

Dr. S.K. Chandrahari

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

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**Annual Report
1978-79**

**MINISTRY OF HEALTH & FAMILY WELFARE
(Government of India)**

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CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA & SIDDHA

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Ministry of Health & Family Welfare
(Government of India)



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Central Council for Research in Ayurveda and Siddha

In Retrospect

1.1. The Central Council for Research in Indian Medicine and Homoeopathy, constituted as an autonomous body under Government of India to initiate, guide, develop and co-ordinate scientific research in different aspects-fundamental and applied-of Ayurveda, Siddha, Unani, Homoeopathy systems of medicine and Yoga, came into being and commenced functioning towards the end of 1969. Recording that research is essential for the development of these systems and to contribute their best for national health, a basic objective of welfare State the Council envisaged research programmes in different fields and identified the areas of priority which have potentiality to be of great utilitarian value in the context of health and medical care needs of the country. Research or rather systematic investigation utilising the currently available technological skill and advancements helps in providing interpretation and standardisation of theory and practice. It also helps in revival or establishing these systems on a proper footing and also in rehabilitating them to enable these systems to gain their pristine glory and place in the world of medicine of today.

1.2 The areas of Research were broadly identified as below :—

1. Clinical research oriented not only to find a drug for successful treatment but also to establish the pathogenesis of diseases.
2. Research in drugs used in Indian Medicine and Homoeopathy and folk practice at multidisciplinary level.
3. Medico-botanical survey of the entire country to assess the availability of medicinal resources.

4. Collection of folk information and recipes not described in classical works.
5. Evolving of standards for drugs and pharmaceutical preparations used in Indian Medicine.
6. Research into fundamental doctrines on which the medical system is based.
7. Medico-historical research concerned with the Indian systems and their influence on their contemporary science and society.
8. Research into medical literature, interpretation and publication of critical edition.
9. Evaluation of contraceptive potentialities of indigenous drugs.

1.3 Broadly looking, these may be sorted out as Clinical Research, Drug Research, Literary and medico-historical research and studies and research in reproductive biology. These different medical systems, being economic-oriented and much suited to the socio-cultural background of our country and traditional beliefs and customs of the people the results of research, largely meet the common man's needs, in the field of health and medical care. As a pre-requisite to the understanding the demands of the common man and to study the needs at his own place, to make the research studies meaningful and purposeful, council initiated survey and surveillance programmes with an accent on research on rural problems. This has been taken up on a priority level as there has been new dimension to health structure and disease pattern with the passage of time due to socio-cultural stresses and strains and urbanisation. The villages, which constitute over 80% of the country's area had to be taken care of as they are the foundations for life and activities at urban and metropolitan levels. The programme of survey and surveillance was taken up to avert health planning crisis at that level and to meet the challenge so that the prosperity of the nation may not be undermined by sick villages. The information gathered in these programmes cover a wide spectrum of details which have scope to assist in the working out of appropriate planes. The beneficial results of clinical research and applied drug research were made available at rural level and to common man.

1.4 Closely moving with the subject of health and medical care is the subject of clinical medicine. Clinical research is one of the fruitful lines of approach for classification and principles and methods of diagnosis and treatment of diseases as mentioned in classical works. Appropriate operational models and protocols were designed so that there can not only be critical appraisal of the content related to realm of clinical medicine but also viable and helpful information suitable for application for the benefit of the ailing humanity. This also helps to chalk out preventive measures in case of preventable illnesses. Central and Regional Research Institutes, units and enquiries were established to handle different kinds of research-clinical as well as drug and in the field of basic doctrines. The clinical material available was utilised in critical appraisal of theories of pathology, symptomatology, clinical methods of diagnosis and prognosis, lines and methods of treatment, and drug therapy and other lines of treatment peculiar/particular to Ayurveda and use of reputed drugs in medicine in the treatment of diseases. The programmes of these institutes indicate the work taken up has been on these lines and the results are considered to enhance the utilisation value of medical systems and also provide interpretation of the concepts of the medical systems. These activities, resultant of long drawn considerations and elaborate discussions, will be able to explain the rationale of methods of diagnosis and lines of treatment of Indian medicine and will help to eliminate methods of doubtful value and utility. Research plans have also taken into account time-cum-situation based and need-oriented projects as the passage of time, mode of life and way of living have grossly changed since the time of first description of conditions in in the classical works. Some old diseases have exhibited variations in their manifestations from age to age, country to country and also in relation to changed conditions of the individual and his social and other environments.

The old time principles and methods of diagnosis will have to be studied where necessary, revised and reoriented or supplemented in the light of new and known experience. The existing methodology available in texts has to be supplemented by the diagnostic and prognostic techniques and methods available currently and the projects taken have subscribed to this approach at functional levels. The Central/Regional Research Institutes are charged with a range of subjects encompassing clinical and drug research programmes that are considered to have utilitarian importance, both from the angle of common man's needs and advancements of the system of medicine.

1.5 Institutes handling Homoeopathy, in addition, have taken up provings of drugs and corroborating the symptomatology of proved drugs. The research at clinical level while endeavouring to look at the principles of therapeutics, also finds remedies effective in particular situations. The sources for remedies in these systems are from vegetable, animal and mineral kingdom. Bulk of drugs used in different medical systems are available from vegetable kingdom and there is a need to have a complete picture of drug wealth of the country. Medicobotanical studies and surveys in this context occupy a pivotal position. This helps in obtaining information on distribution and extent of availability of medicinal plants finding place in Indian Medicine generally with special emphasis on plants enumerated in classical treatises. Further steps have been taken to utilise the indigenous drug sources in the Homoeopathic system so that it might be possible to have substitute remedies for medicines described in Homoeopathic treatises.

1.6 Medico-botanical projects operating under the Council have made available genuine/authentic plant material for the research studies. Further, the report of works from a standard guide on medicinal flora providing details of occurrence, habit, habitat, local folk uses etc.

Herbaria and museums with collected material function as reference units. The teams during their exploratory surveys will be able to locate potential spots of much prized drugs which are either important or not easily available in their pure form.

1.7 Another programme of vital importance to the common man and pharmaceutical industry is research in evolving of working standards for formulations used as therapeutic agents. There is need for research in this field as it helps in obtaining genuine medicinal preparations whose quality can be assessed. This programme is not without its intrinsic problems in evolving firm standards as most of the medicines are compound preparations with large number of ingredients collected from different places and at different seasons. The raw drugs collected from different regions at different seasons tend to show variations in the analytical dimension of measurable and evaluative nature, which perhaps is the first attempt made in that direction in this country.

1.8 Another programme in the field of drug research which has added a new dimension is the study of currently used drugs from a

multi-disciplinary angle utilising techniques and know-how currently available in the field of pharmacognosy, chemistry, pharmacology and medicine. This provides scope for an interdisciplinary approach capable of providing interpretative discussion of the mechanism of action drugs; further these re-investigation studies help in confirming the described effects and actions and also facilitate finding of new areas of utility for these drugs.

1.9 The subject of medical research was taken up as a project of importance as it is felt that it needs particular attention for building up a welfare State in order to provide medicare to maximum population with time tested remedies for simple ailments commonly met with. It can thereby play a significant role in making available medicare at doorsteps in rural areas and remote pockets so that a larger section of the population of our country can be benefitted. A medical kit with easy to use simple remedies that are well tested, and recipes resultant of experience of physicians was brought out with a guide so that the baffling challenge of catering medical care in remote areas and rural pockets can be met with.

1.10 The projects staff engaged in the medico-botanical surveys and survey and surveillance programmes among others have collected a number of folk claims prevalent in the regions of their visit. Planned studies and investigations of these claims are being taken up.

1.11 Another field which was given high priority is in the studies planned in reproductive biology and fertility control. Human fertility and accompanying problems of demographic explosion have been attracting individual attention. A number of drugs claimed to possess contraceptive potentiality are screened and the studies afford scope to get a drug from the medical lore of Indian medicine. Planned clinical trials are also initiated based on experience at chemico-pharmacological level.

1.12 Research projects involving the fields of dietetic role in treatment of diseases and studies on Prakriti were also taken up. The collection of source material projects were established to make available the authentic literary material of useful nature and the work is being further carried out at the Documentation & Publication Division of the Council.

1.13 Medico-historical research and studies have been taken up by the Council. Medical history is not only the concern of history but of medicine through elaboration of course and trend of evolution of medical thought on a clinical condition or drug or a therapeutic approach. It is an established fact that one step forward leads to another. This is in short the basis of evolution in thoughts and ideas. It is the historian who can determine the ways and steps, methods and measures, that have been responsible in the sojourn of ideas. This will help to discover sources of knowledge and its influence on the contemporary and subsequent ideas. Though this is considered a scientific age it is nonetheless historically-oriented in its outlook. The pervasive orientation of medical historiography is recognisable in the way of action of the research undertaken by the Council. The Council through the Indian Institute of History of Medicine is releasing a quarterly bulletin highlighting different historical facts related to the medical systems.

1.14 The Council is also releasing a quarterly Journal of Research in Indian Medicine, Homoeopathy and Yoga which is functioning as an effective forum for the research work done in the different medical systems and allied disciplines. The Documentation & Publication Division of the Council with the library and Journal wealth has been documenting information of scientific interest and importance and assisting the research workers of the Council and others. The brief foregoing review of the programmes taken up has been able to make a contribution of significant nature and importance in the direction of human welfare.

1.15 In the field of medico-botanical survey, collection and cultivation, the Council has been able to make considerable progress despite financial constraints on the budget, and the petrol hike which has been a major limitation in the programme. About 150 forest divisions/areas have been surveyed for assessing the medicobotanical potentialities. The teams have collected about 35,000 plant specimens for their herbaria during their surveys and their herbarium sheets were prepared. About 3,500 drug specimens were collected for the museum. New taxa, e.g. *Impatiens razaina*, *Impatiens acantis granulata* *Marsdenia razaina*, *Sonerlia pedunovelosa* Thw., to name only a few, were added to botanical armamentarium.

The drug requirements of the research projects have been met largely by the teams. Germ plasms, green specimens etc. were collected

to intensify studies. Germination potential of some of the germ plasms received from Geneva were studied. Experimental cultivation of about 1600 plants like *Plantago ovata*, *Vinca rosea* etc. have been taken up; ecological studies are carried out with a view to assess the acclimatisation or scope of certain plants. *Crocus sativus* Linn. and *Glycyrrhiza glabra* Linn are examples of such study. Special survey tours covering Andaman and Nicobar Islands, Arunachal Pradesh, Leh and Ladakh, Tribal pockets of Nilgiris, Lakshadweep, Sikkim etc. were carried out.

1.16 The research programme related to drug standardisation has helped to bring out a manual containing pharmacoepial standers for 430 medicinal preparations commonly used in medical practice. Standards for identification of 200 single drugs were worked out. Chemo pharmacological information on seventy drugs is currently available. Pharmacognostic studies on 116 drugs together with information on adulterants/substitutes/ allied species is worked out. The chemical units have been able to isolate pure fractions and elucidate structure in regard to some of them. Use of *Aswagandha* in arthritic disorders, *Pippali* as anti-tubercular drug as well as analeptic agent, *Karaveera* in cardiac disorders, *Mandukaparni* in improving the mental faculties, *Guggulu* in medoroga and its associated/accompanying complications, *Kantakari* in respiratory disorders, *Haridra* in allergic disorders, *prasarini* in *gridhrasi* and *sandhigatavata*, *yastimadhu* in *udara sula*, *Changeri* in *amlapitta*, *Aragwadha* in *twakroga*, *katukarohini* in hepatic disorder, *Lasuna* to control blood cholesterol levels, *Bhallataka* in *krimiroga*, *Punarnava* in *shotha*, *Satavari* as galactagogue, *Sirisha* as an antiallergic agent, *Shigru* in *swasa roga*, *Mammajjak* as well as *Saptarangi* in *madhumeha*, *Varuna* in *asmari*, *Haridra* as an anti inflammatory agent are a few of noteworthy leads with therapeutic potential for extending on a wider trial. Isolation of anabolic steroid considered to benefit healing of fractures is an interesting lead.

1.17 Use of *Jatyadi taila/ ghritha* in wound healing, *kshara sutra* in the treatment of fistula, *Amasaya shodhana* with *Varuna kvatha* in *Parinamasoola*, treatment of *kanchanara guggulu* in *galaganda*, *timira roga* with *Mahatriphaladhi ghritha* and use of *ksheerabala taila* in *vataja shirashoola* are worthy of recording. *Brahmyadiyoga* in mental diseases, *panchakarma chikitsa* in *vatarogas*, *prakriti* studies, endocrine responds to *rasayana chikitsa*, study of relation of *Jataragni* to *Dhat-*

wagni, role of *sodhana*, *virechana*, *vamana* and *raktamokshana chikitsa* in *Kshudra Kustha* are a few of important clinical programmes of significant importance to elucidate therapeutic principles. The Council has evolved cheaper and simpler remedies for the treatment of conditions like leucoderma epilepsy, mental retardation, etc. Simple yogasans and yogic techniques have been identified for treatment of arthritic disorders, diabetes, hypertension obesity, gastro intestinal diseases and also to correct refractive errors.

Clinical studies on *Zeekhum-nafs* have shown that Unani medical system can provide an effective remedial measure. A simple preparation possessing the activity to relieve the hazards of Vajaul mafsil. Positive results could be achieved from Unani medicine in *Zahure-e-Muzmein*. *Yarkan* (Jaundice) can be controlled by Unani Medicine. The study conducted with *Ustukhudoos* indicated its potentiality to relieve the symptoms of *Ileb-e-khaishoom-e-Muzmein*. Atrilal indicated its curative effect in *Bars*. Post-Bekh-Madar has shown its effectiveness in *Zaheer Muzmein*. Pharmacognostic study of 15 single drugs used in Unani system of medicine has been worked out. Chemical studies have been carried out on 76 drugs.

1.18 Standards for ten drugs used in Siddha system of medicine have been worked out. Clinical studies conducted on Putrunoi exhibited that Siddha drugs have scope to be used with advantage. Further studies are in progress. Studies using certain Siddha remedies revealed that *Manjal Kamalai* can be successfully treated. *Ambar mehugu* has shown a promising lead in the control of sandhivata shoalai. Likewise Rasaganadhi Mehugu indicated its action on *Kalanjipadai*.

1.19 Standardisation studies on 35 single drugs used in Homoeopathy have been carried out. Drug proving studies were completed on five Homoeopathic drugs. Clinical studies conducted on amoebiasis, bronchial asthma, tonsillitis, rheumatism, behavioural disorders, diabetes, hypertension, infective hepatitis, allergic manifestations, trigeminal neuralgia and post extraction complications proved that the Homoeopathic remedies have potential role in successful treatment.

1.20 A number of drugs claimed to possess contraceptive potential have been screened. The results of study on *Japakusum*, *Vidanga*, and some other three coded drugs seem to show promising effects. An-

tifertility activity of Homoeopathic drug Pulsati'la and Caulophyllum is in progress.

1.21 Major portions of Kent Repertory has been edited. Critical edition of Bhela samhita has been brought out. The following books of Unani system of medicine which are in Persian/Arabic are being translated into Urdu and are getting ready for publication: Rasal-e-Judia Kitab-ul-abdal, Kitab-u-Umoda, Kitab-ul-Kuliyat-1, IV & V volume of Al-Havi and I volume of Kitabal-Jane-e-Mufridal.

1.22 The Council is publishing two quarterly journals i.e. Journal of Research in Indian Medicine, Homoeopathy and Yoga and Bulletin of Indian Institute of History of Medicine containing scientific articles of medico-historical importance. 45 scientific publications including monographs based on the study conducted by various research projects of the Council have been brought out. Health statistics pertaining to rural areas selected on random basis in different States of India have been collected to work out disease health atlas, disease proneness, and to work out suitable health programmes based on the needs, demands and at the same time harnessing local resources.

The Council has evolved a medical kit containing simple easy-to-use remedies for many common ailments. The Council has secured ten patents for the active principles isolated and are being exploited for commercial use through the National Research and Development Corporation. The Council conducted various scientific Seminars and also participated in Indian Science Congress regularly and in the International conference. As an outcome of the research carried out 1500 scientific articles were published in National and International journals. The Council was recipient of Iranian Trophy for its exhibition under Bombay Natural History Society. The Council has received the coveted award (First Prize) for excellence of printing of a book on Yoga, Science and Man. The work on certain clinical problems was much appreciated and the units bagged gold and silver medals from various Trusts and Academies.

In pursuance of the policy decision taken by the Government of India to have four separate research Councils viz. for (1) Ayurveda and Siddha, (2) Unani, (3) Yoga and Naturopathy and (4) Homoeopathy. Steps have been taken to bifurcate the Central Council for Research in

Indian Medicine and Homoeopathy with a view to provide adequate opportunity for independent development of these systems of medicine.

The setting up of the new research Councils will not only further enrich the concerned medical system but also enhance its scope and utility in the National Health Care.

The subsequent part of the report provides activities related to Central Council for Research in Ayurveda and Siddha, which has commenced functioning in pursuance of the above decision.

= 30-3-1978

Ay Siddha.

29-7-2011

Ayurvedic Science.

Annual Report 1978-79

Administrative Report

During the period under report the Union Ministry of Health and F.W. took a decision to bifurcate the existing composite CCRIMH into four separate Research Councils as under to provide better opportunities for each system of medicine to grow independently according to its own patterns and principles so that it can play more useful role to provide medicare needs of the Country's population :—

1. Central Council for Research in Ayurveda & Siddha
2. Central Council of Research in Unani Medicine
3. Central Council for Research in Homoeopathy
4. Central Council for Research in Yoga and Naturopathy

Objectives of the Central Council for Research in Ayurveda and Siddha :

The aims and objects of the Council are to formulate aims and patterns of research on scientific lines in Ayurveda and Siddha systems and to undertake research or other programmes, the prosecution of and assistance in research, the propagation of knowledge and measures relating to the cause and prevention of the diseases. The Council also conducts research in different aspects, both fundamental and applied, and also assists institutions of research for the study of diseases, their prevention and cure especially with emphasis for covering the rural population in the country which have been hitherto inadequately taken care of. The Council is also to collaborate with other institutions having similar objects and disseminate knowledge through publications, literature etc. so that these systems may be popularised among people not only in this country but also in countries all over the world.

Members of the CCRAS Society and Governing Body :
(First Governing Body) :

President	Union Minister for Health & F.W.
Vice-President	Union Minister of State for Health and F.W.
Official Members	Union Health Secretary or his representative Joint Secretary Incharge of ISM Ministry of Health and F.W. Joint Secretary (Financial Adviser) Ministry of Health & F.W.
Non-Official Members	Pt. Shiv Sharma Dr. M.L. Dwivedi Vd. B D. Triguna Vd. B M. Dikshit Vd. Sita Ram Mishra Dr. C.K. Atal Prof. (Mrs.) G. Santhakumari Prof (Mrs.) Asima Chatterjee Director, National Institute of Ayurveda. Dr. A. Ananda Kumar Dr. V. Raghupathi
Member-Secretary & Director	Dr. P.N.V. Kurup

During the period under report the Governing Body met once on 14th June 1978.

Deliberations of the Governing Body :

During the meeting mentioned above the following important matters were approved :

1. The State Bank of India was nominated as the Bankers of the Council.

2. The accounts of the Council and its subordinate units be audited annually by the C & A.G. or his representative.
3. One representative from the Siddha system be included in the Finance Committee.
4. Constitution of Two standing Scientific Advisory Committees was approved, one each for Ayurveda and Siddha.
5. Accepted the proposal to acquire land from D.D.A. for constructing a building to locate the Headquarters Office of the Councils and also authorised the Council to deposit the money for the land on the basis of the demand note issued by the DDA.
6. Approved the proposal to hire an alternative commercial building to locate the Headquarters Office of the Council.
7. Considered the proposal regarding merger of R.R.I. (Ay) with National Institute of Ayurveda, Jaipur.
8. Approved the adoption of the existing emblem of the CCRIMH for the CCRAS.

Scientific Advisory Committees :

The Governing Body has constituted two Scientific Advisory Committees one for Ayurveda and another for Siddha with the members as indicated below. These Committees have been assigned the task of periodical evaluation of the programme in hand, preparation of annual reports for consideration of the Governing Body, consideration of proposals for establishment of new schemes and all other technical and other matters as may be specifically assigned to them by the Governing Body or Finance Committee. The members of the Committee are chosen from the members of the Governing Body and they hold office concurrently with their membership of the Governing Body.

Scientific Advisory Committee (Ayurveda) :

- | | |
|---------------------|----------|
| 1. Pt. Shiv Sharma | Chairman |
| 2. Dr. M.L. Dwivedi | Member |

3.	Vd. B.D. Triguna	Member
4.	Vd. B.M Dikshit	Member
5.	Vd. Sita Ram Mishra	Member
6.	Dr. P.N.V. Kurup	Member-Secretary
7.	Dr. C.K. Atal	Coopted Member
8.	Prof. Asima Chatterjee	—do—
9.	Prof. G. Santhakumari	—do—

Siddha

1.	Dr. A. Ananda Kumar	Chairman
2.	Dr. V. Raghupathi	Member
3.	Dr. P.N.V. Kurup	Member-Secretary
4.	Dr. C.K. Atal	Coopted Member
5.	Prof. Asima Chatterjee	—do—
6.	Prof. G. Santhakumari	—do—

During the period under report the Scientific Advisory Committee (Ayurveda) met five times.

Deliberations :— First meeting — 2-3 July 1978

1. The members scrutinised the reports of work carried out with reference to the programme/problems allocated to the Institutes/Centres/Units/Enquires and found the work satisfactory.
2. The annual Reports in respect of Ayurvedic Scheme of the CCRIMH for the period 1976-77 and 1977-78 were approved.
3. Constituted four Standing Sub-Committees to visit the research centres and study the working and give suitable guidance, assess their work periodically, recommend future plan of work and protocol.

4. Approved programmes to be handled at different Institutes/ Centers/Units/Enquires during 1978-79.
5. Renaming of Central Research Institute (Ay) Patiala and Cheruthuruthy and CSMRI was recommended.
6. Establishment of a 50 bedded Central Research Institute (Ay) at Delhi was recommended.
7. Recommended establishment of C.R.I., Bombay and R.R.Is at Bihar, Madhya Pradesh, Gujarat and U.P. with 25 bedded hospital.
8. Recommended the strengthening of Pharmacy sections of Indian Institute of Kayachikitsa, Patiala and Indian Institute of Panchakarma, Cheruthuruthy and the Regional Research Institute (Ay), Calcutta.
9. Recommended establishment of R.R C's at Arunachal Pradesh, Assam, Sikkim and Jammu.
10. Recommended shifting of Journal of Research in Indian Medicine from Varanasi to Delhi.
11. Approved the staffing pattern of some of the major Institutions/ Centres.
12. Approved the guidelines to regularise the service conditions of taken-over employees.
13. Recommended the retention of Indian Institute of History of Medicine and Documentation Centre under the CCRAS.
14. Recommended the constitution of scientists cadre and restructuring of the existing categories of research personnels.

Second meeting : (1-10-1978)

1. Recommended adding of out-patient section to the RRI, Trivandrum.

2. Recommended 9 Institutes as non-plan programmes and the remaining as projects.
3. Recommended 8 workshop programmes on different fields.
4. Recommended preparation of coloured prints of medicinal plants Vol. I.
5. Recommended the disassembly of existing petrol engines.

Third Meeting : 27-11-1978

1. Recommended the proposal for providing financial assistance to the tune of Rs. 2 lakhs to post-graduate Institute Chandigarh for anti-fertility studies on indigenous drugs.
2. Approved the Five Year (Rolling) plan 1978-83 subject to adjustments that may become necessary in the light of the fresh guidelines on research methodology to be adopted by the Council.

Fourth Meeting : 21-1-1979

1. Accepted the research methodology as recommended by the Sub-Committee of S.A.C. (Ay)
2. Recommended revised staffing pattern for Pharmacognosy, Chemistry and Pharmacology and Applied Drug Research Projects.
3. Recommended Financial assistance to S. K. Ayurvedic Cancer Research Institute, Kurukshetra for Cancer Research.

Fifth Meeting : 4-2-1979

1. Recommended Conversion of R.R.I. (Ay) Bhubaneswar into CRI (Ay).
2. Recommended 9 time bound enquiries on different fields for financial assistance.
3. Recommended that the Central Government may take a decision with regard to amalgamation of the various research projects in Kerala with the proposed Indian Institute for Advanced Studies and Research in Ayurveda at Trivandrum.

During the year under report the Scientific Advisory Committee (Siddha) met three times and made the following recommendations :

1. First Meeting : (8-7-1978)

The Committee discussed in detail the reports of various Institutes/Units for the year 1976-77 and 1977-78 and found the progress satisfactory. Progress reports of these two years were also approved.

Recommended that the bed strength of the C.R.I. (Siddha) be increased.

The L.R.U. at Palayamkottai may be closed and merged with Central Research Institute (Siddha)

The Literary Research Wing (Siddha) at Thanjore may be merged with the C.R.I. (Siddha) Madras.

Clinical Research Unit functioning at A.A. Hospital may be merged with the C.R.I. (Siddha), Madras

A standardisation wing for Siddha may be attached with CSMRI, Madras.

Staffing pattern for different Institutes/Units were approved.

Problems to be taken by various Institutes/Units during 1978-79 were approved.

Appointed two sub-committees one for Literary and Clinical and another for Standardisation and Survey.

Restructuring of different cadres were recommended.

Second Meeting :

One R.R.I. (Siddha), one Drug Research Scheme (Multidisciplinary) attached to CRI Madras, one Department of Literary Research and one M.C.R.U. attached to CRI (Siddha) and 10 time bound enquiries were recommended for establishment.

Workshop programme on cancer was recommended.

Sixth Five Year Plan proposals were considered and suggested priority of schemes to be taken up during the 6th plan period.

Third Meeting :

Clinical Research Unit at Palayamkottai was approved.

Three Preliminary Standardisation Units for Siddha were recommended.

There is also a *Standing Finance Committee* consisting of the following members :

Joint Secretary Incharge of ISM
Ministry of Health & F.W.
Financial Adviser, Ministry of Health & F.W.
Dr. M.L. Dwivedi Representing Ayurveda
Dr. A. Ananda Kumar Representing Siddha
Dr. P.N.V. Kurup Director, CCRAS

During the year under report the Committee met four times and considered the various proposals as recommended by the Scientific Advisory Committees and approved the schemes as indicated below for implementation after obtaining the approval of the Governing Body.

1. Intimated that the CCRAS will have as their share a sum of Rs. 138 lakhs for the year 1978-79.
2. Approved new schemes recommended by the S.A.Cs. (Ayurveda) and (Siddha) subject to the condition that priority should be given to establish those schemes where basic facilities are made available by the State Government as far as possible.
3. Agreed for hiring of accommodation for headquarters Office including Documentation Centre.
4. Approved the staffing pattern for various Institutes/Centres/Units functioning under the Council.
5. Approved the commencements of the following new research projects :

Central Research Institute (Ay) at Delhi and Bombay
 Regional Research Institutes (Ay) at Bihar, Madhya Pradesh,
 Gujarat and U.P
 Regional Research Centres at Assam, Arunachal Pradesh
 Sikkim and Jammu
 Clinical Research Unit (Siddha) Palayamkottai
 Drug Standardisation Unit (Siddha) at CSMRI, Madras.
 Regional Research Institute (Siddha), Mobile Clinical Research
 Unit, Multidisciplinary Drug Research Circuit, Literary Re-
 search Department, Ten time-bound enquiries in Siddha

Approved Budget estimates for the year 1979-80 as below :

Non-Plan	1.00 crore
Plan	1.32 crores
	<u>2.32 crores</u>

7. Approved the Workshop programme on cancer.
8. Approved the proposal for financial assistance to postgraduate Institute, Chandigarh for a research scheme on anti-fertility studies at an estimated cost of Rs. 2 lakhs
9. Approved the proposal to extend financial assistance for Cancer Research Scheme at S.K. Ayurvedic Cancer Research Institute, Kurukshetra.
10. Approved Grant of 5% additional house rent allowance to the employees of the Council.
11. Approved purchase of diesel Ambulance Van for CRI (S).
12. Approved hiring of accommodation for C.R.I. (Ay) Delhi at Dhanvantari Bhavan, Punjabi Bagh, Delhi.

CLINICAL RESEARCH

Indian Institute of Panchakarma, Cheruthuruthy.
Indian Institute of Kayachikitsa, Patiala.
Regional Research Institute, Jaipur.
Regional Research Institute, Trivandrum.
Regional Research Institute, Calcutta.
Regional Research Institute, Bhubaneshwar.

Clinical Research Units

(Dr. ALURIM : Hyderabad: Bombay: New Delhi:
Baroda: Kottakal: Bangalore:)

Applied Drug Research Units

(Gwalior, Bombay, Lucknow, Ahmedabad, Poona, Varanasi.)

Clinical Research Enquiries

(Madras, Pondicherry, Rishikul, Jammu, Gauhati, Ahmedabad,
Varanasi, Pune, Hardwar).

**SERVICE ORIENTED SURVEY AND SURVEILLANCE
PROGRAMME**

Indian Institute of Panchakarma, Cheruthruthy

The Institute carried out research studies on the role of Classical lines of Therapeutic approach using *Sneha*, *Sweda*, *Virechana* and *Basti*. In cases of *Pakshaghata* and also the role of the drugs viz *masha*, *atmagupta*, *eranda*, *bala* in the treatment of *Pakshavadha*.

The Institute studied 56 patients of *Pakshavadha* (Hemiplegia) of two years duration under this research programme. The cases were selected after proper clinical assessment.

In the present study the patients are divided into two groups. One group of 30 patients received the treatment of *Snehan*, *Swedan* and *Basti* with *Kwath* and *tail* prepared with *masha*, *atmagupta*, *eranda* and *bala*. The second group consisted of 26 patients receiving only *Sneha*, *Sweda* and *Basti* with placebo in place of *kwath* and *tail*. The treatment in both groups continued for two months. Dose of *snehapan* was 20 ml a day according to the *agnibala* of the patient. The dose prescribed for the treatment according to the *snehapan* was administered on third, fifth and seventh days. Sometimes *Samyak snigdha* and *lakshanas* were not seen even after 7 days *snehapan*. In such cases two days rest was advised and one more course of *snehana* was prescribed if considered necessary. Full course of *Poorva Karma* and *Panchkarma* was prescribed in (a) group and (b) group patients according to the text i.e. *Panchkarma* and *Sansarjana Karma* for first 13 days, *Shaman* treatment from 14th to 18th day followed by *Vastikarma* for next nine days and again *basti* and *shumankarma* were prescribed onward upto 60th day and thereafter patients were discharged. *Ahar* and *Vihar* were prescribed for both the groups i.e. light diet was given to all the patients.

Blood sugar and serum cholestrol were estimated before and after *snehapana*. Similarly urine and stool were also examined. X-rays were taken wherever considered necessary. The effect of treatment in each group of patients was observed in group 'A' mild relief 30% moderate relief 63.3%, marked relief 3.3% and complete relief 3.3% and in Group 'B' mild relief 23%, moderate relief 42.3%, marked relief 26.9% and complete relief 7.6%.

The study on this problem is being carried out since 1977-78 and so far 94 cases have been studied. Under 'A' group 44 cases were treated and 3 patients got complete relief and 41 cases had partial, marked or

mild relief. Similarly in 'B' group 50 cases were treated, 5 cases were completely relieved, 2 cases had no relief and others had marked relief, partial and mild relief.

Effect of Guggulu and Rasna in Amvata :

22 cases suffering from involvement of joints associated with severe pain and swelling with occasional fever ranging from one month to ten years were included. The criteria for diagnosis and classification as evolved by Singh (1972) was adopted.

The patients were divided into two groups : group A with 11 patients was prescribed *langhana*, *swedan* and *mriduvirechana*. *Deepan*, *pachan* and *shaman* treatment included *Guduchi* 60ml + *Guggulu* 2gm. three times of a day and *Guduchi tail* 15 drops a day. This treatment was continued for one month. Group 'B' with 11 patients was also provided the same treatment up to the 10th day as in group 'A' (except that of *shaman* treatment). The treatment included *Guduchi* 60 ml + *Rasna churna* 2 gms and *Guduchi tail* 15 drops three times a day for one month. Common medicated oil was used for local application in both groups. However, in certain cases where no improvement was noticed and the symptoms aggravated, this course of treatment was extended for a further period of 2-3 months. *Ahar* and *vihar* were prescribed according to the text.

After the treatment, the cases were graded for relief as Grade I - complete remission, grade II major improvement, grade III minor improvement and grade IV no improvement. The patients in group 'A' could be classified as : grade I (9%) grade II (36%) and grade III (54%), while in group 'B' : grade I (9%) grade II (54%) and grade III (33%)

The study has been continuing since 1976 and so far a total of 37 cases have been studied, out of which 4 cases got no relief while others showed partial, moderate or complete relief.

Effect of Shudhguggula and Nirgundi in the treatment of Gridhrasi :

Patients with full expressions of signs and symptoms of *Gridhrasi* with tenderness in the sciatic notch of the hip bone and pain during the

leg raising test, but without any history of injury had been selected and admitted for this clinical trial. The signs and symptoms of *Gridhrasi* were observed as prescribed in the texts for diagnosing such cases.

During this period 19 cases were selected (age from 10 to 70 years) having the disease for more than two years duration. Routine examination of blood, stool and urine including V.D.R.L. test to exclude syphilitic patients were conducted before and at the end of trial. All the admitted patients were divided into two groups i.e. 'A' and 'B'. Group A having 10 patients, the drug was provided alongwith *Shodhan* and *Shaman* and in group 'B', having nine patients, treatment with *shaman* only was provided. The treatment was continued for 45 days. The drug *Nirgundi Ghr̥it* 10 ml and *Nirgundi Kashaya* 60 ml was given only in the morning but *Shudh guggulu* 1 gm and *Nirgundi Kashaya* 60 ml, were administered two times a day (at 1 p.m. and 6 p.m) as *Shaman* treatment to groups 'A' patients. While group 'B' only *shaman* treatment was prescribed as in Group 'A'.

Nirgundi taila was prescribed for *abhyanga* in both groups, *ahar* and *vihar* were selected as per classics

All the cases admitted for the trial underwent routine pathological and biochemical investigations, on admission and discharge. In addition their blood sugar, blood urea and serum cholestrol were also done.

The results of the treatment based on the relief shown by the patient in signs and symptoms was graded as under : Group 'A' moderate relief (10%), complete relief (80%) and drop-out (10%), while under Group 'B', marked relief (12%) and complete relief (88%).

The study was commenced in the year 1974-75 and a total of 24 cases have been studied so far out of which 18 cases got complete relief and one patients left the treatment and the rest showed varying degrees of relief i.e., partial, marked or moderate relief.

The Effect of Sahacharadi yoga in Khanja and Pangu :

29 cases of the either sex with duration of illness not exceeding two years were selected. The diagnosis of cases of *Khanja* and *Pangu* was based on the clinical examination of the patient and the signs and sym-

ptoms like inability to walk, weakness and rigidity of the muscles, dragging on the toes on the affected side, occasional loss of control of micturition and defecation due to the involvement of the bladder and bowels. Pain was due to sudden contractions of the involuntary muscles, and emaciation of the effective muscles in chronic cases. All the cases were admitted in the hospital, routine laboratory investigations i.g. ESR blood sugar, blood urea was serum cholestrol and X-rays of the lumbar and sacral regions and hip joints were also done before and after the treatment.

The patients were randomly grouped as 'A' and 'B'. In group 'A' 14 patients were studied out of which 4 were dropped while in 'B' group, 15 patients were studied and 5 were dropped.

Group 'A' patients were administered *sahacharadiyoga* in the form of *Kashaya*, 60 ml. thrice a day with *Sahacharadi taila* 10 ml twice a day. *Sahacharadi tail* was used for *abhyanga*. Hence this group was prescribed for *shodhan* and *shaman* treatment for 2 months. Group 'B' patients were treated with *shaman karma* only for 2 months as in Group 'A'. Light diet was prescribed to all the cases during the treatment.

Gradation for relief was done as mild relief - 25%, moderate relief- 50%, marked relief upto 75% and complete relief above 75%. Under Group 'A' mild relief was shown in one case, moderate relief in 5 cases, marked relief in one case, complete relief in 2 cases and no relief in one case. Similarly under Group 'B' mild relief was observed in one case, moderate relief in 2 cases, marked relief in 5 cases and complete relief in 2 cases.

So far, 44 cases have been studied under this programme since the inception of this study and out of which 6 cases got complete relief, two cases had no relief, while 27 cases had partial/moderate relief and nine cases were dropped out.

Study of treatment of Shaishaveeya vati :

Children in the age group of 6 months to 12 years with paralysis of one or both the lower Limbs and with history of fever were selected for trial.

Diagnosis of the cases of these diseases was based on clinical examination of the patients, having signs and symptoms of *jwarpurva ardhan-*

aga ghat, Karmahani, mansa, shithilta, sachetanta, anga Vaikallya etc. Routine Laboratory and pathological investigations were conducted.

The selected cases were admitted and divided into two groups: 'A' and 'B'. In Group 'A' 13 patients were treated with drugs and kept under *srotas shodhan* and *shaman karma* which continued for 56 days. First 15 days *shodhan karma* was provided, with *Indu Kant Ghril* and *mastu* 3-5 gms twice a day for 14 days and *virechana* with *Eranda tail* on the 15th day. Thereafter *shaman karma* with *Bala kwath* 30 ml., *Rasa tail*, 3ml. twice a day from 16th day to 41 days was prescribed. Similarly in group 'B', 4 patients were provided *Shodhan karma* as in 'A' group and *shaman karma* provided with *Indu kant ghril* and *Mans Rasa* 3-5 gm. twice a day was prescribed after *shodhan karma*. Light diet with milk and rice according to the digestive power of the case was given.

Criteria for assessment of treatment was based on clinical and physical examination as muscles power test, muscle tone test, reflexes test and foot drop and observations of signs and symptoms. The percentage of relief was graded as mild relief -25%, moderate relief 55%, marked relief 75%, complete relief above 75% and the results observed patients. Group 'A' showed marked relief (3), Moderate relief (7), Mild relief (1) and dropped out (2).

Under Group 'B' three cases showed moderate relief and one case dropped out of trial.

Thus 42 cases were studied out of which one patient had complete relief while 38 cases got marked or partial relief and 3 dropped out.

Indian Institute of Kayachikitsa, Patiala

The Institute has studied during the year a wide range of short term and long term programmes.

1. Krimi Roga :

Seventy three cases in the age range of 10 to 60 years were admitted and their case history as per signs and symptoms mentioned in the Ayurvedic classics i.e. *Dosha, Dishya, satwa, Prakriti, Pariksha*, etc. were recorded. For diagnosis the Stool examination according to Stoll's technique was conducted thrice i.e. for three successive days before the treatment and the ova were counted. Where the stool findings were negative and ova were not visible but worms were present/visible in the stool and the general symptoms were also present were also registered for the trial. During the treatment stool examinations also were performed regularly at weekly intervals to assess the effect of treatment. Complete haemogram was also done before and during the course of treatment. Cases were either treated with a coded drug CRIA No. 12 (Nimba + Marich) or with CRIA No. 13 (Palash Beej Churna). Drugs were prescribed in the tablet form in dose of 1-2 gm thrice a day with water to adults and 5 mg to 1 gm thrice a day with water to children. Duration of treatment was 2-12 weeks.

2. Amvata :

During the period, 60 cases of Amvata were selected for study, out of which 10 have discontinued the treatment. Subsequently, routine stool, urine, blood examinations were done and diagnosis was made according to the signs and symptoms mentioned in the classics. *Yograj guggulu* 3 pills with *Rasnasatak kwath* 50 ml. provided 3 times a day. *Eranda sneha* 10 ml. at bed time and *Balukaswed* for local use were also prescribed.

The patients were examined during the treatment and the diminished signs and symptoms were the criteria for effectiveness of the treatment in each case. The percentage of patients having relief was quite encouraging. The study has been continuing since 1974 and a total of 297 cases have been studied so far. During this period the Institute has registered 204 cases for their study. All cases were examined physically and their

clinical examination was done according to the criteria mentioned in the text i.e. *Ashtvidharoga pariksha*, *prakriti* and *Dosh Dushya Pariksha*, and *Agnipariksha*, *srotas pariksha*, *Nidan Pariksha* etc.

3. Tamakswasa :

The study of Tamakswasa was started in 1971 and a total of 1112 cases have been studied so far.

The cases were divided into two groups : 'A' group, with 68 cases treated with *Nardiyalaxmivials Rasa* (0.5 gm) and *Godanti Bhasma* (1.0 gm) with honey and 'B' Group having 136 cases, treated with *Swaskeshari Rasa* (3 tab/day each tab. 0.5 g). In group 'A' results included 100% relief—21 cases; 75% relief—15 cases, 50% relief—8 cases, 25% relief—7 cases and rest of the cases left against medical advice. No toxic effects were found in any of the cases treated.

4. Study of Pradar Roga :

Total 88 cases were taken for study and the main drug Pradaradi-churna with Uttarvasti of Triphala Kwath followed by plug of *Jatyadi taila* was prescribed. Duration of treatment was from 2-12 weeks and above. The dosage of the *Pradaradichurna* was 3 gms three times a day in tablet form with simple water followed by once or twice douche (*Uttarvasti*) with *Triphla kwath* 50 mls. and subsequently *Jatyaditaila* was applied. Douche was specially used in cases suffering from cervicitis and if no inflammation was found in cervix, douche was discontinued.

The criteria for assessment of the effects, of the drug was based on the improvement of signs and symptoms of the disease. The results have been encouraging so far. A total of 919 cases have been studied with *Pradar Roga* since 1971.

Regional Research Institute, Jaipur

The Institute has studied following problems :

1. Clinical Study of Grahani Roga :

Although 31 cases were selected for trial, only 7 cases continued with the treatment. The diagnosis criteria for *grahani roga* was on the clinical basis in Ayurvedic literature. The comprehensive schedule covering-*Hetu Poorva Roopa and Roopa* etc. was used for this purpose. After proper diagnosis the patient was admitted to the hospital.

All these patients were provided with 500 mg of *Musta* powder filled in capsule and administered to each patient in a dose of 3 gms a day divided into 3 doses with plain water for a period of 4 weeks. Weekly assessment of all patients was done by Ayurvedic physicians regularly. No side effects were reported in any case.

Along with clinical examination, routine blood, Urine and stool examinations were also conducted to know the efficacy of the drug. Sputum examination for AFB was also carried out wherever necessary.

Since a small number of cases has been studied, it is too early to evaluate the result of the drug.

2. Clinical study of Krimi Roga :

Krimi Roga is one of the burning problems in the urban and sub-urban areas of Jaipur. To solve this problem, Regional Research Institute has taken up a short term project to study the efficacy of "Shobhanjana" in the patients of *Kaph ja* and *Pureesh ja Krimi Roga*. 15 patients were found suitable for this study. Out of 15 patients, seven patients discontinued the treatment in second week. Eight patients continued the trial.

Shobhanjan Bark was used for the treatment. Capsules containing 250 mg fine *sohbhanjan bark powder* were prescribed orally with luke warm water in a dose of 4 capsules three times a day or 3 capsules three times a day according to age and needs. The treatment was continued upto one month. Four patients took the treatment upto 3rd week and worms were found in stool in the third week report also but

symptomatically they were partially relieved. Three patients continued the treatment upto the period of 4 weeks and no worms were found in their stool from 3rd week and symptomatically also they were relieved completely from the 3rd week itself. One patient was continuing the treatment.

3. Role of Pippali, Haritaki Yoga in Shool Rooga.

Shool Roga being one of the most common ailments encountered in day to day practice, quite a good number of drugs has been described in Ayurvedic literature for the management of *Shoola roga*. Keeping this in view, the present study was undertaken to evaluate the effectiveness of Ayurvedic drug in the patients suffering from *shoola roga* at the OPD level. It was also aimed to evolve a suitable and cheap Ayurvedic drug for this common ailment.

A total of 44 patients, attending OPD of the hospital, of either sex were selected for the study. Diagnostic criteria for the said disease was in accordance with the symptomatology described in Ayurvedic literature, clinical observations made by physicians and final subjective reports given by the patients. The patients were thoroughly examined on the line of approach pre-scheduled for this purpose to exclude organic lesions.

After confirmation of the diagnosis the drug *Pippali Haritaki yoga* was prescribed to each patient in a dose range of 1½ gm divided into 3 doses with plain water for four weeks, and the patients were examined regularly by the physicians. No major side effects were observed except few patients reported burning sensation during the treatment, while passing urine. After completion of treatment only 10 patients reported for follow-up study and some of others had re-occurrence of the complaint and the reason observed was *apathya sevan*. Thus out of 44 cases, 24 completed treatment for 4 weeks.

Weekly assessment was carried out during the courses of treatment and it was observed that 19 patients had complete cure, four patients were partially cured, one patient showed no relief and was continuing the treatment.

However, it is considered that this drug can be used for the treatment of *shool roga* with advantage.

The Regional Research Institute, Trivandrum

The Regional Research Institute, Trivandrum has taken up study on diseases of Skin including *Vicharchika*, *Pundareekam*, *Pama*, *Charnadalam*, *Vipadika*, *Visphotam* to assess the effect of *Aragwadha* (*Cassia fistula*).

The cases of various skin diseases were selected for trial after proper physical and clinical examination for ruling out lesions due to syphilis, tuberculosis and leprosy. Detailed clinical history was recorded. These skin diseases were treated with *Aragwadha kwath* and *Aragwadha kerum* as local application. *Aragwadha kwath* was prescribed 16 ml three times a day before food and *Aragwadha kerum* was used for external application only. Duration of treatment usually lasted for more than a month. Total of 76 cases suffering from various skin diseases were being treated. Necessary Laboratory investigations were also conducted.

***Dadru* (Psoriasis) treated with Nimbidine (capsules & Oil) :**

11 cases of *Dadru* were treated under this programme. The drug Nimbidine capsule (amorphous bitter principle of Nimb) was prepared in the chemistry section of this Institute and administered in a dose of 100 mg. three times a day and Nimbidine oil prepared by mixing 1 gm of Nimbidine in 100 ml of Coconut oil was applied externally. Duration of treatment usually lasted for over a month.

***Pama* (Scabies) treated with *Pamarilepam* :**

The cases of *Pama* (Scabies) were selected and treated with *Pamarilepam*, specially prepared by the Institute. The diagnosis of the patient was based on proper examination of the cases as per signs and symptoms, mentioned in the text.

Two cases of *Pama* were treated with *Pamarilepam*. Drug is prepared with *Pranthimool twak*, *Dinesh valli* and *Manjishta* mixed with juice of coconut and is used in *Pama* as external application.

