg./kg. orally once daily for thirty consecutive days with an untreated control which received only the vehicle (distilled water). The daily routine recording of body weight, feed and water

intake were noted. The animals were observed for any toxic symptoms and mortality. On the 31st day, the animals were sacrificed. Heart blood was collected for haematological studies and vital organs like heart, liver, lungs, kidneys, spleen and adrenals etc. weighed and referred for Histo-pathological and biochemical studies. Further study is in progress.

iii) Anti-inflammatory Studies :

a) Carrageenin induced paw-oedema :

Oedema of right hind paw of albino rats weighing between 80 to 100 gm. were induced by injecting 0.1ml. of 1% carrageenin (in 5% C. M. C.) in the plantar aponeurosis of the hind paw. The drug was administered in the doses of 25, 100, 250mg./kg. Another group received phenyl butazone in a dose of 100mg./kg. orally with a control group which received vehicle only. Paw volume was measured by plenthysmography. The drug in the doses of 25 and 250mg./kg. showed significant anti-inflammatory activities of 27% and 36% respectively. But in the dose of 100mg./kg. the drug did not show any significant activity which is being repeated.

b) Cotton-pellet granuloma Study :

The drug was studied for sub acute phase of inflammation by cotton pellet granuloma technique. The test was carried out in albino rats of either sex weighing between 100 to 200 gm. body weight. The drug was administered in the doses of 25, 100 and 250mg./kg. with a group receiving vehicle only as control group. Whereas another group received phenylbutazone in the dose of 100mg./kg. orally as standard group. None of the above employed doses were found to be effective.

c) Granuloma pouch :

Granuloma pouch in albino rats weighing between 120 to 150gm. were induced on the dorsal side of the animal by injecting 25 ml. of air and one ml. of 0.5% croton oil sub-cutaneously. The drug was administered to the rats in the dose of 50, 500 and 1000mg./kg. body weight, Orally once daily for 7 days, whereas other two

groups received phenyl butazone in the dose level of 100mg./kg. body weight and distilled water and served as standard and control groups respectively. On 8th day the animals were sacrificed for removing the pouch and other vital organs like thymus, spleen and adrenals. The pouch was punctured and the volume of exudate was recorded. The vital organs were weighed and recorded. The study is in progress.

d) Formalin Arthritis :

The drug *Kandankathiri* was subjected to screening for arthritis induced by formalin in rats. The drug was administered in the doses of 50, 500 mg./kg. bodyweight in different groups consisting of 6 animals each. A similar group which received only vehicle served as standard drug for comparison. Arthritis was induced by injecting formalin sub-cutaneously in the right hind paw. The bodyweight and linear cross section of the ankle joint of right leg were recorded. The study is in progress.

8. Triphala

DRSM

Anti inflammatory studies - (Formalin Arthritis) :

The drug *Triphala* was subjected to screening for Arthritis induced by formalin in rats. The drug was administered in the doses of 25, 100 and 500 mg./kg. body weight in different groups consisting of 6 animals each. A similar group which received vehicle only served as untreated control whereas another group received wysolone (Prednisolone) in the dose of 10 mg./kg. and served as standard drug for the purpose of comparison. Arthritis was induced by injecting formalin sub-cutaneously in the right hind paw. The bodyweight and linear cross section of the ankle joint of right leg were recorded till 11th day. The drug showed an equal percentage of activity (17%) in the dose of 25mg./kg. compared to prednisolone in a dose of 10mg./kg. The effect produced by 100mg./kg. was much lower and statistically insignificant. There was not much difference in activity observed with the maximum dose of 500mg./kg. when compared to the minimum dose of 25mg./kg.

9. Avarai Chooranam :

DRSM

(i) Acute toxicity studies :

Fresh sample of *Avarai Chooranam* were collected locally and

was suspended in distilled water. The drug was administered in the doses of 100, 250, 500, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000 and 10,000 mg./kg. bodyweight orally once. The animals were observed for toxic symptoms and mortality upto 72 hours. The drug was found non-toxic in all the dose levels. However, the studies with other doses are in progress.

(ii) Acute toxicity studies :

The drug was administered in albino mice weighing between 20-30 gm. in doses of 100, 250, 500, 1000 and 2000 mg./kg. orally once. The animals were observed for toxic symptoms and mortality upto 72 hours. The drug was found non-toxic in all the above doses. Further studies are in progress, with higher doses.