In all 89 cases under various diseases were registered and treated with above mentioned drugs. Out of these 8 cases left the treatment

against medical advice. Criteria for assessment of results of treatment was according to the Ayurvedic point of view stated as *Swasthya Labha* where there is complete relief. Patients free of most of the symptoms of the disease under study were labelled as having had *Anshik Labha*, i.e. partial relief. Generally there had been reduction in the symptoms of the disease and partial improvement in the vitiated *Doshas*. Cases discharged as *Alabha* i.e. no relief showed no significant improvement in the symptoms.

With *Aragwadha* treatment, 26 cases showed complete relief, 37 cases partial relief and 6 cases had no relief. Similarly in cases treated with *Nimbidin*, two cases had complete relief, six cases showed partial relief but 2 cases had no relief. However, the cases treated with *Pamarilepam* showed complete relief. The study was started in 1976 and the number of patients treated with these drugs for various skin diseases was 1167 both at OPD as well as IPD levels.

4. Eosinophilia treated with Lohasava :

34 patients having more than 15% eosinophilia count were prescribed *Lohasava* at a dose of 25 ml twice a day. In the first instance these cases were kept under trial for one month and thereafter the treatment was started. 22 cases got satisfactory response as there was reduction their original in eosinophilia count by 40% and above. Rest of the cases left the treatment against medical advice. The study on the problem is in progress.

Regional Research Institute, Calcutta

The Institute has studied the following problems :

1. Trial of Ayush-56 Coded drug and Epilepsy :

The drug under trial was evolved by Regional Research Institute, Calcutta and was put to large scale use under Code Ayush-56. During the current year total 87 cases suffering from Epilepsy were taken up for study and divided into 4 groups. Most of the cases of epilepsy with major type had wide frequency of fits at the beginning of trial. The treatment was continued for a period of one year to 1½ years according to the number and frequency of fits. Most of the patients have been rehabilitated and have resumed their previous occupation and are maintaining their normal family life. In quite a few cases there had been considerable reduction of fits. Other cases did not show encouraging results and so far as the behavioural pattern is concerned, some changes were observed.

Routine investigations were conducted and no untoward effects on haemopoetic and renal system were noticed in any of the cases.

The Institute has claimed that out of 87 cases studied during the year, 27 cases got no attack of fits, 30 cases showed satisfactory results and remaining cases showed no response. The drug appears to be harmless, nontoxic and without any withdrawal phenomenon. It is found to be effective. The assessment of the drug was based on the diminished signs and symptoms of the patients.

2. Trial of Ayush-57 on vitiligo :

The trial on vitiligo was started as a pilot study during the year 1975-76 and later included as Clinical problem for long range study with a Coded drug Ayush-57, coded by the Institute.

All the cases were treated at the out door level and no hospitalisation was required in any of the cases. 138 cases suffering from vitiligo were under trial. These cases were of either sex in the age range of 3 to 60 years.

Routine examination of Blood for TC, DC, Hb% and Blood sugar (P.P.) and melanin and pH estimations were done in all the cases. Pre and post trial photographs of the affected parts were taken under identical conditions. It was noticed that 30 cases showed perfect recovery and for record their photographs were maintained in the Institute. Remaining cases (50%) showed evidence of pigmentation; the rate of development in a few cases was very slow particularly in cases who showed allergic tendency. The process of the developing pigmentation noticed in all cases showed two variations i.e. in one group the pigmentation started in the form of black dots in every hair follicle and their gradual enlargement in size and mixing with each other and finally the black spots merged and covered the entire area. In the second group the pigmentation started from the periphery and gradually proceeded towards the central area and covered the entire white patch. It was also noticed that few cases developed psychological complex and the patients with inferiority complex, suspected mind, depression, anxiety and sometimes became unsocial and such type of cases usually did not show confidence in the treatment and hence the response was not satisfactory.

3. Trial of *Bimbigutika* as Anti-diabetic drug :

During the period 25 patients of this disease were selected for study covering 22 male and 3 female patients out of which 5 cases left the treatment but the remaining patients continued it. The criteria for selection of the cases was based on clinical signs and symptoms according to the text.

The drug *Bimbi Gutika* with the contents of *Bimbi Churna* one part + *Jamun Majja* half part + *Shudh shilajeet* half part was used for diabetic patients. The drug in dose of 500 mg was administered twice daily with water and continued for 3—6 months.

The blood sugar and other routine Laboratory investigations, were conducted. 10 cases showed good response as their blood sugar levels came down to normal range and the symptoms also disappeared within 2 months of treatment, these cases were put under follow-up study. 7 other cases also showed fair control. Their blood sugar and symptoms showed 75% relief but three cases had only minor relief. It is interesting to note that some these patients who were being previously treated

with allopathic drugs for the past many years and whose blood sugar could not be reduced below 220 mg% had also showed good response with this drug as their blood sugar level was reduced to 170 mg per 100 ml of blood.

4. Trial of *Nirgunđi*+*Guggulu* in *Amvata* :

Cases of *Amvata* were selected for trial from OPD on the basis of detailed clinical history, swelling and tenderness in the joints, loss of appetite and heaviness all over body. 30 patients were registered for trial in the year but 19 patients left the treatment against medical advice.

The drug *N. Guggulu* (*Nirgunđi* + *Guggulu*) in a dose of 4—6 gms in 2—3 divided doses per day with hot water was prescribed to the patient. *Nirgunđi oil massage* followed with hot water *fomentation* was also prescribed. The treatment was continued for 3—6 months. Out of 11 cases, 7 cases showed improvement with this drug but 4 chronic cases were prescribed *Rasnasaptak churna* 1 gm twice a day with hot water.

It was observed that the drug proved effective in *Amvata* and the scope of complete improvement in the middle age patients was greater than in the case of chronic patients.

Regional Research Institute, Bhubneshwar

The Institute had undertaken the following research trials during the year :

1. Study of cases of *Amyata* using clinical therapeutic procedure :

During the current year 25 cases of *Amyata* were selected for study in IPD on the basis of the following signs and symptoms e.g. morning stiffness, *vedana*, *sparshsahatva*, swelling in one or more joints and symmetrical joints-involvement. Routine Lab. investigations e.g. blood, stool, urine examination, VDRL tests were carried out, X-rays were also done as and when required.

The patients were classified into two groups according to the gradation of diseases and the functional impairment as per Stein Broker's classification. As such both the groups were prescribed different treatment as under : Group 'A'—15 cases were studied out of which 6 left the treatment against medical advice. The treatment was prescribed as *Yograj guggulu* 1 gm + *Vatgajangush rasa* 250 mg + *Maharasanadi Kwath* 50 ml. thrice a day. In group 'B', 10 patients were studied with following treatment: *Shunthi guduchi Kwath* 50 ml. thrice a day and there was one drop out. In both groups *Baluka swed*, *Dashang lep*, *snehan*, *virechan*, *matrabasti* with *Eranda tail* and *Dashmool Kwath* were also given according to the *Amavastha* and *Niramavastha*. In addition to the treatment symptomatic treatment was also prescribed as and when required. Duration of treatment was fixed from 8—12 weeks and followed for one year. Patients were given mixed light diet as milk, *suji*, *dal*, rice and vegetables etc.

Criteria for assessment of results was based on the the reduction in signs and symptoms e.g.

- a) No pain or signs of joint inflammation, no further impairment of joints, reduction in immobility other than that associated with irreversible changes stated as complete relief.
- (b) Major signs of inflammation resolved, movement of joints improved not fully stated as partial relief.

- (c) The patients who did not respond to the treatment were categorized as not improved. As such in Group 'A', 3 patients got complete relief, 2 partial relief and 4 were not relieved and 6 dropped out. In group 'B', 5 had complete relief, 3 partial relief and one had no relief and one dropped out. It was observed from the results that the response with *Shunthi Guduchi Kwath* is better than medicine of Group A as evidenced by the clinical improvement and fall of ESR values.

The problem of *Amylata* has been studied since 1973 and a total of 139 cases have been studied so far with this drug.

2. Study of *Parinamsula* with classical therapeutic approach :

20 cases of *Parinamsula* were selected from OPD on the basis of following signs and symptoms like pain related to food, chronicity which aggravated during empty stomach and was relieved just after taking food/vomiting, burning sensation (*Hrit Kanthah*) nausea, vomiting (*Hritrasa* and *Charahi*) and *Amlodgara*.

The study was carried out in two groups 'A' and 'B' having 10 patients in each group. Duration of treatment was for 45 days. Routine blood, stool, urine examination and fractional test meal test also conducted. The examination was repeated in the middle and at the end of the treatment. Patients in group A were administered *Shatavari swaras*, 25 ml. with Honey 10 ml. twice a day. In group B the treatment given was *Sonthsek'vara rasa* 250 mg. with honey thrice a day. The diet fixed for the patients was milk for first 15 days, chapati with milk for next 15 days, milk mixed with diet-rice dal etc. for the last 15 days. In group 'A' 3 cases showed complete relief, 5 had partial relief and two dropped out.

In Group 'B', 8 showed complete relief and 2 partial relief. It is observed that there was no toxicity or side effects in both the groups. It was also observed that treatment for Group B was more effective than that of Group 'A'.

The study on this disease has been continued since 1976 with this drug and a total of 60 cases has been studied so far.

3. *Amlapitta* (Hyperacidity)

12 cases of either sex were taken up for this study during the current year. The patients were selected as per signs and symptoms e.g. indigestion, nausea, acid eructation, burning in chest and loss of taste etc. Routine blood, stool, urine and fractional test, meal tests were performed before and after the treatment as well as during the treatment also.

The patients were divided into three groups and all the patients were treated for a period of 45 days duration.

In group A two patients were taken up and administered *Shatavari swaras* 25 ml. with honey 10 ml. thrice daily.

In group B, only one male patient was taken up and treated with *Sootshehar rasa* 250 mg. with milk thrice a day.

In group C, 9 patients were studied and administered *Avipatti kar churna* 1 gm twice daily. Both the patients in Group 'A' left the treatment against medical advice but in group 'B' the patients responded well and had complete relief.

4. *Pakshaghata* :

7 patients (Male) of *Pakshaghata* were studied during the period. The criteria of selection was as below :

- (a) Impairment or loss of function of one side of the body, trunk being affected.
- (b) Loss of strength of affected parts.
- (c) Stiffness of joints.
- (d) Loss of sensation of the parts affected.
- (e) Pain in the Limbs and joints.

Out of the 7 cases, 3 left the treatment and as such only 4 cases were studied with the following drugs during three courses of treatment adopted as under :

First Course :

Yograj guggulu (2 gm) *Vatgajankush rasa* 250 mg, *Maharasnadi Kwath* 50 ml. three times daily.

- (a) *Snehana* with *Mahānarayana taila* for local use
- (b) *Virechana*
- (c) *Swedana* (*Karanja patra*)

Second Course :

- (a) *Snehana* as above
- (b) *Swedana* (*Vashpasweda*)
- (c) *Virechana* as above.

Third Course :

- (a) Some medicines were repeated until the patients were discharged. In addition to this symptomatological treatment was also conducted as and when required.

The effect of the treatment was that in seven cases, no one had complete relief and two cases reported partial relief while no relief was observed in two cases and 3 cases dropped out. The study is being continued.

The problem of *Pakshaghata*, *Pangu* was started since 1976 with the above drug and a total of 81 cases have been studied so far.

5. Anti Malarial drug :

During the current year only 9 patients were selected on the basis of clinical systems pertaining to *Vishamiwara*. Routine blood, stool, urine examinations and blood smear for malarial parasites were also prepared before and after treatment.

Anti malarial tablets supplied by the Council under coded name Ayush-64 were prescribed in doses of 2 tablets three times a day and followed up for a month. Out of 9 cases, 1 left the treatment and remaining cases were treated with the drug as above. It was also observed that the patients suffering exclusively with *Jwar* responded well, while patients associated with other diseases did not show any response. Out of the cases treated, 5 were completely relieved while 3 had no relief.

Clinical Research Units

The Clinical Research Unit Dr. A. Lakshmi pati Unit for Research in Indian Medicine, Madras undertook the following problems during this year.

1. Effect of *Ashwagandha* (*Withania Somnifera*) as *Rasayana* Drug to study its effect on prevention of the process of Ageing in human Volunteers :

The study was planned to know the effect of *Ashwagandha* drug on prevention of the process of ageing of normally healthy adults in the age group of 50-59 years. Detailed clinical examination, laboratory investigation, anthropometric measurements were the protocol in approach.

The duration of the treatment was one year and the volunteers were followed at six months' interval. Shade dried roots of the plant were powdered and made as tablets of 0.5 gm. each. The dose was 2 tab. 3 times a day with milk. Out of 141 volunteers included in the trial, 101 completed the treatment period and the remaining 40 patients dropped out of the trial due to irregularity in intake of drugs or due to their being transferred to other places etc.

Results have shown significant increase in the haemoglobin, RBC, hair melanin and in seated stature in the treated group as compared to control group. There has also been decrease in the serum cholesterol and Calcium levels of nails in the treated group.

2. Study of *Prakriti* pattern among the habitual criminals and its scope in re-habilitation.

Human constitution is basically dependent upon the physical features, psychological traits and certain characteristic habits. This constitution is described as *Deh prakriti/Prakriti*.

103 habitual criminals were screened. Out of them 4 were rejected on medical and other grounds and only 99 cases were registered for the study. All the criminals were classified into 3 groups, in accordance with the nature of crime committed i.e. simple crime, moderate crime

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- (c) *Swedana* (*Karanja patra*)

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and severe crime Out of 99 cases 9 were rejected on the basis of their high lie score. It was observed that the proportion of liars was significantly less in criminals than in non-criminals. Among criminals (90 cases) there were 62 *Kapha*, 12 *Pitta*, and 16 of *Vataj Prakriti*. While among non-criminals (94 cases) 66, 18 and 10 was the ratio respectively. Majority of the criminals and non-criminals were found to be *Kapha* dominant. However, the influence of *Vata* as the first and second component was more in criminals than in non-criminals. Most of the cases were in the age group between 25-60 years who have been convicted in the crimes. The majority of the criminals in the study were found to possess positive traits like religiosity (*Astikta*), truthfulness (*Satyavadita*) and gratitude (*Kritagyata*). The negative traits were associated with *Vat Prakriti*.

The study was based to improve their intelligence, memory and will power for greater understanding of right and wrong. Further, the Unit has prescribed *Satwik Ahar*-Milk, Wheat, Green gram etc. *Vihar* yogic exercises were prescribed and some psychotropic drugs like *Mandook-parni* and *Shankhpushpi* were also administered to stimulate improvement.

3. Effect of *Kiratadi* compound, *Kuberakshi* and *Kirata Tikta* in Malaria.

Twenty cases of both sexes in the age group of 15 to 35 years were included in the trial contacting the patients at their doors with the help of health visitors. Routine clinical examination as well as haematological investigations like TC, DC and Urine examination, thick and thin blood smear examination for malarial parasite were done in all cases before and after treatment. Monthly follow up for 6 months was being done. Cases with periodicity of fever with rigor associated with the positive blood smear were included in the trial. Whenever the smear was not positive, cases were also included on the basis of the following symptoms i.e. splenic enlargement, increased pigmented monocytes, decreased lymphocytes and neutrophils leucopaenia. These cases were divided into 4 groups and were treated with *Kirated ghamvati*, (750 mg) *Chirayata* drug (1500 mg), *Kuberaksha* (750 mg) and chloroquine (750mg control group) respectively for four days to find out their anti-malarial effect.

Blood examination was conducted for finding out the malarial parasites. The test was done in all cases before and after treatment and monthly follow up was also conducted. The assessment was based on diminution of presenting symptoms like fever, headache, body pain, nausea, vomiting and pain in lower limbs and blood smear examination.

The Clinical Research Unit, Hyderabad was engaged in study of effect of *Amasya Shodana* in cases of *Parinamasula* and other allied disorders.

Peptic ulcer is considered to be a common clinical condition in the country due to various factors like dietitic patterns and irregularities in addition to stress and strains of modern life. Strict diet schedule by itself at times helps but may call for supplementation by other therapeutic processes even in cases where operative treatment, re-currence of the disease is more common and the disturbances make the cure worse than disease. The Unit has initiated a few techniques of treatment called *Amashyashodhan* based on the Ayurvedic concepts enunciated by *Vagbhat*.

During the period under review the Unit has studied a total of 87 cases. The patients with complaint of epigastric pain related to food intake or inter-digestion were admitted. The patients were selected or diagnosed on the basis of specific subjective and objective signs and symptoms e.g. (i) pain during digestion and pain relieved by either taking food or by fomentation or by complete digestion and (ii) pain occurring in abdomen and increased by *Odana*.

The technique consisted of gastric lavage with decoction of *Varuna*. The decoction was prepared by adding 800 mg. of water to 50 gm. of *Varun* powder and boiling it down to 1/4 th quantity. The patients with complaint of epigastric pain related to food intake or as well as those who reported pain during inter-digestive period were admitted and treated with the above said drug. Some were treated by *Basti* with *Varuna Taila*. *Virechana* and *Amavasna Vasthi Karma* were planned according to needs. During the treatment period, no other medicines were given nor the patients were put on any special diet. Normal food which was neither spicy nor hot was permitted.

All the cases treated with the drug under various groups had shown considerable beneficial response. Since inception 600 patients had been registered and treated under this scheme. The results were found satisfactory as the patient, treated experienced freedom from the distressing symptoms of peptic ulcer. *Amashya shodhan* showed return to normalcy of the gastric mucosa and no complications were reported.

The Revised Panchakarma Unit functioning at Podar Ayurvedic Research Institute has taken up the study for assessing the effect of *Panchakarma* in *Vatvyadhi*, *Pakshavadha*

Vat Shamak oils like *Narayana taila*, *Bala oil* etc. were used for *Abhyanga* during the trial. It was observed that *abhyanga* by itself was not sufficient and there was need to include *Yograj guggulu*, *Mahayograj guggulu*, *Rasnadi kashya* and *Dashmool ghrīt* in the therapeutic regimen.

Patients who were considered fit for *virechana karma* were prescribed 10—15 gm. of *Trivritmool churna* alongwith 4 ounce of milk, water and two tea-spoonsful of sugar. Black *trivritmoola* showed satisfactory purgative action because after taking 10 gm. of it the patients had 10-12 motions in a day.

Further the unit tried the *Virechana* with or without *Vamana* and it was observed that when *Kirechana* was followed by *Vamana*, patients got better effect whereas in other cases no particular relief was noted and therefore, they decided to study atleast 100 cases in each group. So far, 95 cases have been studied with *Virechana* and *Vaman* and 90 cases with *Virechana* only.

Simultaneously *Bastikarma*, a therapy considered to be of significance for *Vat-Vyadhi* was also taken up particularly to assess its effect in *Pakshavadha*, *Karma basti*, *Kala basti* and *Yogbasti* was studied in the form of *Utkleshan*, *Shodhan* and *Shaman basti*. 90 cases with this *Bastikarma* were studied. However, they have indicated that Sushruta has given more importance to *Shirobasti* in the treatment of *Pakshavadha*.

Similarly to see the effect of *Shirobasti* with *Prasarnitail*, a programme was started. This procedure showed good results. In fact

Nasya (shorvirechana karma) was recommended as one of the best treatment for *Urdhwa Jatruguti* rogas with the help of *Mashaditail*. This also showed good results.

Vaman Karma :

After proper *snehana karma*, the Unit started *Vaman karma* over eight patients with medicated milk prepared from 50 g *Madanphal* and half litre milk. *Pakshvadha* : 6 patients including one patient of Tamakwas and one of Urticaria. were included in the group. Of 6 patients of *Pakshavadha*, 5 were given *Vamankarma*. Out of them 3 had moderate relief with slight relief in shoulder elevation and two did not show any improvement.

Virechana Karma :

Three patients were selected for *Virechana karma* and admitted into the hospital for *Samshodhan* treatment. First of all *Snehan* treatment was given followed by *swedana*. *Snehana* was given for six days in a dose of 6 ounces of *Dashmoolghrit*. It was found that the patients had *Samyak Snigdhlakshana* in seven days. After stopping *Snehana* the patients were advised rest and no medicine was given for three days. On the fourth day *swedan* was given (*Vashpswedan*) and patients were brought to the ward for *Virechana karma*. *Trivritmool churna* 10 gm. was administered with water containing teaspoonful of sugar.

All the three patients of *Pakshavadha* were affected on the right side of the body. All the patients got *samyak snigdha palakshana* in seven days as mentioned above. Minimum time for *Virechana vega* was 2.45 hours while maximum time in the *virechana vega* was 4 hours. Minimum number of *vegas* was 4 (in two patients) while maximum number of *vegas* was 6 (in one patient).

Bastikarma :

Basti is a procedure to eliminate vitiated *doshas* from *pakvash*, a place where *vat dosha* is mainly vitiated.

In this duration *Dashmool oil* was taken for study to know its effect in *Pakshavadha* and *Ekanagavata* cases. During this period 21

patients of *Pakshavadha* were selected for *Bastikarma*. Out of which 3 patients left against medical advice thereby leaving only 17 patients for trial. This procedure was given after *snehan* and *swedan karma* as usual. *Nirooha* and *Anuvasan basti* were tried alternatively as indicated in the text. *Dashmool tail* was used in both *bastiakrmas*.

In *Vaman karma* three patients had shown moderate relief in elevation of shoulder and others showed no improvement. Although one patient got relief in tingling sensation of the face and also little improvement in upper extremities. General lightness of the body was observed in all the three patients. *Jatharagni dipti* was also found in every patient.

Out of 17 patients, 7 could not even stand before initiating the treatment while two could stand with aid and two started walking with aid. Whereas three patients did not show any improvement after the treatment. Another 8 patients were found unable to walk before, but after treatment seven of them started walking with aid. Clinically improvement was noted in shoulder elevation and speech.

Before *Vaman karma* patients were given *Yograj guggulu* along with *Rasna Sap'ak Kwath* as *Deepan pachan* and *snehan karma* were also performed. For *snehan karma* *Dashmool ghrít* was given in a dose of 1—1/2 ounces daily and increased by 1—1/2 ounces daily upto 7 days. Thereafter *snehan karma* was stopped. One *swas rogi* was given 30 ml. *Dashmoolghrit* for three days. Five patients were given *Dashmoolghrit* for 7 days, and then *vamankarma* was initiated. The patient of *swas* was injected *Aminophyllin* injection daily which was reduced to half. The patient reported that he never felt so free from disease as he noted after *vaman karma*. However, it was observed that although after this treatment the patient had a feeling of well being but a few patients showed slight improvement in the affected parts. Thus the observations made so far were encouraging.

The Clinical Research Unit, New Delhi studied the following problems :—

1. *Amandravasula* and *Parinamsula* :

The cases were divided into the following five groups :

(a) Control group

- (b) Single drug treated group
- (c) Compound drug treated group
- (d) Single drug with *Panchakarma*
- (e) Compound drug with *Panchakarma*

In control group, the patients were kept on placebo for 15 days but all the laboratory investigations were conducted e.g. TLC, DLC, HB, ESR, routine urine and stool examination, x-ray, occult blood, and gastric analysis.

In the single and compound drugs treated groups, after the basal laboratory investigations were done, patients were given 1 gm. capsule of *Shamboobhasma* (single drug) and *Samudradichurna* (compound drugs) respectively with hot water after meals regularly for 15 days. Besides *eranda sneha*, *Atis upnaha* and *Lasunadi lep* was applied externally as and when required. Similarly *Panchakarma* treatment was also prescribed alongwith drugs in these cases. In all 45 cases of *Annadravsula* and *Parinamasula* were treated during the period so far. Out of these cases, 19 had left the treatment against medical advice or due to some other reasons. 17 patients of *Annadravsula* and 9 patients of *Parinamasula* cases were treated regularly with these drugs. Out of 17 cases, 7 cases were given *Shamboobhasma* and 9 were given *samudradichuran* in 1 gm. dose and the remaining one case was kept as control.

9 patients were declared cured, 2 were partially relieved and in 5 cases there was no relief, as stated in the report. In Control group one case was also shown as partially relieved.

Further it was also observed that *Annadravsula* is more prevalent in *Yuvavas'ha* and *Madhyavastha*, particularly in males than in females.

9 patients of *parinamsula* were selected out of which 8 were treated with *Samudradi churna* and 1 was given *shambook bh'asma*. 3 patients were declared as cured, one partially relieved and 5 patients had no response. This disease was also found more prevalent in male than in female patients particularly in *Yuvavastha*.

2. Patients were selected from OPD on the basis of cardinal symptoms of *amlapitta*, particularly from the age group of 20-50 years. The criteria of selection of patients was based according to the signs and symptoms mentioned in the texts of Ayurveda.

The patients were put under three separate groups e.g (i) Control group (ii) single drug group and (iii) compound drug group. However, the control group could not be maintained and it dropped out. Under the single drug group the patients were prescribed *Amlakichurna* in the dose of 5 gms. thrice a day with water. Necessary lab. investigations were carried out before and after the treatment.

Under compound drug group the patients were treated with *Dasangkwatha* in the dose of 50 gm with honey for 15 days. The laboratory investigations were repeated before and after the treatment.

It was observed from the report that out of the 45 cases treated during the period; 21 patients left the treatment against medical advice and only 24 cases were treated under both groups. Out of them, 13 patients were put on *Amlaki churna* and 9 were declared cured, one partially relieved and 3 showed no response. Out of 11 patients treated with *Dashang kwatha*, 5 patients were declared cured, 3 were partially relieved and 3 got no relief. All these cases were treated as indoor patients. It was observed that *Amalaki churna* was more effective than *Dashanga kwatha*. Most of the patients who suffered were in the age group of 20-40 years and the disease was found more prevalent in males than in females.

It was observed however that no significant improvement occurred in the pathological investigations but reduction in cardinal symptoms and severity occurred along with improvement in general condition.

The Clinical Research Unit, Baroda studied the following problems :—

1. Study of *Pratishyaya* having *Laxmivilas Rasa* for oral administration and *Vyaghrital* for local use i.e. *Nasya*. 259 cases of *Pratishyaya* were studied. Two varieties of *Pratishyaya* were studied during the trial i.e. (i) *Vatik* (ii) *Dushta Pratishyaya*. All the cases were treated with *Laxmivilas Rasa* in a dose of 150 mg. thrice daily,

The E.C.R. and differential blood count was done in all the cases before and during the course of therapy. Most of the acute cases got prompt relief whereas chronic cases showed only symptomatic relief. No toxic effects were observed.

However, 17% showed *Prasham*, 18% had *Alpa prasham* and 18% left without medical advice and the remaining cases showed only slight improvement.

The highest number i.e. 50% of the patients belonged to *Yuva-vastha*. Males were more affected than females. Out of the cases treated, 66% were of chronic nature.

A total of 291 cases have been treated since inception of the results have been found encouraging.

2. *Dhatri-nisha Kwath* in cases of *Prameha*.

During the period under review 25 cases—7 (IPD) and 18 (OPD) were treated with *Dhatri-nisha Kwath*. The drug which contains two medicines namely *Amalki* and *Haridra* was prepared in the pharmacy of the college. The drug was investigated for its hypoglycaemic efficacy.

Dhatri-nisha kwath in a dose of 100 ml, twice a day was given to each patient an hour before meals. The blood samples were taken before and after treatment for blood sugar estimation. Simultaneously, urine examination was also carried out. All these cases were grouped according to their sex, *prakriti* wise distribution, *doshatah*, *baltah* and *deshtah*, *Vyadhiavastha*, duration of *vyadhi* etc.

Only one case showed reduction in blood sugar while three cases showed fair response and six cases had poor response and left against medical advice. The remaining showed some relief in signs and symptoms.

No significant effects were observed in any case except that three cases reported of diarrhoea, and one of nausea, after taking the medicine, and these were treated symptomatically.

It was observed that *Dhatri-nisha Kwath* has some hypoglycaemic activity which needs to be further studied.

The Clinical Research Unit, Kottaikal undertook the following studies during the year :

1. Effect of *Yastimadhu* and *Tiladigutika* in *Parinamsula* :

Parinamsula is an ailment which usually affects the people in between their twenties and forties and tends to last for a long time.

Yastimadhu is a popular drug in Ayurvedic system of medicine. It is claimed to be useful in this condition.

Tiladi Gutika : A compound drug containing *Tila-Guda-Nagara* was to be taken with warm milk. 810 *Parinamsula* patients were admitted in the ward for this trial. Their detailed history, clinical examination etc. were recorded in the proformae specially prepared for the purpose. Diagnosis was made on the basis of *Nidan Pancaka* obtained by interrogation and physical examination.

Patients were divided into the following groups and treated as under :—

1. Group-I-A (*Yastichurna* treated group)

45 patients were treated under this group: 3 gms. of *Yasti.hurna* mixed with 2 ml. honey taken four times a day at 6 A.M., 11 A.M., 4 P.M. and 8 P.M.

2. Group-I-B (*Yasticurna* plus *Panchakarma* treated group).

34 patients were treated under this group. In addition to the medicine prescribed in group I-A, 80 ml *Sahacara tails* (small) was given for *Anuvasan* at 1 P.M. after food for 3-7 days, 20 ml. *Eranda tailadi yoga* was given for *Virecana* in the 2nd week. 5 ml. *Dhanyantaram taila* was applied externally on abdomen for 3 to 5 days as '*Bahyasneha*'

3. Group I-C (Control group)

41 patients were given 2 gms. of Glucose powder at 6 A.M. 11 A.M., 4 P.M. and 8 P.M.

4. Group II-A (*Tiladi Gutika* treated group).

46 patients were treated with 10 gms of *Tiladi gutika* at 6 A.M., 11 A.M., 4 P.M. and 8 P.M. alongwith 50 ml. warm milk as Anupana.

5. Group II—B (*Tiladi gutika* plus *Panchakarma* treated group).

44 patients were treated in this group. *Tiladi Gutika* was given as in group II—A and *Anuvasana*, *Virechana* and *Bahyasneha* were applied as in Group I—B

For occasional pain, 2—3 *Dhanvantaram gutika* with hot water, 200-300 mg. of *Sankha Bhasma* with honey were given internally. For external application on abdomen, 5 ml *Dhanvantaram taila* was given. When the pain continued sveda was also done on abdomen with hot water

Patients were kept on *Leya* and Vegetable curry 3 times in a day with restriction of other materials to maintain uniformity in each case.

Smoking was prohibited. They were advised to take complete rest and to take oil bath daily using 10 ml. *Dhanvantaram Taila*.

Routine examinations e.g. blood for T.L.C , D.L.C., E.S.R., Hb, Urine and stool examination were done. Basal gastric analysis were also done. Assessment of the results was made on the basis of symptomatic improvement. Subsidence of all symptoms and improvement in general health were grouped under complete relief. Subsidence of more than half (50%) of the symptoms and the severity of pain becoming less acute were grouped under partial relief. Others were grouped under no relief.

Pain was felt by some patients just after meals, in some during digestion, in some others at the end of digestion and still in some others early in the morning. Due to fear of pain, some of the patients had not been taking proper food. So the vitality and strength of the patients were poor.

Yasti madhu has shown much effect especially in the case of *Parina-mashula* in which *Chardi*, *Daha* and *Amlodgara* were more predominant.

Sopha was found in some patients as a complication in *Yasiturna* treated group. *Dasmula Kasaya* with *Dhanvantaram pill* was found very effective in this stage.

The Clinical Research Unit, Bangalore undertook the following problems during this year :

1. Pilot study on the role of *Shirodhara* in Anxiety Neurosis (*Udvega*).

The following are the ingredients used in *Shirodhara Yashti* (*Glycyrrhiza glabra*) *Jatamansi* (*Nardostachys Jatamansi*) *Bala* (*Sida cordifolia*); *Ksheera* (milk). 10 patients of either sex between age range of 20-35 years having signs and symptoms and suffering from uncomplicated anxiety neurosis with duration of minimum of 6 months were selected for the study.

Diagnosis and classification of the cases was done in accordance with the WHO Glossary of Mental Disorders. Laboratory investigations were completed before the treatment was started in IPD of the Mental Institute, Bangalore.

Shirodhara (*Yasti*, *Jatamansi*, *Bala* and *Ksheera*) was given daily for 14 days during which the patients could not be given any other medicine for the psychiatric conditions. Progress was periodically recorded.

Side effects, if any, were recorded when noticed and managed accordingly. All the patients were followed up after one month, after the completion of the treatment to determine the stability of the treatment

Psychiatric and psychological assessment was carried out on the basis of (a) Mx. Hamelton's anxiety rating scale (b) Manifest anxiety scale and (c) Ayurvedic assessment was done on the basis of symptoms present in the patients, initially and after the completion of treatment.

So far the results of the treatment were encouraging as 9 out of 10 patients had shown statistically significant improvement.

2. Role of *Ayushnan-VI* in patients of *Kaphonmada* (depression).

15 'patients' of either sex between the age group of 21 to 50 years suffering from uncompleted depression with active symptoms for at least 3 months constituted the sample of the study. Patients suffering from 'Kaphonmada' very much resembled those suffering from depression and were treated with an Ayurvedic compound drug containing 3 ingredients i.e. *Vacha, Jatamansi, Pipali*.

Patients were given initially 6 gms of the drug, and those who did not improve after 2 weeks were given 8 gm dose for another 2 weeks. Further those who still did not improve were given 10 gm dose for another 2 weeks. As such treatment was given total for a period of six weeks

Detailed blood, urine and stool investigations were carried out before and after treatment besides maintaining charts on body weight, sleep and menstrual cycle etc.

Fortnightly assessment for six weeks was carried out by Ayurvedic physicians, psychiatrists and clinical psychologists. They found good response of drug in these patients.

3. *Laksana sammuchhva Adhyayan on Unmada :*

Ayurveda has classified diseases into two kinds viz. *Shareerika* (Physical) and *Manasika* (Mental) considering the *Adhishtana* (seat of affection) By and large, Acharyas have considered *Unmada* (insanity), as a *Manasika Vikara* (Mental disorder) although it is considered as *Ubhayatmaka* in other words, Psychosomatic, in some contexts. Though these views are not so in reality, it is not intended to elaborate this point here, since it falls beyond the scope of the study proposed.

The unit studied 100 cases (Mahal *et al* 1965) and observations in 245 cases between January, 1978 and June, 1978 have led us to the following provisional conclusions :

1. Diagnosis of *Doshaja Unmada* can be made on the basis of signs and symptoms.
2. Only *Doshaja Unmad*as are encountered most. Other types of *Unmada* described in texts are very rarely seen.

3. Some of the textual signs and symptoms ascribed to different kinds of *Doshaja Unmada* are not observed now a days and some new ones are seen.

Around 90% of the Doshaja Unmadas seen are *Dwidoshaja (Unmada)* caused on account of the preponderance of two of the three doshas) which is not described in the texts and *Ekadoshaja Unmada (Unmada)* caused from a singly vitiated dosha) as well as *sannipataja unmada (Unmada)* produced by the vitiation of all the three doshas) are very rarely confronted. The study was introduced to find out the following facts :-

1. Re-examining the availability of textual signs and symptoms of *Doshaja Unmadas*.
2. Examining whether there would be any formation of cluster of signs and symptoms in favour of any type of *Doshaja Unmada* aiding to confirm or modify textual classifications of *Doshaja Unmada*.
3. Evaluation of cardinal symptoms for each cluster in case of cluster formation.

Criteria for selection of cases and observations :

Signs and symptoms ascribed to different kinds of *Doshaja Unmadas* are to be collected and arranged in an alphabetical order to form a check list. This is done in order to prevent bias on the part of the examiner engaged in the study because of his familiarity with the normal functions of *tridoshas* on one hand and the signs and symptoms of *Doshaja Unmada* on the other which are closely related.

4. Role of Ayushman VIII on mental retardation :

In India, there are about 10 million mentally retarded subjects whereas the incidence in U.S.A. and U.K. are 4.5 million and 0.3 million respectively. These figures clearly demonstrate the dimension of the problem in both developing and developed countries.

A study of the Ayurvedic literature reveals that the following factors are responsible for prevention of mental disorders and promo-

tion and reservation of mental well being. These factors play their role in different states of human life right from the embryonic state. Obviously they could be the causative factors for mental retardation also when they are not taken care of. Briefly they can be enumerated as follows :—

1. State of *Atma, Satwa, Satmya* and *Rasa* in the genesis of different parts of the body including mind in the foetus.
2. Prevention of *Vatic* provocation during pregnancy.
3. Fulfilment of desires of expectant mother.
4. Avoidance of untimely straining during labour.
5. Adherence to the principles of child care.
6. Administration of *Balarasayana* to the new born.

Ayurveda has recognised the role of certain drugs like *Vacha, Jatamansi, Shankhapuspi, Brahmi, Jyotismati*, to mention a few, in promoting mental development and all vitiating mental illnesses as well.

Recent studies (Apparao, *et al*) have shown that *Brahmi (Centella asiatica)* has definite action in improving general mental ability. The drugs mentioned earlier are said to possess qualities to improve *smriti* (memory) and *Buddhi* (intellect) which are affected in the mentally retarded.

60 mentally retarded patients in the age range of 5 to 16 years formed the sample of the study. Their diagnosis was based on certain intelligence tests. Ayurvedic diagnosis was done on the basis of symptoms present and *Manah Pareeksha*.

Ayushman VIII (Vachadi yoga), 0.7 gm per dose was given in two divided doses for 90 days. This compound contains *Brahmi (Centella asiatica)* *Shankhapushpi (Convolvulus pluricaulis)* and *Vacha (Acorus calamus)* 0.7 gm powder/tablet contains 500 mg. *Brahmi*, 190 gm *Shankha pushpi* and 10 mg *Vacha*.

Both Ayurvedic and Psychological assessment is to be done before the start of treatment and after its completion. Ayurvedic assessment will be done on the basis of symptoms whereas Psychological assessment will be on the basis of :

1. Banet—Kamath test of intelligence.
2. Seguin form board test.
3. Vinland social maturity scale.

Follow up will be done 6 months after the cessation of treatment.

Clinical Research Unit for Dietetics, Bombay has taken up the assessment on the following :—

1. Effect of *Brista Dhanya* (roasted diet) ingestion on Blood Sugar Levels of Dietetics, *Brista Dhanya* (Roasted food article) described in Ayurved is useful for *Prameha* (Diabetes). Cereals like Rice *Yava* are converted into *Laja* and *Saktu* respectively by the process of roasting and advised as a diet to the patients suffering from *Prameha* (Diabetes).

Three cases, two male and one female between 50—60 years of age having fasting blood sugar between 150 to 250 mg per 100 ml. were selected for study and were admitted to M. A. Podar Hospital, Bombay.

110 gm. Wheat powder, after roasting, was administered in the form of *Chapati* with 225 gm. leafy vegetables in two equal divided doses (lunch & dinner) continuously for two weeks. A cup of tea was also given twice daily.

The effect of roasted diet was assessed by estimation of blood sugar levels (G. I. T.). Glucose tolerance test was done basically before roasted diet ingestion and on 16th day after ingestion of roasted diet continuously for fifteen days. Fasting blood samples for blood sugar estimation were collected in the morning at 7.30 hrs after overnight fasting to exclude circadian variations in blood sugar levels if any. Further blood samples were collected after 1, 1½ and 2 hrs on ingestion of 50 gm glucose powder dissolved in a glass of water. Blood sugar was estimated by Folin-Wu-method.

Fasting blood sugar level was dropped in one subject from 220mg% to 137mg% after two weeks with roasted diet, while no significant change in fasting blood sugar (FBS) levels was noted in the two other cases after two weeks. Mean FBS value dropped from 217 mg% to 185 mg% (14.7% drop) at the end of two weeks with roasted diet. Drop in FBS value after two weeks with roasted diet though seemed to be significant in case No. 2 further blood sugar values at 1, 1½ and 2 hours were not satisfactory. Study is continuing

2 Assessment of acute effect of *Java* (*Hordeium vulgare*) diet on blood sugar levels of Diabetics :

Java is described in Ayurveda as one of the best diet in Diabetes mellitus. It is prescribed in the form of different dietetic preparation for Diabetic patients. A long term human study was carried out in five diabetics with daily ingestion of 200 gm. *Java* diet in the form of chapaties along with 1360 ml. milk in two equally divided doses continuously for two weeks. No marked change was observed in fasting blood sugar levels with *Java* diet at the end of two weeks. A trial was therefore, designed to study the acute effects of *Java* diet on blood sugar levels of Diabetics.

Seven confirmed cases of Diabetics were selected irrespective of their fasting blood sugar level, age and duration of disease. The age range was 38 to 90 years (mean age 47.5 years).

Self control study was conducted, Blood sugar estimations were carried out with *Java* load and wheat load. Blood sugar estimations were done basically with wheat flour *gangi*. 50 gm. wheat flour was cooked in 300 ml water to form *gangi*. Saccharin was added in the cooked *gangi* for taste and served after collection of fasting blood sample. Fasting blood sample was collected in the morning at fixed time at 8 A M after overnight fasting to exclude circadian variation in blood sugar levels, if any. Further blood samples were collected at 1, 1½ and 2 hrs after ingestion of *gangi* of 50 gm *java flour*. Blood samples were collected at the same time cuts.

Blood sugar estimations were done with control and trial diets.

A comparatively flat blood sugar curve was observed with *Java*

Increase in mean blood sugar levels with wheat load compared to mean FBS was 40.13% at 1 hr 30.97% at 1½ hr and 24.67% at 2 hr. While with *Java* load, increase observed in mean blood sugar levels by 23.53% at 1 hr. 15.37% at 1½ hr and 17% at 2 hr was comparatively less.

50 gm of *Java* or 50 gm of wheat though containing nearly the same amount of carbohydrates (34.7 to 34.9 gm) but it appeared that *Java* might be containing some antidiabetic principle which control the blood sugar levels. Further study may throw more light on the action of *java* diet in cases of Diabetes mellitus.

(3) Study of Amylase inhibition by *Jasad Bhasm* in cases of *Diabetes Mellitus* (Preliminary study).

Jasad Bhasma is an Ayurvedic preparation of zinc. Zinc is closely associated with insulin. There is evidence that zinc is used in the Cells of the pancreas to store and release insulin as required. Scott and Fisher in an analysis of insulin and zinc in the pancreas found on an average 1.7 units of insulin and 0.14 mg. of zinc per gm of non-diabetic pancreas and 0.4 units of Insulin and 0.7 mg of zinc per gm of diabetic pancreas. Lazaroa (1954) observed in animal experiments that zinc protects against diabetes if given before the administration of alloxan. Recently Aote showed in vitro and also in vivo experiment, the inhibitory action of zinc on intestinal amylase (10 to 30%), leading to retardation of carbohydrate digestion and reduction of availability of monosaccharides for absorption in proportion with amylase inhibition. Thus amylase inhibition by *Jasad Bhasma* will allow the diabetic patients to take carbohydrates freely.

Ten known Diabetics were included in this clinical trial. The age varied from 35 to 66 yrs (Mean 50.2 yrs). Their basal blood sugar estimation was done before ingestion of starch. 50 gm of soluble starch was cooked in 300 ml of water to form jelly. Saccharin was added in the cooked starch for taste and served after collection of fasting blood sample. The fasting blood sample as well as further blood samples were collected as stated earlier. The same process was repeated on the next day by administering 50 gm of starch in the form of jelly with 250 mg of *Jasad Bhasma* thoroughly mixed in it. Blood samples were collected at the same time cuts.

A comparatively flat blood sugar curve was seen after ingestion of *Jasad Bhasma* with starch. Increase in mean blood sugar levels with starch load as compared to mean basal value (203.6 + 14.6) was 29.32% at 1 hr. 38.65% at 1½ hr and 16.21% at 2 hrs. While with starch and 250 mg *Jasad Bhasma* Load, increase in mean blood sugar values was 24.24% at 1 hr., 24.8% at 1½ hr and 14.92% at 2 hr.

Applied Drug Research Units (ARDS)

The Composite Drug Research Scheme (C.R.U) Gwalior has undertaken the following problems during the year :

- 1 Clinical trial of Roots of *Kantakari* (*Solanum xanthocarbum*) in cases of *Swas* and *Kasa Roga*.

The patients with respiratory diseases reported with *kapha* and dyspnea in the OPD of Govt. Ayurvedic College and Hospital, Gwalior were generally referred to research section. During this period 44 cases of *Swas* and *Kasa* were admitted. A total of 108 cases have been tried with this drug but in the current year out of 44 cases, only, 16 cases were found suitable for clinical trial with *Kantakari* and rest of the cases could not be included as they were found suffering from other associated diseases. Before starting the treatment, laboratory investigations were carried out e.g. Blood for HL, TLC, DLC, ESR, routine urine & stool examinations and sputum for AFB were carried out and skiagram of chest was also taken for locating congestion of the lungs, bronchus etc. Detailed history and physical examination were conducted both by the Ayurvedic and modern teams.

During the investigation period, the patients were put on placebo for 3—7 days and later the drug was prescribed in the form of decoction of the root in doses of 60—200 ml. daily in equally divided doses with or without honey. The drug was administered for a period of 15—20 days. Out of 16 cases 3 were diagnosed as *Tamak swas* (*Vat Pradhan*) 7 cases of *Vat shleshmak Kasa* (*Vat Pradhan*) and 6 *Vat shleshmak kasa* (*Sh'eshmak pradhan*).

Kantakari in 3 cases of *Tamak Swas* showed significant improvement. 7 cases of *Vat shleshmic kasa* (*Vat Pradhan*) also showed significant improvement. Out of six cases of *Vat shleshmic kasa* (*Shleshmik Pradhan*) one case has significant improvement, and 2 cases had margi-

nal improvement while 3 cases had no response. The observations made so far are encouraging.

2. Clinical trial of *Curcumin* (isolated from *Curcuma longa*).

Curcumin is an active principle isolated from *Curcuma longa*, a chrome yellow crystalline powder. The pharmacological studies have revealed that it possesses an anti-inflammatory and analgesic activity and can be compared with Cortisone and Phenylbutazone, but this drug does not possess any action on adrenals and kidneys and caused no toxicity to mice and rats.

The aim of current clinical trial was to assess clinical effects in cases of *Amavata* (Arthritic disorders). During this period only three cases of *Amavata*, reported with pain and swelling of joints with restricted movements, were admitted in the college hospital. They were put on placebo and bed rest for more than a week. Meanwhile they were subjected to detailed history and physical examination by Ayurvedic and modern teams. Simultaneously pathological and radiological examinations were also carried out. Routine blood, urine and stool examination and x-ray was also done of the patients to find out any arthritic changes in the joints and to locate spur and calcification if any in tendoachillis.

After investigations, two cases of *Amavata* were tried with curcumin. The usually recommended dosage was 1200-2000m gm. daily in divided doses administered orally for a period of one month to three months according to the severity of the case.