10. Ponnimilai Chendooram :

DRSM

(i) Acute toxicity study :

Fresh samples of *Ponnimilai chendooram* were collected and was suspended in milk. The drug was administered in the doses of 50, 100, 250, 500, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000 and 10,000 mg./kg. bodyweight orally once. The animals were observed for toxic symptoms and mortality upto 72 hours. The drug was found to be non-toxic in the above doses employed.

(ii) Acute toxicity study :

The drug was administered in albino mice weighing between 20-30 gm. in the doses of 50, 100, 250, 500, 1000 and 2000 mg./kg. The animals were observed for toxic symptoms and mortality upto 72 hours. The drug was found to be non-toxic in the above doses. The study is in progress with higher doses.

STANDARDISATION RESEARCH

The Standardisation Research Programme is being conducted through the Drug Standardisation Research Unit, at CSMI Madras, Preliminary Standardisation Research Units functioning at R. R. C. (Ay.) Bangalore, and RRI (DR), Trivandrum. These projects have taken up steps to lay-down analytical standards for single drugs and various types of formulations such as *Parpams, Thailams, Lehiyam, Podi, Chooranam, Thean, Kuzhambu, Kalimbu, Pamneer, Ennai, Chendooram* etc.

Standardisation studies play a vital role in any of the researches that are being carried out. The results which are obtained after using standardised single drugs, formulations etc. have significant value and also has got reproducibility, which is basic requirement in any of the studies.

The studies were taken up on single drugs like *Kaipalai, Poochandra Patai, Murangai, Athondai, Kiliyural Pattai, Athividayam* etc. and finished products like *Tippilli irasayam, Chundai Varial Curanam, Atatotai Kudineer, Anta tailam, Turunchi Manappagu* etc. Besides this, the units have taken up the responsibility of laying down analytical standards for various types of formulations included in the National Formulary of Siddha, Part I. Apart from this the pharmacognostical identification of the single drugs which enter as ingredients in the formulations have also been taken up.

Uniform proforma for a particular data is being maintained by the Units as well as uniform method of analysis are being adopted for particular types of analysis.

The drug requirement for the preparation of various types of formulations by these projects are met by the Medico-ethno-botanical survey teams of the Council and also from market.

The medicines are prepared strictly according to the classics and text of each of the formula, authorised in the formulary. Thus the uniformity is being maintained in all the standardisation research projects for the preparation of medicines, analysis and data gathering which will be reproducible.

The work carried out by the Units is reported as under :

1. Kaippalai (<i>Wal sura piscidia</i> Roxb)	DSRM
2. Poochandrapattai	”
3. Adondai (<i>Capparis meylanica</i> L.)	”
4. Murangai (<i>Moringa olcifera</i> Lamk)	”

The standardisation projects, laid down analytical standards of the following formulations :

1. Tippilli iracayanam	DSRM
2. Inci iracayanam	”
3. Cuntai vartal curanam	”
4. Kadukkai curanam	”
5. Atatotai kttinir	”
6. Anatatailam	”
7. Tirunci manapaku	”
8. Atatotai manapaku	”
9. Ilanir kulambu	”
10. Nakkupuccikkolli kutinir	”
11. Kesari ilekiyam	DSRB
12. Imbural ilekiyam	”

The single drugs listed below have also been studied pharmaco-gnostically and for other ancillary investigations :

1. Atatotai	DSRM
2. Kiliyooral pattai	”
3. Kandankathiri	”
4. Adalai	”
5. Poochandra pattai (<i>Betula atilis</i> D. Don.)	”
6. Avil thol	”
7. Aduthinnapalai	”
8. Murangai	”

9. Nattu athividhayam	”
10. Akirakaram	”
11. Karunjeeragam	”
12. Vellarugu	”
13. Adondai (<i>Pongamia galabra</i> Vent)	”
14. Kattumurangai (or) Elumbotti (<i>Ormocarpusmenoidos</i> DC)	”
15. Jadikey (<i>Myristica foragrans</i>)	DSRB
16. Jadipatri (<i>Myristica foragrans</i>)	”
17. Sriragam (<i>Cuminum cyminum</i>)	”
18. Chukku (<i>Zingiber officinalo</i>)	”
19. Kottam (Market sample)	”
20. Talicam (<i>Abies webbiana</i>)	”
21. Milagu (<i>Piper nigrum</i> L.)	”
22. Tippili (<i>Piper langum</i> L.)	”
23. Inji (<i>Zingiber officinalo</i> Rose)	”
24. Siragam (<i>Cuminum eyminum</i> L.)	”

The following monographs on single drugs have been prepared:

1. Mudakkaruthan.
2. Murangai.

PHARMACY

Realizing the importance of the pharmacy, the Council has established a pharmacy at the Central Research Institute for Siddha, Madras to prepare Siddha Medicines.