Out of the 2 cases studied, one case of osteoarthritis involving both the knee joints left against medical advice. Another case of *Amavata* with pain and swelling of both ankle joints, knee joints, shoulder joints and left hip joint with some constitutional symptoms i.e. anorexia, fatigue, loss of weight was studied with drug. After two months treatment the patient showed sufficient relief in signs and symptoms in all the affected joints. Particularly there was marked reduction in pain intensity in the right knee, reduced from moderate to slight category. Similarly, there was reduction in swelling, range of movements of the joints increased from 15° to 60°. Patient was able to walk a distance of

50 feet without support of sticks within 3—4 minutes while he was unable to do this before treatment. There was some improvement in patient's appetite and they gained some weight. However there was no evidence of any improvement radiologically.

The Composite Drug Research Scheme (CRU), Bombay has undertaken the study of effect of *Yasti Madhu* in peptic ulcer and hyperacidity :

This drug is very common and it is available easily all over India. It has *Sheet Veerya* and *Madhnrvipak* properties, particularly it acts against Pitta and *Vata Doshas*. During this year, 11 patients were admitted with complaints of pain in abdomen and they were put under trial.

Gastric analysis and barium meal x-ray examination were also done in addition to routine investigations like blood count, serum electrolytes, stool and urine examinations. However out of 11 patients put on trial, 4 cases were cured by placebo only two were diagnosed as *Parinamsula* and were put on drug trial. The remaining cases were excluded as they proved to be cases other than peptic ulcer.

Study of effect of *Arogyavardhini* (Compound drug) in infective hepatitis and liver cirrhosis was also taken up. In hepatitis and cirrhosis of liver *Arogyavardhini* has been claimed as an useful therapeutic agent. During the current year in all 121 cases of suspected infective hepatitis were selected for trial after proper investigation. Subsequently, 19 cases were dropped out and 28 cases of infective hepatitis left against medical advice. Hence, the remaining 74 cases were studied with the drug. Their serum bilirubin, hemoglobin, liver function test and stool tests were conducted and repeated every week.

Arogyavardhini in a dose of $1/4$ gm. to $1/2$ gm. twice daily with luke warm water was prescribed to all selected cases for trial. The treatment was continued for one month period. Daily follow up is recorded during the treatment. The cases were classified under three groups as 1st week of illness, 2nd week of illness and 3rd week of illness respectively. Further each group was sub-divided on the basis of maximum serum Bilirubin levels, as mild, moderate and severe. During

this period 22 cases were taken up for study having history of passing worms and showing ova in stool examination. 7 patients did not report for follow up and the rest of the 15 cases were followed regularly.

The drug in dose of 500 mg. three times a day was prescribed for 7 days with warm water. The duration of treatment was 3—4 weeks. In some cases only *Kampillak* in dose of 500 mg. twice daily was prescribed for three weeks and the results were recorded.

Before starting the treatment, ova counting was done by repeated stool examination at weekly intervals. This drug was used in a variety of worm infections and was found useful as an anthelmintic.

The composite Drug Research Scheme (CRU) Lucknow, took up the study of effect of *Bilwa Powder (Aegle marmelos)* in case of *Udarkrimi* :

The Unit admitted 22 patients with various *Udarkrimi roga* in the hospital for trial with *Bilwa*. The stool examination for ova and cysts was carried out. The cases reported pain in abdomen, vomiting, nausea and anaemia at the time of admission. The cases were divided into four groups according to worm infection. All the patients were given *Bilva churn* 9—10 gms. thrice daily with water. These 22 cases were divided in 5 groups and kept under various relief categories :

- (a) Ankylostomiasis (4 cases)—One slightly improved, one showed no relief and two left the treatment.
- (b) Amoebic dysentary and
hprtaic amoebiasis (7 cases)—3 had good relief and four showed slight relief (Symptomatic).
- (c) Mixed cases of Ankylostomiasis
and amoebiasis. (4 cases)—One had good relief, 2 slight relief
and one left the treatment.
- (d) Ascariasis (2 cases)—One had good relief and one mild relief.
- (e) Five case with abdominal discomfort of unknown etiology were

It can be inferred that *Bilva Majja Churna* has only mild vermifugal action, while it is more useful as antidiarrhoeal and anti-dysenteric.

Trial of *Vibhitak* in case of *Swas* and *Kasa* was also taken up. A total number of 22 cases of respiratory disorders were included. The criteria for assessment of cases was based on the relief in signs and symptoms of the cases. The cases were categorized and treated for a period of one month as under :

- (a) *Kshyaja kas* (7 cases) - 2 mild relief, 1 no relief and four were discarded when sputum examination showed A.F.B.
- (b) *Kaphaja kan* (3 cases) - One good relief, one mild relief and one no relief.
- (c) *Vatajkasa* (7 cases) - 3 mild relief, 2 no relief and 2 cases left against medical advice.
- (d) *Vat kaphaj kasa* (3 cases) - one had good relief, 2 mild relief.
- (e) *Tamak swas* (2 cases) - one had good relief and one no relief.

Shigru was taken upto assess its anti-hypertensive potential. Three cases of hypertension were studied with *Shigru ghanasatva vati* in the dose of ranging from 0.5 G. to 2.0 gram thrice a day with warm water for 6 to 12 weeks. Only 2 cases showed considerable response and in other cases the drug showed no positive response and it was found that the patient had taken allopathic medicine and was dropped out.

The drug was found to be effective in hypertension as it showed relief to the patient and the blood pressure also had come down to some extent.

The Composite Drug Research Scheme (CRU), Ahmedabad has studied the effect of *Karvellak* on *Madhamahai*. Initially the patients were selected for assessment of the effect of drug *Karvellak* as anti-diabetic agent.

Routine blood, microscopic examination of urine, Blood urea estimation, liver function test, P.P.B.S. and F.B.S. examination. Urine culture and sensitivity and E.C.G. and X-ray etc. wherever needed were done.

5 cases of diabetic mellitus were admitted for trial of *Karvellak* and were followed further. Another 8 cases were also registered in addition to the above cases but could not continue the trial. The cases suspected for diabetes mellitus were subjected to standard oral glucose tolerance test along with urine sugar investigation. To establish the diagnosis of diabetes mellitus the criteria suggested by WHO were adopted.

The drug *Karvellak* in the form of powder 3—7 gm. 3 times a day was administered with water for 2—8 weeks and gradually increased. No toxic effects were observed with the drug clinically or pathologically except that in one case, mild *Diarrhoea* was noted.

Initially all patients were put only on diabetic diet and afterwards the drug was prescribed along with the diet. Out of 5 cases who completed the trial with the drug 3 cases had mild attack and one each showed either moderate or severe attack, there was reduction in F.B.S. and PPBS value. Thus it was observed that 3 cases displayed good response, one showed fair and one border line response at the end of the trial indicating the hypoglycaemic action of the *Karvellak* (*Momordica charntia*).

2. *Pashanbheda* (*Bergenia lekulata*) was taken up to assess its usefulness in case of *Shoth*. Eight cases of *Shoth* were admitted out of these 3 cases have completed the trial and remaining five could not be included for trial, due to various other complications.

To establish the diagnosis of the case the criteria suggested by WHO was adopted.

After three days the drug *Pashanbheda* powder in 5—7 gm. dose three times a day was prescribed along with salt restricted diet. Duration of treatment was 4 weeks or more. No toxic effects were observed in the cases studied. All the three cases completed the trial and showed considerable increased urine output ranging from 7% to 45% and the

remaining 5 patients who dropped out at various stages of trial had marginal increase in urine output depending upon the duration of trial.

Routine laboratory investigations were carried out in blood and urine, specially the urine output in 24 hours in 3 cases treated with this drug before and after treatment was recorded.

In all 74 patients were subjected to trial to evaluate the diuretic action of *Pashanbheda*. Out of these 42 completed the trial so far and all of them registered significant rise in urine output without any significant change in liquid intake. The results are promising and further studies might be more helpful for getting more data.

The Composite Drug Research Scheme, Poona undertook to study the effect of *Guggulu* in cases of Obesity. 20 new cases in addition to 8 old cases were put on trial out of which 16 were studied with *Gugulu Lata Karanja* was given in 12 cases. The cases of obesity of both sexes atleast 25% over-weight were selected from OPD above the age of 20 years and divided into four groups

- (a) Restricted diet with drug
- (b) Non restricted diet with drug
- (c) Restricted diet with Placebo
- (d) Non restricted diet with Placebo

Complete history, physical and biochemical and dietary details were recorded of the cases selected for the study.

The cases under the group A & C were specifically given instructions regarding the diet. The drug *Guggulu* in a dose of 0.5 gm. in gelatine capsule was administered with water thrice daily for six months and follow up was conducted at monthly intervals and blood examination after third month and sixth months were also conducted. Body weight, skin fold thickness and lipid profile was also assessed for evaluation of the treatment. Most of the cases under trial by *Guggulu* and *Latakaranj* responded by showing reduction in body weight. The associated symptoms also subsided within 2 months.

2. Studies on Vitiligo with *Kakodumber* was taken up for study by the unit. In all 27 cases were put under trial during the current year out of which 19 were new cases and 8 were old cases. The cases of vitiligo were selected, detailed history, physical examination and details regarding diet were noted. Site and duration of the pigmented patches were noted and photographs wherever possible were taken. Stool examination for intestinal parasites were also done before the treatment.

The drug *Kakodumber* was prescribed in a dose of 2 gm 3 times a day with water for six months or more. Monthly follow up was maintained during this period.

2 patients were cured completely, 15 showed improvement in pigmentation, 4 did not show response and six patients were dropped out. The total duration of study was for a period of one to three years.

The cured cases were from younger age group and with minor vitiligo while six cases who did not show response were of older age group, with extensive illness and of long standing duration. *Latakaranj* drug was used as placebo in cases of vitiligo.

The Composite Drug Research Scheme (CRU) Varanasi undertook clinical trial of Drug *Sireesh* (*Albizia lebbek*) in cases of *Tamak Swasa*.

The study was conducted in different age and sex group, clinically diagnosed patients of *Tamak swas* with symptoms of dyspnoea, cough, heaviness in chest and insomnia etc. were included. The patients were of different severity, duration of illness was also variable. The majority of the cases were from out-patient Deptt and some of them were hospitalised, During the diagnosis some of the patients found suffering with tropical eosinophilia, cardiac and renal asthma were excluded from study. During the current year 40 patients of *Bronchial Asthma* were studied with this drug. The drug was used in the form of decoction in the dose of 25 ml 4 times a day.

No side effects were observed in any case except that some of them had nausea and vomiting with present does of decoction but with the reduction of the does the symptoms subsided.

Out of 40 patients 50% were cured, 30% improved, and 20% had partial improvement. Thus it was observed that the drug possesses bronchodilator properties as was evident from the reduction in the frequency of paroxysmal attacks of dyspnoea and *rhonchi*.

The Composite Drug Research Scheme (CRU), J.J. Group Hospital, Bombay undertook the study of the following problems during the current year :—

1. Evaluation of *Arogyavardhini* in infective hepatitis :

Infective hepatitis is a disease for which no specific remedy is available as yet and this prompted the choice of this subject for study.

During this period 121 patients of suspected Jaundice were taken up for study but 19 cases were found to be suffering from diseases other than jaundice during investigations and 28 patients of jaundice left the treatment half way. Thus only 74 cases were treated with *Arogyavardhini*.

The drug *Arogyavardhini* was given in a dose of 500 mg. 4 times a day with warm water. The patients were categorised into the following three groups for treatment and assessment of the drug.

Group A—43 cases who came in the first week of illness were treated with this drug; out of this, 19 cases were clinically cured in the second week of treatment and 12 cases in the third week of treatment.

Group B—Similarly 22 patients came in second week of illness, 9 were cured in the second week of treatment and 6 in the third week of treatment.

Group C—9 patients came in third week of illness, 5 were cured in the second week of treatment and 1 in the third week of treatment.

2. Evaluation of *Yastimadhu* in peptic ulcer :—

This is a multi-factorial disease. Stress and strain of daily life play an important role in its etiology. Numerous drugs are advocated for

its treatment which only goes to illustrate that the ideal drug is not yet available. Therefore the Unit has taken up *Yastimadhu churna* for the treatment of peptic ulcer.

The patients complaining of epigastric pain, retrosternal burning and vomiting were taken up for the study. Gastric analysis & barium meal x-rays were done in these patients for diagnostic purposes.

Patients were given *Yastimadhu churna* in a dose of 2 gm four times a day. Clinical course was repeated daily in hospitalised cases, gastric analysis and barium meal X-rays were repeated after treatment. During the year 11 patients with a history of peptic ulcer were taken up for study, 5 were found to be suffering from diseases other than peptic ulcer and hence were discontinued.

4 patients were cured of their symptoms with placebo therapy only, while they were under investigations. Of the remaining 2 cases one was of peptic ulcer and other was of hyperacidity without ulcer and provided *yastimadhu churna* in approved dose as mentioned above. The peptic ulcer patients showed no improvement even after two months of the treatment and the hyperacidity patients were cured of all their symptoms.

3. Evaluation of some common Ayurvedic drugs in worm infections

The study aims at evaluation of popular indigenous anthelmintic drugs like *Kumpillak churna*, *vidanga*, *Palashbeeja*, *Kajjali*, and *Krimi mudgar rasa* in common intestinal worm infections. Egg count was done by Stoll's method before and on the 10th and 15th day of the treatment. For the purpose of evaluation only egg count of 500 or more per gram of stool was considered.

During the reporting year 22 cases of various worm infections were taken up for trial after proper diagnosis, based on Laboratory investigations. 7 cases left the treatment and the results of remaining 15 cases studied with various drugs as mentioned above was evaluated. The drugs *Krimi Mudgar rasa*, *Palash beeja*, *Kajjali* in a dose of 500 mg thrice daily for 7 days was prescribed to 15 patients for atleast 6

month period. Regular stool investigations was carried out for assessing the effectiveness of the treatment.

The modern team of Composite Drug Research Scheme, Gwalior also undertook the following studies :

(1) **Clinical trial of *Kantakari* (*Solanum xanthocarpum*) in cases of respiratory diseases (*Shwas* and *Kas*)**

During the period under review 41 cases of respiratory diseases were admitted and investigated at Govt. Ay. College Hospital, Gwalior, out of which 16 cases of different respiratory diseases i.e. 9 cases of chronic bronchitis, 1 case of tropical eosinophilia, 1 case of asthmatic bronchitis, 1 case bronchiectasis and 4 cases of bronchial asthma were tried with *Kantakari* root. 25 cases could not be included in the drug trial as they left the hospital without medical advice or were suffering from other diseases like tuberculosis, chronic congestive cardiac failure and chronic Bronchitis with tuberculoid leprosy etc. Thus only 16 patients completed the trial with *Kantakari* root decoction as mentioned above.

The drug was administered 60-200 ml. daily with or without honey for a period of 15 days. All the Routine Laboratory investigations including X-ray were carried out before and during the treatment. No side effects have been observed of the drug except mild headache in 1 patient. However, the patients were advised to avoid exposure to cold and smoking.

Out of 16 cases, 5 cases showed significant improvement, 7 cases marginal improvement and 4 cases had no response to the treatment. It was observed that *Kantakari's* root decoction possessed anti-inflammatory properties in cases of respiratory diseases and was able to provide some relief in the subjective feeling of *Kapha* and *Dyspnoea*.

2. Curcumin in Arthritis—**Curcumin** is an active principle taken out from *Haridra* and was shown to possess anti-inflammatory activity comparable to Cortisone and Phenybutazone. Initially it was proposed to restrict the clinical trial in cases of non specific Arthritis like rheumatic arthritis etc. During the current year only 3 cases of arthritis having Arthralgia, joint swelling and restricted movement were admitted and are being studied.

Clinical Research Enquiries

The Clinical Research Enquiry functioned at A.A Hospital, Madras which was closed, carried out the studies on the effect of *Virechana karma* in cases of *Vata Vyadhi* (*Pakshavadha*, *Gridhrasi*, *Avabahukam*).

The principle of treatment by and large was application of *Snaha*, *Sweda* and *Samshodhan karmas*. Based on this concept, study of effect of *Vasti* and *Virechanam* were taken up as mainstay of approach. A total of 130 cases have been studied during the year. *Ksheerbala taila* prepared with *Masha*, *Guduchi* and *Guggulu* was used externally and *Sahatphal ghris* was given for internal use. *Dhatiri oil* was used for *Shodhan* (*virechana Karma*). The treatment carried out consisted of 3 mini courses of *Virechana Karma* of 8 days duration with proportionate dose of *Dhatiri oil* 30 ml after premedication. Total duration of courses was 24 days i.e. 3 mini courses each covering 8 days. *Ksheerbala taila* was confined for external use.

Sahatphal ghris was administered for internal use. *Vashtpsvedan* was given on 4th and 5th day and on the 6th day *Shodhan* (*Virechana*) with 20-40 ml *Dhatiri oil* was followed by nice and Kanji diet and ordinary diet presented on 7th and 8th day. The cases were divided into two groups i.e. X and Y.

Subjective parameters like pain, heaviness, stiffness and numbness along with objective and methods like walking time, grip power, lengthening and abduction were made use of for the assessment. The results of the study showed that out of 90 cases of *Pakshavadha*, 6 cases got complete relief, 33 had partial relief and 50 showed no relief while 1 left against medical advice.

Of the 30 patients of *Gridhrasi* treated, 1 showed complete relief, 17 good relief, 5 partial relief and 7 showed no relief and 1 case left the treatment in the middle.

A total of 9 cases of *Avabahukam* were treated out of which 5 showed good relief, 3 showed no relief and 1 left the treatment. The Clinical Research Enquiry, JIPMER, Pondicherry carried out trial of Gum-guggulu for treatment of Arteriosclerosis, cardiovascular diseases and obesity.

During the period under review the Unit studied long and short term clinical benefits with *Gum-guggulu* fraction 'A' in obesity. 20-cases were included under long term and short term trials and the trial continued for 12 weeks.

The selected cases were divided into two groups-one group was given *Gum-guggulu* fraction 'A' in a dose of 0.5 gm. three times a day, in the form of capsule for twelve weeks and other group was treated for twenty four weeks. After every four weeks estimation of serum lipids and recording of body weight and thickness of skin fold were carried out.

The observations revealed that the fraction 'A' *Gum-guggulu* was found effective in reducing serum cholesterol and triglycerides.

The Clinical Research Enquiry, Rishikul, Hardwar took up the problems of Aetiopathogenesis of *Timir* and its treatment with *Mahatriphala ghrī*, *Saptamrīt Lauha* and combination therapy.

Timir roga, is known under cataract in modern parlance. A total of 458 patients were studied during the entire period and studies were completed in 243 cases but 215 cases dropped out from the study.

The cases were grouped as under :—

- (a) 71 cases treated with Mahatriphalaghrita.
- (b) 77 cases treated with Saptamrītlauha.
- (c) 73 cases treated with A & B drugs (combined therapy).
- (d) 22 cases treated with control group.

The drugs were prescribed in accordance with textual dictates. The treatment continued for about 3 months. The cases of *Timira* belonged to age range of 11 to 40 years with predominance among males. The group largely covers middle and lower middle income groups. Hereditary factors also seem to have played some role. Persons with *Vata* and *Kapha Prakriti* appeared to be more prone for *Timira*.

The response has been encouraging in *Vata* group of cases treated with *Mahatriphala ghritha*. While *Saptamrit lauha* proved to be more useful in *Kapha* group of patients.

The 22 control patients did not show any change clinically and pathologically. Maximum relief was noticed in those in the age range of 11 to 40 years.

The follow up studies revealed that the patients did have lasting benefit by this treatment. A few cases reported that falling of hair was stopped by taking *Mahatriphala ghritha* while there was improvement in vision. No toxic effect of any kind was observed during the trial. A few patients who were using glasses, did not require glasses after completing the desired course of treatment with these drugs.

The Clinical Research Enquiry, Jammu took up the study of assessing the role of *Guduchyadi* Capsules on *Madhumeha*.

36 patients were taken for clinical trial with *Guduchyadi* capsules, 11 discontinued the treatment and 25 cases completed the treatment. The patients were selected and divided into the following main groups for trial :

1. Patients having symptoms of recent origin i.e. below one year duration.
2. Patients having diabetic symptoms for more than one year duration with fasting blood sugar 200 mg/100 ml or more.

Diagnosis was made both clinically as well by conducting laboratory investigations. The capsules were prescribed to patients in different doses i.e. 1 to 2 gm considering their age, direction and intensity of the disease, with water as anupana. The treatment continued for one month's duration. Diet and physical exercise was prescribed to each patient as per body weight and *prakriti*.

The investigations conducted included glucose tolerance test, fastings post prandial blood sugar Test; Urine sugar and albumin and Serum cholesterol. X-rays were done wherever considered necessary.

The response generally has been satisfactory and reduction of symptoms of *prabhuta Mutrata*, *Atipipasa* and *Atikshudha* were observed. Regular administration of capsules was found beneficial in reducing the blood sugar and Urine sugar. In cases having other complications like *Carbuncle*, *prameha pidika* and vision defects, slight improvement generally occurred after two weeks of treatment.

The Clinical Research Enquiry, Gauhati carried out to assess the effect of *Swarasa* of *Latakaranj patra*, (*Caesalpinia bonducella*) *Sarpunkha Kshar* (*Tephrosia purpurea*) as anthelmintic drugs.

The Clinical trial with *Latakaranj* (*Caesalpinia bonducella*) and *Sarpunkha Kshar* (*Tephrosia purpurea*) were conducted in the indoor section of Department of Govt. Ayurvedic College, Gauhati. 33 cases were included, of which 21 cases were given the *swaras* of *Latakaranj* leaves, 25 ml. twice daily mixed with honey for 21 days and 12 cases were given *sa punkha kshar* 1 gm., twice a day for a period of 10 days. The Blood, Urine and stool examinations were done in all these cases before and after and also at weekly intervals during the course of treatment. Out of 21 cases were treated with *Latakaranja swaras*, 4 cases took drug for 7 days but there was no response. 8 cases who took drug for 14 days 1 case showed improvement, while 7 cases remained unchanged. Out of 9 cases administered *Swarasa* for 21 days, 5 cases improved (symptomatic relief) and 4 remained unchanged.

Similarly out of 12 cases treated with *Sarpunkha Kshar*, 4 cases who took medicine for 5 days did not show any change. Out of 8 cases who took treatment for 10 days, 2 cases showed improvement and remaining 6 cases showed no response.

There Clinical Research Enquiry, Ahmedabad carried out Clinical trial on *Khanj* and *Pangu* (Polio Mellitus) during this year.

There is no specific treatment available for these diseases to compare their effects with that of the Ayurvedic treatment. It was, therefore, decided to study this problem on the basis of Ayurveda to find out specific treatment of the diseases. 46 patients of *Khanja* and *paugu* (Polio mellitus) between the age range of 4 months to 5 years were admitted in the hospital. Diagnosis was made according to the following Criteria :

1. Symptomatology of the *Khanja* and *Pangu* (Polio Mellitus).
2. Muscle test, examination of Poliomyelitis was conducted by a physiologist.

Findings of examination were recorded separately and criteria of Ayurvedic diagnosis and prognosis was maintained separately. The milk diet was given to every patient and they were permitted to take other light diet if required.

The patients were divided into two groups :

- (a) Acute cases (illness of not more than 21 days duration).
- (b) Chronic cases (illness exceeding 21 days duration).

Acute cases were treated with *Brihatvat Chnintamani Rasa* and *Karaskar Mishran* in a dose of 2 Ratti twice a day with milk for 21 days.

- (ii) *Mahanarayana taila, Matrabasti* 50 ml. daily upto 15 days (once in the morning).
- (iii) *Dashang lep* plus *Guggulu lep*--application on affected parts (once daily) upto 21 days.
- (iv) *Balukaswed* once daily upto 21 days.

Chronic cases were treated with :

1. *Brihat Vat chintamani rasa* twice a day with milk upto 21 days.
- (ii) *Mahanarayana taila, Matra basti* 50 ml. daily upto 21 days.
- (iii) *Mahanarayan tail abhyanga* daily upto 21 days.
- (iv) *Shashtika shali pinda swed* daily upto 21 days.

Complete treatment of three courses was provided i.e. First course of treatment was for 21 days and then no medication was given for one

month. Similarly second and third courses were prescribed at an interval of one month each. After completion of the treatment the patients were discharged and follow up study was continued.

The evaluation of the treatment was made by muscle test and symptomatic relief. Out of 46 cases, 43 patients were relieved and 3 were cured in first course, 21 patients were relieved and 1 was cured in second course, 10 patients were relieved and 5 were cured in third course.

No side effects were observed during the course of treatment. The line of approach was found to be effective in the treatment of *Khanja*, *Pangu—roga* (Polio-Mellitus) and such cases can be managed by Ayurvedic treatment.

The Clinical Research Enquiry, Varanasi undertook the studies on (i) *Amalaki Rasayana* and its mode of action in Peptic ulcer.

The aqueous extract of *Amalaki* was used on isolated loops of intestines of rats and rabbits and studies on its effect on blood pressure and respiration in dogs were also carried out.

This drug was found to have relaxant effect on the smooth muscle of the rats and the effect increased gradually with increased concentration of the drug. Similarly the extract of the *Amalaki* has shown stimulant action over isolated loop of ileum of rabbits. This extract was used in concentration of 1 mg, 10 mg, 20 mg, 40 mg, 80 mg and 160 mg respectively. 40 mg. dose showed much more marked relaxation continuing for longer duration over the ileum of rabbits. The effect of the drug was studied on blood pressure and respiration of dogs and it produced marked to moderate hypertensive effect without any significant effect on the heart rate.

Further the *Amalaki rasayana* was also tried at clinical levels in cases of peptic ulcer. The following effects were observed :

1. Level of gastric mucin was increased.
2. The level of pH and acid output of gastric juice in patients with hyperacidity was lowered. This action imparts relief from

spasmodic pain of the gut in patients of peptic ulcer. It also normalised the vascular pattern of the gastric and duodenal mucosa in these patients.

The drug was tried in 100 cases of chronic peptic ulcer and non-ulcer dyspepsia. The results have been encouraging. The drug imparted symptomatic relief and reduced the level of gastric acidity and increased the gastric juice mucin level. Thus besides *Rasayana* effect *Amalaki* also appears to be a useful remedy for the treatment of peptic ulcer.

The clinical evaluation of *Brahmi* in 30 cases of *Chittodevga* (Anxiety Neurosis) was undertaken to assess its anti-anxiety and medhya effect. The drug was administered in these cases for over a period of six weeks in the form of syrup and it was observed that the treatment produced significant symptomatic relief by abating/reducing nervousness, palpitation, insomnia, fatigue and lack of concentration. It was also observed that the drug helped in improving the memory span of the patients significantly. The bio-chemical investigations indicated reduction in the rate of urinary excretion, indicating a less stressful state. The study revealed that *Brahmi* appears to possess significant anti-anxiety effect, which is in conformity with what is mentioned in Ayurveda.

The Clinical Research Enquiry at Tilak Ayurvedic Mahavidyala, Poona has conducted studies on *Prakriti*-diseases Proneness. The study broadly aimed at identifying proneness to disease in certain cases of *Prakriti*. The earlier knowledge about *Prakriti* can help in safeguarding against diseases since one can take appropriate steps to prevent illness.

The plan of study comprises of *Prakriti Parikshan* in healthy individuals i.e. students, blood donors and other volunteers. The relation of *Prakriti* to blood groups was also studied.

Pilot study on blood donors for deciding dosh prakriti and its relation between blood clotting time and Dosh Prakriti was also incidentally studied. The studies were carried on patients both at indoor and outdoor levels of the eye department of Poona to study the *Dosha Prakriti* in relation to their disease proneness for their present disease.

The *Dosh Prakriti* of 379 healthy individuals was studied, as per proformae supplied by the Council to establish the relationship between Dosh Prakriti and *Dosha predominance* in the past diseases.

As mentioned above in order to observe *Prakriti* in different age groups and different social stata, Unit has tried to establish the relationship between blood group, and *Dosh Prakriti*. They have undertaken the study of blood donors to find out the modern parameters for deciding *dosh prakriti*. The lower level of clotting time was 3-5 minutes in case of *Kcpha Dosha*. The normal range of 6-8 minutes of clotting time was increased in cases of *Pitta*. The study was carried out in 78 persons.

The Clinical Research Enquiry, Varanasi conducted the study on the effect of *Panchamrita Parpati* in *Krimijgrahani*, secondary malabsorption caused by giardiasis.

During this period 18 cases were selected for study. Diagnosis of the cases was made on the basis of clinical history and laboratory investigations e.g. blood, urine, stool for ova and cysts, fractional test meal which were done before and after the treatment in each case. The symptoms present were intermittent diarrhoea, flatulance, loss of weight, pain in abdomen, diminished appetite and nausea.

The drug *Panchamrita Parpati* was administered orally 2-3 ratti with *Takra* in a dose of 50 ml. The treatment was given for 15 days. The treatment was well tolerated except in 2 patients who complained of sensation of warmness throughout the body. The appetite was improved. The treatment was continued for 15 days with suitable laboratory investigations. Out of the 18 patients who were positive for *Giardia lamblia*, 3 of them had associated infestation of *E. histolytica* and the stools were free from giardia in 12 cases within a week of treatment. The results of study reveal that *Panchamrita Parpati* was effective in majority of the cases. There is improvement in gastrointestinal function tests in terms of gastric secretion and intestinal absorption. D-xylose absorption also has improved. There has been improvement in haemoglobin and serum protein levels. Its repercussions on thyroid function were also obvious. There has been improvement in I¹³¹ uptake as well as serum protein bound iodine (PBI).

The Clinical Research Enquiry, Gurukul Kangri, Hardwar Carried out studies relating to aetiopathogenesis of thyroid swellings with reference to the effect of Indigenous drugs on these diseases.

Since inception a total of 191 cases were included in the study. Two indigenous drugs i.e. *Kan hnar guggul* and *Shilajeet* were selected for trial in cases of *galganda*. Lugol's Iodine was taken up in these studies for comparison of results. The treatment was administered for a period of 3 months to all the patients. 79 cases were treated with *Kan hnar Guggulu*, 51 cases with *Shilajeet* and 54 cases with Lugol's Iodine.

Patients between the age group of 11 to 30 years belonging to middle socio-economic status who were malnourished suffering from psychological trauma, using tap water and also excessive use of *Lavan* and *Madhur Rasa* appeared to show some relation with aetiology of *galganda*. It was also observed that the effect of *Kanchnar Guggulu* on cases of group of *Galganda* was comparatively better in comparison to *Shilajeet* or Lugol's Iodine.

This study revealed that it was possible to identify proneness of the disease or pre-disposition of cases of *vata Prakriti* leading to *Vataj rogas* due to *Vataprakopaka nidana*. Similiar studies were made in other cases to establish other *Prakritis* also but in case of the relation between blood group and disease proneness.

A total number of patients from indoor department were selected. this includes 53 male patients and 28 female cases. It was observed that *Vata Prakriti* individual is prone to *Vatroga* more than towards *shleshma rogas*. Similarly *Shleshna* and *Pitta Prakriti* persons were prone to *Shleshmaj Rogas* and *Pitta Rogas* respectively.

Similarly, 136 outdoor patient, from eye department were taken up for study. Thus a total number of 295 cases were studied in the current year. The studies have shown presence of definite relationship between *Dosh Prakriti* and the positive *Doshi* of the disease with tendency to cause the disease of the same *Dosha* as per the *dosh prakriti* of the person.

This attempt is likely to be of advantage in the prediction of certain diseases in the light of *Prakriti Vijnan*.

Service Oriented Survey and Surveillance Programme

The Survey and Surveillance programme carried out during the year under review covered 15 villages covering a population of 10,263. The door to door survey carried out in villages Baholi and Ramgarh by the team at Kurukshetra included initial study of 973 individuals of Baholi and 360 of Ramgarh. The follow-up studies in these villages were carried out on 749 and 640 individuals respectively. About 800 people were examined during the survey and incidental medical aid was provided to about 165 patients. The common diseases met within the area included *Jwara*, *Kasa*, *Udarshool*, *Pidika*, *Vranashotha*, *Netrarogu* and *Pandu*.

A short term pilot study of the effect of *Mudhnasyadivati* in *Kasa* was also carried out with promising results.

The team at Jogindernagar carried out survey in village Batyara. The survey covered 417 individuals. A total of 518 cases were examined by the team. The common diseases in this area include *Jwara*, *Kasa*, *Atisar* and *Krimiroga*. The effect of *Mustha* in *Balatisar* was taken up as a pilot programme. The study on the anti-malarial effect of Ayush-64 was also taken up.

The team of Central Research Institute (Ay), Patiala carried out its survey and surveillance programme at Rakhra village. About 450 individuals were covered both at initial and follow-up levels. 855 patients were examined by the team and incidental medical aid was provided. The team had also launched special camp for malaria studies and also actively participated in the motivational programme related to Family Welfare.

The survey and surveillance work of the village Thalasseri was carried out by Central Research Institute (Ay), Cheruthuruthy. The initial studies were carried out in about 790 subjects and follow up work was completed in 172 cases. 780 subjects had then completed health check up and out of these 357 cases were provided necessary medical aid. The effect of *Pushkar-moola* in cases of *Tamakswasa* is under study.

The survey and surveillance programme of village Gosala was undertaken by the Regional Research Centre (Ay), Vijayawada. The initial as well as follow-up studies were carried out in 946 and 597 subjects respectively. The health screening of 1722 individuals was carried out. A total of 1664 cases were provided medical aid. 51 cases of *Sleepada* were treated with *Bhoonimbadihati*, *Nityanada Rasa* and *Sarshapa Lepa* and the results of the study are being analysed.

The team of Regional Research Institute (Ay), Jaipur took up two anti-malarial trials in the semi-urban area of Jaipur i.e. Brahimpuri as well as in the out-patient Department of the Institute. 38 cases of malaria were treated with Ayush-64 with encouraging results. The Unit was engaged in tabulating the work of 12678 individuals from nine villages, which was essentially required for the preparation of Monograph on the Health Statistics Study informations/data collected till March, 1977.

The Regional Research Centre (Ay), Nagpur took up the programme at village Kapsi. The initial as well as follow-up studies were carried out in 620 and 300 persons respectively. A total number of 128 cases were provided medical aid during the survey. Cases of *Sandhivata* and *raktapradara* were treated with suitable Ayurvedic medicines.

The survey and surveillance studies were taken up in village Dasron after completing the work at Mandalganti by Regional Research Institute (Ay), Calcutta. The initial study and follow up studies were carried out in about 106 and 583 subjects. A total number of 153 cases were examined during the survey in the village and medical aid was also provided. 34 cases of *Sandhigatvata* were treated with *R. Guggulu* and *Yograj Guggulu*.

Najanappa Setty Palaya and Henur villages were taken up under the programme by Regional Research Centre (Ay), Bangalore. A total of about 480 individuals of both the villages were studied under initial study. About 2000 subjects were included in the follow up. A number of 477 cases were provided incidental medical aid. This team also made efforts to motivate the local people for taking up contraceptive drugs.

Regional Research Institute (Ay), Bhubaneshwar carried out its programme in villages Damana and Kakudia. The figures under the

initial and follow-up programme respectively are 358 and 4 only. The latter was recently commenced. 380 cases were provided incidental medical aid during these surveys. 35 cases of *Sleepada* were also treated with encouraging results. Cases of malaria are also being treated with Ayush-64.

The survey work was carried out in the village Samart by the Mobile Clinical Research Unit, Jamnagar. The initial and follow-up study figures are 435 and 156 respectively. A total number of 1400 cases were provided medical aid. Pilot study on *Krimtroga* has been initiated. 125 cases of malaria were also treated with Ayush-64.

The villages Paho and Paloh were surveyed out by Mobile Clinical Research Unit, Vidisha. The initial as well as follow-up study figures of these villages are as below :—

Village	— Paho	— 261 Initial study	261 follow-up
Village	— Paloh	— 361 Initial study	361 follow-up

A total number of 625 cases were provided with incidental medical aid. 50 formulations of folklore claims were also collected by the team.

The surveys were carried out in villages Pali Pahari-I and II by Regional Research Centre (Ay), Jhansi. About 394 individuals were studied at both initial and follow up phases. No follow up study was undertaken in the village Pali Pahari-II. A total number of 1009 cases were provided incidental medical treatment. Some of the cases of bronchial asthma were also treated with *Tylophora indica*.

Mobile Clinical Research Unit, Varanasi carried out its programme at the village Bhathi. A total number of 913 cases were provided health check-up and 476 cases were given treatment. 92 cases of dysentary were treated with *Kutajadi Vishesh Yoga* and the results are encouraging.

The initial and follow up studies have been undertaken in all these villages and the total population covered is 10,263. These teams have provided incidental medical aid to 6,560 individuals and the Ayurvedic

medicines were supplied free of cost. General health checkup was carried out.

These units have also worked on some of the special problems i.e. *Sleepada* (Filariasis), *Krimi* (worm infestation), *Kasa* (Bronchitis), *Vtshama Jwara* (Malaria), *Grahani* (Dysentric disorders).

The teams have gathered interesting folklore claims. The teams made efforts to educate local population on health care measures and also on use of locally available plants. Programmes like Family Welfare which needed due attention also were taken up. The study revealed, by and large, the diseases that commonly affect the rural pockets surveyed. They are *Jwara*, *Kasa*, *Swasa*, *Atisara*, *Twakroga* etc. It has also been felt that most of the ailments could be treated with simple remedies and at times with locally available plant resources.

Survey of Medicinal Plants

Drugs play a key role in the research programmes. It is essential to know of the biological and other sources so that one will be able to identify and get genuine drug material. Consultation of herbaria, museums and botanical gardens do considerably aid in providing helpful information.

Plants form a major source of drugs and it is necessary to have a fairly full knowledge regarding the position of the plant wealth. The information relating to the vernacular names, distribution of plants and local uses are to be gathered to make the study fruitful. The identification of drugs will pose a problem if the prominent characteristics of each drug are not noted. It is through field studies carried out at the various regions of the country, one will be able to assess the distribution and extent of availability of medicinal plants finding use in indigenous systems of medicine together with first-hand knowledge of characteristics of plants. Specimens of various medicinal, wild, cultivated and rare plants are collected by survey parties and data regarding their occurrence, habit and habitat etc. are recorded so that complete information about individual plant is available. Besides this, Herbarium also plays an important role, where authentic specimens are preserved for purposes of comparison and identification.

To fulfil these aforesaid requirements, the Council has taken up special and routine medico-botanical survey programmes. The Council's survey projects are stationed at Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

The projects are maintaining herbarium in the Institutes/Centres where they are functioning. The Council has a few medicinal plant gardens also for introduction of exotic species, propagation of local species that have become rare and to carry out experimental cultivation.

The Council has also conducted special survey tours to Sikkim Himalays and special survey projects have been launched in different

tribal pockets in the states of Andhra Pradesh, Orissa, Bihar, Gujarat, Madhya Pradesh, Kerala, Rajasthan and West Bengal. The teams have also gathered information on folklore claims on various medicinal plants during their visits.

During the year 1978-79, the survey projects of the Council covered vast range of areas such as Reserve forests of Kondavall and Krishna districts (Andhra Pradesh), Central Forest Divisions, Gaya forest including Kowakol forests (Bihar), Bulsar, Banaskantha and Gir forests (Gujarat), Mandi (H.P.), Dorli, Boredhena, Borgaon, Totladoh and Talegao (Maharashtra), alpine and subalpine regions, Tarai and Gange-tic plains of U.P. and neighbouring areas of West Bengal.

Special survey tours were conducted to the tribal pockets of the various states viz. Siang and Subansiri (Arunachal Pradesh), Bastar districts (M.P.), Chitrakoot, Pachmarhi and Amarkantak (M.P.), desert areas of Rajasthan and Purulia district of West Bengal.

A techno-economical survey of different forest areas of Drass, Kargil, Zanskar and Leh ranges of Ladak, was also undertaken.

About 10,657 medicinal plants were collected from different areas and approximately 9,673 kg. of crude drugs were supplied to various units of the Council. About 448 folk lore claims of medicinal value have been gathered.

The work carried out under this programme is highlighted below :

Survey of Medicinal Plant Unit, Vijayawada, (Andhra Pradesh.) conducted seasonal visits twice to Kundapalli. Reserve forests of Krishna district and 36 field numbers and 15 raw drugs were collected and supplied to various research organisations.

The unit has written a book on 'Medicinal Plants of Siddha found in Andhra Pradesh-II'. This contains information on 97 plants such as Latin name, Family, Telugu and Tamil names, short morphological description, phenological and ecological notes, properties, uses and distribution in various districts of Andhra Pradesh.

The unit participated in the scientific exhibitions held during Golden Jubilee celebrations of Andhra University at Waltair from 8th July, to 16th July, 1978 depicting medicinal plant wealth of Andhra Pradesh.

Survey of Medicinal Plants Unit, Govt. Ayurveda College, Gauhati (Assam) has surveyed the Siang and Subansiri districts of Arunachal Pradesh. The areas are rich in medicinal plants. Areas of the districts are among the heaviest rainfall areas of India with moist climate. The latest area surveyed is Likabali having more or less tropical climate and the coldest was Zero area having a temperate climate. Some valuable plants namely *Embelia* Sp, *Viola* Sp, *Potentilla*, *Arjuna*, *Berberis*, *Begonia*, *Ficus*, *Musa indica* Linn. *Rubia cordifolia*, Linn. and some species of *Pine* are available at different places.

The principal tribes of the region are *Adi* in district Siang and *Apatani* in subansiri. The main crops of the area are rice and maize. An improved variety of bamboo was found being cultivated by *Apatanis*. Oranges grow vigorously in the area and some citrus fruits and pineapple have been introduced. Common food is rice, goat meat, mithun, fish, bull and so on. Local beer called 'Apang' is a common drink. The persons are stout and healthy having Mongolian blood.

The unit has supplied 333 kg. drug material on drug basis to various units of the Council. The unit has further supplied herbarium sheets of 25 important medicinal plants from its stock to R.R.C. (Ay.) Jhansi (U.P).

The unit was actively engaged in collection of folklore claims on medicinal plants and treatments for various diseases, ailments and problems like birth control. More than 40 folklore claims were collected from district Kamrup of Assam. The informations regarding *Bhetphul* (*Nymphaea alba* Linns.) flowers in Asthma, *Kol* (*Musa paradisiaca* Linn. Plants) *Bhaidheka* (*Lycopodium* sp.)— aerial parts, *Kola* (*Zizyphus jujuba* Lam.) Leaves, *Ouh* (*Dillenia indica* Linn.) fruits and *Golnumu* (*Citrus medica* Linn.) fruits to cure the condition of insomnia. *Sweliphul* (*Nyctanthes arboristis* Linn) leaves in malaria, *OI* (*Amorphophalus campanulatus* (Roxb.) — rhizome, *Tidhakuri* (*Solanum indicum*

Linn.)—seeds, *Borial* (*Sida Cordifolia* Linn.) root bark, *Kol* (*Musa paradisiaca* Linn.)—Stem in indigestion and acidity, *Aparajita* (*Clitoria ternatea* Linn.) white flower variety and root, for inducing abortion and other medicinal plants for various diseases are noteworthy.

Survey of Medicinal Plants unit Patna (Bihar) arranged survey tour to Champaran West and Central Forest Divisions including Madan pur, Genauli, Udaipur, Govardhana and Someshwar forest ranges. The localities adjoining Patna city were also surveyed during rainy winter seasons. Besides, an exhaustive survey of Gaya Forest Division including Kawakol range and Kanchanpur forest was made. During the aforesaid survey tours 950 herbarium specimens spread over to 290 field book numbers were collected.

Folklore claims were also recorded and museum samples of parts used of 44 medicinal plants were preserved.

The Unit organised an exhibition of medicinal plants of Bihar at Rajgiri on the occasion of the inauguration of the 10th annual celebration of Vishwa Shanti Stupa on 25th & 26th October, 1978.

The Unit extended wholehearted co-operation and assistance to the encephalitis camp of the Council organised at Govt. Ayurveda College Hospital, Patna under the leadership of Dr. M.P.S. Arya, Research Officer (Ay.) The staff members of the Unit actively participated in survey and treatment of encephalitis case. The staff of the unit also surveyed and participated collection of medicinal plant from Sikkim for three months.

Survey of Medicinal Plants Unit Rajpipla (Gujarat) surveyed three major forest divisions viz :

1. *Bulsar* Dhamampur, Kaparadda, Nanda Pondha, Dixal with their neighbouring forest localities.)
2. *Banaskantha* (Paanpur, Balara, Amirgadh, Danta, Ambaji), Ikbalgadh, Jessore, Dessa).

3. *Gir forests* (Sasan, Raydi, Kamleshwar Jamwala, Tulsi shyam, Dhari, Dalkharia),

About 115 plant species and 89 crude drug samples in the form of tubers, roots, stem, leaves, flowers, fruits were collected for herbarium and museum. 13 items of crude drugs weighing about 35 kg. were supplied to various Research Units/Centres/Institutes of the Council. 158 herbarium sheets comprising of 46 species were prepared.

A botanical 'Shibir' was organised at Rajpipla and a good number of folklore claims of various diseases as told by Vaidyas and other persons based on their experiences were collected.

Regional Research Centre, Joginder Nagar, Himachal Pradesh conducted fifteen Medico-botanical trips in different localities of Mandi district and forests. The collection of 82 plants were done. A supply of 10 items of crude drugs was made to different research units of the Council.

Survey of Medicinal Plants Unit, Jammu-Tawi undertook techno-economical survey of Ladakh for a period of 90 days during the months of July to October, with a view to collect details related to herbal wealth, medicinally useful mineral resources, medical systems folk lores, folk medical literature, disease prevalence and incidence, dietic habits and social customs that influence the health and living of people. During the exploration of the area, 660 plant species and 250 folklores of the plants, were recorded. Besides 110 samples which are being used by the tribal people of the area for cure of various ailments were collected for museum and phytochemical screening.

Survey of Medicinal Plant Unit (Regional Research Institute), Trivandrum conducted two survey and collection tours to Kottayam, Idukki and Thenmala forest divisions. Many important drugs such as *Vidanga*, *Kutaja*, *Polasa*, *Murva*, *Aragwadha* and *Saptarangi* were collected during the trips. About 167 drugs samples were supplied to various units.

Hill Ranges of Kottayam :

A survey cum collection tour to the hill ranges of Kottayam and Idukki Districts collected 200 kg. of crude drug. The areas covered

are Palai, Erattupattah, Poonjar, Moolamattam, Kulamavu and Idukki. Kueamavu-Idukki route area is of ever green forest type with isolated deciduous trees. Hill tops are covered with perennial grasses while sholas are full of evergreen trees. *Wild tribes*, 'Mannan', once predominant in this area, have fully migrated to interior ranges. A luxuriant growth of *Rothia aquatica* Lour (Pashanabheda) has been observed in *Eratt Pettah* area in the Meenachil river, mostly in sand banks attached to rocks. *Clerodendron squamatum* Vahl was found as a common shrub along the roads in this area. Enroute to Idukki, or steep hills of Arakk lam-kulamavu road, an economically important plant *Heracleum rigons* Wall (Atichatra) was found to be acclimatised at a height of 750 m.

Thenmala Forest Division :

The other forest explored is Thenmala forest division, which is situated at a distance of 71 kms. from Trivandrum. Vegetation is mixed type. Hill tribes are not seen but the suburban areas are occupied by the workers of the Kallada Irrigation Project. Most of the people speak Tamil. Another group of people who migrated from Ceylon are also inhabited there. They were given living facilities and cultivation work. Main cultivation is the Rubber plantations.

Survey of Medicinal Plants (Regional Research Institute), Gwalior (Madhya Pradesh) conducted two survey tours of 10 and 11 days respectively in the North and South Forest Divisions of Bhopal Forest Circle and the areas covered are Ramne, Garhakota, Mandkroni, Garhpahra, Reservoir on Bebas river, Gopalpur, Rangir, Deori, Maharajapura, Jhirghat, Titurpani, Barman, Rajmarg crossing, Melthone Lake, Am, Jhara, Ata, Barodia, Dhamons, Bhaurandahar, Jujher ghat, Meher river area. Dhasan and Kashan river areas, and Sagar proper.

Local trips to University were also conducted. During the survey approx. 666 specimens covering 400 spp. were collected. Approximately 378 sheets of 65 species were added to the herbarium and 39 samples were collected for the museum.

Folklore Claims :

During the survey tour to the forest division of Bhopal 16 folklore claims of medicinal value have been collected. Of them worth mentioning are *Bakar* (*Wattakkaka volubilis* Linn.) Start *panchang* is applied in scorpion sting. *Chirsyata* (*Exacum pedunculatum*. Linn.) whole plant is a cure for chronic and persistent fever and also in Malaria. *Pilli Mundi* paste of whole plant is applied in cutaneous infections and *Baro salpan*, decoction of the whole plant is effective for genito-urinary system.

Survey of Medicinal Plant Unit (Regional Research Centre), Nagpur conducted Survey tours to Durli, Boredharan, Borgeon, otladoh, Talegaon for collection of medicinal plants and folklore claims of the crude drugs. Approximately 59 plants were collected from the above forests. During the survey of Durli, the unit collected *Bakuchi* seeds, which grows at large in some of the cultivated areas. In the vicinity of Boregaon tank, important medicinal plants such as *Holarrhena anti-dysenterica*, *Aegle marmelos* Corr., *Gardenia qummifera* Linn. *Abrus precatorius* Linn., *Semecarpus anacardium* Linn. etc. were found to be in abundance.

Folk-lore claims were collected only from few places. The common medicines used by the villagers are *Bilva*, *Jambul*, *Saghvan*, *Nirgundi*, *Kantera* for different diseases.

Regional Research Institute, Bhubaneshwar (Orissa) conducted four tours in Tangi, Balugan, Banpur, Berbara, Ranapur, Banki, Ragadi, Dampoda, Parthpur and Chandaka forest area in Puri Forest Division. Dasapalla and Chammundia area in Nayagarh Forest Division for 29 days. A total number of 3350 specimens carrying 462 field book numbers were collected.

A total number of 582 herbarium sheets were accessioned and incorporated in the herbarium. 20 crude drug samples were added to the museum and samples of 8 crude drugs were supplied to different units of the Council.

Plant Research Division of Regional Research Institute, Jaipur (Rajasthan) conducted two Survey tours in Jaipur forest division covering local forest areas and two special Medico-botanical survey tours to Pachmarhi, Amarkantak and Chitrakoot areas in Madhya Pradesh and in the desert areas of Rajasthan. 492 specimens comprising of 127 field numbers have been collected. 14 living plants were brought for experimental cultivation and six folklores have been collected. 764 herbarium sheets have been prepared.

About 11 kg. of the *Guggulu* gum and 25 kg. of the roots of *Solanum xanthocarpum* Schrad & Wendl. have been supplied to various units. Besides these, items of different raw plant parts have been supplied to various units of the Council.

Survey of Jaipur Forest Division

Two Survey tours in Jaipur forest division have been undertaken with a view to record the plants of medicinal and economic value. The areas covered are (a) Amer Hills extending from Nahargarh Fort area upto the Amer near Sagár Dam. (b) Galtaji forest areas extending from the forest near Jagga Ki Bawari to Galtaji.

The forest in the Amer Hills are dominated by *Anogeissus* sp. inter-spread with *Wrightia tinctoria* R. Br. *Bos. Wellia serrata* Roxb. and so on. The vegetation inside Nahargarh Fort is rather well preserved due to bounded walls and restricted admission. About 300 specimens comprising of 79 field numbers and 11 live plants and 3 folklores have been collected.

The forest near Jagga Ki Bawari are mostly *Acacia* dominated *A. leucophloea* Willd. being the dominant species associated with *A. jacquemontii*, Benth. *Preploaca aphylla* Decne., *Capparis aphylla* Roth, and so on. *Boerhavia diffusa* Linn. with gregarious roots is quite common and *Crotalaria burhia* Buch Ham. *Vernonia cinerea* Less. *Solanum xanthocarpum* Schrad & Wendl. etc. are some of the other species present in the area. In Galtaji area, the forest is of deciduous type with *Anogeissus* Sp. *Bauhinia racemosa* Lan. *Acacia* spp. *Capparis aphylla* Roth, *Prosopis specigera* Linn. *Wrightia tinctoria* R. Br. Var. *tomentosa*

Roem & Schult, *Flacourtia indica* Merr. as some of the important species growing in this area. 192 specimens comprising of 40 field numbers and 3 live plants have been collected.

Survey and Supply Enquiry, Lucknow, U.P. surveyed local areas of Lucknow and collected about 270 kg. of various medicinal plants and about 85 kg. drugs were supplied to the various Units/Centres/ Institutes of the Council. The drugs collected are viz. *Crataeva nurvala* Buch Ham. (Varun) Stem bark, *Datura metel* Linn. (Durure) fruit and seed. *Terminalia belerica* Roxb (Baker) fruits.

Terminalia chebula Retz. (Harira) Fruits.

Adhatoda vasica Nees. (Vasita) leaves.

Withania somnifera Dunal (Ashwangandha) roots.

Lawsonia inermis Linn. (Mehndi) Leaves

Abroma augusta Linn. (Ulatkambol) root.

Gynandropsis gynandra (Linn.) Brinquet Agandha Root, leaves stem, fruits.

One of the staff, Shri D.P. Badola, Field Assistant, joined the special survey tour to Ladakh for three months, sponsored by the Council. He was further deputed for one month to the herbarium of Botanical Survey of India, Northern Circle and Forest Research Institute, Dehradun for identification of the plants collected from Ladakh area.

Survey of Medicinal Plants Unit, Tarikhet (U.P.) arranged seven tours in alpine, sub-alpine montane, Tarai and Gangetic plains of U.P. Trips to the following areas were performed with a view to collect an exhaustive and accurate data :

1. Rampur, Bhandber, Pipera and Baharawa forest ranges in North Gonda Forest Division.
2. Bhinga, Kakarda, Sohelva East and West in West Bahraich Forest Division.
3. Sitapur Forest Range, Biswa, Srdhanli, Hargaon, Naimisaranya and Misrikh areas in Oudh Forest Division.

4. **Betlaghat-Kosyan-Mohan area** in Nainital Forest Division.
5. **Mandal-pangarwasa-Dhotidher-Tingneth and Mandal-Anusuyadevi Dhanpal-Rudranath** (Kedarnath Forest division) Chamoli Distt.
6. **Dewal-Mundoli-won-Vedinis-Kurmatoli patarnachyni Ali Munyal thok-Brachmtal-Bhegamta** (Badrinath Forest division, Chamoli district).
7. **Vajula-Garkhet-Salani-Gwaldam-Chhinga-Kalyani-Therali Kulsari** areas (Almora East and Badrinath Forest Division).
8. **Loharkhet - Dhakuri-Jatuli - Dhungiadhon -Sunderdhunga** (Almora East forest division).

During these survey tours 2447 specimens were collected for the herbarium and 89 samples for museum. These included important items like *Satawari*, *Meda*, *Mahameda*, *Gristhika*, *Kakoli/Kshira Kakoli*, *Asthisandlhank* and different epiphytic orchids.

Herbarium

2205 sheets were added to the herbarium. In all 18181 sheets from 2163 species, 1058 genera and 165 families of angiosperms, gymnosperms, pteridophytes and lichens were maintained. This collection includes medicinal plants used in the indigenous systems of medicines. Poisonous plants, plants occupying important position in folklore and industrial and economic plants were collected from Gangetic plain, Tarai-Bhabar, Sub-montane, montane, subalpine and alpine areas of Uttar Pradesh.

Supply of Research Material : About 8,530 kg. of extractive drug specimens were supplied to various research units of the Council.

Folk Lore Claims : About 47 folk-lore claims were collected.

Regional Research Institute (Ay), Calcutta (West Bengal) surveyed a number of areas viz. Chandpur, Belghoria, Dasron, Dum Dum, Kalabagicha, Shikotour, Hatiara, Kankinara, Atghora for the collection of crude drugs. About 30 crude drugs have been supplied to the

Regional Research Institute, Calcutta and other units for the preparation of medicine and research purposes.

A tour to Purulia Forest Division was undertaken for survey and collection of medicinal plants. About 130 medicinal plants were collected.

The Purulia district lies between 22° 43' N and 23° 42' N and 85° 42'E and 86° 54'E. Some isolated conical hills are present in this district. Forests of lone hill range are dry deciduous type. Sal associates are dominant specimen. Some important plants are as follows :

Acacia arabica Willd, *Acacia catechu* Willd. *Adina cordifolia* (Roxb), Benth & Hook. *Aegle marmelos* Corr. *Anogeissus latifolia* Wall., *Gmelina arboea* Linn., *Launea grandis* (Dennst.) Engl. *Madhuca indica* J.F. Gmel. *Mitragyna parvifolia* Korth, *Terminalia belerica* Roxb. *T. chebula* Retz., *Oroxylum indicum* Vent.

Some Mantras were collected by the survey team. Mantras (Jhar-fuk) used to treat the diseases which play an important role in tribal medicine, are as follow :—

1. *Nunparah* is prescribed for stomach pain.
2. *Mantya* to treat Snake bite.
3. *Naiar laya* for Evil eyes.
4. *Mantra* for treatment of small pox.

Besides these, informations on folklore claims for curing 43 diseases like Brain defect, Constipation, Dysentary, Ptyphoid, Diabetes, Eczeema, Seiatica, Stomach troubles, Bhangandar, Urinary trouble, Cough, Gout, Piles, Asthma, Anasarce, Rheumatism, Diarrhoea, Red urine, Fever, Bone fracture, Snake bite, Minor injuay, Dysentery, Headache Orchitis, Burn, Small pox, Dog bite, Antifertility, Epilepsy, Rheumatism, Tuberculosis and Fever were gathered.

Special Surveys

During the period 1978-79, the Council has conducted Medico-botanical exploration of the Bastar districts (Madhya Pradesh), Pachmarhi, Amarkantak and Chitrakoot forest divisions of Madhya Pradesh, desert areas of Rajasthan, Sikkim-Himalayas, and a techno-economical survey of different forest areas of Ladakh region.

Medico-Botanical Survey of Bastar District of Madhya Pradesh

A special medico-botanical survey of Bastar district of Madhya Pradesh was conducted by the Council for 82 days. The party visited the various camps covering about 45 areas. The important camps visited for survey work are as follows :—

1. *Lohatthar Camp.*
2. *Kotul bhatti Camp*
3. *Amraoti Camp*
4. *Sonpur Camp*
5. *Chotedongarh Camp*
6. *Jagdulpur Camp*
7. *Darbha Camp*
8. *Barsur Camp*
9. *Kirandul Camp*

During the survey, plant specimens covering 640 field numbers were collected for detailed study. About 300 folk lore claims of which more than half are of medicinal value were gathered.

Bastar district lies between 17°—46' to 20°—34' (North) latitude and 80°—15' to 82°—15' (East) longitude. The district is surrounded by Durg and Raipur districts of Madhya Pradesh in the North, Orissa State in the East, Andhra Pradesh in the South and South West and Maharashtra State on the West. Prominent soil type is sandy loam to loamy sand but clay loams and clay are also significant. However, murum and lateritic soils are found in patches. The population of Bastar district, is 11,67,810. The principal tribes of this region are Bhatra, Gond, Gonds are generally well built; copper to dark in complexion with coarse black hairs. They possess their own religious beliefs and have strong faith on the Log God, the Anga Deo. Almost every tribal village has their own 'Matagudi' shrine of village goddess the Danteswari Devi, the deity of rulers of the Bastar district. Worship of gods is accompanied by the sacrifice of pigs, sheep and cock, pardhaira, Pardhi, Parja and Savara.

Every tribe has its own dialect. *Halli*, Gundi, Bhatrī, Pardhi and Durli are the prominent languages of the district. *Halli* is the lingua-franca of the district and is spoken and understood by most of the people of this district.

They observe numerous festivals connected mainly with agriculture and ancestors of clan God.

Trade : The articles of trade are of minor forest produce nature. They get very little for their produce and pay more for their articles. *Rasna* (*Blepharissubsessilis* DC) roots, *Baibirang* (*Embelia tsjariancottam* DC) fruit. *Bhallatakai* (*Semecarpus anacardium* Linn. f), fruit, *Harra* (*Terminalia chebula* Retz.) Fruit, *Sal* (*Shorea robusta* Gaertn.) resin; *Karkati beeja* (*Ipomoea* Sp.) are some of the forest produce of medicinal importance.

Tamarind (*Tamarindus indica* Linn.) *Kullu* (*Sterculia urens* Roxb.) *Mode* (*Launca coromendelica* (Houtt.). Merhoc gums, lac, *Kosa* (Silk pods) and some oil yielding seeds are some of the commercial commodities.

Teequr (*Curcuma angustifolia*) Indian arrowroot powder is prepared and sold in the market. Yams, tomatoes, beans are some of the vegetables grown and sold. Paddy, mustard seeds, *Ricinus* seeds are cultivated and sold.

Agriculture : The Marias or Murias mainly follow the following agricultural practices. *Viz.* *Gatta*, *Marhan*, Penda and Dahi cultivation and mainly Kodo, Madia, Kosra, paddy as foodgrains; tomatoes, beans, Yams, Cauli flower, cabbage, as vegetables and Urad, Moong and Arahara as dals are cultivated.

The vegetation of Bastar district is deciduous in general; but semi evergreen patches, aquatic and semi aquatic vegetation is also found.

Folk lore medicine viz. *Chepoda* for relieving cough, cold, vitiated pitta, wild species of *Oryza*, as anti-fertility drug, Root of *solanum* to induce abortion, Japa flowers (*Hibicus rosa-sinensis* Linn.) for *Rakta-Pradar* are of great interest.

Medico-Botanical Exploration and Natural Resources Survey of Sikkim-Himalayas

The Council deputed a special survey team to Sikkim for conducting Medico-Botanical exploration of Natural resources of Sikkim-Himalayas. The team has undertaken survey work during the period from July to October and have gathered details relating to the flora and fauna, mineral wealth, medicine practices, folk-medicine, life and habits of the local people, socio-religious customs of the local people, trade prospects and economics of the available drugs of Sikkim.

The team in course of its survey of Sikkim region also visited Jongri alpine area in Yuksum valley (West Sikkim) and Lachung valley, Lachen valley with Yumthang, Unisamdong, Thangu, Dankan, Lonakala Vakthang and Zema etc, which fall in the Tibet border areas of North Sikkim Forest Divisions for carrying out medico-botanical survey. About six thousand plant specimens were collected which represent about 900 species. It includes 160 traditionally used drugs. About 100 species of medicinal orchids were collected from Sikkim area.

The Party came across new medicinal plants which are either not recorded earlier or are rare such as *Maikopila* (*Saussurea Sp.*) *Yanki* (*Siigon*), *Sharmaguru*, *Mahaguru*, *Eklabir*, *Rambu*, *Pangan*, *Tikta*, *Aasole*, *Pema*, *Sangthe* and *yanebita* (Ginseng) etc. Drugs considered as *Astavarga* and *Jivaniya Oushadhis* etc. *Divyaoushadhis* mentioned in *Samhita* were also collected.

Traditionally used drugs for malaria include *Dichoroa Febrifuga* called as *Vasaka* in Nepali, *Alstonia scholaris* (*Chiton/Saptaparna*) are available in abundance in this area.

During the time of drought, Lepchas and Bhotias eat sometimes bread prepared of *Nagdamani* tubers locally known as *Tow*, *Larwa*. It is also used in the preparations of a local liquor popularly known as *Marcha* (*Cheng*). Some medicines located possess either export potential or can be used as an import substitutes. They include *Jatamansi*,

Kutki, Vatsanab, Ativisha, Revandehini, Salampanja, Kasturi and Lemosisi etc. which are available in fairly large quantity in the Sikkim area.

In Sikkim State there are about 15 Amchis who practise traditional medicine i.e. Tibetan system of medicine using Hydro-therapy. The mineral wealth of Sikkim consists of copper, iron, lead and Zinc ores.

The party provided medicinal treatment to about 5005 patients during their tour. The common conditions seen are tape worm manifestation (*Bukabu & Bu Marbu*) Goitre (*Bavake*) Digestive disorders (*Fonase*), cough (*Lichun tav*), T.B. (*Shye*), *Amyata (Tambo)* Haemorrhoids (*Ghune Maroo, Ghune Kabo*) and Eye diseases etc. Local people also visit the hot sulphur springs and stay there upto one month to take regular bath for the treatment of their blood disorders, skin diseases and rheumatism.

Medico-Botanical Survey of Pachmarhi, Amarkantak and Chitrakoot, Madhya Pradesh

A special medico-botanical survey tour, was conducted to Pachmarhi, Amarkantak and Chitrakoot areas of Madhya Pradesh for a period of 35 days. The party recorded data in the Folk medical lore, Socio-religious customs of the tribal inhabitants and fauna of the area besides collection of medicinal plants in the various parts of the areas. Some of the important plants surveyed include *Terminalia chebule* Retz. (*Haritaki*) *Madhuca longifolia* (Linn.) Macbride. (*Madhuka*), *Berberis asiatica* DC (*Daruharidra*), *Celastrus paniculatus* Willd. (*Jyotismati*), *Clerodendrum serratum* (Linn.) Moon. (*Bherangi*) *Woodfordia fruticosa* Kurz. (*Dhataki*) *Shorea robusta* Gaertn. f. (*Sal*) *Semecearpus anacardium* Linn. (*Bhilwa*), *Rubia cordifolia* Linn. (*Manjistha*), *Buchanania lanzan* Spreng (*Priyal*). *Aegle marmelos* Corr. (*Bilwa*), *Holarrhena antidysenteca* Wall. (*Indrajav*), *Centella asiatica* (Linn.) Urban (*Mandukaparni*) etc. During the survey about 4500 samples of medicinal plants comprising of 887 field numbers and about 36 specimens for museum and 13 live plants have been collected. 159 interesting folklores pertaining to the Medicinal usage of the plants by the local Advasis/tribes have also been gathered.

SPECIAL SURVEY OF DESERT AREAS

A special medico-botanical survey in the desert areas of Rajasthan was conducted for 27 days in the month of October. The team explored the areas of Jodhpur, Bikaner, Jaisalmer, and Barmer districts for the collection of flora and fauna

About 82 plant samples were collected. Efforts were made to get the maximum possible information and samples of gum Guggal (*Commiphora wightii*) and gum Acacia (*Acacia senegal*) known as *Kameth* in the area. The other important medicinal plants of Ayurveda, which do not grow commonly in the other parts of the country, but have been collected from deserts are, *Abutilon indicum* (Linn.) Sw. (*Atibala*), *Aitanthus excelsa* Roxb. (*Mahanimba*), *Balanites roxburghi* Planch (*Hingot*), *Citrullus colocynthis* sharad. (*Indrayan*) *Clerodendrum phlomidis* Linn. (*Shudragni manth*) *Encostemma littorale* Blume (*Chata*

chiryata), *Evolvulus alsinoides* Linn. (Neel), (*Shankhapushpi*), *Fagonia eretica* Linn. (*Dhamsa*), *Petalium murex* Linn. (*Gokhru chda*), *Tecomella undulata* (G. Don) Seem (*Rohira*), *Tribulus status* Del. (*Gokhru bheda*), *Withania coragulans* Dunal (*Paneer*) and *W. Somnifera* (Dunal) (*Asgandha*).

25 samples of crude drugs were collected from various dealers and folklore claims of gum of *Acacia Senegal* Will. (*Kumath*), *A. nilotica* (*Banwari*), *Digera muricata* (Linn) Mart. (*Lolario*) *Euphorbia thymifolia* Linn. (*Kherpa*) *Sida ovata* (*Bala*) *Corchorus depressus* (Linn) *Christensen* (*Changash*), *Fagonia cretica* Linn. (*Dhames*) and *Citrullus colocynthis* Schard (*Tumbi*) were noted. Information on history, geography, climate, culture and diet of the people has also been collected.

Herbarium : About 764 herbarium sheets have been prepared. Six folklore claims have been collected from Amer hills and Galtaji forest areas in Jaipur Division. *Hanspadi* (*Adiantum caudatum*) juice of the whole plant for a typical fever, 'Nikathe' *Molya Rjunkandi* (*Tridax procumbens* Linn.) whole plant in menstruation, *Lagaraya* (*Sarcostemma parviflora*) root in burns, eczema are of interest.

Techno-Economical Survey of Different Forest Areas of Ladakh

A techno-economical survey of Ladakh was undertaken with a view to collect details related to herbal wealth, medicinally useful mineral resources, medical prevalence, dietic habits and socio-religious customs.

The intensive floristic exploration of forests under Drass, Kargil, Zaskar and Leh ranges enabled the Survey team to trace the availability of 1000 plant species. About 660 plant specimens were collected. About 250 folklores of the plants, stones and their mode of administration, specially used by Amchis in Tibetan system of medicine were recorded. About 110 plant samples were collected from different localities of Ladakh for phytochemical screening. Various minerals viz. *Shilajeet*, *Jaharmora*, Lime stone, Potassium sulphate, Sodium sulphate, Sodium carbonate, Sodium bicarbonate, Sulphur and Borax were collected. These minerals are used by Amchis either singly or in combination with some other drugs for the treatment of various diseases. Informations regarding the medical practices, disease prevalence and also mode of treatment were collected. Further, a study of Rangdum, Basgdum, Dkarche, Chikser, Padam and Sanik gumpas was made in detail.

Information was also collected on the Historical, Geographical and Meteorological aspects, life and habits of people, language, dress, houses food, beverages, vegetables, fruits, fuel and fodder, domestic animals, art and culture, Religio-social customs and beliefs, Child birth, Marriage ceremony, Death ceremony, Festivals, Polyandry, Religion and Incarnation etc.

Cultivation of Medicinal Plants

As the crude drugs are extensively used and certain drugs are now obtained from cultivated plants there is much need to take up the cultivation of some of the most important indigenous drugs. An Ayurvedic plant garden is necessarily an important resource centre of medicinal plants. Apart from introduction, maintenance and acclimatization of plants, the garden also envisages documentation. The garden also provides opportunity of identifying accurately a number of

plants, which could not otherwise be found either in fruiting or flowering during the tours. The garden offers facilities for introduction scarcely distributed species for sustaining scientific work.

The experimental cultivation of medicinal plants helps to demonstrate the influence of manures on the growth of plants and the amount of their constituents. Information relating to morphology, such as the variation in external features and histological details resulting from cultivation and hybridisation is also rendered available.

For this purpose, the Council has established an Ayurvedic Plant Garden at Pune, and also in other parts of the country, where besides introducing important medicinal plants, experimental cultivation of the selected ones has been undertaken.

Jawaharlal Nehru Ayurvedic Medicinal Plants Garden and Herbarium, Pune

The Jawaharlal Nehru Ayurvedic Plants Garden consists of 20 acres of land situated between two hillocks near Gandhi Bhavan and Kirloskar Cummins Factory-16 Kms. away from Poona Railway Station. This agricultural land has 3 major soil groups. Cultivation of 188 species of medicinal plants has been carried out in the garden which includes 36 herbs, 69 shrubs, 66 trees and 17 climbers.

Approximately 40 kg. of seed material of the 54 species of Medicinal Plants was collected from the garden in order to recultivate and also for germination purpose.

Important plants grown during 1978-79 are *Abus precatorius* Linn. (red and white variety), *Ritius connun's* Linn., *Spilanthes acmella* Merr., *Clitoria ternatea* Linn., *Colus aromaticus* Benth., *Plumbago zeylanica* Linn., *Asparagus racemosus* Willd., *Cassia sophora* Linn. and *Mimosa pudica* Linn.

Experimental cultivation of Shatavari (*Asparagus racemosus* Willd) and some species of *Dashamula* as given below was undertaken. 1) *Gokshur* (*Tribulus terrestris* Linn.) 2) *Kantakari* (*Solanum xanthocarpum* Schard

& Wendl) 3) *Brahati* (*Solanum indicum* Linn.) 4) *Shalaparni* (*Desmodium gangeticum* DC) 5) *Bilva* (*Aegle marmelos* Corr.) and 6) *Gambhari* (*Gmelina arborea* Linn.). Of these *Gokshura*, *Kantakari*, *Brahati* and *Shalaparni* are seasonal.

Herbarium : 2514 herbarium sheets are maintained in the Herbarium belonging to 342 genera.

Museum : Market samples of 420 Drugs of important medicinal plants, collected from different places, and 118 drawings and plates are maintained.

Survey of Medicinal Plants Unit Tarikhet, (Raniket) U.P.

The unit maintained medicinal plant gardens at Raniket and Chamma. Scientific work covering the following aspects of rearing of medicinal plants was carried out :—

- i. Introduction of exotic species of medicinal plants.
- ii. Propagation of local species that have become either rare or are difficult to procure.
- iii. Production of stock for sustained supplies of medicinal plants for research work.
- iv. Trials on acclimatization of plants and
- v. Evolution of improved Agro-techniques.

The unit has maintained 77 herbs, 47 shrubs, 8 climbers and 41 trees in the Medicinal Plants Garden in Raniket and Chamma with a view to study the adaptability of wild herbs to cultivation. These include some important plants such as *Kakoli*, *Kshirakakoli*, *Meda*, *Mahameda*, *Salim mishri*, *Jivanti bheda*, *Katuki*, *Rasna bheda*, *Pashanbheda*, *Asthisodhanak*, *Langli Krishna*, *Musali*, *Yasthimadhu*, *Daruha-ridra*, *Gajapippali*, *Pippali* etc.

Besides these, species of *Polygonatum*, *Allium*, *Orchids* (4 Spp), *Swertia*, *Dioscorea*, *Thuja* brought by survey parties were also planted.

Trial on *Glycyrrhiza Glabra* Linn.

Glycyrrhiza glabra Linn. (Yasti, Mulethi) a perennial plant about 1.5 m. high is well known for its use of roots as medicine. It is found wild and cultivated in Southern Europe, Russia, Syria, Afganistan, and Iraq. Sporadic trials have been carried out in North-West India on its cultivation.

Cultivation of *Glycyrrhiza* is carried in the months of March and early April. It is mostly grown from root cuttings, rhizomes, crown of the lifted roots and runners.

A trial was undertaken in S.M.P, Garden at Ranikhet on cultivation of *G. glabra* during 1976-77. The planting material was procured from S.M.P. Unit, Jammu in February '76 in the form of root cutting (20 to 25 cm. \times 1.5 cm.) These cuttings were planted in bed (3 \times 1.5 m) and some of them in pots in the sandy loam mixed with farm yard manure at depth of 1.5 cm. All of the cuttings started sprouting well in the bed, but could not stand for next few day and till June '76 all dried off. The sprouting in 8 cuttings out of 10 in pots, started late in July '76 and continued growing till August-September when the plants were well developed and attained height upto 15 cm.

During the year 1977, in August well developed plants were again transplanted in bed. The bed was prepared by loosening soil upto a depth of 45 cm, and mixed with fine sand and F.y m. providing good drainage. After 15 days of transplanting, the plants started growing and by middle of October they had attained height upto 25 cm. thereafter yellowing of leaves started and subsequently drying of leaves occurred and stem dried. It has been observed that plant does not withstand frost and cold.

New sprouting started in February, 78 and plant have shown a good vegetative growth during March 1978 to September 1978 and attained a maximum height upto 32 cm. Yellowing of the leaves started after October, 78 and no vegetative growth was seen till the end of January, 1979. New sprouting again started in the beginning of February, 1979 and attained height upto 10 cms. till March end.

Experimental Cultivation of '*Rudraksha*' *Elaeocarpus ganitrus* Roxb.

Elaeocarpus ganitrus Roxb. were procured from M/s. Pratap Nursery, Dehra Dun and were planted in February, 1979, in the pits of 55 × 55 × 55 cm. New sprouting started immediately after 15 days of planting. The cultivation is under observation.

Experimental Cultivation of *Saffron*

Experimental cultivation of Saffron was undertaken in Ranikhet, Dharanghar, Chamma and Tarikhet in 1700 Sq. metre of original plantation and 417 Sq. metre extension. The carry over of 3,01,000 Corms from the previous year increased to 4,25,517 of large, medium and small sizes. As against normal trifold stigma of flowers, tetrafid and pentafid stigma were collected on many occasions among the 12,986 flowers collected. The length and weight of stigma had shown further improvement. The number of flowering was nearly double than that of the previous year.

A 2 mgs. dose of Nickel oxide to the buds have shown that supplementation of Nickel increased flower yield.

Regional Research Institute, (Ayurveda) Jaipur

Under the Plants Research Division, some cultivation of important species both on experimental and extensive basis have been taken up. 27 plants of medicinal importance have been introduced in the garden.

Cultivation of *Guggal* :

Guggul (*Commiphora wightii* (Arn.) Bhand.) have been cultivated extensively at the *Guggul* Herbal Farm, Mangliniwas. The herbal farm at Mangliniwas near Ajmer was about 140 acres of land. There are about 18,110 plants of guggulu growing in the farm. About 5,950 Kg. of gum resin was collected from the farm and nearby areas.

About 71 plants raised from last years cuttings have been transplanted in block No. 2 and 16. About 2 kgs of seeds of *Katkaranj* (*Caesalpinia bunduc*) anther were shown along the boundary walls.

Some seeds of *Dalbergia sissoo* anther were also sown in the beds. About 40 kg. of *Katkaranj* seeds have been collected.

Regional Research Centre (Ayurveda) Nagpur :

The following medicinal plants have been tried for cultivation viz. *Guduchi* (*Tinospora cordifolia* (Willd) Miers). *Bakuchi* (*Psoralea corylifolia* Linn.) *Datura* (*Datura innoxia* Mill) which have shown promising growth.

Pharmacognosy

Crude drugs of vegetable origin are extensively used in Ayurvedic system of medicine, yet much confusion exists in their correct botanical identity. The crude drugs occur in commerce either as dried or fresh, in the entire or broken conditions or sometimes in the powdered form. In many cases same drug is known or being sold under various names as different drugs under the same name, thus causing a great deal of confusion. The problem is further accentuated because of adulteration as there is hardly any control over the procurement and sale of crude drugs.

In order to establish the correct botanical identity of a drug, it is essential to collect detailed information on the authentic drug as well as its various substitutes and adulterants. There is also need of the investigation on drugs which are already in practice under the same name.

For establishing the botanical identity of the drug along with their substitutes, and adulterants, Pharmacognosy Research Units of the Council functioning at Chandigarh, Jammu-Tawi, Pune, Lucknow and Calcutta have carried out detailed investigations on the following reputed drugs of the Ayurvedic systems of medicine.

Chandigarh

1. *Latakaranja (Coesalpinea crista Linn.)* seeds.
2. *Langali (Gloriosa superba Linn.)* Tuber
3. *Vridhadaru-ka (Argyrea speciosa Sweet)* roots and leaves

Calcutta :

4. *Kustha (Saussurea lappa Clarke)* roots.
5. *Hriversa (Pavonia odorata Willd.)* Whole plant.
6. *Sukhadarshan (Crinum defixum Ker.)* Blb
7. *Nirgundi (Vitex negundo Linn)* Leaf
8. *Bimbi (Coccoloba indica W & A)* leaf and fruit.

Lucknow

9. *Paribhadra (Erythrina indica Lamk.)* Root and root bark.

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10. *Priyala* (*Buchanania lanzan* Spreng) Heartood.
11. *Bakula* (*Mimusops elengi* Linn.) Fruit and seed.
12. *Sirisha* (*Albizia odoratissima* Benth.) seed.

Pune :

13. *Kanchanara* (*Bauhinia variegata* L.) Bark and flower.
14. *Sankhapuspi* (*Evolvulus alsinoides* Linn.) Whole plant

(*Clitoria ternatea* Linn.) flower.

15. *Kakodumbara* (*Ficus hispida* Linn. f.) bark.
16. *Dadima* (*Punica granatum* Linn.) fruit.

Jammu-Tawi :

17. *Pippali* (*Piper peepuloides* Linn.) leaf.

Further the Plant Research Division of Regional Research Institute, Jaipur has studied pharmacognosy of the whole plant of *Tridax procumbens* Linn. and the Regional Research Institute, Kerala has carried out investigations on a number of drugs as *Jambu* (*Syzygium cumini* (Linn.) Skeels) Bark, leaves and fruit, *Jayapala* (*Croton tiglium* Linn.) Wood, seed oil, *Bokuchi* (*Psoralea corylifolia* Linn.) fruit, *Jambira* (*Citrus limonia* Osbeek) rind, juice and oil of the fruit. *Vacha* (*Acorus calamus* Linn.) rhizome, *Satapushpa* (*Peucedanum graveolens* Benth. & Hook) fruit and *Ativisha* (*Aconitum heterophyllum* Wall.) tuberous root.

So far the Council has already completed pharmacognostical studies on a large number of drugs as reported previously.

The studies included procurement of the material from the different areas, identification, survey of literature, macro and microscopical characters, fluorescence analysis and preliminary phytochemical investigations. The investigation included the study of market samples and substitutes/adulterants wherever available. The data obtained will help to establish the botanical identity and in the evaluation of drug.

The diagnostic characters of each drug is given below :—

Bakula (Mimusops elengi Linn.)

Fruits and seed of *Bakula* are specifically used for fixing loose teeth and gum. Fruit is a berry with persistent calyx, ovoid, one seeded when unripe and light orange in ripe condition. Pericarp is differentiated into three layers. Secretory canals, some cells, are characteristic features. Testa 1—1.5 mm thick, distinguished into five distinct zones.

The epidermal cells of the cotyledons are columnar. Power treated with H₂SO₄ and Iodine turns black with Sudan II, turns red. Powdered fruit when treated with NaOH in water mounted in nitro-cellulose emits deep violet with greenish tinge fluorescence. Tannin, reducing sugar, saponin, sterol, oil and resin are present.

2. *Bimbi : (Coccinia indica W & A)*

Leaves are applied externally in eruptions of the skin. Fruit is aphrodisiac allays thirst. Leaves are simple, alternate, petioled, palmate, 5 nerved from a cordate base, obtusely 5-angled lobed : some swollen gland-like structure in between the nerves at the base. Fruit indehiscent, berry, ellipsoid, slightly beaked, green with streaks when immature and bright scarlet when fully ripe. Large multicellular uniseriate rhizomes at the leaf margin and presence of asterosclereids in specialised large cells in the upper sub-epidermal region is the characteristic feature. Fruit is one chambered when immature and three to many at maturity. Testa consisting of corrugated basal region of thick walled pitted cells with a compact row of covering trichomes and the tegmen consisting of a row of radially elongated cells. Alkaloids, tannin, saponin, sugar, starch, protein and mucilage are present.

3. *Dadima (Punica granatum Linn.)*

Fruit is globular, obscurely six sided, indehiscent. Seeds numerous oblong or obconical, many sided, exalbuminous, each seed is enclosed by the juicy rose coloured pulp. The rind which is calycine tube, smooth, hard, leathery on ripening changes into brownish yellow with red shade. It is internally divided into two chambers by six transverse membranous

partitions meeting in the axis. The rind is irregular, toothed, tabular, calyx still enclosing stamens and style. Fracture short, externally rather rough, yellowish brown, internally brown or yellow, honeycombed with depression left by seeds.

Middle layer of rind consists of large thin walled, elongated cells with fibrovascular bundles. Starch grains and crystals of calcium oxalate occur in the inner bark.

4. *Harivera* (*Pavonia odorata* Willd.)

Whole plant issued as an appetiser, refrigerant, stomachic and tonic. Roots brownish in colour, rough stem woody, rough with longitudinal anastomising ridges forming network, leaf petiolate palmately-nerved, round, ovate, 3—5 lobed. lobes often digitate or dentate with marginal hairs. Upper surface is olive green in colour. Root shows several layers of cork, secondary phloem consisting of petioles of pitted fibres, starch grains and clustered crystals. Stem shows several layers of cork cells, secondary phloem consisting of alternate rows of fibres and thin walled cells. Leaf dorsiventral.

Stomata anomocytic, trichomes glandular and non glandular both. Alkaloids, tannin, saponin, sugar, protein, mucilage and oleoresin are present.

5. *Kanchanara* (*Bauhinia variegata*, Linn.)

Bark and flower are more widely administered. Bark is useful as antiseptic, astringent to bowels; Fresh bark is grey to black externally, white and cream coloured internally. Dried bark is curved, channelled with vertical cracks and longitudinal ridges. Fracture short outer side, fibrous within, granular. Taste slightly astringent. Mature bark shows cork followed by rhytidome phellogen and wide zone of phelloderm layer. Fibres and stone cells are scattered in the pericyclic region. Secondary phloem consists of strands of fibres, a few stone cells alternating with ceratenchyma traversed by medullary rays. Stone cells are also present in the medullary rays. Total ash, 10.92%, Acid insoluble ash

1.8% alcohol and water soluble extractive values 6.8% and 12.92% respectively. Alkaloid, tannins, protein are present. Powder with ether emits violet fluorescence under U-v light.

6. *Kakodumbara (Ficus hispida Linn)*

Bark and fruits are reported to be emetic, laxative, antiperiodic, galactagogue and anti-haemorrhagic. Bark is greenish when fresh, fairly smooth, surface skin is extremely thin and cannot be peeled off, but on rubbing whitish tissue in the form of minute flakes get separated. On removal the skin exposes the rusty brown colour. Fracture short, taste astringent. Cork is thin. Stone cells, compound starch grains and crystals of calcium oxalate are present in the phelloderm region. Secondary phloem is a wide zone consists of regular thin walled phloem elements, sclerenchymatous cells, latex tubes and crystals of calcium oxalate. Medullary rays are multi-seriate, wide and are heavily packed with starch grains. Total ash 11.9%, acid insoluble ash 3.8%. Alcohol and water soluble extractive values 18.45% and 17.20% respectively. Starch, tannins, and saponins are present.

7. *Kustha (Saussurea lappa Clarke.)*

Roots are used as a-phrodisiac, tonic and valuable remedy in asthma. Roots are dark brown externally, creamish white internally. Taste bitter, odour aromatic. Mature root shows cork cells, patches of pericyclic fibres, phloem and xylem. A ring of secretory canal is present just below the phloem region and resin canals of various shapes and sizes are present throughout the tissues. Total ash 3.538%, Acid insoluble ash 0.029%, alcohol and water soluble extractive values 28.03% and 36.72% respectively. Alkaloid, tannin, saponin, sugar, protein, mucilage and oleo-resin are present.

8. *Langali (Gloriosa superba Linn)*

Tuber is 2—3 mm thick, horn like, brownish externally. The vascular bundles are scattered in the ground tissue of parenchyma full of starch grains. In the beginning, tuber tastes like roasted starch followed by bitter taste.

9. *Latakaranja (Caesalpinia crista Linn.)*

Seeds are pear shaped, greenish, lustrous, upto 2 cm long and 1.5 cm. broad. *Kernel* is hard, waxy, having a nauseating bitter taste. Seed coat shows palisade layers followed by a wide zone of thickwalled parenchyma.

10. *Nirgundi (Vitex negunda Linn.)*

Leaves and roots are used in headache and for removing foetid discharges and worms form ulcers. Fruits are used as vermifuge. Fruit is a stalked simple indehiscent drupe, 4—6 mm. in length and 3—4 in diameter, light brown to black in colour with rough surface having four distinct longitudinal grooves, mostly round with a tapered base surrounded by a persistent fine toothed calyx tube. Glandular trichomes with small white dots are present in the outer surface of the fruit and calyx tube. Seed coat consisting of several layers of pigmented cells, outer layer of which is thick walled, provided with thick cuticle and glands. Total ash 9.92%, acid insoluble ash 0.043% alcohol and water soluble extractive values 27.02% and 19.34% respectively. Alkaloid, tannin, protein and oleoresin are present.

11. *Paribhadra (Erythrina indica Lamk)*

Paribhadra is largely used for its laxative, anthelmintic and galactagogue properties. The roots are long, buff, coloured. Root bark occurs in flat pieces, brown to buff colour, rough due to the presence of longitudinal cracks and exfoliated cork. Phelloderm consists of isolated groups of stone cells yellowish brown contents. Secondary phloem consists of ceratenchyma, phloem parenchyma alternating with groups of phloem fibres. Crystals of calcium oxalate are present in each septa fibre. Powder is buff coloured, with coc. H₂S₀4 and Iodine it turns black. Powder treated with H₂S₀4 diluted with equal volume of water gives dark purple with green tinge fluorescence under U-V light. Sterol, reducing sugar, alkaloid and polysaccharide are present.

12. *Pippali (Piper peepuliodes).*

The leaves were subjected to column chromatography and two more

compounds PPL-6 appears to be a sesquiterpene and PPL-7 is an amide in nature

13. *Priyala Buchanania lanzan* Spreng).

Heartwood is hard, buff coloured. Powder treated with H₂SO₄ and Iodine turns black, with FeCl₃ it turns green and with Sudan III, reddish orange colour appears. Total ash 6.72%, acid insoluble ash 2.5%, alcohol and water soluble extractive values are 7.3% and 1.38%, Glycoside, tannin, Resin, Sterol and reducing sugar are present.

14. *Shankhapushpi* : (*Crotalaria verrucosa* Linn.)

Shankhapushpi is one of the controversial drugs of Indian systems of Medicine. There are about five different plant species viz. *Evolvulus alsinoides* Linn. *Convolvulus pluricaulis* Chors. *Clitoria tornatea* Linn. *Canscora diffusa* (Vahl) R. Br. and *Lavandula bipinnata* Oiktze which are used as *Shankhapushpi* in different parts of India.

Evolvulus alsinoides Linn.

The whole plant is used in strengthening memory, in intestinal haemorrhage, as tonic, anthelmintic and is a popular nerving tonic. Root is small, woody, root stock prostrate or erect leaf simple, small alternate exstipulate, entire, obtuse, densely clothed on both sides with appressed silky hairs. Flowers simple, blue, rarely pink or white. The wood forms the major part of the root and is represented by six broad wedge shaped radiating bands of xylem separated by medullary rays. Interxylary phloem is present. Stem shows a superficial cork with nonglandular and glandular trichomes chlorenchyma and cells are present in the pericycle. The intraxylary phloem is present with tanniniferous contents. Leaf is obilateral Epidermis contains tanniniferous contents. Secretary elements occur in the form of isolated cells containing whitish substance in the mesophyll cortex and pith region. Clustered crystals are present. Total ash 23.70%, acid insoluble ash 10.67%, Alcohol soluble extractive 0.0142%. Tannin, proteins, starch, saponins and alkaloid are present. Total alkaloids isolated are 0.192%.

Clitoria ternatea Linn.

Root, stem, leaf have been reported in previous years. Seed is round to oblong, 8×12 mm. Hilum distinct with a clear spot, yellowish brown, shiny, smooth. seed coat is highly blistered. Seed comprises outer testa, inner papery tegmen. Epidermis and subepidermis show palisade cells with pigmentation and characteristically hour glass cells. Saponin present.

15. *Sirisha* (*Albizzia odoratissima* Benth).

The investigations on various parts of *Sirish* (*Albizzia lebbek* benth.) *A. pocera* Roxb, Benth and *A. odratissima* Benth have been reported in previous years. The seeds of *A. odoratissima* Benth are $7-10$ cm \times $4-7.5$ cm, exarillate, ellipsoid, compressed with slight hilar depression, straw coloured. Testa thin, hard, palisade having *Linea Lucida*.

Hypodermis consists of hourglass cells, which are absent in raphe and anti-raphe region. Endosperm present. Oil globules, starch grains, protein and rosette crystals of calcium oxalate are present.

16. *Sukhadarshan* (*Crinum defixum* ker gawl).

Bulb is used as emollient and emetic. It is $4-10$ cm. in diameter, crown of leaves arises from the top, covered externally by thin papery scale leaves. Internally the scale leaves are thick, fleshy, glossy white. Stomata present on both the surfaces, vascular bundles embedded in a row in the mesophyll consisting of xylem, phloem and small cavities. Raphides are present in the mesophyll of leaf, parenchyma of stem and root. Alkaloid, sugar, starch, calcium oxalate, protein and mucilage are present.

17 *Vridhdaruka* (*Argyreia speciosa* sweet)

This drug is used often substituted and adulterated by *Cocculus hirsutus*. (Linn.) Diels. *Ipomea pes-capre*, *I. petaloides*. The root shows anomalous secondary growth with a central woody are and 2-3 concentric xylary rings. The stone cells are wide spread in the cortical

zone and rosette crystals of calcium oxalate, are abundantly present in the parenchyma. Alkaloid and Tannin are present.

Preliminary Phytochemical Investigations :—

The Pharmacognosy Unit, Jammu-Tawi conducted phytochemical screening on 101 plants collected from the different regions of Ladakh for the presence of active constituents. Out of 98 Plants screened, 29 plants are reported to contain alkaloids, 2 quarternary alkaloids, 69 coumarins, 77 steroids, 89 phenols and 77 flavonoids. The same Unit has also isolated two new compounds PPL-6 and PPL-7 from the leaf of *Piper pectuloides*.

An improved method for the preparation of *Z. guggul* Sterone from 5.17 (20) trans pregnadiene—38-16 B-diol.

Pharmacognosy Research Unit, Jammu-Tawi has improved a method for the preparation of *Z*-guggul. Sterone from 5.17(20) (trans) pregnadiene 38-16-B diol.

An improved method for the preparation of *Z guggul* Sterone from 5.17 (20) (trans) Pregnadiene -3-16-diol. Standardization of the conditions of experiment for obtaining better yields of *Z-guggul* sterone.

10 gm of synthetic *Z*-guggul sterone has been prepared from 5.17 (20) (trans) Pregnadiene-3-16-diol for pharmacological and clinical investigations.