The pharmacy is engaged in the preparation of classical preparations described in the Siddha literature and chosen for clinical trials in the Institutes, Units of Siddha Medicine under the Council. Apart from this the pharmacy is also engaged in the preparation of patented medicines for using them in the Out-Patients Departments of the Siddha Institutes/Units.

The crude drug requirement of the pharmacy is met by the Medico-ethno-Botanical Survey project, failing which the crude drugs are also purchased from the local market after confirming identity, authenticity and quality of the drug by the competent person available in the pharmacy.

Thus procured drugs are used to prepare medicines required for the use of the Institutes/Units, without losing potency and genuineness of the medicines .

Methods, followed for the preparation of the medicines are as per the descriptions and method of preparation given in the classical literature. It is proposed to use machines for the preparation of the medicines without losing the potency of the drugs. This would enable the pharmacy to prepare larger quantity of the medicines in short time so that the medicinal requirements of Institutes/Units of Siddha Medicine under the Council are fully met.

During the period under review the pharmacy attached to Central Research Institute (Siddha), Madras has prepared eighty-three preparations both for research and general OPD. These include *Parpam*, *chendooram*, *Chooranam*, *Podi*, *Thailam*, *Lehiyam Thean*,

Pattru, Manappagu, Mathirigal, Kuligai, Ennai, Vennai, Jyzqanvym Jakunbu, Pamneer, etc. These preparations are used as *Velimarunthugal* and *Ullmarunthugal* according to their nature and some were used for both the purposes also. The medicines are prepared after *sudhi* (purification) by using specific *Chathuru* and *Mithru* (Incompatible and compatible as per the theory laid down in the *Siddha* literature.

During the period under review, the pharmacy was able to meet the medicinal requirements of the Central Research Institute both for research and general use. The pharmacy has also supplied medicines to some extent to the following Institutes/Units

1. Regional Research Institute (Siddha), Pondicherry.
2. Mobile Clinical Research Unit (Siddha), Madras.
3. Drug Research Scheme (Multi-Disciplinary) Siddha, Madras.
4. Clinical Research Unit (Siddha), Palayamkottai.
5. Drug Standardisation Research Unit (Siddha), Madras.

LITERARY RESEARCH

The Literary Research is being carried out through the Literary Research and Documentation Department (Siddha) at CRI (Siddha), Madras, since 1979. During the reporting year, *Agasthiyar sowmiya sagaram-1200* containing 1200 verses dealing with fundamental principles such as *Nathayindhu Jananam*, *Thathuva vagai*, *Imbootham*, *Gana kanma*, *Inthiriyangal Iybulan Anthakkaranam Vaidya thathuvam*, *Imbootha Kuri*, *Desanadi Dasavavu Vasa Nadi*, *Mukkunam*, *Vaku nangu Utakarivi*, *Purakaruvi*, *Sivakooru* and *Udalkooru* etc. was edited and transcribed. 1050 stanzas were annotated. Work on the rest of the 150 stanzas is in progress.

The editing and transcribing work of *Agasthiyar Pooranam 200* is being carried out and 155 stanzas have been annotated.

Typewritten copies of *Pathimēn Siddhar Nadi Sasthiram* comprising of *Agathiya Minivar Nadi Sasthiram*, *Thirumurai Munivar Nadi Sasthiram*, *Gunavagadathin Nooin Saram*, *Kaviyathin Nadi*, which deals with the art of reading of the pulse of the diseased and normal individuals, poporation of *Vatha*, *Pitha*, *Kapha* humours, and its *Thontha Nila* (State of its combination), prognosis of the diseases where there is derangement of the *Vatha*, *Pitha* and *Kapha* humours were compared with the originals available with the department and corrected.

The Documentation Department has consulted the local libraries including the Library of Indian Institute of Technology, Connemara Library and the Library of General Hospital, Madras and prepared a list of useful journals dealing with medicine, phytochemistry, pharmacognosy, pharmaceutical chemistry etc.

The council's publications worth Rs. 1604.10 were sold by the department during the reporting year.