An improved oxidation procedure and standardisation of the conditions of experiment has resulted in better yields of *Z*-guggul sterone than by the method previously reported. The oxidation of the compound was this time carried out with aluminium isopropoxide in toluene/cyclohexanone instead of aluminium tert. butoxide. The details of the procedure are as follows :—

A solution of 50 gm of the compound and 50 gm of aluminium isopropoxide in 2 liters of toluene and 500 ml of cyclohexanone was maintained at reflux. for 2 hours, during which time a total of 600 ml of solvent was removed by distillation. The orange red coloured solu-

tion was diluted with 400 ml of saturated aqueous solution of Potassium-sodium tartrate. The mixture was then steam distilled until about 500 ml of distillate had been collected. The residual mixture was extracted with chloroform. The chloroform extract was washed with water and dried over anhydrous sodium sulphate. The chloroform extract was distilled under reduced pressure and the residue was taken in benzene & subjected to column chromatography over neutral alumina. Elution with 3-5% ethylacetate in benzene gave crystalline solid melting at 165-170°. Repeated recrystallisations from methanol yielded 10 gm of white crystalline compound m. p. 180-182°C.

The compound was identified as 4,17(20)-*trans*-pregnadiene 3,16-dione (Z-guggulsterone) by its spectral studies.

Bibliography :

The Pharmacognosy Research Units of National Botanical Research Unit, Lucknow, and Drug Research Laboratory, Indian Drug Research Association, Pune have prepared the bibliography of six drugs, viz. *Paribhadra*, *Pataig*, *Kinchanar*, *Saptaparni*, *Nilotpala* and *Shahkha-
puspi*.

Chemical Research Units

The Chemical Research Units of the Council located at Calcutta, Delhi, Hyderabad, Lucknow, and Trivandrum have taken up studies relating to identification of newer compounds and their structure elucidation in addition to supply of extractives for pharmacological and toxicity studies.

Chemical analysis of the following 30 plants was carried out. Further, extractives/fractions/pure compounds were also supplied to pharmacological, toxicological and clinical Units to study their effectiveness at experimental and/or clinical levels.

Sl. No.	Name of the Plant	Extractives prepared	Unit
1.	<i>Albelmoschus moschatus</i>	Alcoholic Extract	Hyderabad
2.	<i>Aegle marmelos</i> (i) Fruits (ii) Leaves	,, ,, Aqueous Ext.	Delhi
3.	<i>Aloe vera</i>	Alcoholic Extract	Trivandrum
4.	<i>Asparagus racemosus</i>	,, ,,	Trivandrum
5.	<i>Barringtonia acutangula</i>	Petroleum ether and Ethyl acetate extract	Calcutta.
6.	<i>Cassia siamea</i>	Siaminol	Hyderabad
7.	<i>Cassia tora</i> (Leaves & Seeds)	Alcoholic Extract	Trivandrum
8.	<i>Celastrus paniculata</i> (leaves & seeds)	,, ,,	Trivandrum
9.	<i>Commiphora mukul</i>	Petroleum ether ext.	Calcutta & Lucknow.

10.	<i>Desmostachya bipinnata</i>	Alcoholic extract	Delhi
11.	<i>Embelia ribes</i> (seeds)	Embelin	Trivandrum
12.	<i>Ficus hispida</i> —(i) bark	Petroleum ether and chloroform ext.	Hyderabad
	(ii) berries	Petroleum ether extract F.H/P/TNR-1 C.F.H./P/TNR-2 Chloroform Ext. KR/NVS/F.	Hyderabad.
13.	<i>Hemidesmus indicus</i>	Alcoholic ext.	Trivandrum
14.	<i>Marsilea minuta</i>	Alcoholic ext.	Calcutta
15.	<i>Murraya koeniggi</i> (Leaves)	” ”	Trivandrum
16.	<i>Nardostachya Jata- mansi</i>	” ”	Calcutta & Delhi
17.	<i>Nymphaea alba</i> (Flowers)	” ”	Delhi
18.	<i>Picrorhiza kurroa</i>	” ”	Delhi
19.	<i>Plumbago zeylanica</i>	Plumbagin Bromo- plumbagin Moplumbagin Monacetate of Plumbagin Monobenzoate of Plumbagin Nitro plum- bagin	Trivandrum

20	<i>Physalis peruviana</i>	Physalolactone	Varanasi
21.	<i>Pistacia integerrima</i> (galls)	Methanolic ext.	Hyderabad
22.	<i>Punica granatum</i>	Alcoholic ext.	Delhi
23.	<i>Rubia cordifolia</i>	Petroleum ether & Ethyl acetate ext.	Calcutta
24.	<i>Saccharum spontaneum</i>	Methanol, Pet. ether, Chloro- form extract.	Hyderabad.
25.	<i>Salacia prinoides</i> (root bark)	Alcoholic extract.	Trivandrum
26.	<i>Solanum nigrum</i>	Chloroform and Methanol Ext.	Hyderabad.
27.	<i>Other extracts</i>		
	Nimbidine		Trivandrum
	Vilangin		
	2-hydroxy- 4 methoxy benzal- ehyde		Trivandrum
	Visicinone		
	Visicinone (Photoproduct)		Hyderabad

The work carried out on each plant is summarised as under :—

(1) *Abelmoschus moschatus* (*Kasturi latika*) :

Petroleum ether extract was prepared and sent for pharmacological studies.

(2) *Achyranthes aspera* (*Apamarga*) :

Four saponins namely A.B.C. and D. were isolated from this plant and a brief chemical explanation has been given for the

difference in their pharmacological activity. This difference in their pharmacological activity is being attributed to the difference in their structural pattern.

(3) *Alpinia galanga* : (*Sugandha vacha*) :

The defatted rhizomes of the plant were extracted with chloroform and the concentrated extract was chromatographed over silica gel. Chloroform eluate on concentration gave a solid which was crystallised from chloroform to afford yellow crystal, designated as Ag I. Physical and chemical properties of this solid (SG I.) has been studied in detail e.g. M.P, Rf value, UV-absorption and I R. spectrum etc.

The positive Shinoda test (magenta colour) indicated the presence of a flavonoid chromophore.

The U V. absorption studies revealed that alkali shift indicated the presence of phenolic-OH group.

Further work with the compound is in progress.

(4) *Alternanthera sessilis* : (*Matsyakesi*) :

The chemical investigation of the aqueous extract of *Alternanthera sessilis* furnished a glycoside. Due to its difficult solubility in common organic solvents, the glycoside was acetylated with acetic anhydride and pyridine at room temperature.

The sugar moiety was identified as glucose and the aglycone part is yet to be identified. The water insoluble part was chromatographed over silica gel which furnished some fatty matter, β -sitosterol and a flavanone. The complete identification of the flavone is in progress.

(5) *Angu* (*A drug claimed to be useful in leprosy*) :

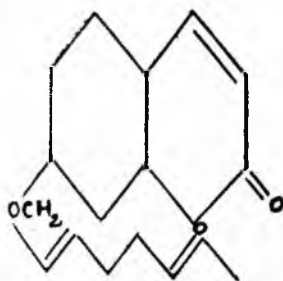
The petroleum ether, chloroform and methyl alcohol extracts were prepared and were subjected to colour tests for the presence of terpenes, alkaloids, steroids and flavones. The chloroform

extract indicated the presence of carbohydrates and steroids. Thin layer chromatography showed the presence of five spots. After trituration with acetone, a colourless solid was separated out, whose TLC examination revealed it to be a mixture of two compounds. The methanol extract did not respond to any of these colour tests.

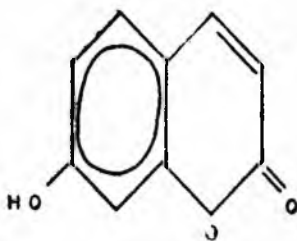
(6) *Atalantia wightii* (Atavi Jambira) :

Petrol ether extract of *A. wightii* was chromatographed over silica gel and the benzene eluate was rechromatographed over the same absorbent. Finally, two solids (compound VI and VII) one in the petrol benzene (1 : 1) eluate and another in benzene eluate were obtained. Compound VI was crystallized from petrol benzene mixture and the compound VII was crystallized from methanol. The characteristics of these two compounds were established.

From the spectral data the compound VI was found to be geranyl umbelliferone and finally confirmed by superimposable IR, Co- TLC, m. m. p with an authentic sample.



(VI)



(VII)

The compound (VII) was found to be identical with Umbelliferone and confirmed by superimposable IR and Co-TLC with an authentic sample.

(7) *Clitoria ternatea* (*A. parjita*) :

The petrol, benzene and alcohol extracts of the air dried aerial parts were prepared. The individual fractions have been taken up for further chemical analysis.

(8) *Coccinia indica* (Bimbi) :

The young green fleshy fruits were sliced and soaked in alcohol for 5 days, the alcoholic layer was decanted off and the fruits then exhaustively extracted with fresh hot alcohol. The total alcoholic extract was concentrated under reduced pressure and the residue was chromatographed over silica gel using pet. ether, chloroform and methanol as the successive eluents.

Its dried roots (cut) were extracted with petroleum ether and then with alcohol. The alcoholic extract was concentrated and extracted with pet. ether. The two pet ether were mixed together as they were found same on TLC. The residue from pet. ether extract was saponified and the gummy unsaponifiable material was chromatographed over silica gel which yielded (A), Lupeol, (B) β -amyrin and C), β -sitosterol. The residual alcoholic extract on chromatography yielded (D) β -sitosterol glucoside.

This is the first report of the occurrence of β sitosterol glucoside from *Coccinia indica* while other compounds were reported earlier. Isolation and characterisation of E is under progress,

(9) *Coccoloba fenestrata* (Daru harijdra) :

The Pet. ether extract of its roots bark has been found to contain Berberine. The benzene extract of the root has however, yielded another alkaloid oxyberberine. The identification of both have been established by spectral data and comparison with authentic sample of the respective alkaloids.

(10) *Desmostachya bipinnata* (Kusha) :

Aerial part of the plant was taken up for the chemical investigation. The alcoholic extract of the aerial part was taken up and the concentrated extract was subjected to column chromatography over silica gel. The gradual elution of the column with solvent of increasing polarity, furnished a needle shaped crystal-

line solid which gave positive response to Libermann's colour test characteristic of terpenes. The IR spectrum of the terpene does not reveal any hydroxyl band. Further investigation is in progress.

(11) *Diospyros peregrina* (Tinduka) :

The isolation of a triterpene m. p 150-2°C, from the pet. ether extract of *D. peregrina* (fruits) has been reported previously.

The mass spectrum of the compound D-f (2) showed molecular ion peak at m/e 422 (C₃₀ H₄₆ O) indicating the presence of two double bonds in pentacyclic triterpene skeleton. It exhibited UV absorption at max MeCH 281 mμ (Log 3.886). The ketonic function was reduced to the corresponding alcohol with NaBH₄ and a qualitative UV of the reduction product was taken. No change was observed in the UV spectrum.

These two observations suggest that the compound contains a homannular diene component which is not in further conjugation with the carbonyl function. In the IR spectrum, the compound exhibited bands at 1700 cm⁻¹ and 835 cm⁻¹. Further characterisation of Dp-f (2) is in progress.

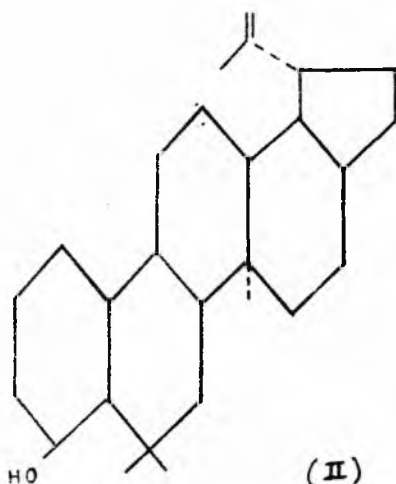
As usual, the bark of *D. peregrina* was extracted with pet. ether (b. p 60-80°) in a soxhlet apparatus. On cooling, a solid deposited which was filtered off and the filtrate was chromatographed over silica gel.

A colourless material was obtained in the petrol; benzene (1:3) eluate. It was rechromatographed over silica gel. A solid was obtained in the petrol; benzene (40 : 60) eluate which was purified by crystallisation from petrol-benzene mixture and designated as D-p (b)/1. The homogeneity of the compound was confirmed from its TLC on Argentine silica gel plates in a number of solvent systems.

The mother liquor of D-p (b)/1 was evaporated to dryness and then acetylated with Ac₂O/Py in the usual manner, The acetylated product was chromatographed over silica gel and the petrol;

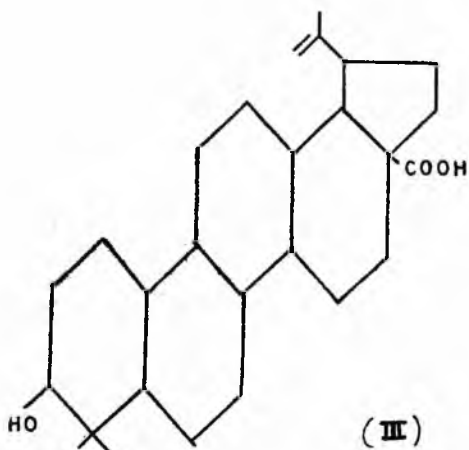
benzene (1 : 1) eluate deposited a solid. It was finally purified by crystallization from MeCH-CHCl₃ mixture and designated as D-p (b)/2.

The compound D-p (b)/2 was finally identified as Lupeol acetate by co-TLC, m.m. p and superimposable IR spectrum with an authentic sample of Lupeol acetate. Hence the original solid D-p (b)/1 isolated from the bark of *D. peregrina* is lupeol (II).



Another solid was obtained in the benzene-ethyl acetate (4 : 1) eluate on chromatographic resolution of the petrol ether extract of the bark of *D. peregrina*. It gave a positive L. B. colour reaction for triterpenes and was acetylated with Ac₂O/Py in the usual manner. The acetylated produce was chromatographed over silica gel and after a series of chromatographic resolutions, a solid was obtained in the (petrol-benzene 3 : 1) eluate. It was finally purified by crystallization from absolute alcohol under analytical conditions and was designated as D-p (b)/4. A part of the solid was esterified with diazomethane and purified by crystallization from methanolic chloroform under analytical conditions and designated as D-p (b)/6.

In all probability the original compound is identified with Betulinic acid (III).



(12) *Ficus hispida* (Kakodumbarika) :

The Petroleum ether extract of its berries was subjected to column chromatography over alumina (basic) and the column was eluted with solvents of increasing polarity. Thus two fractions were obtained and were sent for pharmacological testing. All these fractions were found to be inactive pharmacologically indicating that the active principle is being lost during the course of column chromatography. Further, petroleum and methanol extracts of its berries were prepared and sent for pharmacological screening.

(13) *Fumaria indica* (Pitpapra) :

The pet. ether extract of the drug furnished a weak base, which was identified as Fumariline, and two strong basis Oxysanguinarine and 8-methoxy dihydrosanguinarine.

The alkaloid 8-methoxy dihydrosanguinarine has been found to contain dihydrobenzo phenanthredine chromophore in its structure, which has been established by spectral data and chemical reactions.

(14) *Helicteres isora* (Mriga-Shinga) .

The petrol ether extract of the fruits of *H. isora* on chromatographic resolution over silica gel afforded only β -Sitosterol

The defatted plant material was then successively extracted with chloroform ethyl acetate and ethanol.

The ethyl acetate extract gave positive test for saponins. However, all attempts to isolate the saponins in pure form following standard methods were unsuccessful. The whole extract was then subjected to hydrolysis with 5% methanolic sulphuric acid under reflux for 3 hrs. After usual work up, it afforded a gummy residue, which was chromatographed over silica gel. Elution of the column with chloroform afforded white crystalline solid which was then crystallized repeatedly from a mixture of chloroform and acetone to afford a pure solid designated as Hi_1 . The characteristics of this compound have been described.

The compound, Hi_1 was then acetylated with Ac_2O /py in the usual manner and chromatographed over deactivated alumina. Petrol—Benzene (1 : 4) eluate afforded a white solid which was crystallized from chloroform acetone mixture and designated as $Ac-Hi_1$.

The characteristics of the acetate have also been studied in detail.

Further work is in progress.

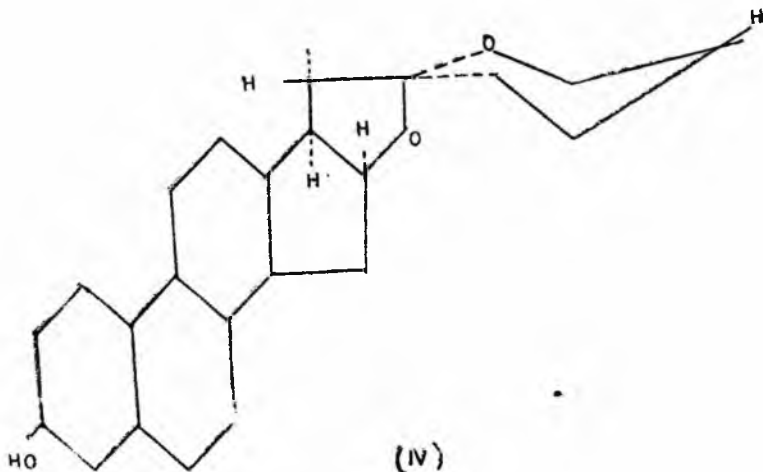
(15) *Kallstromea pubescens* :

The demand of Diosgenin in drug industry is ever increasing. In an attempt to find out new source of diosgenin, chemical investigation on *K. pubescens* (Whole part) was undertaken

Pet. ether extract was chromatographed over alumina (neutral). Chloroform eluent of the column on concentration gave colourless solid which was crystallized from acetone to afford wooly crystals, (designated) Kb_2 . Physical and spectroscopic properties have been done.

Kb_2 was acetylated with dry pyridine and Acetic anhydride in the usual manner. On usual work up, a solid was crystallised from Pet-Benzene mixture, to give colourless needles, m.p 196-98°.

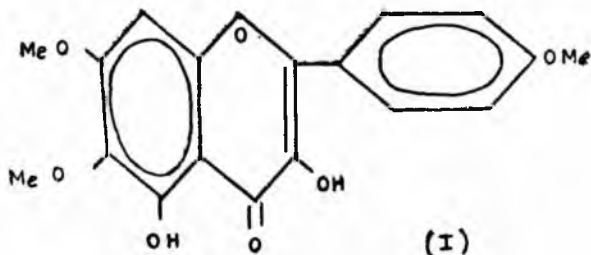
Physical and chemical properties of Kb_2 were very similar to that of Diosgenin. A direct comparison of Kb_2 (m.p., superimposable IR and Co-Tlc) with an authentic sample confirmed its identity with Diosgenin (IV).



(16) *Mikania scandens* :

The compound, as reported earlier, obtained from chloroform soluble part of the ethyl acetate extract of *M. Scandens* was found to be a flavonoid compound from its positive Shinoda test, UV-absorption and IR-spectrum data.

Further studies indicated that the compound was found to be identical with mikanin, 3—5—dihydroxy-4; 6, 7-triethoxy flavone (I) by direct comparison (mmp, superimposable IR and Co-TLC) with an authentic sample.



Incidentally, that is the first report of the occurrence of mikanin in *Mikania scandens*.

(17) *Nardostachys Jatamanasi (Jatamansi)*

The Petroleum ether and alcohol extracts were taken up for chemical studies. Petroleum ether extract on column chromatography over silica gel was eluted with Petroleum ether; Benzene (75-25) and gave a mixture of fatty acids and a crystalline compound. Its melting point and Co. TLC studies indicated it to be a *lupcol*.

The soil samples of *Ja'amansi* were analysed, and it was observed that the percentage of Volatile and non-volatile matter was 32.96% and 66.91% respectively.

(18) *Nelumbo nucifera (Kamala)* :

While the pet. ether extract furnished only. β -sitosterol, the residual alcoholic extract was isolated as micro-needles, m.p 210-12°. The chemical characterisation of this compound has not been established.

(19) *Nymphaea alba (Kumula)* :

As the drug gave promising results in pharmacological testing, a detailed chemical investigation of the drug was taken up.

The air dried flowers were defatted with hot petroleum ether and then exhaustively extracted with hot alcohol.

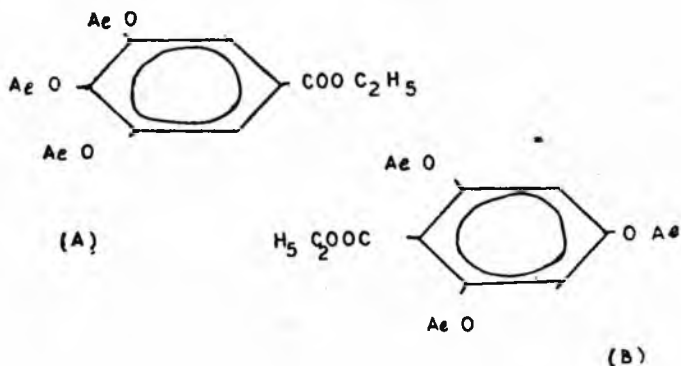
The petroleum ether extract on subjecting to column chromatography, yielded three solids A, B and C. Solid C was identified as β -sitosterol, while compounds A and B gave positive L. B. test showing their terpenoid nature.

The alcoholic extract on chromatography and further purification yielded four solids (glycosides) D E. F. and G. Glycoside D was indentified as β -sitosterol-B-D-glucopyranoside. Compounds E, F and G are phenolic in nature and further identification of these compounds is in progress.

(20) *Nymphaea stellata* (Nilkamal) :

The isolation of a phenolic solid m. p 152-4°C from the alcoholic extract of *N. stellata* was reported previously. The compound was photosensitive and it underwent decomposition in contact with silica gel or upon heating thereby rendering its purification difficult. The remaining solid was acetylated with $\text{Ac}_2\text{O}/\text{Py}$ in the usual way and purified by column chromatography followed by repeated crystallization from petrol benzene mixture under analytical conditions (NS-5).

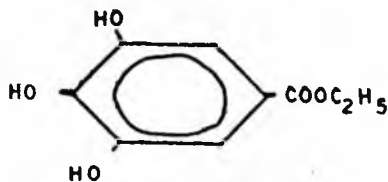
From the physical and spectral data of the acetate the structure of "NS-5" would be either (A) or (B).



For direct comparison compound (A), triacetyl ethyl gallate was prepared directly from gallic acid by esterifying it with absolute alcohol in the presence of dry HCl gas followed by acetylation with acetic anhydride and pyridine.

"NS-5" was found to be identical with synthetic triacetyl ethyl gallate by CO-TLC, m. m. p and superimposable IR spectrum.

Hence the original phenolic compound present in the plant is identified as Ethyl gallate (V).



It may be mentioned that this is the first report of occurrence of Ethyl gallate in *Nymphaea stellata*.

(21) *Pistacia integerrima* (*Karkatasringi*)

The methanolic extract, from its powdered galls was prepared and sent for pharmacological screening.

In addition, Vascicinone, KR/NVS/E and Siaminol were also prepared.

(22) *Punica granatum* : (*Dadima*)

The extensive investigation of *Punica granatum* has already been taken up. Since the glycoside part of the plant has not been studied thoroughly, it was thought appropriate to study the glycosides present therein. The glycoside obtained from its fruits was purified by column chromatography followed by crystallization. A part of the pure acetylated product was deacetylated by heating in a sealed tube with pyridine. The reaction mixture was then hydrolysed with Kiliani's mixture and then neutralised with NaHCO_3 . The sugar part was then subjected to paper chromatography in B.P.W. system, which agrees well with authentic glucose the second sugar moiety and the aglycone part are yet to be identified.

(23) *Physalis peruviana* : (*Tipari*) :

A number of alkaloids have been found present in the root of *P. peruviana* which show novel structure. Of these the major alkaloid physoperuvine has been studied in detail and its structure has been conclusively established. Besides these the structure of three other minor alkaloids have also been established on the basis of chemical reaction, spectral analysis and interconversion experiments.

A number of steroidal principles have been isolated from the leaves of *P. peruviana* and major compound has been designated

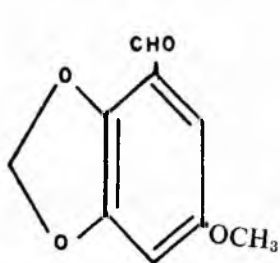
as physalolactone and formulated 6 chlor, 4 B, 5 B, 14, 17, 20B hydroxy 1—Oxowitha—2, 24 dienolide from its chemical and spectral analysis. The work on minor constituents is in progress. Physalolactone has shown some anti-inflammatory activity.

(24) *Randia dumetorum* (Madana) :

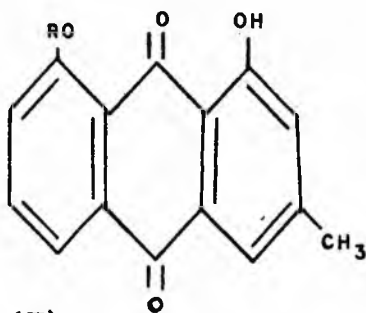
The Petroleum ether and alcohol extracts were prepared from its fruits and the detailed chemical analysis studies were undertaken. Thus, four glycosides were isolated and their identification work is in progress.

(25) *Rumex nepalensis* (Jangli palak) :

The roots of *Rumex nepalensis* are used in some parts of India for their purgative properties in place of rhubarb (*Rheum alatum*). Therefore thorough chemical investigation of the roots was undertaken. Ten crystalline compounds (A—J) have been isolated and identified, except F and J, all others were found to be known compounds. All the known compounds were identified. A as chrysophanol, B as physcion, C as Lupeol, D as β -sitosterol, E as Orientalone, G as emodin, H as sitosterol β -d-Glucoside and I as 1-O- β -D-Glucopyranosyl musizin. Compound, F, $C_9H_8O_4$ m. p 185° (M+100) showed the presence of a carbonyl function (1626 cm^{-1}), and methylenedioxy group in its IR spectrum. The structure of compound F was thus arrived at as -methoxy—5, 6—methylenedioxy benzoldoche (U. V, N. M. R.) (I). It was not known so far as a naturally occurring or a synthetic compound.



(I)



(II)

R - GALACTOSE

Compound, J, $C_{21}H_{20}O_9$, m. p $272-77^\circ$ exhibited colour reaction. IR and UV visible spectral data for an anthraquinone glycoside. It was identified as chrysophano 1-8-0- β -D-galactopyranoside (II), and seems to be a new compound not reported earlier in literature.

(26) *Saccharum spontaneum* (Kasa) :

Petroleum ether, chloroform and methyl alcohol extracts were prepared and sent for Pharmacological testing to Haffkine Institute, Bombay. These extracts did not respond to the usual colour tests.

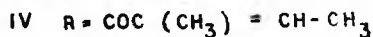
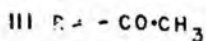
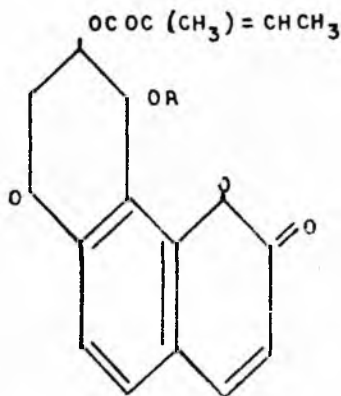
Column chromatography of these extracts did not yield any single spotted compound in workable quantities. So, further work on this plant has been stopped.

(27) *Selinum tenuifolium* :

The petroleum ether extract of the powdered roots was fractionated into acidic and neutral parts. The neutral fraction on chromatography over deactivated alumina yielded solids A and B.

Solid A :

It was crystallised from petroleum ether in colourless cubes m. p $135 - 7^\circ$ was analysed for $C_{21}H_{22}O_7$ and was optically active $D-77.2$ ($CHCl_3$). Its IR spectrum supported the coumarin structure max 1750 . (lactone ester carbonyl merged with it), 1620 , 1235 and 826 cm^{-1} . The m. p. IR and NMR spectra were in complete accord with 3'-angeloyloxy--4'-acetoxy--3' 4'-dihydroseselin (III).



Solid B :

It was crystallised from methanol as colourless needles m. p, 173–5°. Analysis suggested the mol. formula to be C₂₄H₂₀O₇ its UV spectrum max 323 nm istypical of 7 –oxygenated coumarin. Its IR spectrum showed max 1748, 1733, 1613, 1493, 1235 and 847 cm⁻¹ and NMR showed four protons attributed to 3, 4, 5 and 6 positions of the coumarin ring system. It was confirmed as 3' 4'—diangoloyloxy—3', 4'—dihydroreslin (IV)

The residual root powder was than extracted with alcohol. The alcohol extract on concentration and chromatography yielded a solid (C) identified as d—mannitol and the solid (D) identified as sucrose.

This is the first report of the occurrence of these compounds from selinum tenuifolium.

(28) *Solanum nigrum* (Kakmachi) :

The Petroleum ether, and methanolic extracts of the red variety of *Solanum nigrum* and chloroform extract and methanol extracts of the black variety were prepared and sent for pharmacological testing.

(29) *Symplocos spicata* :

Besides isolation of β -sitosterol from the stem, a glycosidic principle has been isolated from the bark of the drug. The chemical characterisation of the glycoside principle is in progress.

(30) *Vanku* :—

The Petroleum ether, chloroform and methyl alcohol extracts were prepared and also a very little amount of white solid substance was obtained after the solvent evaporation. All the three extracts showed the presence of steroids and terpenes. The analysis of these extracts revealed them to be a mixture of atleast 7--8 compounds.

Chemical Research Unit, Hyderabad

The work on the following plants carried out by this Unit :—

1. *Saccharum spontaneum*
 2. *Ficus hispida*
 3. *Solanum nigrum*
 4. *Abelmoschus moschatus*
 5. *Pistacia integrifolia*
 6. Visicinine (Photoproduct)
ICR/NVS/E
 7. Siaminol
 8. *Angu*
 9. *Vanku*
- Detailed work done

Chemical Research Unit, Delhi

1. *Randia dumetorum* (Fruits)
 2. *Nymphaea alba* (flowers)
 3. *Coccinia indica* (fruits & roots)
 4. *Selinum tenuifolium* (roots)
 5. *Alternanthera sessilis*
 6. *Desmostachya bipinnata* (Aerial parts)
 7. *Punica granatum* (fruits)
 8. *Clitoria ternatea* (aerial parts)
 10. *Aegle marmelos* (Fruits and leaves)
 11. *Nymphaea alba* (flowers)
 12. *Desmostachya bipinnata* (Alcoholic extract)
 13. *Punica granatum* (Alcoholic extract)
 14. *Nardostachys Jatamansi* (Alcoholic extract)
 15. *Picrorhiza kurroa*—(Alcoholic extract)
- Detailed work done.

Chemical Research Unit, Lucknow

1. *Commiphora mukul*—Pet. ether & Ethyl acetate extracts.

Chemical Research Unit, R. H. H. Varanasi

1. *Fumaria indica*
2. *Coscinium fenestratum* (Root)
3. *Symplocos spicata* (stem) Detailed work done.
4. *Nelumbo nucifera* (seeds)
5. *Physalis peruviana* (Roots & leaves)

No extracts supplied.

Chemical Research Unit, Trivandrum

1. *Cassia tora* (leaves and seeds)
2. *Celastrus paniculata*
3. *Murraya koenigi* (leaves)
4. *Embelia ribes* (seeds)
5. *Salacia prionites* (root bark)
6. *Asparagus racemosus*.
7. *Aloe vera*
8. *Ixora coccinea*
9. *Ventilago*.
10. *Hemidesmus indicus*
11. *Plumbago Zeylanica*
12. Nimbidine
13. Plumbagin
14. Monoacetate of Plumbagin.
15. Monobenzoate of Plumbagin
16. Bromo plumbagin
17. Nitro plumbagin
18. Vilangin
19. 2-hydroxy-4-methoxy benzaldehyde

Chemical Research Unit, Calcutta

1. *Alpinia galanga*—Rhizomes
2. *Mikania scadens*—Aerial parts
3. *Diospyros peregrina*—Bark and Fruits.
4. *Kallectromea pubescens*—Pet ether extr.

5. *Nymphaea stellata*—flowers.
6. *Atalantia wightii*—Aerial parts.
7. *Helicteres isora*—fruits

Detailed work done.

Extracts

1. *Rubia cordifolia*
2. *Barringtonia acutangula*
3. *Nardostachys Jatamansi*
4. *Marsilia minuta*
5. *Commiphora mukul.*

Pharmacological Studies

The report presents the work carried out at the pharmacological and toxicity Units of the Council located at Bombay, Calcutta, Jodhpur, Lucknow, Meerut, Raipur, Trivandrum and Varanasi. 31 single drugs, 3 coded drugs, and one compound formulation in addition to Urine therapy were studied. While certain drugs were put to routine pharmacological screening, others were investigated for their specific effects. A few drugs whose general pharmacodynamics have been completed were subjected to toxicological studies. The Units at Bombay and Meerut are mainly engaged in studying the toxicology of these indigenous drugs. The work carried out during the period under review is briefly indicated as under :—

Pharmacological Research at a Glance During-1978-79

Investigated for (1)	Drug (2)	Remarks (3)	Unit (4)
1. Adaptogenic effect	<i>Withania somnifera</i> (<i>Aswagandha</i>)	+++ (P < 0.01)	Lucknow
2. Cardiovascular effect	<i>Terminalia arjuna</i> (<i>Arjun</i>)	Hypotensive effect (+++) Heart rate (+++)	Lucknow
	<i>Pongamia pinnata</i>	Study in progress	
	<i>Quercus infectoria</i>	Hypotensive effect (+) Heart rate (+)	Raipur
	<i>Iris florentia</i>	Hypotensive effect (+)	Bombay II

(1)	(2)	(3)	(4)
3. Antitumor activity	<i>Withania somnifera</i> (<i>Aswagandha</i>)	(+)	Lucknow
	<i>Plumbago rosea</i>	Preliminary clinical trials on cancer patients in progress	Trivandrum
	Plumbagin	Significant anti mytotic activity	Trivandrum
4. Anti-epileptic activity	<i>Naradostachys Jatamansi</i> (<i>Jatamansi</i>)	Effect not yet confirmed ?	Lucknow
5. Antipyretic activity	<i>Albizzia lebbeck</i>	nil	Varanasi
6. Analgesic activity	<i>Albizzia lebbeck</i>	nil	Varanasi
7. Anti-inflammatory activity	<i>Nelumbo nucifera</i>	nil	Bombay
	<i>Barringtonia acutangulata</i>	nil	Bombay
	<i>Tephrosea purpurea</i>	nil	Bombay
	<i>Albizzia lebbeck</i>	nil	Varanasi
	<i>Hemidesmus indicus</i>	significant effect (+++)	Trivandrum
	<i>Sidarhombifolia</i>	(+++)	Raipur
	<i>Blepharis edulis</i>	(++)	Raipur
	<i>Quercus infectorius</i>	nil	Jodhpur
<i>Aegle marmelos</i>	nil	Jodhpur	

(1)	(2)	(3)	(4)
8. Antifungal activity	<i>Cassia tora</i>	nil	Trivandrum
9. Toxicity studies	RDG-I	LD-50-5.0 mg/kg I.P	Trivandrum
	<i>Plumbago rosea</i>	Study in progress	Trivandrum
	<i>Rubia cordifolia</i>	No toxicity (oral & I.P)	Bombay
	<i>Barringtonia acutangulata</i>	No toxicity upto 1 gm/kg (oral)	Bombay
	<i>Nelumbo nucifera</i>	No toxicity upto 800 gm/kg (oral)	Bombay
	Ayush-14	No toxicity upto 500 mg/kg (oral) during acute & sub-acute studies.	Bombay.
	Anti-leprosy drug progress	Studies in progress	Meerut.
10 Anti histaminic activity	<i>Azadirachta indica</i> (Nimbidin)	Study in progress	Trivandrum
	<i>Swertia chirata</i>	(+)	Bombay

(1)	(2)	(3)	(4)
11. Anti-ulcer activity	Nimbidin	Study in progress	Trivandrum
	Taramanduram	Effect significant	Trivandrum
12. C.N.S. Depressant	<i>Nymphaea alba</i>	Nil	Jodhpur
	<i>Punica granatum</i>	(+)	Jodhpur
	<i>Albizzia lebbeck</i>	Nil	Varanasi
13. Antispasmodic activity	<i>Boswellia serrata</i>	(+)	Bombay
	<i>Scirpus kysoor</i>	(+)	Bombay
	<i>Iris florentia</i>	(+)	Bombay
14. Diuretic effect	<i>Cyperus ratudus</i>	Effect not confirmed	Jodhpur
	<i>Pandanus tectorius</i>	(nil)	Jodhpur
	<i>Blepharis edulis</i>	(++)	Raipur
15. Antihelmintic activity	<i>Swertia chirata</i>	Only ether and petroleum ether extract (++)	Bombay
16. Antidiarrhoeal activity	<i>Aegle marmelos</i>	Nil	Jodhpur
	<i>Punica granatum</i>	Effect not confirmed	"
	<i>Cyperus rotundus</i>	Effect not confirmed	Jodhpur
17. Immune suppressive effect	<i>Albizzia lebbeck</i>	(+) further work in progress.	Varanasi

(1)	(2)	(3)	(4)
18. Anti-diabetic effect	Amrita (An ayurvedic preparation) Gowar <i>Cymopsis tetragonoloba</i> <i>Salacia prinoides</i> <i>Benincasa hispida</i> <i>Albizzia lebbeck</i>	mild effect (+) (++) (++) (+) (++) $P \leq 0.025$	Trivandrum Trivandrum Trivandrum Jodhpur Varanasi
19. Hypolipidaemic effect	<i>Albizzia lebbeck</i>	(++) $P \leq 0.05$	Varanasi
20. Urine therapy	Rats, Cow's & Human urine	No toxicity in rats Auto-urine therapy showed arabolic effects in rats.	Trivandrum

(i) Detailed pharmacological studies on an antileprosy drug were conducted by the Toxicological Unit, Meerut.

(ii) *Ficus hispida*, *Saccharum spontaneum*, *Leea aquata* were also screened by the Bombay Unit but did not show any specific activity.

Good effect +++ ($P/0.01$), Fair effect ++ ($P/0.05$), Mild effect +

(1) *Aegle marmelos*—Fruit Extract (*Bilwa*):

Aegle marmelos in 0.5 gm/kg orally protected albino rats from castor oil induced diarrhoea but a dose of 1.0 gm/kg did not show any protective effect. The extract was devoid of anti-inflammatory activity and did not modify spontaneous motor activity, open field performance and conditioned response in rats.

(2) *Albizzia lebeck* (Siris) :

Albizzia lebeck was studied for its CNS, hypoglycaemic and immunosuppressive activities in rats. The decoction produced a significant reduction in the locomotor activity of mice but not that of rats. Although it has also caused a significant reduction of body temperature in rats, but it failed to produce antipyretic effect in rats against yeast induced pyrexia. The drug showed no effect on other CNS parameters i.e. potentiation of barbitone induced hypnosis, anti-convulsant activity, anti-inflammatory activity, analgesic activity, CAR responses etc.

The decoction produced significant reduction in the blood sugar content of the fasting rats in acute studies as well as after one week of its administration. There was also a significant reduction in serum cholesterol and adrenal cholesterol content of these rats.

The bark decoction in the dose of 0.5 gm/kg orally also reduced the antibody titre in rats against sheep R.B.C as it was evident by haemagglutination test. These results were compared with prednisolone. These results suggest that bark decoction might be producing its immunosuppressive effect through the inhibition of T. Lymphocytes.

(3) *Amrita* :

Amrita, an Ayurvedic preparation was screened for its hypoglycaemic activity in normal fasting rabbits and glucose fed fasting rabbits. The drug in 50 ml/kg dose level showed moderate hypoglycaemic effect.

(4) *Azadirachta indica* (Nimba) :

Nimbidin, isolated from the oil of *Neem* seeds was further investigated in certain selected invitro experiments to detect whether it possessed any histamine-H₂ receptor antagonist activity. The study is in progress.

Nimbidin was further investigated to detect its activity against induced duodenal lesions in guinea pig and rats. The study is in progress.

(5) *Barringtonia acutangula* (*Dhatriphala*) :

Toxicity studies with pet. ether and ethyl acetate extracts of this plant were studied. It was observed that pet. ether extract was non toxic upto a dose of 1 gm/kg (oral). However, 10% mortality was observed at a dose level of 2 g/kg oral. Intraperitoneally ethyl acetate extract showed more toxicity.

Ethyl acetate extract potentiated pentobarbitone sleeping time. It produced a fall in B.P which was blocked by Atropine. Both the extracts failed to show any anti-inflammatory activity when tried at a dose of 500 mg/kg orally.

(6) *Benincasa hispida* (*Kusmanda*) :

Benincasa hispida (alcoholic extract) lowered fasting blood sugar level of 61.2 mg/ml to 41.6 mg/100 ml after 5 hr of administration in rabbits. The blood sugar lowering effect persisted upto 24 hours.

The extract showed no effect on carrageenin induced inflammation and open field performance in rats.

(7) *Blepharis edulis* (*Uttinajana*) :

The alcoholic extract of *Blepharis edulis* seeds was found to possess anti-inflammatory effect as tested on hind paw oedema and cotton pellet test. The extract also increased the out-flow of urine in rats suggesting a potent diuretic effect in doses only 1/10 of urea in producing similar effects. The extract can be utilised as a good diuretic agent in patients of kidney diseases.

(8) *Boswellia serrata* (*Kundururu*) :

Routine pharmacological studies were conducted. The petroleum ether and chloroform extract of *Boswellia serrata* exhibited

nonspecific antispasmodic activity. The inhibitory activity was found on rat uterus also.

(9) *Cassia tora* (*Chakramardh*) :

Cassia tora and Acetone, alcohol, benzene and petroleum ether extracts of its seeds were studied to detect the probable antifungal activity using in vitro methods. The extracts were made soluble in polyethylene glycol-400 in various concentrations and incorporated in the S-bouraud's glucose agar medium. Two species each from Trichophyton, Microsporum, Aspergillus and candida were used as test organism. All the four extracts in concentration of 0.5 and 1 mg/ml of medium did not show any antifungal activity.

(10) *Cyamopsis tetragonoloba* (*Gowar*):

The whole fruit and dried seeds were used for investigation. Hot aqueous extracts (decoction) of both were studied for hypoglycaemic effect in rabbits and for antidiabetic effect in alloxan induced diabetic rabbits. The whole fruit in 20 g/kg showed significant effect in fasting rabbits as well as in G.T.T. studies. In alloxan diabetic animals the activity of gowar (in 40 g/kg) was found to be twice that of tolbutamide (250 mg/kg). The drug exhibited activity similar to sulfonylureas and studies are in progress to detect its possible mode of action.

(11) *Cyperus rotundus* (*Motha*) :

Alcoholic extract of *Cyperus rotundus* was tested in doses of 0.5, 1.0 and 1.5 gm/kg orally for diuretic effect, in rats and it was observed that the extract showed biphasic effect on urine flow. In doses of 0.5 and 1.0 g/kg the urine flow was increased but with a dose of 1.5 gm/kg it was reduced.

Against castor oil induced diarrhoea *Cyperus rotundus* (alcoholic extract) in doses of 0.5 & 1.0 gm/kg given orally showed a protective effect at 1 hr. after drug administration but after 2—3 hrs there was no protection. *Cyperus rotundus* in a dose of 1.0

gm/kg increased ambulation, rearing and preening in rats after 1 hr. of its administration in open field test whereas the conditioned avoidance response remained unaffected.

(12) *Hemidesmus indicus (Sveta sariva)* :

2 hydroxy-4 methoxy benzaldehyde isolated from the root of the plant was screened for anti-inflammatory activity against chronic inflammation in albino rats-granuloma pouch (Selye, 1957) Drug in 100 mg/kg dose orally was found to possess significant effects. Further studies are in progress.

(13) *Iris florentina (Pushkarmul)* :

Routine studies on pharmacology were undertaken on *Iris florentina* (all the extracts) exhibited nonspecific anti-spasmodic activity. The inhibitory activity was observed on isolated rat uterus preparation

(14) *Leea aquata (Kakaganjha)* :

The chemical extraction and general pharmacology of the plant *Leea aquata* (stem and root) was carried out. Petroleum ether and ether extract of the *Leea aquata* (stem) caused reversible blockade of carbachol induced responses on rat uterus.

(15) *Nardostachys jatamansi (Jatamansi)* :

Jatamansi was tested for its anti-epileptic activity in experimental animals.

Metrazol induced convulsions were induced in albino mice. The drug in doses of 100 mg/kg i.p did not show any effect. In doses of 300 mg/kg there was 60% protection but 400 mg/kg did not show any prevention and the mortality of animals rather increased. In rats where electroshock convulsions were produced the drug showed no effect upto a dose of 403 mg/kg. Thus it had

a doubtful anti epileptic activity. However, it may be possible that prior treatment with drug for prolonged period may show some anti-epileptic effect. The studies in this direction will be performed in due course.

(16) *Nelumbo nucifera* (Kamal) :

Pet. ether, ether, ethanol, acetone and benzene extracts were tried. It is observed that none of the extracts were toxic when tried in a dose ranging from 100 mg/kg to 800 mg/kg i.p in mice. The effects if any were observed upto a period of 72 hrs. Effects of various extracts on B.P. and Respiration were studied but only Petroleum ether extract produced a fall in B.P. which was blocked by anti histaminic drug i.e. Mepyramine meclate

Acetone extract produced a dose related fall in B.P. and this fall was blocked by anti cholinergic drug i.e. atropine.

Alcohol, ether and benzene extracts of this plant also produced a fall in B.P. and this fall was blocked by atropine. There was apnoea with these extracts. Further studies are continuing.

(17) *Nymphaea alba* (Kumud) :

Nymphaea alba in dose of 0.5 and 1.0 gm/kg orally had no effect on pentobarbitone hypnosis, conditioned response, muscular coordination and open field performance in rats.

(18) *Pandanus tectorius* (Ketaki) :

Alcoholic extract of *Pandanus tectorius* (0.5 gm/kg orally) reduced urinary flow in rats. There was no effect on open field performance of rats.

(19) *Plumbago rosea* (Chitraka)

Plumbago rosea and a pure compound called plumbagin were screened for their anti tumour activity in selected cancer patients.

P. rosea was administered to patients orally as crude drug in tablets from and the results of the limited clinical trial are yet to be assessed.

Plumbagin as suspension in 0.5% gm acacia in tissues culture experiments using chick fibroblasts exhibited very significant anti-mitotic activity. Further investigations on this are in progress

Simultaneously plumbagin isolated from this plant was also subjected to detailed toxicological investigations. Experiments were also planned to study its effect in male fertility in rats. These studies are in progress.

(20) *Pongamia pinnata* (Karanja) :

The aqueous extract from the stem bark of this plant was subjected to preliminary investigations to detect its CVS effects in experimental models.

(21) *Punica granatum* (Anar) :

Punica granatum extract in a dose of 1.0 gm/kg orally increased pentobarbitone sleeping time by 27.0 per cent but a dose of 2.0 gm/kg did not modify the time. The extract in dose of 1.0 and 2.0 mg/kg orally increased the pain reaction time in rats when tested by Techno analgesiometer but this increase was not statistically significant. There was slight impairment of muscular coordination in extract treated rats. The extract (1.0 & 2.0 gm/kg orally) provided protection against castor oil induced diarrhoea at 3rd hr. but the total number of diarrheal droppings in drug treated rats were not reduced during the 4 hr. period of observation. A relaxant effect was seen on isolated rabbit's ileum and rats uterus.