**PUBLICATION/PARTICIPATION
IN SEMINARS Etc.**

Sl. No.	Author (s)	Article (s)	Published/ Participated	Name of the Unit.
Clinical Research :				
1.	Veluchamy G., Sundaram M., Ghosh D., Siva- nanandam G.,	A preliminary clinical, phar- maceutical and chemical evalu- ation of Myna Thailam-A Siddha Medicine.	Asian Confere- nce on Traditi- onal Asian Medicine . Bombay (March, 1983)	CRI (S), Madras
2.	Rajalakshmi S., Kalavath N., Sundaram M., Thyagarajan R., Sivanandam G.	Clinical evalua- tion of Siddha green drugs in the treatment of Manjal Kamalai (Part I <i>Coccinia indica</i>)	J. R. A. S.	-do-
3.	Sundaram M., Veluchamy G.	Cancer Research in Siddha Medi- cine	Ist All India Siddha confere- nce Tanjavur (Feb., 1983)	-do-
4.	Rajalakshmi S., Saroja P. R., Thyagarajan R., Sundaram M., Veluchamy G.	Simple Siddha remedy for kan noi (Acute cata- rrual conjunct- ireities) A pilot study	-do-	-do-

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|-----|--|---|---|--------------------|
| 5. | Thyagarajan R.,
Sundaram M.,
Rajalakshmi S.,
Sivanandam G.,
Veluchamy G. | A clinical evaluation of Siddha herbal remedy for viral hepatitis | -do- | -do- |
| 6. | Sivaprakasam K.,
Kalavathi N.,
Yasoda, Veluchamy G. | Leucoderma-a clinical study with Siddha drug | -do- | DRS (MD)
Madras |
| 7. | Sivaprakasam K.,
Kalavathi N.,
Yasoda, Veluchamy G.,
Jayachandran. | Study on Diabetes mellitus (short research communication) | J. R. A. S. | -do- |
| 8. | Anandan T.,
Veluchamy G. | Role of Siddha System of Medicine in the treatment of the disease-Hypertension (Kuruthi Aghutham) | Third National seminar & Essay competition in Ayurveda at Tvm. (Jan., 1983) | MCRU (S) |
| 9. | Anandan T. | A clinical trial on Siddha Medicine in the management of Neerkovai (Common cold) in epidemic state. | J. R. A. S. | -do- |
| 10. | Anandan T. | Folk Medicinal claims from Tamil Nadu (Part I North) Arcot Distt. | J. R. A. S. | -do- |
| 11. | Anandan T. | A pilot survey report on rural health in Tamil Nadu | J. R. A. S. | -do- |

Drug Research :

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|-----|---|---|---|---------------------|
| 12. | Ghosh D.,
Thejomoorthy P.,
Veluchamy G. | Anti-inflammatory, antipyretic, analgesic activity of Tripala-A Siddha Medicine | Work shop on Pharmacological and bio-chemical approaches to medicinal plants Madurai (Oct., 1982) | CRI (S)
Madras |
| 13. | Ghosh D.,
Uma R.,
Thejomoorthy P.,
Veluchamy G. | Hypoglycemic and toxicity studies of Tripala-A Siddha Medicine | -do- | -do- |
| 14. | Ghosh D.,
Thejomoorthy P.,
Veluchamy G. | Anti-inflammatory and analgesic activities of 777 oil from <i>Wrightia tinctoria</i> Linn-A Siddha Medicine | Annual conference of Indian Pharmacological Society held at Chandigarh (Nov., 1982) | -do- |
| 15. | Ghosh D.,
Thejomoorthy P.,
Veluchamy G. | Anti-inflammatory and analgesic activities of oleanolic acid 3-B-glucoside (RDG-I) from <i>Randia dumetorum</i> (Rubiaceae) | Indian Journal of Pharmacology (Nov., 82) | -do- |
| 16. | Natarajan R.K.,
Balakrishna K.,
Purushothaman K. K. | Chemical constitution <i>Geniospermum prostratum</i> (Labiatae) | I. P. C. A. Conference at Varanasi (Dec., 1982) | DRS (MD),
Madras |
| 17. | Natarajan R.K.,
Balakrishna K. | Phytochemical Examination of <i>Ola x scandens</i> Roxb. | -do- | -do- |