(22) *Quercus infectoria* (Majuphal) :

The alcoholic extract of *Quercus infectoria* was found to cause peripheral vascular dilatation and lowering the blood pres-

sure which may probably be responsible for its temperature lowering effects. Further, there were no marked pharmacodynamic effects either on heart and smooth muscle, and possessed very low toxicity.

(23) *Rubia Cordifolia* (Manjista) :

None of the extracts were found to possess any toxic effects in mice when tried by oral and intraperitoneal routes. (doses oral 250-500, 1000 mg/kg & 250 & 500 mg/kg i.p).

Both the extracts i.e. petrol and ethyl acetate extracts of this plant failed to show any significant effect on isolated heart, ileum, rectus muscle etc.

(24) *Salacia prinoides* (Saptarangi) :

Decoction and infusion of the root bark of the drug in 1g/kg showed significant hypoglycaemic activity in rabbits.

(25) *Scirpus kysoor* (Kaseru) :

General pharmacological screening was done. The petroleum ether and methanol extract of *Scirpus kysoor* showed antispasmodic activity in the dose of 50-300 mcg/ml and is found to be of nonspecific type. The Methanol extract potentiated the effect of isoprenaline on tracheal smooth muscle.

(26) *Sida rhombifolia* (Mahabala) :

Alcoholic extract of *Sida rhombifolia* was found to inhibit the development of oedema after injections of carragenin in hind paw of rats. The extract was found to be only 1/10 as potent as hydrocortisone with regard to its anti-inflammatory effect. The inflammatory effect of *sida rhombifolia* was also confirmed by granuloma pouch test as well as by cotton pallet methods. These anti-inflammatory effectiveness studies indicate for its use in arthritic and other anti-inflammatory conditions.

The alcoholic extract of *Sida rhombifolia* was found to cause rise in carotid blood pressure followed by a fall. The pressor response was found to be blocked after alpha adrenergic blockade. The alcoholic extract in doses 100 ug to 200 ug caused a significant bronchodilator response and in much smaller doses potentiated the adrenergic bronchodilator response in air perfused isolated rat lung. The drug also caused relaxation in intestinal tone and potentiated the adrenergic response on rabbit ileum. It inhibited the constrictor responses on isolated tracheal chain preparation.

The alcoholic extract of *Sida rhombifolia* increased the force of contraction of isolated rabbits and frog's heart. This stimulatory effect was blocked by propranolol. The extract, like adrenaline, also caused vasoconstriction as indicated from the decrease in out-flow in hind limb perfusion experiment of rats.

(27) *Swertia chirata* (*Kairata*) :

Chloroform extract of *Swertia chirata* exhibited neuromuscular blocking activity on rat phrenic nerve diaphragm, frog rectus abdominis, chick biventer cervicis muscle, crumaster muscle of guinea pig, anterior tibialis nerve muscle preparation of cat and dorsalis muscle preparation of *Ascaris lumbricoides*. The contraction of frog rectus at high doses and contraction of chick biventer cervicis suggest that the activity is of depolarizing type while inhibition of acetylcholine induced responses on frog rectus (at low doses) and crumaster muscle of guinea pig, partial blockade by neostigmine on rat phrenic nerve diaphragm and anterior tibialis nerve muscle of cat, suggest that the activity is of D-TC type. The neuromuscular blocking activity was also observed on dorsalis muscle preparation of *Ascaris lumbricoides* while the ether extracts and petroleum ether extracts exhibited only 50% and 40% anthelmintic activity respectively where as chloroform, methanol and water extracts did not show any significant anthelmintic activity.

(28) *Tarvanduram* :

This drug significantly prevented Shay ulcers with 480 mg/kg dose orally and afforded partial protection against histamine

induced gastric lesions in guinea pigs and drug induced duodenal ulcers in rats.

(29) *Terminalia arjuna* (Arjun) :

Cardiovascular effects :

Terminalia arjuna was studied for its cardiovascular effects. The alcoholic extract of this plant produced a consistent lowering of blood pressure and bradycardia in anaesthetised dogs. The mechanism of hypotensive response was studied in detail. Its effect was studied on pressor responses induced by bilateral carotid occlusion, norepinephrine responses and electrical stimulation of preganglionic fibres of abdominal splanchnic nerve.

It blocked the carotid occlusion response.* Intracerebroventricle (ICV) injection of the drug in small doses produced a prolonged hypotension and bradycardia. Similarly intra-arterial injection in vertebral artery produced a long lasting effect in small doses. Thus the extract appears to be acting through the CNS neurones. However, experiments with isolated head cross circulation will finally prove this contention. As the drug possesses low toxicity it may be tried in hypertensive patients

(30) *Withania somnifera* (Aswagandha) :

(i) Adaptogenic properties.

Withania somnifera was earlier reported to possess adaptogenic properties. An attempt was made to analyse the mechanism of such activity in the present study. The experiments were carried out in 120 albino mice. 60 animals were adrenalectomised. *W. somnifera* was given for 5 days in doses of 100 mg per kg orally in one group Sam group (control) and non adrenalectomised normal controls and adrenalectomised control were also taken. Swimming performance was taken for all 4 groups and swimming time was compared. The *Withania somnifera* treated group showed increased performance while in adrenalectomised group there was marked reduction in swimming time.

These findings suggest that the adrenal glands which normally function to combat stress are not necessary for anti-stress effect of *W. somnifera* and the hypophysial hypothalamo-adrenal axis does not play role in its adaptogenic effect. However, more work is in progress to establish its loci of action.

(ii) Antitumor activity

Withania somnifera was also studied for antitumor activity in albino mice against urethane induced lung-adenomas. The lung adenomas, were produced by injecting urethane/s/e twice weekly for seven months. All the group of animals (drug treated or normal control) were kept on same diet and environmental conditions. *W. somnifera* was administered per orally daily during the whole course of the study. On completion of 7 months all the animals were sacrificed and macroscopic and histological examination was carried out. The extract inhibited the formation of adenomas. Thus it appears to have antitumor potentials which needs further investigations for confirmation of such an activity.

(31) Antileprosy Drug :

The following studies were carried out on this drug :—

(i) Surface anaesthetic activity :

The study was conducted on rabbits eye and the effect was compared with Xylocaine. The drug was devoid of any significant surface anaesthetic activity.

(ii) Analgesic activity :

Antileprosy drug in a dose of 40 mg/kg orally was found to possess significant analgesic activity by analgesiometer.

(iii) Anti-inflammatory activity :

The effect was tested by carrageenin induced rat hind paw odema in ordinary and pretreated rats. The drug in a dose of 40 mg/kg was was found to possess statistically significant anti-inflammatory activity.

(iv) Hypnotic activity :

Pentobarbitone sodium was given to induce hypnosis in rats but it was observed that the drug has no hypnotic effect.

Effects on Isolated Guinea Pig Ileum :

The drug was found to increase the tone and the amplitude at a dose of 8 mg/ml.

Effect on Dog Blood Pressure :

It was found to have hypotensive effect. Further studies are in progress.

Tranquilizing Effect :

The effect was studied by Rota Rod method but it was observed that the drug had no significant effect.

Spasmodig Effect

The spasmodic activity was studied on rabbits fundus strip, isolated rat's colon, and rat's uterus. The drug in a dose of 6—10 mg/ml showed spasmodic activity which could be blocked by atropine.

Toxicity Studies :

The drug was given in dosages of 120—140 mg and 160 mg/kg orally to albino mice. It produced facial clonus and sedation after 15 minutes. No mortality was seen within 24 hrs. Sub-acute toxicity studies on rabbits are in progress.

(31) RDGI

A Saponin, isolated from *Randia dumatorum* supplied by CSMRI Madras was screened for its CVS effects in certain experimental models. Acute toxicity studies in mice showed that its LD 50 was 5.07 mg/kg i.p.

(32) Ayush-14

i. Acute toxicity study of Ayush-14 in rats by oral route has been completed. No mortality was observed upto dose of 40 g/kg.

ii. Sub-acute toxicity of Ayush-14 by oral route : In this study the compound was administered in doses of 250-500 mg/kg to the rats of either sex for a period of 4 weeks. No mortality, effect on body weight and food intake was observed during this period.

(33) Urine Therapy :

Pharmacological evaluation, including toxicity studies on urine therapy in rats was carried out during the year. Fifteen-days administration of rat's, cow's and human urine to young castrated male rats showed that urine therapy did not exhibit any toxicity in rats. But auto-urine therapy and human urine therapy showed apparent anabolic effects in rats.

Drug Standardisation Projects

Captain Srinivasa Murthy Research Institute, Madras.

During the year under report chemical investigation of the following plants were carried out as a result of which the active principles of the same have been characterised with a view to indentify possible structure action relationship:

1. *Pogostemon heyneanus* Benth (*Kadira Pachai* (Tamil))
2. *Plumbago zeylanica* Linn. (*Chitraka*)
3. *Swertia chirata* Buch Ham. (*Chirata*)
4. *Myristica fragrans* Houtt (*Jatipatry*)
5. *Aerva lanata* Juss (*Pashanabheda*)
6. *Ochna squarrosa* Linn (*Kanaka champa*)
7. *Oldenlandia auriculata* K. Schum (*Kadala churuki*, Malayalam)
8. *Physalis minima* Linn. (*Tankari*, Tamil)
9. *Desmodium gangeticum* DC (*Shalaparni*)

Analytical Standards were laid down for the following formulations after preparing the same in the Institute in addition to the samples sent from the Council :

1. *Avipathikara Churna*
2. *Bhaskara lavana Churna*
3. *Lohasav*
4. *Draksharista*
5. *Amiritarista*
6. *Kumaryasava*
7. *Ashwagandharista*
8. *Abhayarista*
9. *Triphala Ghrita*

This Institute has analysed the samples of *shilajit* collected during the special survey of Laddhak. The study so far conducted on various types of *shilajit* has kept out of picture viewing *shilajit* as a dried latex of the plant but still it has been felt necessary that further confirmatory studies are needed to draw specific conclusions.

Process standardisation of *Asava & Arista* is also being undertaken. Pharmacognostic studies of the following durgs together with market samples was also carried out in certain instances :

1. *Bambusa bambos* Druce. (*Vamsha*)
2. *Saccharum officinarum* Linn. (*Ikshu*)
3. *Solanum nigrum* Linn. (*Kakamachi*)
4. *Cryptolepis buchmanii* Roem. & Schult. (*Krishna sarvia*)
5. *Cedrus deodara* Roxb. (*Devadaru*)
6. *Carum carvi* Linn. (*Krishna Jiraka*)
7. *Cyperus rotundus* Linn. (*Musta*)
8. *Vicoa indica* DC. (*Banjauri* (Hindi))

Anti bacterial activity of *Khadira rista* against *E. Coll S. Dublin*, and *Staph. aureus* was carried out, besides the screening of *Amritharista* for its activity against *S. Paratyphi* and *S. Dublin*.

The studies on methyl cholanthrene induced fibrosarcoma, on westertype of rats to assess the efficacy of Phytochemicals like PFI, PF2, and WS 280 are carried out. LD₅₀ studies on plumbagin in albino mice continued as also the studies of ED₅₀ of the same isolate. Histopathological studies of vital organs of fibrosarcoma induced wistar rats at different dose levels were carried out.

The oxytocic and abortifacient effects of physallin-x are under investigation. The studies related to anti-implantation activity of Embelin are in process.

Combination therapy consisting of RGX and STG for various types of cancer are in progress in collaboration with CRI, Siddha.

Regional Research Centre, Bangalore.

Standardisation wing of this centre has prepared the following formulations and laid down the standards :

1. *Mahayogaraja Guggulu*
2. *Manjisthadi Quath churna*
3. *Ichabhedhi Rasa*
4. *Saptamritha Loha*
5. *Kanchanara Guggulu*
6. *Chandramrita Rasa*
7. *Chyavana Prasha Avaleha*
8. *Dhatri Loha*

Standards were laid down for the following authentic drug samples to facilitate identifying adulterents :

1. *Kanchanara (Bauhinia variegata Linn)*
2. *Shatavari (Asparagus racemosus Wild)*
3. *Varuna (Crataeva nurvala Buch Ham)*
4. *Vijaya (Cannabis sativa Linn)*
5. *Nagabala (Sida spinosa Linn)*
6. *Vijayasara (Pterocarpus marsupium Roxb)*
7. *Vidari (Pueraria tuberosa DC)*
8. *Raktachandan (Pterocarpus santalinus Linn)*
9. *Dhatuira (Dhatuira metel Linn.)*

Chemical studies on the following plants were also carried out :

1. *Operculina turpethum (Trivrit)*
2. *Hedychium spicatum (Shathi)*
3. *Cyperus rotundus (Musta)*
4. *Pterocarpus marsupium (Asana)*
5. *Solanum indicum (Brihati)*
6. *Commiphora mukul (Guggulu)*

7. *Sida cordifolia* (Bala)
8. *Crataeva nurvala* (varuna)

Detailed pharmacognostic studies were carried on *Vetivera zizanioides* (L) Nash (*Ushira*) *Operculina turpethum* (L) Silva Manso (*Trivrit*), *Zingiber officinale* Rose (Shunthi), *Trachyspermum roxberghianum* DC (Ajamoda) and *Cyperus rotundus* (Musta).

Amalgamated Unit, Tarikhet.

During the period under report following preparations were prepared and laid down the standards of the finished products as well as for their method of manufacture, by the Standardisation wing of this project :

1. *Yasada Bhasma*
2. *Sringa Bhasma*
3. *Abhraka Bhasma*
4. *Yavakshara*
5. *Kumarya ava A*
6. *Kumarysava B*
7. *Trivanga Bhasma*
8. *Makaradhwaja*
9. *Swarnavanga*

The Pharmacognostic studies on the following single drugs were carried out beside their alleged/market samples :

1. *Scindapsus officinalis* Schott. (*Gaj.pippali*)
2. *Piper longum* Linn. (*Pippalimula*)
3. *Juniperus communis* Linn. (*Hapusha*)
4. *Pluchea lanceolata* Oliver & Hiern. (*Rasna*)
5. *Curcuma longa* Linn. (*Haridra*)
6. *Glycyrrhiza glabra* Linn. (*Yastimadhu*)
7. *Symplocos racemosa* Roxb. (*Lodhra*)

8. *Mucuna pruriens* Bak. (*Atmagupta*)
9. *Blepharis edulis* Pers. (*Utingana*)
10. *Hingaptri*
11. *Baliospermum montanum* Muell-Arg. (*Danti*)
12. *Operculina turpethum* (L) Silva Manso. (*Trivrit*)
13. *Piper chaba* Hunter (*Chavya*)
14. *Salmalia malabarica* Schott & Endl. (*Mocharasa*)

Fluorescence analysis of the following were also carried out :

1. *Aegle marmelos* (*Bilwa*)
2. *Premna integrifolia* (*Agnimantha*)
3. *Piper nigrum* (*Maricha*)
4. *Mesua ferrea* (*Nagakeshar*)
5. *Solanum xanthocarpum* (*Kantakari*)
6. *Pueraria tuberosa* (*Vidari*)
7. *Picrorhiza kurroa* (*Katuki*)
8. *Hyoscyamus niger* (*Krishna Jiraka*)
9. *Carum carvi* (*Shveta jiraka*)
10. *Uraria picta* (*Prasniparni*)
11. *Elettaria cardamomum* (*Ela*)
12. *Syzygium caryophyllatum* (*Lavanga*)
13. *Zingiber officinalis* (*Shunthi*)
14. *Plumbago zeylanica* (*Chitraka*)
15. *Riddhi*
16. *Vridhi*
17. *Inula racemosa* (*Pushkaramula*)

Steps have also been taken to standardise the drugs used in Encephalitis programme and as well as those which are under Multicentred studies, such as AYUSH-56, 57, 64, AYUSH-AC₄ etc.

Effect of shelf life, light as well as glass and plastic containers on the following formulations are under study :

1. *Dashanga lepa*
2. *Pravala Pisti*
3. *Dhatri loha*
4. *Shankha Dravaka*
5. *Punarva Mandoora*
6. *Panchamrita Parpati*
7. *Chandrodayavarti*
8. *Palasha Kshara*
9. *Mahayogaraga Guggulu*
10. *Makardhwaja*

Drug Standardisation Research Unit, Junagadh

During the period under report this Project carried out the following :—

Flourescence analysis of *Madhuca* (*Madhuca longifolia*), *Indravaruni* (*Citrullus colocynthus*), *Mocharasa* (*Salmalia malabarica*) *Vatsa nabha* (*Aconitum ferox*), *Nagakeshara* (*Mesua ferrea*), *Hapusa* (*Sphaeranthes indicus*), *Katurohini* (*Picrorhiza kurroa*), *Haridra* (*Curcuma longa*), *Daruharidra* (*Berberis aristata*), *Lodhra* (*Symplocos racemosa*), *Saptaparna* (*Alstonia scholaris*), *Parpata* (*Fumaria parviflora* and *Ativisha* (*Aconitum heterophyllum*) were carried out.

Chemical studies of the following was carried to destinguish between the authentic and adulterated specimen :

- Lodhra* (*Symplocos racemosa*)
- Saptaparna* (*Alstonia scholaris*)
- Kramuka* (*Area catechu*)
- Gajapippali* (*Spondias pinnata*)
- Nagakeshara* (*Mesua ferrea*)

Katurohini (Picrorrhia kurroa)
Ativisha (Aconitum heterophyllum)
Murva (Marsdenia tenacissima)
Rasna (Pluchea lanceolata)

Detailed standardisation studies on *Lavangadi Vati*, *Avipattikara Churna* and *Lavana Bhaskar Churna* were carried out.

Studies on the effect of glass and plastic containers on *Brahmi ghrita* and *Guduchi satva* is initiated.

Besides the above studies bibliographic collections were also made on some plants entering into composition in the finished products. A few line drawings of some of the plants were drawn.

Regional Research Institute, Trivandrum

Standardisation section of this Institute has taken steps to standardise following finished Products and single drugs.

1. *Ami Taila*
2. *Agasthya Rasayana*
3. *Nirgundi Taila*
4. *Sahacharadi Taila*
5. *Vasavaleha*
6. *Dashamoolarista*
7. *Pancha Tikta Chrita*
8. *Dhanwantara Taila*
9. *Rasnadi Kashaya Churna*
10. *Lavangadi Vati*
11. *Aragwadha Keram*
12. *Patolamuladi Kwatha*
13. *Sapta Sara Kwatha*
14. *Dadimadi Kwatha*

15. *Bilwadi Kwatha*
16. *Dashamularista*
17. *Kumaryasava A & B*
18. *Chitrakadi vati*
19. *Shankha Vati*
20. *Khadiradi vati*
21. *Dhanwanthari gutika*
22. *Sanjivani vati*
23. *Rajah Pravarthini Vati*
24. *Gomdharva Hasta Taila*
25. *Nirgundi Taila*
26. *Jambu* (*Syzygium cumini* (L.) Kuls)
27. *Jayopala* (*Croton tiglium* Linn.)
28. *Bakuchi* (*Psoralea corylifolia* Linn.)
29. *Jambira* (*Citrus limonia* Osbeck.)
30. *Vacha* (*Acorus calamus* Linn.)
31. *Shotapushpa* (*Peucedanum graveolens* Benth & H.)
32. *Devadaru* (*Cidrus libani* Var. *deodara* Hook. f.)
33. *Ativisha* (*Aconitum heterophyllum* Wall.)

Besides above, process standardisation on *Asava* & *Taila* are also undertaken, and also the study of shelf life of *Kashayas* using indigenous source like Turmeric & black pepper.

Preliminary Drug Standardisations Project, Jamnagar.

During the period under report Analytical standards were laid down for (i) *Hingvastaka churna*, (ii) *Samudardya churna* (iii) *Sanjivini Vati*, (iv) *Chitrakadi gutika* (v) *Shankha vati* and under the programme of shelf life period the following four formulations were studied.

- (i) *Vaishwanara Churna*.
- (ii) *Sitopaladi churna*

(iii) *Hengvashaka churna*

(iv) *Samudradya churna*

The shelf life study of *Sanjivini vati*, *Chirakadi gutika* and *Shankha vati* is in progress.

Studies on the preservatives on the finished formulations are in progress.

Under the programme of standardisation the formulations, included in the WHO medicare programme, the following have been taken up for working out preliminary analytical standards :—

1. *Madhushukhī Rasayana*
2. *Dashamula Kwathā*
3. *Kutajaghana Vati*
4. *Pancha Tikta ghrīta guggulū*
5. *Gangadhara Churna*
6. *Vishagarbha Taila*
7. *Panchaguna Taila*
8. *Kamadudha Rasa*
9. *Gandhaka rasayana*
10. *Hridayarnava Rasa*
11. *Lepa guti*
12. *Punarnava Mandoor*
13. *Yavakshara*
14. *Maharasnadi Kwatha*
15. *Punarnava guggulu*
16. *Sudarshana ghana vati*
17. *Astanga lavana*
18. *Satavaryadi Churna*
19. *Swadista virechana Churna*
20. *Satavari Mandura*

21. *Navajeevana Rasa*
22. *Visha Tinduka Vati*
23. *Lavanga Taila*
24. *Maha Shankhavati*

Under the programme 'Standardisation of Rural Health Scheme Kit Drugs,' the following have been analysed and their date recorded :

1. *Panchaguna Taila*
2. *Kampillaka Churna*
3. *Sanjivani godanti Mishrana*
4. *Godanti Pippalimoola Mishrana*

Besides above analytical standards for the drugs included in the Multicentred studies are also being worked out.

Preliminary Drug Standardisation Research Project, Varanasi.

During the period under report the analytical data on the following formulations and those of WHO medicare Programme and Rural Health Scheme formulary were laid down :

1. *Chandraprabhavati*
2. *Sitapaladi Churna*
3. *Khadiradi gutika (Kasa and Mukha rogadohikara)*
4. *Jatiphaladi churna*
5. *Karpura Rasa*
6. *Lashunadi vati*
7. *Bilwadi vati*
8. *Simhanada guggulu*
9. *Yogaraja guggulu*
10. *Shankhavati*
11. *Jatyadi Taila*
12. *Tribhuvana Keerti godanti Mishrana*

13. *Sanjivani godanti Mishrana*
14. *Godanti Pippali Mula Mishrana*
15. *Shankha Suthashekhar Mishtana*
16. *Suta shekhara Rasa*
17. *Lakshmi Vilas Rasa*
18. *Arogyavardhini*
19. *Pravala Pisti*
20. *Mukta Pisti*
21. *Jaharmohara Pisti*
22. *Sangeyashab Pisti*

Chemical studies on the following 4 species of *Bauhinia* were carried out (i) *B. variegata*, (ii) *B. racemosa* (iii) *B. purpurea* and (iv) *B. vahlii*.

Standardisation studies on the drug included in the Multicentered study is also in progress, besides analysing some of the samples sent by the Headquarters Office.

The study of shelf life and as well as the effect of Porcelene and Plastic container on *Asava* and *Avaleha* is in progress.

Drug Standardisation Research Enquiry, Vijaya wada.

This enquiry has designed a technique to identify *bhasmas* and *Sindooras* using *Kashayas* and other materials based on principles of Chromatography. According to this process, the studies were carried out to differentiate in between *Pravala bhasma*, *Shankha bhasma*, *Varatika Bhasma*, *Sukti Bhasma*, *Shringa bhasma* and *Mukta Bhasma*. Besides above, various effects, on Chromatography using different forms of *Rasa* is also studied.

Literary Research Programme Including History of Indian Medicine-(78-79)

I. Literary Research Unit-T M S S.M. Building, Thanjaur.

The literary Research Unit functioning at TMSSM Library buildings, Thanjaur brought out printed critical editions of Bhela Samhita and Bheshaja Kalpa. The work on the following have been completed and are ready for final scrutiny.

1. Ashtanghrdaya Tamil Translation
2. Chikitsamritasagara
3. Aswachikitsa

Rasarajalakshmi, Netraprakasika (12 Batalas) and Chikitsamritsagara of Devidasa of about 13th century were copied and edited.

5 Tarangas of Chikitsamritasagar out of 59 Tarangas were scrutinised. The work relating to Hindi Translation of Satasloki of Avadana Saraswathi has been taken up and press copy is under preparation.

II. Documentation & Publication Division :

A Bibliography of published articles on Indian Systems and Homoeopathic medicines is under preparation. Approximately 13,000 articles have been collected. Steps are in process to classify them under subject heads. So far 8,400 articles of Ayurveda and allied subjects have been classified. Textual references from Charaka, Susruta and Astanghrdaya for 325 drugs have been gathered. About 7,000 references on 138 drugs have been collected. 3,000 herbarium sheets are housed in the Centre. They have been identified. 167 herbarium sheets have been sorted out from out of the list of 325 drugs. The Centre has a drug museum with 300 samples. They are being arranged according to *Ganas/Vargas* mentioned in Samhitas and Nighantus. A chart is under preparation. The library of the Centre has about 5,300 books relating to different subjects/disciplines. Photographic section brought out colour and other

photographs in addition to microfilming rare Ayurvedic works borrowed from different libraries in the Country. The Centre has associated itself with seminars and exhibitions arranged by the Council.

III Indian Institute of History of Medicine :

The Institute has brought out papers on medical topics like The fever sage of Skandapurana, Pragmatic Creator Physician, Creator Physician and Pragmatism of Vishnu in health and healing from non-medical sources.

The paper dealing with biography of the commentator Gayadasa was published during the year. The institute participated in the second Scientific Seminar of CCRIMH at New Delhi by presenting a paper on : "Development in biography writing on the commentators of Vrddha-triyi".

The work on history of the disease shlipada has been taken up. The library and medico historical museum have provided valuable guidance to postgraduate students, scholars and others interested in medical historiography. The research staff participated in the seminar on Leucoderma held by C.C.R A.S. at Hyderabad as observers. Third and fourth issues of the seventh volume of the Bulletin were released during the year. Micro-films of two manuscripts entitled Rasasutrabhidhana and Sanjivani commentary have been procured and are being copied for further detailed study

IV Amchi Research Unit, Leh-Ladakh :

The Unit has added 42 rare works relating to Amchi system making the collection to a total of 120 The unit purchased 20 reference books on Amchi medicines thereby initiating a nucleus for library on Amchi medicine.

The Unit has also carried out surveys to locate the sites where 'Shilajet' is available (1) Timisgam, (2) Hemis-Shookpachen, (3) Dumkhar, (4) Skinding, (5) Sapi, (6) Zanskar range, (7) Satsedo and (8) Hardas (Kargil) are a few areas identified by the team.

161 herbal and mineral medicines from various parts of Ladakh were collected. The Unit collected medicines required for the work on clinical problems from different mountain ranges. Of the 161 medicines, 61 herbal/mineral medicines were identified, with the help of medicobotanical survey team of Jammu which visited Ladakh last year. 67 herbal medicines were sent to the team for exact identification.

A paper entitled on 'Evaluation of Tibetan Medicine' was presented at conference of scientists of CCRIMH held at New Delhi on 26th December, 1979. The preliminary working steps regarding Arthritis (*Teekdum*) and peptic ulcer (*Padsmook*) in accordance with Amchi System, medicines are being worked out.

Family Welfare Research Projects of the Council during the year 1978-79.

The Council is engaged in the screening of oral contraceptive agents (drugs/recipes) both at clinical and chemico pharmacological levels with a view to evolve a safe and acceptable non-steriodal contraceptive from indigenous sources. This chemico-pharmacological screening programme is taken up at Bhubneshwar, Trivandrum, Jamnagar, and Varanasi. The studies involving clinical studies are taken up at Bombay, Lucknow, Varanasi, Patiala, Calcutta, Madras, Trivandrum, Jaipur and also in other major institutes of the Council. The results of the study carried out under the project are as hereunder :

(A) Chemico pharmacological screening studies :

Laksha (Cocos lacca) : The studies carried on experimental models with rats showed 30% and 50% anti implantation activity and 35% to 57% of foetal loss in the dose of 10 and 50 mg/100 g. body weight, respectively.

Patherchitti (Coleus) : This drug showed 43.8% anti implantation activity and 48.2% foetal loss at the oral dose of 10 mg./100 g. body weight in albino rats.

Ayush-63 : This coded drug showed 57.1% anti implantation activity and 63.5% of foetal loss at an oral dose of 100 mg/100 g. body weight in albino rats.

Banjauri (Vicoa indica) : This drug in albino rats exhibited 50% and 62.5% of anti implantation effect and 62.5% and 75% of foetal loss in the dose of 1 g. and 2 g./100 g. body weight respectively. At the dose of 5 g./100 g. it showed only 16.6% anti implantation activity and 33.3% foetal loss. Further trials are considered necessary on different species of animals.

Preliminary studies carried out with *Ashoka (Saraca indica)* and *Kramuka (Areca catechu)* produced 55.5% and 50% anti implantation and 28.5% and 50% foetal loss at the dose of 100 mg/100 g and

10 mg./100 g. body weight respectively in albino rats.

Vidanga (Embelia ribes) : An active principle embelin obtained from the drug caused a significant decrease in glycogen and an increase in alanine amino transferase activity in the uterus and decreased significantly lactic acid in the uterine fluid in mated rats.

Further, in ovariectomised rats, embelin caused a significant decrease in alkaline phosphates and an increase in alanine amino transferase activity in the uterus when given along with EDP, while embelin alone did not show any effect. Embelin when administered with EDP, showed in the cervix a significant reduction of total protein, alkaline phosphates and alanine amino transferase.

Chemical, biochemical and pharmacological studies on certain claims received by the Council relating to their contraceptive potential has been carried out with little or no success, yet further studies are in progress for confirmation.

(B) Clinical Studies :

The clinical screening projects engaged in the evolution of oral contraceptive agents have taken up large scale screening of Ayush AC₄ and K capsule in view of the beneficial results observed at experimental studies, and pilot clinical studies. The programme envisages follow up upto 36 cycles of eligible female subject, the conclusive data may be available only after completion of the target period, though, however, presumptive assumptions may be made after a follow up of 24 cycles or so if physiologic factors are eliminated. Each centre has been advised to study a minimum of 30 subjects for 36 cycles. So far these centres have given the drug to 595 subjects, after considerable motivation to a larger section of the population. 174 are continuing the drug, while 421 subjects dropped out during the trial due to varied reasons like their shifting the place, or seeking a surgical approach to obviate the monthly exercise or taking oral remedy or at times going for a pill at the advice of neighbours or friends etc.

The Council's chemico-pharmacological Unit functioning at Medical College Trivandrum was the recipient of Gold Medal from Gujarat Ayurved University, Jamnagar, instituted by Hari Om Ashram Trust for the contraceptive studies carried out on one of the formulations.

SIDDHA

Clinical Research Institute (Siddha) Madras.

The Central Research Institute (Siddha), functioning in Madras, has the following wings and sections in order to undertake research both at clinical and experimental levels in certain selected conditions :

- I. Clinical
- II. Pharmacy
- III. Bio-Chemistry
- IV. Pathology
- V. Pharmacology.

I. Clinical Wing

The clinical wing comprises of 50 bedded I.P.D., O.P.D. and pharmacy section. The following problems were taken up at I.P.D. during the reporting period.

1. *Valigunmam* (Peptic ulcer)
2. *Putrunoi* (Cancer)
3. *Manjal Kamalai* (Infective Hepatitis)
4. *Grahani* (Mal-absorption Syndrome)
5. *Murai Jwaram* (Malaria)

Valigunmam (Peptic Ulcer) :—

During the reporting year, 147 cases were recorded. *Thambira Chendooram* prepared with *Karunthulasi Saru* (Juice extracted from *Ocimum basilicum* Linn. and added with *Chokkara Chunnam* (P 6) was administered as a trial drug to the cases admitted. The clinical assessment was made on the basis of Siddha methodology as well as by the modern parameters. The trial drug (P 6) was administered in all the cases of *Valigunmam* admitted in the ward in three courses and response was encouraging. No toxic effects were observed.

Out of 147 cases, 77 had complete cure, 19 showed partial relief and 45 cases were discharged against medical advice and remaining two

cases are undergoing the treatment currently. The follow up studies are in progress. The majority of the cases admitted were of duodenal ulcer. Some cases of pyloric obstruction and duodenitis were also noticed.

Putrunoi (Cancer) :—65 cases of 21 varieties of the cases were recorded during the period under review. The clinical assessment was made in all the cases on the basis of Siddha methodology as well as modern parameters such as X 'Ray, biopsy, and biochemical parameters. Further special parameters like serum mucoids, rosette formation test and DNFB test were also carried out.

RGX, a coded drug formulated by the Institute was administered to the cases admitted. The coded drug has *Serankottai (Semecarpus anacardium)* as a major constituent. Encouraging clinical response was noticed. In order to reduce/relieve the agonising pain, another coded drug STG, a steroidal alkaloid glucoside from *Solanum trilobatum* possessing antimetabolic-cum-antibiotic properties was combined. The combination helped in the regression of the disease to a considerable extent. Apparent clinical improvement was observed. There has been rapid reduction of seromucoid levels initially. After certain stage, the prognosis of the cases reached a static level and seromucoid level still on the higher side. In order to accelerate the process of regression and ultimately cure, yet another anti-cancer drug VK2, obtained from *Plumbago zeylanica* as main ingredient was introduced. Irradiation or surgery was used in certain cases. The combination thereby proved beneficial with three cases of squamous cell carcinoma.

Manjal Kamalai (Infective Hepatitis) :—

Karisalai Kalkam and *Amanakku Kalkam* were chosen under the research programme on Manjal Kamalai.

Karisalai Kalkam : at a dose level of 1000 mgs twice a day with butter milk for a period of three weeks was administered in the cases of Manjal Kamalai. 13 cases were admitted during the reporting year out of which 5 cases were cured.

Amanakku Kalkam : at a dose level of 2 gms twice daily with palm jaggery and water for a period of three weeks was administered in the

cases of Manjal Kamalai. 27 cases were admitted, out of which 8 were cured.

Grahani (Mal-absorption Syndrome) : — Only two cases were admitted and the trial drug *Naga Barpam* with a dose level of 300 mgs twice a day for a period of 15 days was administered.

Murai Jwaram (Malaria) :—

The study has been taken up recently with the trial drug supplied by the Headquarters. The study is under progress.

The studies on *Mathu megam*, *Swasakasam* and worm infection were conducted at OPD levels and the studies are in progress.

40,960 cases were attended at the O.P.D. during the year under review, out of which 2,836 cases, pertaining to the research problems, were taken up by the Institute. The minimum average of 125 cases were attended daily at O.P.D. The table below shows the total cases attended/admitted in O.P.D. and I.P.D. during the year under review :-

	OPD		IPD
	New	Old	
Valigunam	588	1902	147
Putrunoi	80	137	65
Manjal Kamalai	127	—	40
Grahani	3	—	3
Murai Jwaram	—	—	3

II. Pharmacy Wing

The Pharmacy section of this Institute is established to meet the demand of O.P.D. and I.P.D. cases of the Institute. During the reporting year about 70 medicines of different types were prepared in the Pharmacy. Six formulations were also prepared exclusively for research purpose.

III. Bio-Chemistry Wing

This section has carried out required bio-chemical investigations like blood sugar estimation, *estimation of urea, serum cholesterol levels*

besides haematological studies all *serum uric acid*, *serum creatinine*, *SGOT*, *SGPT* and paper electrophoresis have also been standardised.

Estimation of mercury in vital tissues to know of sub-acute toxicity of Lingax Chendooram was made in long time use.

IV. Pathology Wing

This is fully equipped to undertake all types of routine work. The three main fields of activity of this wing are shown as under :—

1. Cytological screening of all suspected cases of cancer.
2. Histological study of *biopsy specimens*, of both in-patients and out-patients for establishing a definite diagnosis of malignancy before treatment. Attempts have also been made to assess the efficacy of treatment.
3. Microscopic examination of organs from experimental animals to study the toxic effects and pharmacological actions of drugs like Laksha, *AC-I*, *AC-IV*, Linga Chendooram etc.

V. Pharmacology Wing

This section is engaged in conducting the pharmacological and toxicological investigations on Siddha preparations and is also evaluating them for antifertility effectiveness. The progress made by this section during this year is as under :—

Anti-fertility : The drugs like *Ayush-AC-I*, *AC-IV*, *Laksha* have been studied for their *anti-implantation*, *anti-estrogenic* abortifacient activities with different graded doses. Further detailed acute and sub-acute toxicological, haematological, Histopathological studies on these drugs were also conducted.

The anti-pyretic activity with lower doses of *Linga Chendooram* a Siddha drug was screened. The *acute* and *sub-acute* toxicities along with *haematology*, *histopathology* and *mercury estimation* in vital tissues were also conducted. The drug was screened against two different

phases of inflammation viz. acute (carrageenin induced rat paw-oedema) and sub-acute (cotton pellet granuloma) phases and *the drug* was found to be significantly effective. Gangetin in a dose of 100 mg/kg showed a significant anti-inflammatory activity. Studies are also being carried out with this drug to study its anti-pyretic, analgesic and anti-inflammatory activity.

Acalypha indica : (whole plant), Echitamine hydrochloride and *Evolvulus alsinoides* showed mild anti-pyretic effect. Further work is in progress.

Embelia ribes, *Swertia chirata*, *Caesalpinia bonducella* and *Amrita* were studied for their acute toxicity. Embelin was found to be fairly toxic in dose of 250 mgs/kg onwards. 16.66% mortality occurred with 250 mg/kg of *Swertia chirata* but no mortality except general depression occurred with *Caesalpinia bonducella*. *Amrita* did not show any toxic effect.

Clinical Research Unit (Siddha) Madras.

The Clinical Research Unit functioning at A.A. Govt. Hospital for Indian Medicine, Madras has taken up the following studies :—

1. Effect of Amber mezhugu K2 oil (External) in Sandhi Vatha Soolai.
2. Effect of Rasagandhi mezhugu Sivappu emmai (External) in Kalanjapadai.

Since the drug was not found to be effective, the expert committee of Siddha suggested changes in the therapeutic approach. In cases of Sandhivatha Soolai trial with Chandamarutha chendooram and Ayavera Chendooram K2 oil (External) should be carried out and in cases of Kalanja padai, Ragsaghandhi mezhugu, Sivappu ennai (External) has been suggested for trial. 40 cases of Sandhivatha Soolai and 30 cases of Kalanjapadai were treated in the unit during the period under review. The data is being processed.

Drug Standardisation Unit (Siddha) Madras.

The Drug Standardisation Research Unit Siddha at Captain Srinivasa Murthi Research Institute, Madras is engaged in Standardising the single drugs which are used in the Siddha medicinal preparations. During the period under review the following drugs were fully subjected to chemical investigations :—

1. *Sarkari Vembu (Scoparia dulcis Linn)*
2. *Annasipoo (Illicium Verum Hook)*
3. *Cinnammam Pacharisi (Euphorbia rosea Reiz)*
4. *Ammukkara (Withania somnifera Linn)*
5. *Elumtcham Thulast (Ocimum gratissimum Linn)*
6. *Mutchungan (Azima tetracantha)*

The following drugs were chemically analysed during the period under review :—

1. *Vasambu (Acorus calamus Linn)*
2. *Cittarattai (Alpinia speciosa Schum)*
3. *Parangichakkai (Smilax china Linn)*
4. *Nanari (Hemidesmus indicus R. Br.)*
5. *Sambirani*

The following drugs were studied pharmacognostically :—

1. *Nochi (Vitex negundo Linn)*
2. *Sirathai (Operculina turpetham)*
3. *Agil*
 - a. *Venagil (Dysoxylum malabaricum Bedd)*
 - b. *Serappugil (Chukrasia tabularis A. Juss)*
 - c. *Karagil (Aquilaria agallocha Roxb)*
4. *Nanari (Hemidesmus indicus R. Br.)*
5. *Vasambu (Acorus calamus Linn.)*
6. *Mathanakama poo (Cycas circinalis Linn)*

Survey of Medicinal Plants Unit (Palayamkottai)

The Survey of Medicinal Plants Unit at Palayamkottai conducted two survey tours covering the following areas :—

1. Manjalía
2. Kakachi
3. Nalumukker
4. Upperk kothayar
5. Old courtallam
6. Sirasyam forest areas.

The party collected 40 specimens for the herbarium and 10 drug samples for the museum. About 12 kg of different parts of the plant materials were collected for supply to units of the Council. The details are shown as under :—

Name of the plant	Parts	Weight	Units to whom drug Supplied.
1. Karpogarici <i>Psoralea corylifolia</i> Linn.	Fruits (dried)	100 gm	R.R.I. (D.R.) Trivandrum
2. Nilareagai <i>Cassia angustifolia</i> Vahl.	Seeds (dried)	200 gm	—do—
3. Kummatti	Root	1.0 kg.	C.R.I. (S) Madras.
4. Nochi <i>Vitex negundo</i> Linn	Leaves (dried)	5.5 kg.	C.R.U. (U) Madras.
5. Pungu <i>Pongamia glabra</i> vent.	Kernel	5.0 kg.	—do—

The unit is maintaining an Herbarium with 3000 identified sheets of 775 plant species. The drug museum has a total of about 320 drug samples.

The following are a few interesting folk lore claims gathered by the unit :

Name of the drug	Parts used	Disease
1. Naikottam	Fruits	1. Peptic ulcer 2. Flatulance 3. Urinary disorders. 4. Leucorrhoea 5. Rheumatic disorders.
2. Peechankan (<i>Clerodendrum inerme</i>)	Leaf	Rheumatoid artharitis.
3. Ooilai	Leaf	Vathanoigal
4. Velikaruvai (<i>Prosopis julifera</i>)	Leaf	Thornprickle
5. Agathi (<i>Sesbania grandiflora</i> Pers.)	Leaf	Meganoigal
6. Vishnukarandi (<i>Evolvulus alsinoides</i>)	Leaf	Fever with constipation in children.
7. Nilavembu (<i>Andrographis paniculata</i> Nees)	Leaf	Venkuttam.
8. Vilram (Aegle marmelos corr) Thulasi (<i>Ocimum sanctum</i> Linn.) Thumbai (<i>Leucas aspera</i>)	Leaves	Lasuna Thabitham.

Literary Research Units (Siddha) Palayamkottai

The Literary Research Unit (Siddha) at Palayamkottai has visited 16 localities and collected 33 cudjan manuscripts and six badly damaged but rare books. Two cudjan works i.e. *Marunthu Vagadam* and *Ramadeyar-500* were copied this year. The typing of *Agasthiyar Agarthi*, *Marunthu Vagai ariya agarethi*, *Theshanamoorthi palalthirattu Vagadam*, *Boganathar Kayakarpam Part-I*, *Agasthiar Eka Mooligai Neethinam 205* and *Theshanamurthi-50* were completed.

Publications/Participation

(A) CLINICAL RESEARCH

Sl. No.	Name of Author (s)	Title of Publication/Paper
1.	Dave S.K. & Dave K.J.	A successful approach in <i>Vaksanga-Nagarjun</i> .
2.	Deshpande I.S. & Mehencale V.V.	A study of the incidence of pulmonary tuberculosis (<i>yakshma</i>) in diabetes (<i>Madhumeh</i>) with special reference to its etiological factors. Jour. Res. Ind. Med. Yoga & Homoeo. Vol XIV No. 1 March 1979 pp. 12-20.
3	Mukherjee G.D.	Epilepsy-Social Problem Part II the method of Diagnosis – JRIMY & H.
4.	Nair P.R.C, Vijayan N.P, Pillai, B.K.R. & Venkataraghavan S.	Treatment of chronic cases of <i>Saisaveeya vata</i> (Poliom- yelitis) A pilot study- JRIMY & H
5.	Nair, P.R.C, Vijayan, N.P, Pillai B.K.R. & Venkataraghavan S.	The effect of <i>Nirgundi Panch- anga</i> and <i>Guggulu</i> in <i>Sod- hana-cum-Samana</i> and treat- ment of <i>Gridharsi</i> (Sciatica). Jour. Res. Ind Med. Yoga & Homoeo. Vol XIII No. 3. September 1978 pp 14-19.

6. Nair, C.P.R,
Kurup, P.B,
Geetha, A,
Pillai, K.G.B. &
Ramaiah N. Effect of Nimbidine in Psoriasis-Indian Medical Journal.
7. Nair, C.P.R. *Sukladhatu* vis-a-vis the Prostaglandins-JRIMY & H.
8. Nair Narayanan D.R. The Concept of Man and Universe in Ayurveda-Nagarjun.
9. Pandey P.P. Concept of Haemoptesis in Ayurveda-Nagarjun.
10. Pandey P.N. Treatment of *Jalodara* in Ayurveda-Shudhanidhi.
11. Pillai, N.R.,
Uma R., Thyga
Rajan R. &
Venugopal P.M. Preliminary studies on one diuretic activity of *Mimosa pudica* in Experimental animal Jour. Res. Ind. Med. Yoga & Homoeo Vol. XIII No : 2 June 1978 pp 114-117.
12. Prem Kishore Development of different aspects of Rheumatoid Arthritis-Rheumatism.
13. Rao Seshagiri T.
Rao Vishwananda P., &
Kumari Kusum K. Survey of *Sleepada* (Filaria-sis) in villages around Razole (Andhra Pradesh) Jour. Res. Ind. Med. Yoga & Homoeo-Vol. XIV No : 1 March 1979 pp 77-80.

14. Sharma R.K., Dave K.J., Dave S.K. & Audichya K.C. A retrospective study of *Grahani Doshas*-Nagarjun.
15. Sharma R.K. & Deve K.J. A Preliminary study in the management of *Ajeerna*-Nagarjun.
16. Sharma R.K. *Kriya Kal Ek Adhyayan Sachitra* Ayurveda.
17. Sharma R.K., Shukla C.P. & Shastri M.S. Role of certain Ayurvedic drugs in *Gandupad Krimi* (Round worms) Antiseptic.
18. Sharma R.K. & Rao A.S. *Mal Pariksha* Ayurvedic-Drisiikon-Ayurved vikas.
19. Sharma M. *Yoni Roga Ayurvediya Vichar*-Sachitra Ayurveda.
20. Sharma M. *Samhita Me Udarvarta Yoni Roga*-Ayurveda Vikas.
21. Singh, N., Nath R., Agarwal V.K. & Kohli R.P. A pharmacological investigation of some indigenous drugs of plant origin for evaluation of their anti-pyretic, analgesic & anti-inflammatory activities. Jour Res. Ind. Med. Yoga & Homoeo Vol XIII No : 2, June 1978 pp. 58-62.
22. Singh N., Kulshreshtha, Mishra N. & Kohli R.P. Evaluation of toxicity and therapeutic potentialities of *Nerium indicum* Jour. Res. Ind. Med. Yoga & Homoeo Vol. XIII No : 4, December 1978 pp. 17-24.

23. Singh V K. Study of *Madhwari A* and *B* in the treatment of *Prameha* (Diabetes mellitus)II— Scientific Seminar of CCRIMH.
24. Singh V.K. Clinical assessment of Indigenous simple compound on *Prameha* (Diabetes mellitus) Aabstract B H.U.
25. Tyagi R.K. & Goyal H.R. A clinical study on *Krimi Roga* Ayurveda Maha Samelan Patrika.
26. Trivedi, V.P. Nesamany S. & Sharma V K. A clinical Study of effects of *Bilwa Majja churna* on Intestinal parasites (*Udar Krimi*) Jour. Res Ind. Med. Yoga & Homoeo vol. XIII No. 2 June 1978 pp 28-45

(B) DRUG RESEARCH

(Survey, Standardization, Pharmacognostical Chemical, Pharmacological and related)

27. Alam M M. *et al* Research methodology in Indian Medicine-Nagarjuna.
28. Annoniums A hand book of Domestic medicine and common Ayurvedic remedies, Amalgamated unit Tarikhet, under publication, CCRAS.
29. Badola D.P. & Srivastava U.C. Khesari dal that causes Lathyrism nervous disease. Sachitra Ayurveda.

30. **Bhima Rao R.,**
Natraj Sarma, P.C.,
Natrajan Meenakshi
Saraswathi, G. &
Purshoterman K.K. A method for the determi-
 nation of Mercury in
 medicinal plants Jour. Res.
 Ind. Med Yoga & Homoeo.
 Vol. 14 No. 1 March 1979
 pp. 109-112.
31. **Bhima Rao R.,**
et al. Tests to detect adulteration
 in *Asavas* and *Aristas*
 JRIYM & H
32. **Bhima Rao R.,**
et al The analysis of Rajam-
 ringanka Rasa JRIMY & H
33. **Bhide M.B. et al** Studies on the neuromus-
 cular blocking activity of
Solanum khasianum. Bull.
 Haff. Inst. Bombay.
34. **Billore K.V. &**
Audichya K.C. Some Oral contraceptive
 tribal way. Jour. Res. Ind.
 Med. Yoga & Homoeo.
 Vol. XIII No. 2 June 1978
 pp 104-109
35. **Billore K.V. &**
Bhatt G K. Ethno botanical lore from
 Ajmer forest Division
 (Rajasthan) Sachitra Ayur-
 veda.
36. **Biswas G.K.** A novel rearrangement of
 aeronylin Ind J. Chem.
 16 B : 621, 1978.

37. Biswas G K. & Saharia G.S. A new alkaloidal glycoside, Ind. J. Forestry, 66-67, 1978.
38. Bose S. & Biswas M. Studies on the structure of cashew nut tree gum, International cashew symposium, 1978.
39. Chatterjee A, Dey A.K. & Chakravarty T. Triterpenoid Rearrangement: J. Sci & Ind. Res 33 : 493-510, 1978. The Conversion of Epenic Acid into ethers enamtics-14, 15-Helv Chilen Acta.
40. Chelladurai V., Contribution to the botanical identity of *Kokilaksha Beeja* obtained in Madras raw drug Trade Jour Res. Ind. Med. Yoga & Homoeo. Vol XIII No : 4 December 1978 pp 69-74.
41. Chaudhari, B.G. Dholakia, M.V. & Pande. G.S. Studies on *Woodfordia fruticosa* kurz. (*Dhataki*) Seminer of Gujarat Ayurved University, Jamnagar.
42. Dey A.K. & Wolf H.R. Phytochemical reactions : Photochemistry of β -unsaturated, S-epoxy Ketones. Helv. Cheim Acta Vol. 61, 626-637, 1978.
43. Dey D. & Das M.N. Pharmacognostic studies on seed samples of *Brassica nigra* (Linn.) Koch, Proc. 66th Ind. Sc. Cog.

44. Dutta S.K.
Sharma B.N. &
Sharma P.V. Constituent of *Cryptolepis
buchanani*, Seminar on Drug
potential of Indian Medi-
cine, BHU, Varanasi
45. Gupta O.P. &
Atal C.K. Survey & utilisation of *Gum
Guggul*. Production and
utilisation of forest products.
RRL, Jammu.
46. Gupta O.P,
Gupta S.C. &
Atal C.K. A new Piperidine alkaloid
from *Piper peepuloides*.
Phytochemistry.
47. Hemadri K,
Sharma C.R. &
Rao S.C. Medicinal Plants of Siddha
found in Andhra Pradesh-
Part II, CCRAS New Delhi.
1978.
48. Hussain S J. &
Srivastava T.N. A Study on unani medicinal
plants IV (*Birung Kabuli*)
Jour. Res. Ind Med. Yoga
& Homoe. Vol XIV No : 1
March 1979 pp 68-76
49. Israili, A.H. &
Issar, R.K. A note on the Occurrence of
Alkaloids in the root-bark
of *Calotropis prosera* Ait.
R. Br. Jour. Res. Ind. Med.
Yoga & Homoeo. Varanasi.
Vol. XIII No : 3, September
1978, pp. 120-121.

50. Issar R.K. & Israili A.H. Comparative Pharmacognostical study of the Unani drug 'Gulnar' & 'Anarkali' (*Punica granatum* Linn. Flowers). Jour. Res. Ind. Med. Yoga & Homoeo, Varanasi. Vol. XIII No. 2, June 1978 pp. 89-98,
51. Issar R.K. & Israili A.H. Pharmacognostic studies of the Unani drug Gongchi Safaid (*Abrus precatorius* L. Seeds.) Jour. Res. Ind. Med. Yoga & Homoeo. Varanasi Vol XIII No. 4, December 1978.
52. Kapoor S.L. Mitra R. & Kapoor L.D. Pharmacognostic study of the root and rhizome of *Parnassia nubicola* wall-ex Royle (Fam. Parnassiaceae a species used as *Mamira*. Bull. Bot. Surv. India.
53. Koshy Abraham Chromatographic studies on *Pygmacopremna herbaceae* and *Clerodendrum serratum*-30th IPCA Calcutta.
54. Lal V.K. & Singh J. Pharmacognostical studies on the roots of *Salvia lanata* Roxb. Jour. Res. Ind. Med. Yoga & Homoeo. Vol XIII No. 4 December 78 pp. 45-51.
55. Lal V.K. & Joshi P. *Silajit* a Vegetable product Jour Res. Ind. Med. Yoga & Homoeo. Vol XIII No. 3 September 1978 pp 28-37.

56. Misra, O.P. Botanical identity of *Sugandha bala*. Jour. Res Ind Med. Yoga & Homoeo Vol XIII No. 3 Sept. 1978 pp. 110-114.
57. Misra O.P. & Uniyal M.R. Market study of Sugandha-bala (*Udichya*) and a suggestion. Jour. Res. Ind. Med. Yoga & Homoeo. Vol XIII No. 3 September 1978 pp 101-103.
58. Mishra K.P. & Chaturvedi D.D. Ayurveda drugs and standardization Nagarjuna.
59. Mishra K.P., Billore K V. & Chaturvedi D.D. *Ayurveda Main Jivanved* (Hindi), Sachitra Ayurveda.
60. Mitra, R. & Mehrotra S. Pharmacognostical study of *Priyal* (*Buchanania lanzan* spreng.) stem bark, Agt. Proc. 30th Indian Pharm. Cong. Assoc.
61. Mitra R ; Mehrotra S. & Kapoor L.D. Pharmacognostical study of *Patenkya* (*Spinacia oleracea* Linn) JRIMY & H.
62. Mitra R. & Srivastava U.C. Pharmacognostical study of *Paribhadra* (*Erythrina indica* Lam.) Root bark (Abst) Proc. 30th Indian Pharm. Cong. Assoc.

63. Mitra R.
Mehrotra S. &
Kapoor L.D. Pharmacognostical study of
Plaksho-II Leaf of *Ficus tsela*
Roxb. JRIMY & H.
64. Mitra R. &
Pandey H C. Herbal drug in the treatment
of Leucodrema, Proc Semi-
nar on Bars (Leucoderma)
CCRUM.
65. Momin Ali Eleven *Kshudra Kushta* and
Modern nomenclature-V All
India Ayurveda Shastra
Charcha Parishad, Hydera-
bad.
66. Momin Ali Standardisation of Indigenous
drugs-AYU.
67. Momin Ali,
R N. Acharya,
B.B. Tiwari, &
A J. Baxi. Study on the effect of Ayur-
vedic preservative on Ayur-
vedic formulations-Seminar
of Gujarat Ayurvedic Uni-
versity, Jamnagar.
68. Nair P R.C.
Kurup P.B. &
Ramiah N. Effect of Nimbidine in
Psoriasis. Ind. Med. vol.-2,
No. 9, P. 180-181, 1978.
69. Nayar R.C.
Mary Z. &
Simhan S.N.Y. Pharmacognostical Studies
on the root of *Decolepis*
hamiltoni Wt. & Arn. and
comparison with *Hemides-*
mus indicus (L.) R. Br —
Indian Academy of Science.

70. Nayar R C.
Shetty Pattan J.K. &
Yoganara Simhan
Pharmacognostical studies
on the heartwood of *Pterocarpus marsupium* Roxb.—
Asana Jour Res. Ind. Med. Yoga & Homoe vol XIV
No. 1 March 1979 pp.81 - 88.
71. Ojha J K,
Singh B. &
Dutta S.K.
Standardisation of Ayurvedic drugs XIII Scientific
Seminar on Indian Medicine,
BHU, Varanasi.
72. Pandey J.P.
Dutta S.K.
Bajpayee V.S. &
Sharma P V.
Changes in *Abraka Bhasama*
with *Puti* Jour. Res. Ind.
Med. Yoga & Homoeo vol
XIII No. 4 December 1978
pp 109 -110.
73. Patra B.B,
Sikdar S.
Dasgupta S.R.
Das P.C. &
Chatterjee A.
Some Pharmacological act-
ions on the defatted
alcoholic extract of *Blumea
laccera*. All India Conference
of Scientists of C C.R I M.H.
New Delhi, 1978
74. Patra B B,
Sikdar S,
Mukherjee B.P,
Dasgupta S.R,
Mukherjee A. &
Chatterjee A.
Some Pharmacological Acti-
vities of a flavone from
Acorus calamus. All India
conference of Scientists of
C C.R.I M.H., New Delhi
1978.
75. Patra B.B,
Sikdar S,
Dasgupta S.R,
Das P.C. &
Julie Banerjee.
Studies of the antinflamma-
tory properties of active
principles isolated from the
seeds of *Vitex negundo*
Linn. Paper presented at
Seminar on basic medical
Sciences, University College
of Medicine, Calcutta. 1978.

76. Pattan shetty, J.K.
Venkataram, B.S.
Radha Vakula (Mrs) T.
& Mary, (Miss) Z. Preliminary studies on the effect of time, packing material and light on certain Ayurvedic preparations. Jour. Res. Ind. Med. Yoga & Homoeo. Vol 14 No. 1 March 1979 pp 113 127.
77. Pattan Shetty J.K.
Koshy Abram &
Raj P.V. Chemical constituents of the stem bark of *Crateva adenosonii* Sp. *Odora* - National Seminar on the drug potential of Indian Medicinal Plants, Varanasi
78. Puri H.S.
Wider C J &
Widen H.K. Phloroglucinol derivatives in *Dryopteris marcinata* Planta medica
79. Puri H.S. Indian Medicinal Plants. Pb. State (A book in Punjabi Univ. Text book Board.
80. Puri H S. The ignorant antimalarial plant. Sci. Reporter.
81. Purushothaman K K,
Brinda P &
Rukmini B. Further Pharmacognostic Studies on *Anisomeles malabarica* R. Br. JRIMY & H.
82. Purushothaman K K,
Nataraja Sharma P.S,
Rao Bhima R,
Natarajan Munakshi &
Saraswathi G. A method of the determination of mercury in medicinal preparations JRIMY & H.

83. Purushothaman K.K. & Vasanth Sareda. Chemical Examinations of *Ocimum americanum* (Kanj-amkorai). Jour. Res. Ind. Med. Yoga and Homoeo. Vol XIII No. 2 June 1978 pp 77—80.
84. Purushothaman K.K. & Kalyani K. Isolation of isorhamnetin from *Borreria hispida* Linn Jour Res. Ind. Med. Yoga & Homoeo. Vol. 14 No. 1 March 1979 pp 131—132.
85. Purushothaman K.K., Rao Bhima R. & Mathu.am S. Chemical examinations of *Rulivasi*-JRIMY & H.
86. Raj P.V, Abraham Koshy & Shetty Pattana J.K. Importance and scope of Standardisation of drugs in Ayurveda-30th Indian Pharmaceutical Congress Association.
87. Ramaiah N. & Nair G.A. Chemical investigations of the fruits of *Salacia fruticosa* JRIYM & H.
88. Ramiah N. & Prasad N.B.R. New derivatives of Embelin and a new method of preparing Embelin diacetate. Paper presented at the All India Conference of Scientists of CCRIMH, New Delhi, December 1978.
89. Ramiah N. Chemical Investigation of *Conarus monocarpus*-II. Paper presented at the All India Conference of Scientists of CCRIMH, New Delhi, Decmber 1978.

90. Ramiah N,
Nair Aravindakshan G &
Prasad N.B.R. New Approach to the stand-
ardisation of Ayurvedic
Finished products, Paper
presented at the All India
Conference of Scientists of
CCRIMH, New Delhi.
December 1978.
91. Rangaswami S. &
Sharma P. Crystalline Chemical Com-
ponents of *Rumex nepalensis*.
Ind. J. Chem. 16B : 250,
1978.
92. Rao Bhima R. *et al* Tests to defect adulteration
in *Asavas* and *Aristas*.
JRIYM & H.
93. Rao Bhima R. *ei al* The analysis of *Rajamri-*
ganka Rasa—JRIYM & H.
94. Rao Hanumanth B, Research on Herbal Medi-
cine-V All India Ayurveda
Shastra Charcha Parishad,
Hyderabad.
95. Rao Hanumanth B. *Potoladi guggulu* treatment of
Pama Kacchu and *Charma-*
dala.—V All India Ayurveda
Shahtra Charcha Parishad,
Hyderabad.
96. Ray A.K,
Chattopadya S.
Tripathi R.M,
Gambhir S.S. &
Dass P.K. Isolation and pharmacolo-
gical action of epistephuma
an alkaloid of *Stephania*
hernandifolia—*Planta Med-*
ica.

97. Sahai M. & Ray A.B. Steroids and alkaloids of *Physalis peruviana*; paper presented at convention of chemists 1978.
98. Saharia G.S & Seshadri V. Chemical aspects and pharmacological activity of Achrantes Saponin, CCRI-MH symposium held at AIIMS, New Delhi, December, 1978.
99. Saharia G S. & Sharma P. Chemical Components of *Selinium tenuifolium*, Ind. J. Forestry. 1 ; 59, 1979
100. Saharia G.S. & Seshadri V. Chemical aspects of pharmacological activity of *Achyrantes* saponin, Paper presented in CCRIMH symposium held at AIIMS, New Delhi, December, 1978.
101. Seth K.K. & Pandey V.B. Narculline a new alkaloid of *Fumaria indica*, presented at convention of chemists 1978.
102. Shah N.C. & Kapoor L.D. Depletive medicinal plants of Kumaon Himalayas. Jour Res. Ind. Med. Yoga & Homoeo Vol XIII No. 3 September 1978 pp 38-43.

103. Shanthakumari G,
Rathinam K. &
Ramiah N. Preliminary Pharmacological
Screening of Nimbidin, pre-
sented to the VII Annual
Conference of the Indian
Pharmacological Society,
Ahmedabad.
104. Sharma C.R.R. *Vidwadvimarsa Vimarshah*,
Ayurveda Maha Sammelan
Patrika.
105. Sharma P.
Sharma M. &
Rangaswami S. New Dihydrofurocoumarin
leptophylidin, Leptophylin
and Leptophy-loside from
Apium leptopyllum seeds.
Paper presented at Ind. J.
Chem. 16B : 560, 1978.
106. Sheshadri C,
Suganthan D. &
Shanthakumari G. Antioestrogenic activity of
AYUSH AC-2,V-Southern
Regional conference of IPS,
Pondicherry.
107. Sheshadri C,
Suganthan D. &
Shanthakumari G Biochemical changes in
Urine, uterine fluids of
mated rats, treated with
embelin, Indian Journal
of Experimental Biology.
108. Sheshadri C,
Suganthan D. &
Shanthakumari G Oestrogenic and antioestro-
genic activity of AYUSH—
47, Scientific Seminar on
Drug potential of Indian
Medicinal plants, BHU.

109. Shetty Pattan J.K. Periodical studies on the effect of time, packing material and light on certain Ayurvedic preparations, Ay. Drug Research Seminar, GAU, Jamnagar.
110. Singh P.P. & Das P.K. Studies on interaction copper and *Cannabis*; Psychopharmacologia
111. Singh P.P. & Das P.K. Effect of *Cannabis indica* on locomotor activity, Ind. J. Expt. Biol.
112. Singh P.P. & Das P.K. Interaction of *Cannabis*, reserpine and chlorpromazine on body temperature, and mechanism of hyperthermic response to *cannabis* in tolerant rats; Ind. J. Expt. Biol.
113. Singh P.P. Bhattacharya S K. Bose R. & Das P.K. Effects of some drugs influencing brain medulla on body temperature of albino rats; Ind J. Exp Biol.
114. Singh S.P, Singh N. & Kohli R.P. Antifertility studies of some indigenous plants, Ind. J. Pharmacol.
115. Singh N, Nath R. & Kohli R.P. Experimental evaluation of adoptogenic properties of *Ocimum sanctum*, Ind. J. Pharmacol.

116. Singh N,
Mathur A.K.,
Kapoor K.R.,
Singh S.P,
Sunto J.N,
Shankar K. &
Kohli R.P. The mechanism of cardio-vascular effects of *Terminalia arjuna*.
117. Singh N.
Singh S.P,
Sina J N. &
Kohli R.P. An analysis of hypotensive response to *Sapindus trifoliatus*, Quart J. Crud. Drug Res.
118. Singh N,
Nath R. &
Kohli R.P. An evaluation of antipyretic analgasic and anti inflammatory activities of some indigenous plants, J. Res. Hed.
119. Singh N,
Misra N,
Kulshreshtha V K. &
Kohli R.P. A evaluation of toxicity and therapeutic potentiality of *Nerium indicum*, JRIMY&H.
120. Singh N,
Nath R,
Singh D R,
Gupta M.L. &
Kohli R.P. An experimental evaluation of protective effect of some indigenous drugs on carban-tetrachloride induced hepato-toixcty in rats, Quart J of Drug Res.

121. Shrivastava T.N. & Rajasekharan S. Effect of *Neuli* (*Cleome gynandra* Linn.) On *Arsas* (Piles)—An Ethno-botanical study, Jour Res. Ind. Med. Yoga & Homoeo. Vol XIII No. 3 September 78 pp 104-106.
122. Srivastava T.N. Gupta O.P, Uniyal M.R. & Shah N.C. Preliminary Techno-economic survey of natural resources and herbal wealth of Ladakh II edn; CCRIMH No 21 Publication, New Delhi. 1978.
123. Suganthan D. & Shanthakumari G. Antifertility activity of an indigenous preparation AYUSH—AC₂, Scientific Seminar on Drug Potential of Indian Medicinal Plants, BHU.
124. Suganthan D. & Shanthakumari G. Antifertility activity of an indigenous preparation AYUSH—47, Indian Journal Medical Research.
125. Tiwari P.V. & Raksha Devi Clinical trial of 'K' capsule as an oral contraceptive agent, Seminar on National Congress on Clinical Research K.C.M. Hospital, Bombay.
126. Tiwari P.V, Sharma S.K, Basu K. & Raksha Devi Clinical evolution of 'K' capsule and AYUSH AC₄ as oral contraceptive Agent, Seminar on Drug potential of Indian Medicinal Plants, BHU.

127. Tiwari K.C.
Majumdar R.
Bhattacharjee &
Chandra S. A short note on drying of
medicinal plants, Jour. Res.
Ind. Med. Yoga & Homoeo
Vol. XIII No. 4 December
1978 pp 98—101.
128. Tongnashi, V.S,
Venkataram B.S, &
Yoganarasimhan S.N. Novelties of Rajanarahari—
2. Shrievali—A New and
the Correct Ayurvedic Name
for *Acacia sinuata* (Lour)
Merr; Jour. Res. Ind. Med.
Yoga & Homoeo. Vol XIII
No. 2 June 1978, pp 99—
103.
129. Tongnashi V.S,
Yoganarsimhan S N, &
Venkataran B.S. A new source for *Sariva*
and identification of *Swet-
Sariva*. Jour Res. Ind. Med
Yoga & Homoeo. Vol XIII
No. 4 December 1978 pp
75—80.
130. Tyagi R.K,
Tyagi M.K.
Goyal H.R. &
Sharma Keerti A clinical study on *Krimi*
Roga Jour. Res. Ind. Med.
Yoga & Homoeo. Vol XIII
No 3 September 1978 pp
130—132.
131. Uniyal M.R.
Tiway J,
Dixit R.S &
Purohit G.N. Bundelkhand A New Home
for *Glycyrrhiza glabra* Linn.
(MULETHI), Jour Res. Ind.
Med. Yoga & Homoeo Vol
XIII No. 2 June 1978 pp
110—113.

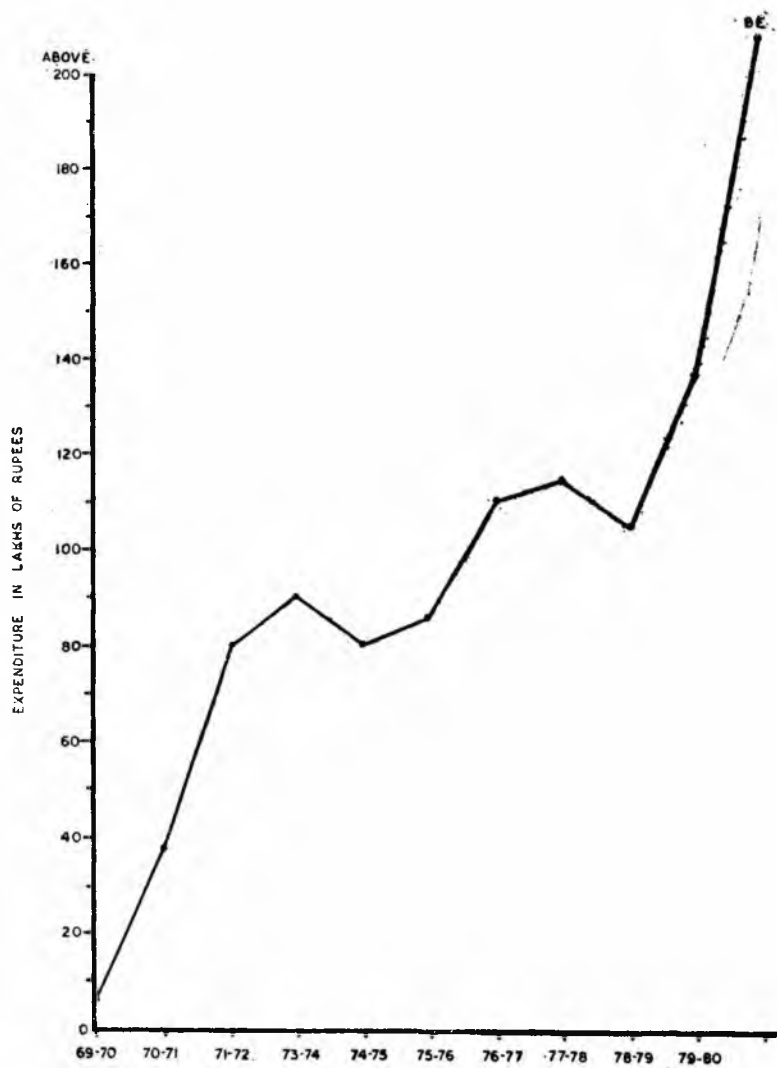
132. Uniyal, M.R.
Tiwary J. &
Dixit R.S. A market study of some controversial drugs supplied from Hardwar & Dehradun markets. Jour Res Ind Med Yoga & Homoeo. Vol XIV No. 1 March 1979 pp 55—67.
133. Yoganarasimhan S.N,
Nayar R.C. *Gaultheria fragrantissima* Wall, A new record for Karnataka State Jour Res. Ind. Med Yoga & Homoeo. Vol XIII No. 3 September 1978 pp 84—86.
134. Yoganarasimhan S.N.
Nayar R.C. *Oldenlandia nudicaulis* (Wt & Arn) Rotes (Rubiaceae) A new record for Karnataka State, Jour. Res. Ind. Med. Yoga & Homoeo. Vol. XIII No 3 September 1978 pp 87—88.

Publications/Participation (Siddha)

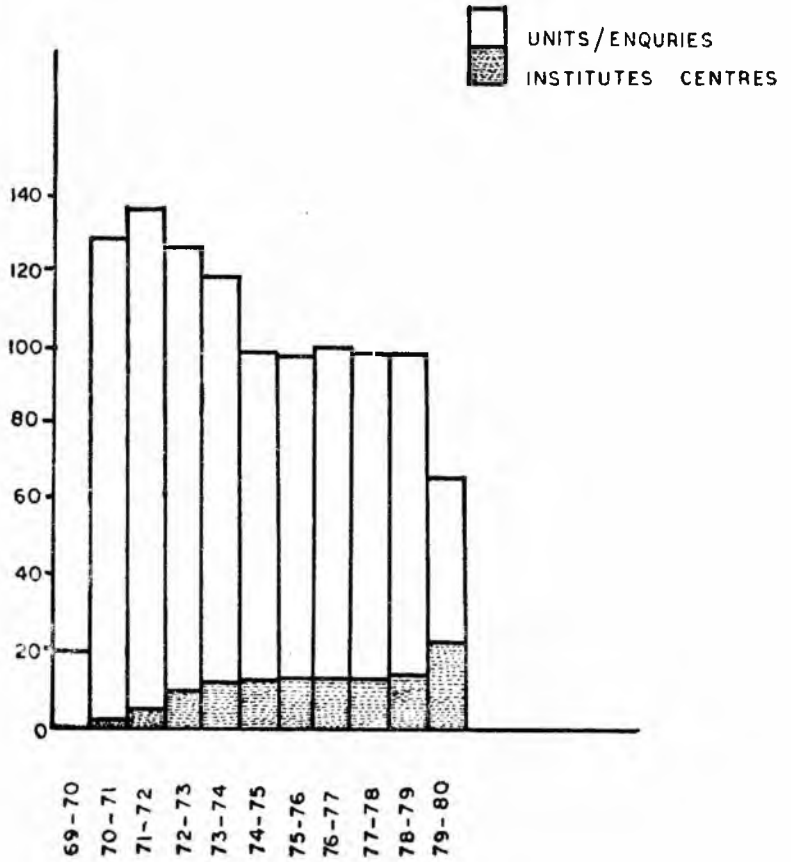
1. Bharadwaj T.P.R. & Purushothaman K.K. Role of Combined therapy in Various types of cancer, IInd Scientific Seminar.
2. Brinda P, Rukmani B. & Purushothaman K.K. Further Pharmacognostic studies on *Anisomeles malabarica* R. Br. JRIMY & H.
Ganapathiraman K, Bharadwaj T.P.R. & Purushothaman K.K. A Pilot study of Kuppaimeni (*Eclipta indica*) in *Swasa-kasa* (Bronchial Asthma), JRIMY & H.
4. Kalyani K. & Purushothaman K.K. Isolation of Isophamnection from *Boerhaavia hispida* Linn, JRIMY & H.
5. Masilamani S, Bharadwaj T.P.R. & Purushothaman K.K. Role of Etti Ennai in the treatment of *Karappan* (Eczema) a pilot study, JRIMY & H.
6. Mathuram S, Rao Bhima R. & Purushothaman K.K. Chemical Examination of Palivasi, JRIMY & H.
7. Pillai N.R, Ghosh D. & Anantharaman M. Pharmacological investigation on *Linga Cheendooran* a Siddha drug—Part I. Jour Res. Ind. Med. Yoga & Homoeo. Vol XIV No. 1 March 1978 pp 89—93.
8. Rajalakshmi S, Bharadwaj T.P.R. & Parushothaman K.K. Effect of *Vaideidengam* (*Embelia ribes*) in worm manifestation (A pilot study), JRIMY & H.

9. Ravishankar V. An Insight to Siddha System of Medicine,
 1. Herbal cure
 2. Journal of National Integrated Medical Association.
 3. Medical Express.
10. Saraswati, Meenakshi Natarajan, Bhima Rao R, Nataraja Sharma P.S, & Purushothaman K.K. A method for the determination of mercury in medical preparations, JRIMY & H.
11. Subbulakshmi V. *Kalanja Padai* (Psoriasis), IInd Scientific Seminar.
12. Sundaram M. & Bharadwaj T.P.R. The study of *Thambira Chenduram* in *Valigunmam* (Peptic ulcer), IInd Scientific Seminar.
13. Vasanth Sarada & Purushothaman K.K. Chemical Examination of *Kanjamkorai, Ocimum americanum* (Labiatae). JRIMY & H.
14. Venugopal P M. & Ganapathiraman K. Role of *Muppu* in Siddha System of Medicine, Jour Res. Ind. Med. Yoga & Homoeo. Vol XIII No. 3 September 1978 pp 125—129.

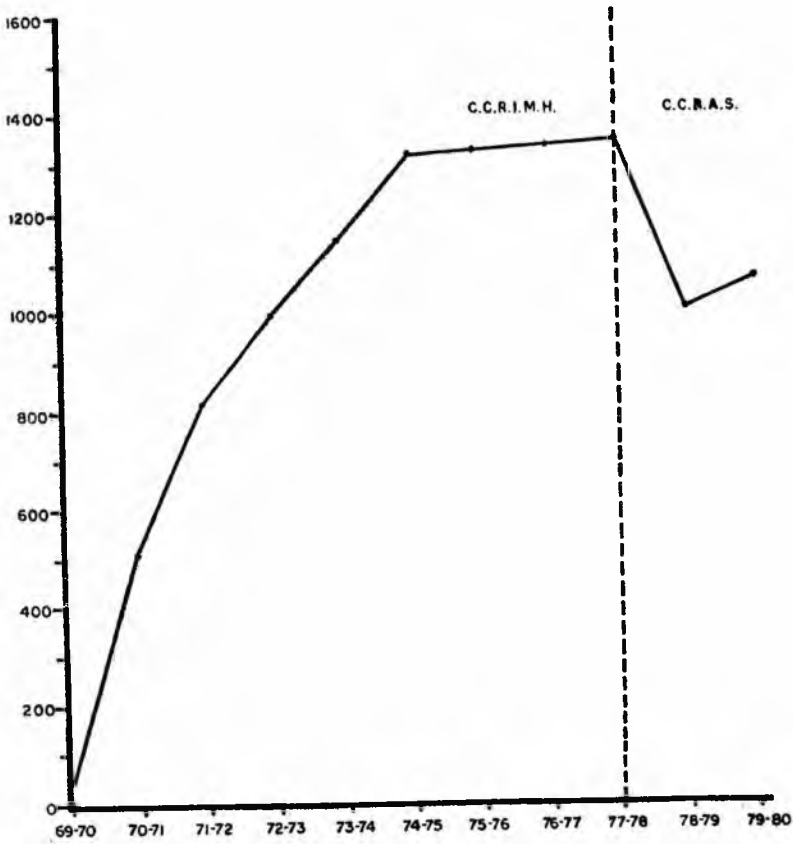
EXPENDITURE ON RESEARCH IN AYURVEDA AND SIDDHA



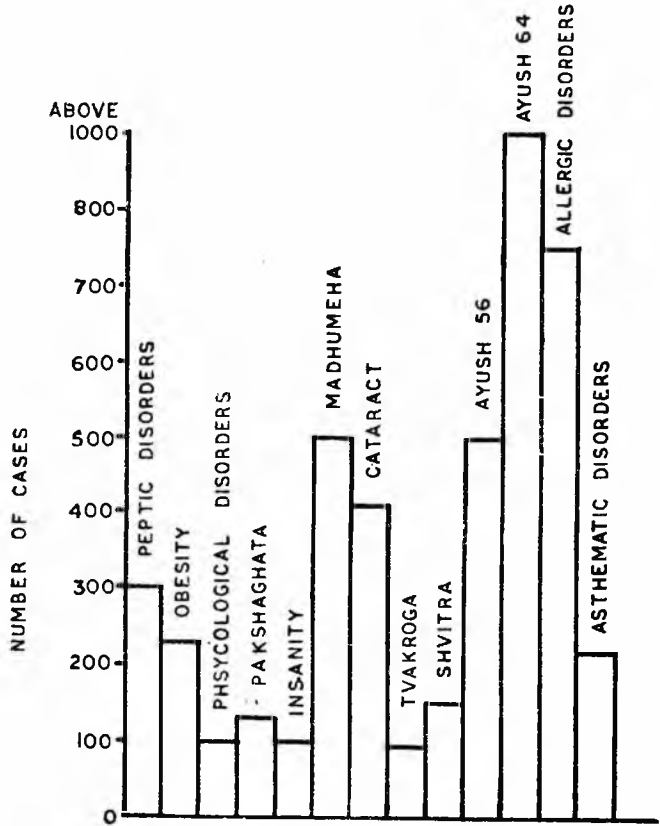
RESEARCH PROJECTS — AYURVEDA AND SIDHA



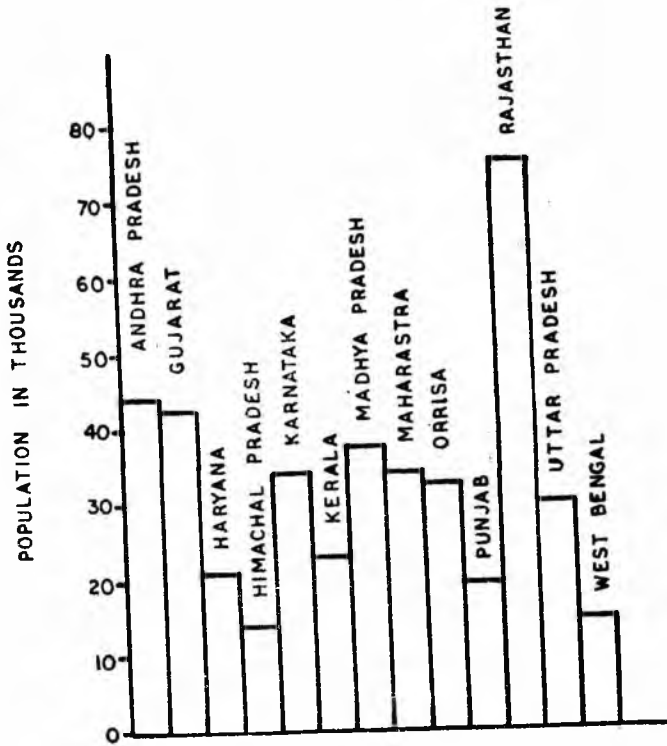
EMPLOYMENT POTENTIAL



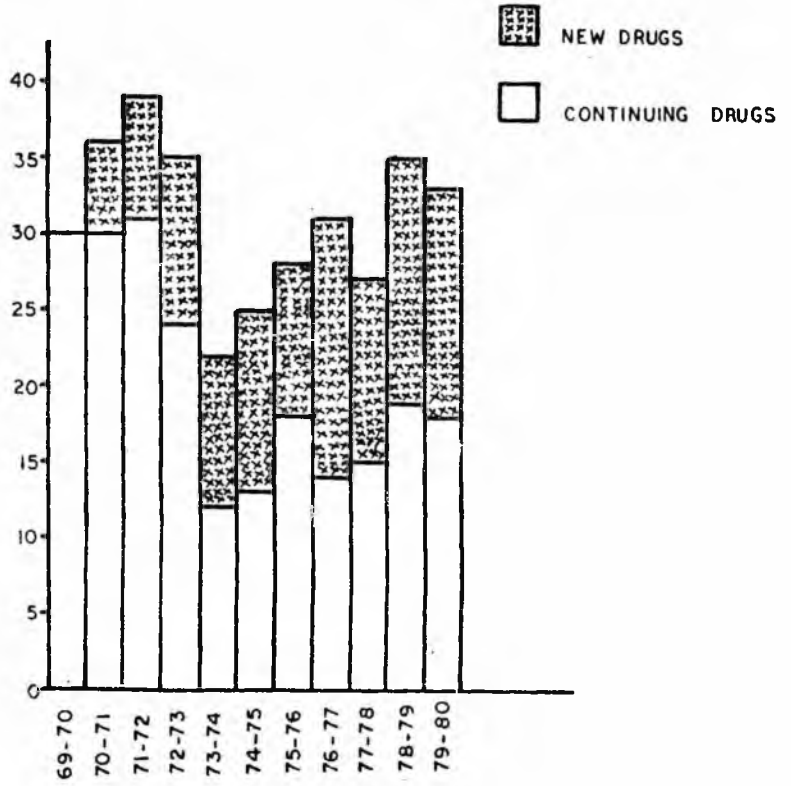
**DISEASE PROFILE - A DECADE OF SURVEY
RESEARCH ORIENTED CASE STUDIES**



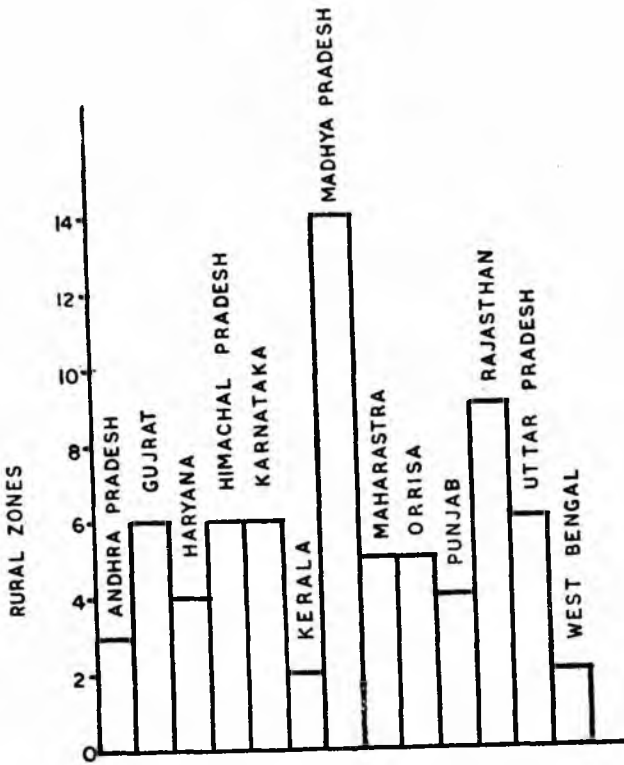
A DECADE OF RESEARCH ORIENTED SURVEY AND SURVEILLANCE PROGRAMME HEALTH CARE RESEARCH



PROGRESS OF DRUGS STUDIED AT A
DECADE OF ACTIVITY.



DECADE OF RURAL ORIENTED RESEARCH CUM SERVICE PROJECT



Acknowledgements

The Directorate of the Council places on record its deep appreciation and regards to Scientists, Scholars of various disciplines of medical systems and allied sciences and Universities and Governmental Agencies who are directly or indirectly associated with this Council and to the officials of all the Research Projects including the Headquarters. The Directorate is grateful to the Union Ministry of Health and Family Welfare and other members of Governing Body, Finance Committee & Scientific Advisory Committee for their wholehearted co-operation for achieving the aims and objects of the Council and hopes to receive their continued support and co-operation in the future also.

Central Council for Research in Indian Medicine and Homoeopathy, New Delhi
Statement of Receipts and Payments Account for the Year 1978-79 (Upto 9th January, 1979)
Scheme Financed by the Department of Health

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
1. Opening Balance		I. Ayurveda and Siddha	
i) Headquarters Office		1. Headquarters Office	
a) Cash in hand	1,000.00	a) Pay & allowances	3,98,463.88
b) Cash at bank	<u>3,23,654.31</u>	b) T A.	43,874.50
ii) Opening balance with the Decentralised Units	3,97,863.66	c) Contingencies	
iii) Lumpsum released in the month of March '78 but received in the month of April '78 by some Decentralised Units.	81,072.55	i) Consumable stores & Miscellaneous expenditure	1,18,479.15
iv) Imprest Advance	79,151.43	ii) Non-consumable stores	88,280.90
v) Advances given to RRI, Calcutta, DPRU, Calcutta & Lucknow, RRC, Jogindernagar for opening bank account	800.00	d) Advances	
vi) Suspense account	5,959.12	i) T.A.	70,341.00
2. Grant-in-aid received from the Govt. of India	95,57,473.00	ii) Contingencies	<u>1,17,338.00</u>
3. Subscription for bulletins/Journals	2,944.90	2. Documentation Centre-cum-Library	
4. Purchee fee	1,015.70	a) Pay & allowances	1,34,815.15
5. Application fee	181.50	b) T A.	720.65
6. Security Deposit	200.00	c) Contingencies	
7. Private use of Staff Car	1,303.79	i) Consumable stores & Miscellaneous expenditure	26,542.66
8. Proceeds from sale of old articles	5,114.06	ii) Non-consumable stores	<u>16,487.14</u>
9. Refund of pay & allowances, TA, Contingencies etc. relating to past years	26,475.58	3. Journal of Research in Indian Medicine Yoga and Homoeopathy, Varanasi.	
10. Interest on FDR of CPF	2,98,454.74	a) Pay & allowances	45,883.40
11. Refund of Festival, Cycle, Scooter etc. advance	36,039.05	b) T.A.	183.30
12. Sale of publication	7,545.54	c) Contingencies	
13. Miscellaneous receipts	15,711.50	i) Consumable stores & Miscellaneous expenditure	18,602.20
14. Interest on S.B. account (Units)	255.99	ii) Non-consumable stores	<u>—</u>
15. Refund of Deposit under O.Y.T. Scheme	3,447.50		64,668.90
	<u>1,08,45,663.92</u>		<u>10,80,011.93</u>
C/o			C/o

RECEIPTS		AMOUNT	PAYMENTS		AMOUNT
		B/F 1,08,45,663.92			B/F 10,80,011.93
16.	Amount received from DAVP through NIH	6,881.43	4. Indian Institute of History of Medicine, Hyderabad.		
17.	Recovery of I.T., C.P.F. etc. made in the pay bills of the Centralised Units & Headquarters	4,19,711.60	a) Pay & allowances	1,34,623.45	
18.	Recovery of I.T., C.P.F. etc made in the pay bills and other receipts by the Decentralised units	8,97,017.66	b) T.A.	—	
19.	Refund of loan FWRS	2,48,077.46	c) Contingencies		
20.	Amount received from the Ministry for making payment to the Special Land Acquisition Officer, Poona	6,42,527.00	i) Consumable stores & Miscellaneous expenditure	5,668.49	
21.	Amount received from RPFC in account of CA (DA)	2,08,475.42	ii) Non-consumable stores	1,228.65	1,41,520.59
22.	Amount of CD received from other Offices	574.71	5. Ayurveda Units (Upto 9.1.79)		
23.	Amount of CD New received from RPFC	1,20,410.47	a) Pay & allowances	55,53,767.66	
24.	Transfer from CPF account	73,244.67	b) T.A.	55,540.88	
25.	Transfer from CPF account on account of Council's contribution forfeited	2,565.00	c) Contingencies		
26.	Adjustment of advances paid during past years		i) Consumable stores & Miscellaneous expenditure	5,87,857.72	
a) T.A.	2,646.25		ii) Non-consumable stores	65,675.16	
b) Contingencies	1,445.95	4,092.20	d) Advances		
27.	Undisbursed amount on account of pay and allowances		i) T.A.	—	
			ii) Contingencies	22,831.77	62,85,673.19
			6. Seminar		
			a) T.A.	608.10	
			b) Contingencies		
			i) Consumable stores & Miscellaneous expenditure	2,586.25	
			ii) Non-consumable stores	—	
			c) Advances		
			T.A.	30,510.00	33,704.35
			7. Siddha Units		
			a) Pay & allowances	2,75,524.00	
			b) T.A.	4,975.15	
		C/o 1,34,69,241.54			C/o 75,40,910.06

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
	B/F 1,34,69,241.54		B/F 89,74,162.09
		III. Yoga (Upto 9.1 79)	
		1. Headquarters Office	
		a) Pay & allowances	37,295.52
		b) T.A.	13,211.45
		c) Contingencies	
		i) Consumable stores & Miscellaneous expenditure	47,163.42
		ii) Non-consumable stores	—
		d) Advances	—
			97,670.39
		2. Units	
		Grant-in-aid	44,500.00
		3. Seminar	
		a) T.A.	—
		b) Contingencies	
		i) Consumable stores & Miscellaneous expenditure	517.25
		ii) Non-consumable stores	—
		c) Advances	—
			517.25
		IV. Homoeopathy (Upto 9.1.79)	
		1. Headquarters	
		a) Pay & allowances	74,280.09
		b) T.A.	11,488.20
		c) Contingencies	
		i) Consumable stores & Miscellaneous expenditure	68,145.15
		ii) Non-consumable stores	1,867.00
		d) Advances	
		i) T.A.	5,440.00
		ii) Contingencies	2,600.00
			1,63,820.44
		2. Units	
		a) Pay & allowances	6,79,922.91
	C/o 1,34,69,241.54		C/o 92,80,671.17

RECEIPTS		AMOUNT	PAYMENTS		AMOUNT
	B/F	1,34,69,241.54		B/F	92,80,671.17
			b) T.A.	4,318.65	
			c) Contingencies		
			i) Consumable stores & Miscellaneous expenditure	95,932.03	
			ii) Non-consumable stores	336.25	
			d) Advances		
			i) T.A.	—	
			ii) Contingencies	—	
			e) Grant-in-aid	8,000.00	7,88,509.84
			3. Seminar		
			a) T.A.	—	
			b) Contingencies		
			i) Consumable stores & Miscellaneous expenditure	775.88	
			ii) Non-consumable stores	—	
			c) Advances		
			i) T.A.	200.00	
			ii) Contingencies	—	975.88
			V. Other Payments		
			1. Payment of I.T., CPF etc. by the Headquarters Office.		4,43,438.00
			2. Payment of I.T., CPF etc. by the Decentralised Units		8,14,977.08
			3. Loan given to FWRS		2,55,384.00
			4. Payment of 3rd Instalment of CA (DA)		1,85,277.22
			5. Final payment of CA (DA)		22,284.57
			6. Payment of 1st instalment of CA (DA) New		8,211.99
			7. Advances		
			a) Festival advance	65,690.00	
			b) Scooter advance	16,750.00	
			c) Cycle advance	18,025.00	
			d) Flood advance	20,000.00	1,20,465.00
	C/o	<u>1,34,69,241.54</u>		C/o	<u>1,19,20,194.75</u>

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
	B/F 1,34,69,241.54		B/F 1,19,20,194.75
		8. Amount paid to the Special Land Acquisition Officer, Poona (Contra)	
		9. Transfer of CA (DA)	6,42,527.00
		a) C.P.F. 1,12,775.00	
		b) G.P.F. <u>294.00</u>	1,13,069.00
		10. Amount transferred to the Successor Councils	
		a) C.C.R.A.S. 1,65,237.85	
		b) C.C.R.Y.N. 25,000.00	
		c) C.C.R.U.M. 1,00,200.00	
		d) C.C.R.H. <u>1,00,000.00</u>	3,90,437.85
		11. Closing Balance	
		i) Headquarters Office	
		a) Cash in hand 1,000.00	
		b) Cash at bank <u>71.00</u>	1,071.00
		ii) Lumpsum released before bifurcation of accounts but received afterwards by some decentralised units	
		a) Ayurveda & Siddha Units 16,351.55	
		b) Unani Units —	
		c) Homoeopathy Units <u>35,500.00</u>	51,851.55
		iii) Closing balance with the Decentralised Units	
		a) Ayurveda & Siddha 2,08,850.32	
		b) Unani Units 54,492.25	
		c) Homoeopathy Units <u>3,525.89</u>	2,66,868.46
	C/o 1,34,69,241.54		C/o 1,33,86,019.61

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
	B/F 1,34,69,241.54		B/F 1,33,86,019.61
		iv) Imprest advance as on 1.4.78 79,151.43 Add paid during the year 1,500.00	
			80,651.43
		Less adjustments 3,056.92	
		Less Refund 1,131.70	76,462.81
		v) Advances given to RRI, Calcutta, DPRU Calcutta and Lucknow, RRC, Jogindernagar for opening bank A/c 800.00	
		12. Suspense account 5,959.12	
	<u>1,34,69,241.54</u>		<u>1,34,69,241.54</u>

Sd/-
(J.K. Dass)
(Accounts Officer)
C.C.R.I.M.H.