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|-----|---|---|---|-----------------------------------|
| 18. | Chelladurai V.,
Padmasorna
Subramanian M. | <i>Alstonia scholaris</i>
R. Br. folk-lore
antifertility drug
for dogs. | News Letter | S. M. P. U.
Palayam-
kottai |
| 19. | Chelladurai V.,
Padmasorna
Subramanian M. | An interesting folk
lore use of the
Wood- <i>Emblica</i>
<i>officinalis</i> G-aertn. | News Letter | -do- |
| 20. | Chelladurai V. | Minnikizhangu-an
unique folk
medicinal plant
from the Adivasis
(Tribes) of point
calimere Tamil
Nadu (Revised) | Bul. of
Medico
Ethno-
Botanical
Research | -do- |
| 21. | Chelladurai V.,
Apparanamtham
T. | Ethno-Botany of
<i>Apama siliquosa</i>
Lamk | Ancient
science of
life. | S. M. P. U.
Palayamko-
ttai |
| 22. | Purusothaman
K. K., Sarada A.
Saraswathy A. | Structure of Race-
mosola a new
coumarin from
<i>Atlantia</i>
<i>recemosa</i> L. | 34th Indian
Pharmaceuti-
cal Congress
Varanasi
(Dec., 1982) | D. S. R. U.
Madras |
| 23. | Purusothaman
K. K., Sarada A.
Saraswathy A. | Studies on the
Market samples
of Poochandra-
pttai | 1st All India
Siddha Con-
ference
Tanjavur
(Feb., 1983) | -do- |
| 24. | Brindha P.,
Sasikala B.,
Rukmani
Sundarasan,
Purushothaman
K. K. | Comparative
Pharmacognostical
studies on Bark
and fruits of
<i>Terminalia</i>
<i>catappa</i> L. &
<i>Terminalia</i>
<i>chebula</i> Retz. | 34th Indian
Pharmaceuti-
cal Congress
Varanasi
(Dec., 1982) | -do- |

- | | | | | |
|-----|--|---|---|------|
| 25. | Purushothaman
K. K , Sarada A.,
Saraswathy A.,
Brindha P. | Chemical
Investigation of
unidentified drug | VIII Annual
chemistry
Symposium,
I. I. T. Madras | -do- |
|-----|--|---|---|------|

Literary Research

- | | | | | |
|-----|--|---|---|-----------------------------------|
| 26. | Veluchamy G.,
Mutharasan S., *
Manikkavasagam
R., Pandiyan
S. J. J., Meenakshi
Sundaramoorthy
K. | Therayar Vaidyam
1500 ore araichi | Ist world
Siddha
Conference
Tanjavur
(Feb., 1983) | L. R. &
D. D.
Madras |
| 27. | Ganapathiraman
K.,
Apparanantham T. | Thinai-its compa-
tible and reciprocal
relation to Andam
(Human body)
In Siddha System
of Medicine | J. R. A. S. | S. M. P. U.
Palayam-
kottai |
| 28. | Ravi Shankar V. | Hypertension
and its treatment
A review from
Siddha texts. | Nagarjun
(Nov., 1982) | Head-
quarters
office |
| 29. | Ravi Shankar V. | Theriyar-A
Siddhar | News Letter
(May, 1982) | -do- |
| 30. | Ravi Shankar V. | Bogar-A Siddhar | News Letter
(May, 1982) | -do- |
| 31. | Ravi Shankar V. | Anti fertility
drugs of Siddha
System of
Medicine | News Letter
(July, 1982) | -do- |
| 32. | Ravi Shankar V. | Bramanand
Bairava-an
abstract. | News Letter | -do- |

- | | | | | |
|-----|-----------------|---|-------------|----------------------|
| 33. | Ravi Shankar V. | Folk Medicinal practices for Fractures followed by Siddha practitioners of Pondicherry. | News Letter | Head quarters Office |
| 34. | Ravi Shankar V. | Litro-Pharmacognosy of Bogar Nigandu. | News Letter | -do- |
| 35. | Ravi Shankar V. | Study of some Antifertility plants/ drugs mentioned in Siddha texts. | News Letter | -do- |

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The Council owes a debt of gratitude to the scholars and scientists who accepted the invitation of the Council to serve as members of its Advisory Committees and gave their whole hearted cooperation and assistance in the evaluation of research schemes.

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The Council convey its profound gratefulness to the Government of India for their continuous support, helpful attitude and cooperation which helped Central Council for Research in Ayurveda and Siddha to pursue satisfactorily its activities in the field of research.