Sd/-
(K.K. Subramanian)
Asstt. Director (Admn.)
C.C.R.I.M.H.

Sd/-
(Dr P.N.V. Kurup)
Director
C.C.R.I.M.H.

Central Council for Research in Indian Medicine and Homoeopathy, New Delhi
Income and Expenditure Account for the Year 1978-79.

EXPENDITURE	AMOUNT	INCOME	AMOUNT
1. Ayurveda & Siddha		1. Grant in aid received from the	
I. Headquarters Office :		Govt of India	95,57,473.00
a) Pay & allowance	3,98,463.88	2. Subscription for Bulletin/Journals	2,944.90
b) Travelling allowances	43,874.50	3. Purchee fee	1,015.70
c) Consumable Stores & Miscellaneous expenditure	<u>1,18,192.90</u>	4. Application fee	181.50
	5,60,531.28	5. Private use of Staff Car	1,303.79
II. Documentation Centre-cum-Library.		6. Proceeds from sale of old articles	5,114.06
a) Pay & allowances	1,34,815.15	7. Refund of Pay & allowances, T.A., Contingencies etc. advances relating to past years	26,475.58
b) Travelling allowances	720.65	8. Interest on F.D R. on C.P.F.	2,98,454.74
c) Consumable Stores & Miscellaneous expenditure	<u>26,542.66</u>	9. Recovery of Cycle, Festival Scooter etc. advances remitted by the Decentralised Units	36,039.05
	1,62,078.46	10. Sale of Publications	7,545.54
III. Units		11. Miscellaneous Receipts	15,711.50
a) Pay & allowances	60,09,798.51	12. Interest on S.B. account (Units)	255.99
b) Travelling allowance	61,307.43	13. Refund of Deposit under O.Y.T. Scheme	3,447.50
c) Consumable Stores & Miscellaneous expenditure	<u>6,84,685.06</u>	14. Amount received from D.A.V.P. through N.I.H.	6,881.43
	67,55,791.00	15. Recovery of I.T , C.P.F. etc.	
2. Unani		a) Headquarters Office	4,19,711.60
I. Headquarters Office :		b) Decentralised Units	<u>8,97,017.66</u>
a) Pay & allowances	92,410.36		13,16,729.26
b) Travelling allowances	34,929.60	16. Amount received from the Ministry for making payment to the special land Acquisition officer, Poona	6,42,527.00
c) Consumable stores & Miscellaneous expenditure	<u>1,14,748.57</u>		
	2,42,088.53		
II. Units			
a) Pay & allowances	6,85,158.42		
b) Travelling allowances	4,599.95		
c) Consumable Stores & Miscellaneous expenditure	<u>92,590.13</u>		
	7,82,348.50		
C/o	<u>85,02,837.77</u>	C/o	<u>1,19,22,100.54</u>

EXPENDITURE		AMOUNT	INCOME		AMOUNT	
		B/F	85,02,837.77		B/F	1,19,22,100.54
3. Yoga				17. Amount received from RPFC on a/c of CD (DA)		2,08,475.42
1. Headquarters Office :				18. Amount of CD (DA) received from other Offices		574.71
a) Pay & allowances	37,295.52			19. Amount of CD (DA) new received from RPFC		1,20,410.47
b) Travelling allowances	13,211.45			20. Transfer from CPF account		73,244.67
c) Consumable Stores & Miscellaneous expenditure	47,163.42	97,670.39		21. Transfer from CPF on account of Council's contribution forfeited.		2,565.00
II Units				22. Adjustment of advances paid during past years		
a) Pay & allowances	—			a) T.A.	2,646.25	
b) Travelling allowances	—			b) Contingencies	1,445.92	4,092.20
c) Consumable Stores & Miscellaneous expenditure	517.25	517.25				
4. Homoeopathy						
1. Headquarters Office						
a) Pay & allowances	74,280.09					
b) Travelling allowances	11,488.20					
c) Consumable Stores & Miscellaneous Expenditure	68,145.15	1,53,913.44				
II Units						
a) Pay & allowances	6,79,922.91					
b) Travelling allowances	4,318.65					
c) Consumable Stores & Miscellaneous expenditure	96,707.91	7,80,949.47				
5. Remittance of recoveries of I.T., C.P.F. etc. and other payments.						
a) Headquarters Office	4,43,438.00					
b) Decentralised Units	8,14,977.08	12,58,415.08				
6. Payments of 3rd Instalments of C.D (DA)						
		1,85,277.22				
7. Final payments of CD (DA)		22,284.57				
8. Payment of 1st instalments of CD (DA) New		8,211.99				
		C/o	1,10,10,077.18		C/o	1,23,31,463.01

EXPENDITURE		AMOUNT	INCOME		AMOUNT
		B/F 1,10,10,077.18		B/F	1,23,31,463.01
9	Amount paid to the special land Acquisitions Officer. Poona (Contra)	6,42,527.00			
10	Transfer of C D. (D.A.)				
	a) C.P.F.	1,12,775.00			
	b) G.P.F.	294.00	1,13,069.00		
11	Amount transferred to the Successor Councils :				
	a) C.C.R.A.S.	1,65,237.85			
	b) C.C.Y.N.	25,000.00			
	c) C.C.R.U M	1,00,200.00			
	d) C.C.R.H.	1,00,000.00	3,90,437.85		
12	Value of articles written off	903.40			
13	Outstanding Liabilities				
	a) C.P.F.	10,041.00			
	b) G.P.F.	884.00			
	c) Professional Tax	790.00	11,715.00		
14	Excess of Income over expenditure transferred to Balance Sheet	1,62,733.58			
		<u>1,23,31,463.01</u>			<u>1,23,31,463.01</u>

Sd/-
(J.K. Dass)
(Accounts Officer)
C.C.R.I.M.H.

Sd/-
(K.K. Subramanian)
Asstt. Director (Admn.)
C.C.R.I.M.H.

Sd/-
(Dr P.N.V. Kurup)
Director
C.C.R.I.M.H.

LIABILITIES	AMOUNT	ASSETS	AMOUNT
	B/F 78,43,668.53		B/F 3,19,791.01
		c) Homoeopathy Units	
		As on 1.4.78	4,350.00
		Addition during the year	<u>500.00</u>
			4,850.00
		Less adjustment & refund	<u> --</u> 4,850.00
		d) Yoga units	
		As on 1.4.78	—
		Addition during the year	<u>500.00</u>
			500.00
		Less adjustment & Refund	<u> --</u> 500.00
		Advances given to opening bank account	
		1. Ayurveda & Siddha Units (RRI, Calcutta & RRC, Jogindernagar)	600.00
		2. Homoeopathy Units (DPRU, Calcutta & Lucknow)	<u>200.00</u>
		2. Assets	800.00
		Non-Consumable Stores	
		A) Ayurveda & Siddha	
		i) Headquarters Office	
		As on 1.4.78	3,23,851.14
		Addition during the year	<u>88,280.90</u> 4,12,132.04
		ii) Doc. Centre Cum Library	
		As on 1.4.78	3,20,746.46
		Addition during the year	<u>16,487.14</u> 3,37,233.60
	C/o <u>78,43,668.53</u>		C/o <u>3,97,053.82</u>

LIABILITIES	AMOUNT	ASSETS	AMOUNT
	B/F 78,43,668.53		B/F 3,97,053.82
		iii) Units	
		As on 1.4.78	43,87,044.01
		including building at JNAMPG & H, Poona	
		Rs. 98005.00	
		Addition during the year	77,919.39
			<u>44,64,963.40</u>
		Less articles written off	132.40
			<u>44,64,831.00</u>
			52,14,196.64
		B) Unani	
		i) Headquarters	
		As on 1.4.78	5,329.78
		Addition during the year	11,095.06
			16,424.84
		(ii) Units	
		As on 1.4.78	6,05,569.60
		Addition during the year	4,460.81
			<u>6,10,030.41</u>
			6,26,455.25
		C) Yoga & Naturopathy	
		i) Headquarters	
		As on 1.4.78	3,103.00
		Addition during the year	—
			3,103.00
		ii) Units	
		As on 1.4.78	—
		Addition during the year	—
		Since grant in aid details of assets not known	3,103.00
	C/o <u>78,43,668.53</u>		C/o <u>62,40,808.71</u>

LIABILITIES	AMOUNT	ASSETS	AMOUNT
B/F	78,43,668.53		62,40,808.71
		d) Homocopathy	
		i) Headquarters	
		As on 1.4.78	3,826.85
		Addition during	
		the year	<u>1,867.00</u> 5,693.85
		ii) Units	
		As on 1.4.78	9,28,692.80
		Addition during	
		the year	<u>336.25</u>
			9,29,029.05
		Less articles	
		written off	<u>771.00</u> 9,28,258.05
			9,33,951.90
		3 Contingent Advance	
		a) CCRAS	
		As on 1.4.78	51,188.15
		Addition during	
		the year	<u>1,40,169.77</u>
			1,91,357.92
		Less adjustment	<u>10,577.90</u> 1,80,780.02
		b) CCRUM	
		As on 1.4.78	—
		Addition during	
		the year	3,960.00
		Less adjustment	<u>—</u> 3,960.00
		c) CCRYN	
		As on 1.4.78	—
		Addition during	
		the year	<u>—</u> —
		d) CCRH	
		As on 1.4.78	—
		Addition during	
		the year	<u>2,600.00</u>
			2,600.00
		Less adjustment	<u>—</u> 2,600.00
			1,87,340.02
C/o	<u>78,43,668.53</u>		C/o <u>73,62,100.63</u>

LIABILITIES	AMOUNT	ASSETS	AMOUNT
	B/F 78,43,668 53		B/F 73,62,100.63
		4. 1.A. Advance	
		a) CCRAS	
		As on 1.4.78	3,928.00
		Addition during	
		the year	<u>1,00,851.00</u>
			1,04,779.00
		Less adjustment	<u>3,628.00</u> 1,01,151.00
		b) CCRUM	
		As on 1.4.78	--
		Addition during	
		the year	<u>11,815.00</u>
			11,815.00
		Less adjustment	<u>—</u> 11,815.00
		c) CCRYN	
		As on 1.4.78	—
		Addition during	
		the year	—
		d) CCRH	
		As on 1.4.78	--
		Addition during	
		the year	<u>5,640.00</u>
			5,640.00
		Less adjustment	<u>—</u> 5,640.00 1,18,606.00
		5. Advances Refundable	
		a) Scooter Advance	
		As on 1.4.78	19,400.00
		Addition during	
		the year	<u>16,750.00</u>
			36,150.00
		Less refund	<u>5,171.00</u> 30,979.00
	C/o <u>78,43,668 53</u>		C/o <u>74,80,706.63</u>

LIABILITIES		AMOUNT	ASSETS		AMOUNT
	B/F	78,43,668.53		B/F	74,80,706 63
			b) Cycle Advance		
			As on 1.4.78	7,265 00	
			Addition during the year	<u>18,025.00</u>	
				25,290.00	
			Less refund	<u>8,119.05</u>	17,170.95
			c) Foodgrain Advance		
			As on 1.4.78	237.85	
			Addition during the year	<u>—</u>	
				237.85	
			Less refund	<u>115.00</u>	122.85
			d) Flood Advance		
			As on 1.4.78	8,714.60	
			Addition during the year	<u>20,000.00</u>	
				28,714.60	
			Less refund	<u>7,127.00</u>	21,587.60
			e) Cyclone Relief Advance		
			As on 1.4.78	4,078.00	
			Addition during the year	<u>—</u>	
				4,078.00	
			Less refund	<u>1,707.00</u>	2,371.00
			f) Warm Clothing Advance		
			As on 1.4.78	3,750.00	
			Addition during the year	<u>—</u>	
				3,750.00	
			Less refund	<u>2,975 00</u>	775.00
			g) Festival Advance		
			As on 1.4.78	6,820 00	
			Addition during the year	<u>65,690.00</u>	
				72,510 00	
			Less Refund	<u>30,665 00</u>	41,845.00
	C/o	<u>78,43,668.53</u>		C/o	<u>1 14,851.40</u>
					<u>75.95,558 03</u>

LIABILITIES	AMOUNT	ASSETS	AMOUNT
	B/F 78,43,668.53		B/F 75,95,558.03
		6. Balance of advance payment to the PWD for carrying out repairs to the building of CRI (H), Calcutta.	8,093.86
		7. Security deposit	4,061.13
		8. Loan due from the Family Welfare Research Scheme account.	
		As on 1.4.78	1,44,069.56
		Addition during the year	2,55,384.00
			3,99,453.56
		Less refund.	2,48,077.46
			1,51,376.10
		9. Amount due from the Department of Health towards expenditure on Conference.	10,120.29
		10. Grant-in-aid released during the year for which certified accounts are due from the Institutions.	
		a) CCRAS Units	-----
		b) CCRYN Units.	44,500.00
		c) CCRUM Units.	16,000.00
		d) CCRH Units.	8,000.00
			68,500.00
		11. Suspense account	
		a) CCRAS Scheme (RRI Jaipur)	3,800.00
		b) CCRH Scheme (CRI (H) Calcutta. 1)	2,159.12
			5,959.12
	TOTAL : 78,43,668.53		TOTAL : 78,43,668.53

Sd/-
I. K. Dass
Accounts Officer
CCRIMH

Sd/-
K.K. Subramaniam
Asst. Director (Admn.)
CCRIMH

Sd/-
P.N.V. Kurup
Director
CCRIMH

**Statement Showing the Details of Recoveries of I.T, C.P.F.
etc. made in the Pay Bills (Headquarters Office and
Centralised Units)**

S.No.	PARTICULARS	AMOUNT (Rs)
1.	G.P.F.	4,515.00
2.	C.P.F.	3,65,391.00
3.	Income Tax	24,092.00
4.	Prof. Tax	3,132.00
5.	Festival Advance	8,291.00
6.	Cycle Advance	3,564.00
7.	Scooter Advance	3,171.00
8.	Warm Clothing Advance	75.00
9.	Food Grain Advance	115.00
10.	Floor Advance	2,917.05
11.	C.G.H.S.	1,975.75
12.	Interest on Advances	189.00
13.	Over Payment	535.85
14.	Cyclone Relief Advances	1,707.00
15.	Miscellaneous	41 00
	Total :	<u>4.19,711.60</u>

ANNEXURE-II

Statement Showing the Details of Recoveries of I.T., C.P.F. etc. and Other Receipts by the Decentralised Units.

S. No.	PARTICULARS	AMOUNT (Rs)
1.	Income Tax	14,593.00
2.	C. P. F.	3,28,073.20
3.	Warm Clothing Advance Received from Council	3,750.00
4.	Festival Advance Recovery	16,400.00
5.	Cycle Advance Recovery	4,868.80
6.	Scooter Advance Recovery	1,090.00
7.	Flood Advance Recovery	5,675.00
8.	Warm Clothing Advance Recovery	3,225.00
9.	Purchase Fee	1,198.39
10.	Subscription for Bulletin	719.70
11.	Pay and Allowances not disbursed	57,913.88
12.	Security Deposit	7,196.90
13.	C.P.F. Advance received from Council	66,570.10
14.	Sale Proceeds of old articles	1,262.60
15.	Pay & Allowances, T.A. etc. received from other offices	68,626.25
16.	Prof. Tax	3,754.00
17.	L.I.C. Premium and F.P.B.S.	23,139.10
18.	Festival Advance received from Council	33,700.00
19.	C.D. (D.A.) Received from R.P.F.C.	1,36,832.51
20.	Loan	71,805.20
21.	G.P.F.	3,315.00
22.	Private use of Vehicles	1,266.80
23.	Cycle Advance received from Council	7,725.00
24.	Flood Advance received from Council	12,500.00
25.	Interest on Advances	944.35
26.	Miscellaneous (Cancellation of Cheques etc.) for Re-issue	20,872.88
	Total :	8,97,017.66

ANNEXURE-IV

Statement showing the details of payments of I.T.C.P.F. etc., and other payments by the decentralised Units.

S No.	PARTICULARS	AMOUNT
1.	I. Tax	14,079.00
2.	C. P. F.	3,20,557.20
3.	Festival Advance	14,720.00
4.	Cycle Advance	5,534.80
5.	Scooter Advance	900.00
6.	Flood Advance	3,770.00
7.	Warm Clothing Advance	3,225.00
8.	Subscription for Bulletin	680.70
9.	Purchase Fee and X-ray charges	1,210.66
10.	Auction fee and Tender fee	30.00
11.	Refund of C.D. (D.A.)	1,31,783.40
12.	Payment of Festival, C.P.F. Advances received from Council	1,29,020.10
13.	Sale proceeds of old vehicles	8,938.00
14.	Payment of pay and Allowances received from other offices	55,009.94
15.	L.I.C. & F.P.B.S.	22,558.90
16.	Prof. Tax	2,938.00
17.	Loan	71,820.80
18.	G. P. F.	3,136.00
19.	Refund of Security Deposit	4,951.90
20.	Private use of Vehicles	1,273.95
21.	C. P. F. (D.A.)	204.00
22.	Miscellaneous (Re-issue of cancelled cheques etc.)	18,634.73
	Total :	8,14,977.08

ANNEXURE-III

Statement showing the details of payment of I. T. C. P. F. etc.
(Head Quarters Office and Centralised Units)

S.No.	PARTICULARS	AMOUNT
1.	G. P. F.	5,220.00
2.	C. P. F.	4,04,539.00
3.	Income Tax	28,366.00
4.	Prof. Tax	3,461.00
5.	L. S. & P. C.	1,530.00
6.	Pay Advance	292.00
7.	Miscellaneous	30.00
	Total:	<u>4,43,438.00</u>

Details of Refundable advances outstanding for Recovery
as on 9-4-79

1) Scooter Advance		
Ay. & Siddha	25,879	
Unani	2,950	
Homoeopathy	<u>2,150</u>	30,979.00
2) Cycle Advance		
Ay. & Siddha	13,605.95	
Unani	3,292.00	
Homoeopathy	<u>273.00</u>	17,170.95
3) Food grain Advance		
Ay. & Siddha		122.85
4) Flood Advance		
Ay. & Siddha		21,597.60
5) Cyclone Relief Advance		
Ay. & Siddha		2,371.00
6) Warm Clothing Advance		
Ay. & Siddha		775.00
7) Festival Advance		
Ay. & Siddha	34,645	
Unani	3,380	
Homoeopathy	<u>3,820</u>	41,845.00

Central Council for Research in Indian Medicine and Homoeopathy
Statement of Receipt & Payment account for the period from 1.4.78 to 9.1.79
(Scheme financed by the Department of Family Welfare)

RECEIPT	AMOUNT	PAYMENT	AMOUNT
1. Opening Balance :		1. Headquarters	
Cash in hand		a) Pay & allowances	45,067.25
Cash at Bank	9,317.25	b) T.A.	—
2. Grant-in-aid received		c) Contingencies	—
from the Deptt. of	2,65,344.00	2. Units (Ayurveda)	45,067.25
Family Welfare		a) Pay & allowances	1,93,715.45
3. Recoveries made in the Bills		b) T.A.	—
i) C.P.F.	18,334.00	c) Contingencies	
ii) Income Tax	740.00	i) Consumable stores &	
iii) Professional Tax	108.00	contingent expenditure	14,498.54
iv) C.G.H.S.	67.50	ii) Non-Consumable stores	108.00
v) Festival advance	540.00	3. Units (Unani)	2,08,321.99
vi) Recovery of salary paid		a) Pay & allowances	25,898.45
during past years	461.90	b) T.A.	—
4. Loan received from Health account	20,251.40	c) Contingencies	
	2,55,384.00	i) Consumable store &	
		Miscellaneous Expenditure	516.00
		ii) Non-Consumable stores	12.50
		4. Recoveries remitted	
		i) C.P.F.	20,593.00
		ii) Professional Tax	170.00
		iii) Income Tax	740.00
		5. Loan refunded to Health account	21,503.00
		6. Advances	
		i) Festival	400.00
		ii) Flood	500.00
		7. Closing Balance	
		Cash in hand	—
		Cash at Bank	—
		Total	5,50,296.65

Sd/-
Dr. P.N.V. Kurup
Director
CCRIMH

Sd/-
K.K. Subramanian
Asst. Director (Admn.)
CCRIMH

Sd/-
J.K. Dass
Accounts Officer
CCRIMH

Central Council for Research in Indian Medicine & Homoeopathy
Statement of Income and Expenditure for the period from 1.4.78 to 9.1.79
(Scheme financed by the Department of Family Welfare)

	EXPENDITURE	AMOUNT	INCOME	AMOUNT
1. Headquarters			1. Grant in aid received from the Deptt. of Family Welfare	2,65,344.00
a) Pay & allowances	45,067.25		2. Recoveries made in the Pay Bill	
b) T. A.	—		i) C. P. F.	18,334.00
c) Contingencies	—	45,067.25	ii) Professional Tax	108.00
2. Units Ayurveda			iii) Income Tax	740.00
a) Pay & allowances	1,93,715.45		iv) Recovery of excess salary paid in the past years	461.90
b) T. A.	—		3. Excess of expenditure over income transferred to balance sheet	16,210.79
c) Contingencies	14,498.54	2,08,213.99		
3. Units (Unani)				
a) Pay & allowances	25,898.45			
b) T. A.	—			
c) Contingencies	516.00	26,414.45		
4. Recoveries remitted				
a) C. P. F.	20,593.00			
b) Professional Tax	170.00			
c) Income Tax	740.00	21,503.00		
	Total	<u>3,01,198.69</u>	Total	<u>3,01,198.69</u>

Sd/-
P.N.V. Kurup
Director
CCRIMH

Sd/-
K.K. Subramanian
Asst. Director (Admn.)
CCRIMH

Sd/-
J-K. Dass
Accounts Officer
CCRIMH

Central Council for Research in Indian Medicine & Homoeopathy
Balance Sheet as on 9.1.79
(Scheme financed by the Department of Family Welfare)

LIABILITIES	AMOUNT	ASSETS	AMOUNT
1. Recovery of advances etc. transferable to the grant account of Health Scheme As on 1.4.79		1. Non Consumable Stores	
a) Cycle Advance	210.00	a) Ayurveda Scheme	
b) C. G. H. S.	137.50	As on 1.4.78	61,332.11
d) C. G. H. S. during 77-78	136.25	Addition during the year	108.00
CGHS during 78 to 9.1.79	67.50		61,440.11
	551.25	b) Unani Scheme	
2. Outstanding Liabilities		As on 1.4.78	6,820.09
1. 1976-77		Addition during the year	12.50
a) C.P.F.	579.00		6,832.59
b) CD (D.A.)	259.00	2. Refundable advance	
	838.00	a) Festival advance	
3. Loan due to the grant account of health scheme		An on 1.4.78	60.00
As on 1.4.78	1,44,069.56		400.00
Add received during 1978-79	2,55,384.00		460.00
	3,99,453.56	Less refunded during year	540.00
Less refunded	2,48,077.46		(—) 80.00
	1,51,376.10	b) Flood advance	
		As on 1.4.78	—
		Addition during the year	500.00
			500.00
		3. Amount due from health a/c towards payment of DA (CPF)	163.65
		4. Excess of expenditure over income as on 31.3.78	71,992.04
		Less past year liabilities	4,293.83
			67,698.21
		Add excess of expenditures over income transferred from income & expenditure statement	16,210.79
		5. Closing Balance	83,909.00
			—
Total	<u>1,52,765.35</u>	Total	<u>1,52,765.35</u>

Sd/-
P.N.V. Kurup
Director
CCRIMH

Sd/-
K.K. Subramanian
Asst. Director (Admn.)
CCRIMH

Sd/-
J.K. Dass
Account Officer
CCRIMH

Central Council for Research in Indian Medicine & Homoeopathy
Statement of receipt and payment of CPF for the period from 1.4.78 to 9.1.79.

RECEIPT	AMOUNT	PAYMENT	AMOUNT
1. Opening Balance		1. Amount transferred to fixed deposit	3,25,000.00
Cash in hand	—		28,927.00
Cash at Bank	16,454.89	2. C.P.F. Advance Paid	2,79,138.00
2. CPF Subscription	7,54,705.20	3. Final Payment of C.P.F.	
3. A.D.A. (C.D.A.) credited to	1,24,654.10	a) Subscription Account	55,066.10
4. Amount excess received from		b) Council's Contribution A/c	<u>32,473.00</u>
current account	1,653.00	4. Amount transferred to CCRIMH Account	87,539.10
5. Interest received on saving account	2,060.85	i) Interest Account	
6. Interest received from fixed deposit receipts		a) On Account of Interest of	
Received through CPF Cash Book	9,235.62	the previous year	21,714.82
Credited direct to current A/c	<u>2,67,504.30</u>	b) Interest on FDRS received	
7. Amount received from	28,927.00	through Cash Bank	9,235.62
Encashment of FDR	<u>1,25,000.00</u>	c) Interest transferred	
	1,53,927.00	direct to current A/c	<u>2,67,504.30</u>
			2,98,454.74
		ii) Others	
		d) Subscription & contribution	
		for the previous years	
		received in excess	72,579.65
		e) DA (CPF) paid from the	
		current A/c	73.00
			<u>72,652.65</u>
		Less adjustment of amount	
		due from Current A/c	1,121.98
			<u>71,530.67</u>
		f) Income Tax wrongly credited	1,714.00
		in CPF A/c during's '77-78	
		now transferred to current A/c	
		g) Council's contribution	
		forefieted transferred	
		to current A/c	2,565.00
			75,809.67
		5. Amount transferred to CCRAS Saving Account	2,35,272.25
		6. Payment of ADA (CDS)	54.20
			<u>13,30,194.96</u>
			13,30,194.96
	Total		
	<u>13,30,194.96</u>		

Sd/-
P.N.V. Kurup
Director
CCRIMH

Sd/-
K.K. Subramanian
Asst. Director (Admn.)
CCRIMH

Sd/-
J.K. Dass
Accounts Officer
CCRIMH

Central Council for Research in Indian Medicine & Homoeopathy
Balance Sheet of CPF account for the period from 1.4.78 to 9.1.79

LIABILITIES	AMOUNT	ASSETS	AMOUNT
1. Subscription Account		1. Fixed deposit A/c	51,74,712.00
a) Opening Balance	28,84,206.00	Add deposit during the period	3,25,000.00
b) Subscription received & credited in CPF A/c	7,54,938.20		<u>54,99,712.00</u>
c) ADA(CDS)credited to CPF A/c	1,24,654.10	Lesss withdrawal	<u>1,53,927.00</u>
d) Interest credited to CPF A/c	22,781.30		53,45,785.00
	<u>37,86,579.60</u>	2. Amount transferred to CCRAS A/c	2,35,272.25
e) Less Bonus excess paid recovered	1,189.00	3. Subscription received but credited into CCRAS CPF A/c	28,927.00
	<u>37,85,390.60</u>		233.00
f) Less withdrawal CPF Advance	2,79,138.00	4. Interest credited & due from current A/c	22,781.30
Final payment	<u>55,066.10</u>	Less Bonus received	1,189.00
	3,34,204.10		21,592.30
	34,51,186.50		
2. Council's Contribution A/c			
a) Opening Balance	22,08,298.00		
Less withdrawal	32,473.00		
	<u>21,75,825.00</u>		
Less Council's contribution forefieted & transferred to cerrent A/c	—		
	2,565.00		
	21,73,260.00		
3. Interest on fixed/saving account			
a) Opening Balance	<u>21,714.82</u>		
b) Interest carried on fixed deposit	2,76,739.92		
c) Interest on saving account	2,060.85		
	<u>3,00,515.59</u>		
d) Less transferred to current account	<u>2,98,454.74</u>		
	2,060.85		
4. D A. CPF A/c I			
1. Opening Balance	345.20		
Less paid	54.20		
	<u>291.00</u>		
Less transferred to current A/c	73.00		
	218.00		
Total C/o	<u>56,26,725.35</u>	Total C/o	<u>56,31,809.55</u>

LIABILITIES	AMOUNT	ASSETS	AMOUNT
	B/F 56,26,725.35		B/F 56,31,809.55
5. D.A. CPF-II			
Opening Balance	3,431.20		
6. Amount due to the current A/c			
Opening Balance	73,171.67		
Less transferred			
to current A/c on	72,579.65		
account of Subscrip-	592.02		
tions & contribution			
transferred in excess			
Add Adjustment of amount due			
Rs. 1,121.98+1,653 00	2,774.98		
Less income tax trans-	3,367.00		
ferred to current A/c	1,714.00		
	1,653.00		
Total	<u>56,31,809.55</u>		Total <u>56,31,809.55</u>

Sd/-
P.N.V. Kurup
Director
CCRIMH

Sd/-
K.K. Subramanian
Asst. Director (Admn.)
CCRIMH

Sd/-
J.K. Dass
Account Officer
CCRIMH

AUDIT CERTIFICATE

I have examined the foregoing accounts for the year 1978-79 (1.4.1978 to 9.1.1979) and Balance Sheet as on 9th January 1979 of the Central Council for Research in Indian Medicine and Homoeopathy and obtained all the information and explanations that I have required and subject to the observations in Audit Report appended, I certify, as a result of my audit that in my opinion these accounts are properly drawn up so as to exhibit a true and fair view of the state of affairs of the Council according to the best of my information and explanation given to me and as shown by the books of the Council.

New Delhi
Dated the 21st August, 1980

Sd/-
K.C. Das
Director of Audit
Central Revenues

Central Council for Research in Ayurveda and Siddha
Statement of Receipts & Payment for the Year 1978 79 (From 10-1-79 to 31-3-79)
(Scheme Financed by the Department of Health)

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
1. Opening Balance		1. Headquarters Office	
i) Headquarters Office		a) Pay & allowances	1,75,990.70
Cash in hand	1,000.00	b) Travelling allowances	91,118.06
Cash at Bank	—	c) Contingencies	
ii) Opening balance with the Decentralised Units	2,08,850.32	i) Consumable stores &	
iii) Lump-sum released before bifurcation of the		Miscellaneous expenditure	2,23,452.71
accounts but received after bifurcation by		ii) Non-consumable stores	14,57,078.49
some decentralised units	16,351.55	d) Advances	
iv) Imprest Advance	66,462.81	i) T.A.	1,000.00
v) Advances given to RRI, Calcutta, & RRC,		ii) Contingencies	300.00
Jogindernagar for opening bank account	600.00		19,48,939.96
2. Grant-in-aid received from the Govt. of India	56,52,000.00	2. Documentation-cum-Publication Divisions	
3. Subscription for bulletin/journals	286.80	a) Pay & allowances	44,908.70
4. Purchase fee	344.20	b) Travelling allowances	—
5. Security Deposit	214.25	c) Contingencies	
6. Private use of Staff Car	145.00	i) Consumable stores &	
7. Proceeds from sale of old articles	9,684.60	Miscellaneous expenditure	19,030.74
8. Refund of Pay & allowances, T.A. contingencies		ii) Non-consumable stores	381.25
etc relating to past years	11,899.31	d) Advances	
9. Recovery of Festival, Cycle, Scooter etc advances		Contingencies	100.00
remitted by the Decentralised Units	10,916.50		64,420.69
10. Sale of Publication	3,232.81	3. Composite Drug Research Scheme	
11. Recovery of Income Tax, C.P.F. etc. made in the		a) Pay & allowances	3,20,929.10
pay bills of Headquarters Office & Centralised		b) Travelling allowances	(-) 351.30
Units	1,39,821.40	c) Contingencies	
12. Recovery of Income Tax, C.P.F. etc. made in the		i) Consumable stores &	
pay bills and other receipts by the Decentralised		Miscellaneous expenditure	46,051.55
Units	2,31,331.46	ii) Non-consumable stores	2,870.20
13. Loan refunded by the Family Welfare Research			3,69,499.55
Scheme	1,77,034.24	4. Survey of Medicinal Plants Scheme	
14. Amount received from erstwhile C.C.R.I.M.H.	1,63,106.14	a) Pay & allowances	92,413.30
C/o	66,93,281.39	b) Travelling allowances	6,106.00
		c) Contingencies	
		i) Consumable stores &	
		Miscellaneous expenditure	13,516.57
		ii) Non-Consumable Stores	36.00
		C/o	23,82,860.20

RECEIPTS		AMOUNT	PAYMENTS		AMOUNT
		B/F 66,93,281.39			B/F 23,82,860 20
15. Adjustment of advances paid during the past years.			d) Advances		
a) T.A.	32,984.00	33,068.00	i) T.A.	800.00	
b) Contingencies	<u>84.00</u>		ii) Contingencies	<u>4,000 00</u>	1,16,871.87
			5. Drug Standardisation Research Scheme		
			a) Pay & allowances	75,877.50	
			b) Travelling Allowances	24.40	
			c) Contingencies		
			i) Consumable Stores & Miscellaneous expenditure	1,686.51	
			ii) Non-Consumable Stores	7,955 14	
			d) Advances		
			Contingencies	<u>3,600.00</u>	89,143.55
			6. Literary Research Scheme		
			a) Pay & allowances	26,364.63	
			b) Travelling allowances	183.60	
			c) Contingencies		
			i) Consumable Stores & Miscellaneous expenditure.	635.30	
			ii) Non-Consumable Stores	<u>—</u>	27,183.53
			7. Clinical Research Scheme		
			a) Pay & allowances	2,47,082.90	
			b) Travelling allowances	1,605.95	
			c) Contingencies		
			i) Consumable Stores & Miscellaneous expenditure	16,478.24	
			ii) Non-Consumable Stores	720.86	
			d) Advances		
			Contingencies	<u>2,284.50</u>	2,68,172.45
			8. Regional Research Institutes		
			a) Pay & allowances	2,31,314.25	
			b) Travelling allowances	6,210.26	
			c) Contingencies		
			i) Consumable store & Miscellaneous expenditure	89,221.84	
			ii) Non-Consumable Stores	<u>34,239.25</u>	3,60,985.60
		C/o <u>67,26,349.39</u>			C/o <u>32,45,217.20</u>

RECEIPTS

AMOUNT

PAYMENTS

AMOUNT

B/F 67,26,349.39

B/F 32,45,217.20

9.	Regional Research Centres		
a)	Pay & allowances	1,26,430.40	
b)	Travelling allowances	2,483.25	
c)	Contingencies		
i)	Consumable Stores & Miscellaneous expenditure	31,133.46	
ii)	Non-Consumable Stores	<u>22,221.14</u>	
d)	Advances		
	Contingencies	1,01,015.00	2,83,283.25
10.	Jawaharlal Nehru Ayurvedic Medicinal Plants Garden & Herbarium, Poona.		
a)	Pay & allowances	23,350.20	
b)	Travelling allowances		
c)	Contingencies		
i)	Consumable Stores & Miscellaneous expenditure	1,949.76	
ii)	Non-Consumable Stores	<u>—</u>	25,299.96
11.	Amchi Research Scheme, Leh		
a)	Pay & allowances	5,259.20	
b)	Travelling allowances	—	
c)	Contingencies		
i)	Consumable Stores & Miscellaneous expenditure	267.70	
ii)	Non Consumable Stores	<u>1,421.00</u>	6,947.90
12.	Journal of Research in Indian Medicine, Varanasi		
a)	Pay & allowances	15,331.20	
b)	Travelling allowances	—	
c)	Contingencies		
i)	Consumable Stores & Miscellaneous expenditure	2,697.20	
ii)	Non-Consumable Stores	<u>—</u>	18,028.40

C/o 67,26,349.39C/o 35,78,776.71

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
	B/F 67,26,349.39		B/F 35,78,770.71
		13. Central Research Institutes	
		a) Pay & allowances	2,77,488.73
		b) Travelling Allowances	6,396.60
		c) Contingencies	
		i) Consumable Stores & Miscellaneous expenditure	1,98,981.21
		ii) Non-Consumable Stores	<u>1,21,033.19</u>
			6,03,899.73
		14. Dr. A. Lakhahmipati Unit for Research in Indian Medicine, Madras.	
		a) Pay & allowances	37,319.20
		b) Travelling allowances	2,222.60
		c) Contingencies	
		i) Consumable Stores & Miscellaneous expenditure	2,715.78
		ii) Non-Consumable Stores	<u>9,967.10</u>
			52,224.68
		15. Captain Srinivasa Murti Drug Research Institute in Ayurveda, Madras.	
		a) Pay & allowances	50,318.60
		b) Travelling allowances	1,884.75
		c) Contingencies	
		i) Consumable Stores	24,385.83
		ii) Non-Consumable Stores	<u>14,255.69</u>
			90,844.87
		16. Ayurvedic Research Unit, Bangalore	
		a) Pay & allowances	27,147.70
		b) Travelling allowances	782.70
		c) Contingencies	
		i) Consumable Stores & Miscellaneous expenditure	<u>6,711.97</u>
		ii) Non-Consumable Stores	—
			34,642.37
		17. Amalgamated Units, Tarikhet	
		a) Pay & allowances	61,930.30
		b) Travelling allowances	4,088.75
		c) Contingencies	
		i) Consumable Stores & Miscellaneous expenditure	16,297.80
		ii) Non-Consumable Stores	—
			82,316.85
	C/o <u>67,26,349.39</u>		C/o <u>44,42,705.21</u>

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
	B/F 67,26,349.39		B/F 44,42,705 21
		18. Indian Institute of History of Medicine, Hyderabad	
		a) Pay & allowances	33,820.20
		b) Travelling allowances	—
		c) Contingencies	
		i) Pay & allowances	3,689.26
		ii) Non-Consumable Stores	9,331.70
		19. Grant-in-aid to C.R.U., Jaipur	46,841.16
		20. Remittances recoveries of I.T., C.P.F. etc. by the Headquarters Office	13,238.68
		21. Remittances of I. T., C.P.F. etc & other payments by the Decentralised Units	96,149.30
		22. Final Payment of C.P.F. made from Health etc.	2,37,756.02
		23. Seminar	58.00
		a) Travelling Allowances	21,863.75
		b) Contingencies	
		i) Consumable Stores & Miscellaneous expenditure	828.60
		ii) Non-Consumable Stores	—
		c) Advances	
		T.A.	5,250.00
		24. Advances Refundable	27,942.35
		a) Festival	20,400.00
		b) Flood	44,000.00
		c) Cycle	825.00
		d) Scooter	7,000.00
		e) Warm Clothing	250.00
		25. Loan given to Family Welfare Research Scheme	72,475.00
		26. Transfer to CPF towards interest and Council's contribution on CPF	1,49,813.88
		27. Closing Balance :	
		i) Headquarters Office	
		a) Cash in hand	1,000.00
			C/o 58,86,979.60
	C/o <u>67,26,349 69</u>		

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
	B/F 67,26,349.39		B/F 58,86,979.60
		b) Cash at bank	
		i) South Extn.	
		Branch 9,343.52	
		ii) Green Part Extn.	
		Branch <u>1,94,348.47</u> <u>2,03,691.99</u>	2,04,691.99
		ii) Closing balance with the Decentralised Units	5,31,158.89
		iii) Lump sum released in March '79 but received in April '79 by some Decentralised Units	36,456.10
		iv) Imprest Advance	
		As on 10 1-79	66,462.81
		Addition during the year	<u>—</u>
			66,462.81
		Less adjustment	<u>—</u>
		v) Advances given to RRI, Calcutta, RRC, Jogindernagar for opening bank account	66,462.81 600.00
	Total <u>67,26,349.39</u>		Total <u>67,26,349.39</u>

Sd/-
P.N.V. Kurup
Director
CCRAS

270

Sd/-
J.K. Dass
Accounts Officer
CCRAS

Sd/-
K.K. Subramanian
Assistant Director (Admn)
CCRS

271

Central Council for Research in Ayurveda & Sidha
Income and Expenditure Account for the year 1978-79 (From 10-1-79 to 31-3-79)
(Schemes Financed by the Department of Health)

EXPENDITURE	AMOUNT	INCOME	AMOUNT
1. Headquarters Office		1. Grant-in-aid received from the Govt. of India	56,52,000.00
a) Pay & allowances	1,75,990.70	2. Subscription for bulletines/journals	286.80
b) Travelling allowances	91,118.06	3. Purchee Fee	344.20
c) Consumable Stores & Miscellaneous expenditure	<u>2,23,452.71</u>	4. Private use of Staff Car	145.00
	4,90,561.47	5. Proceeds from sale of old articles	9,684.60
2. Documentation & Publication Division		6. Refund of Pay & allowances TA, Contingencies etc. relating to past years	11,899.31
a) Pay & allowances	44,908.70	7. Recovery of Festival, Cycle, Scooter etc. advance remitted by the Decentralised Units	10,916.50
b) Travelling allowances	—	8. Sale of publication	3,232.81
c) Consumable Stores & Miscellaneous expenditure	<u>19,030.74</u>	9. Recovery of income tax, CPF etc. made in the pay bills & other receipts.	
	63,939.44	a) Headquarters Office and Centralised Units	1,39,821.40
3. Units		b) Decentralised Units	<u>2,31,331.46</u>
a) Pay & allowances	16,52,377.41		3,71,152.86
b) Travelling allowances	53,501.31	10. Amount received from erstwhile CCRIMH	1,63,106.14
c) Consumable Stores & Miscellaneous expenditure	<u>4,57,248.58</u>	11. Adjustment of advances paid during past years	
	21,63,127.30	a) T.A.	32,984.00
4. Transfer to C.P.F towards interest on and Council's contribution of C.P.F.	3,00,000.00	b) Contingencies	84.00
5. Remittance of I.T, & other Payments :—			33,068.00
a) Headquarters Office	96,149.39	12. Value of assets etc. taken over from the erstwhile CCRIMH	
b) Decentralised Units	<u>2,37,756.02</u>	a) Non-consumable stores	52,14,196.64
	3,33,905.32	b) Advances outstanding for adjustment	
6. Liabilities on securities taken over from CCRIMH	14,118.90	i) T.A.	1,01,151.00
7. Cost of articles written off	13,823.54	ii) Contingencies	<u>1,80,780.02</u>
8. Outstanding liabilities			2,81,931.02
a) Pay & allowances	85,431.20	c) Refundable advances	
b) Travelling allowances	4,969.70	i) Scooter	25,879.00
c) Contingencies	86,602.74	ii) Cycle	13,605.95
d) C.P.F.	41,102.00	iii) Foodgrain	122.85
e) G.P.F.	1,119.00		
f) Professional Tax	<u>2,132.00</u>		
	2,21,356.64		
C/o	<u>41,00,832.61</u>		<u>62,55,836.22</u>

LIABILITIES		AMOUNT	ASSETS		AMOUNT
	B/F	83,93,074.16		B/F	26,94,992.57
			Less cost of articles written off	235.79	3,37,379.06
			c) Units		
			As on 10.1.79	44,64,831.00	
			Additions during the year	<u>2,24,051.27</u>	
				46,88,882.27	46,88,882.27
			3 Contingent Advance		
			As on 10.1.79	1,80,780.02	
			Addition during the year	<u>1,11,299.50</u>	
				2,92,079.52	
			Less adjustment	150.00	2,91,929.52
			4. T.A. Advance		
			As on 10.1.79	1,01,151.00	
			Addition during the year	<u>7,050.00</u>	
				1,08,201.00	
			Less adjustment	<u>33,266.00</u>	74,935.00
			5. Refundable advances		
			a) Scooter advances		
			As on 10.1.79	25,879.00	
			Addition during the year	<u>7,000.00</u>	
				32,879.00	
			Less Refund	1,417.00	31,462.00
			b) Cycle		
			As on 10.1.79	13,605.95	
			Addition during the year	<u>825.00</u>	
				14,430.95	
			Less Refund	<u>2,853.50</u>	11,577.45
			c) Food grain		
			As on 10.1.79		122.85
			d) Flood		
			As on 10.1.79	21,587.60	
			Addition during the year	<u>44,000.00</u>	
				65,587.60	
	C/o	<u>83,93,074.16</u>		C/o	<u>81,31,280.72</u>

LIABILITIES	AMOUNT	ASSETS	AMOUNT
	B/F 83,93,074.16		B/F 81,31,280.72
		Less Refund	3,050.00 62,537.60
		e) Cyclone relief	
		As on 10.1.79	2,371.00
		Addition during the year	—
			<u>2,371.00</u>
		Less Refund	480.00 1,891.00
		f) Warm Clothing	
		As on 10.1.79	775.00
		Addition during the year	250.00
			<u>1,025.00</u>
		Less Refund	325.00 700.00
		g) Festival	
		As on 10.1.79	34,645.00
		Addition during the year	20,400.00
			<u>55,045.00</u>
		Less Refund	13,814.00 41,231.00
6.		Security Deposit	4,061.13
7.		Loan due from the Family Welfare Research Scheme account	
		a) As on 10.1.79	1,51,376.10
		Addition during the year	1,49,813.88
			<u>3,01,189.98</u>
		Less Refund	1,77,034.24 1,24,155.74
8.		Amount due from the Department Health towards expenditure on conference	10,120.29
9.		Grant in aid paid to CRU Jaipur for which audited accounts are awaited	13,238.68
10.		Amount due from CPF A/c towards final payment made from Health grant	58.00
11.		Suspense Account (RRI, Jaipur)	3,800.00
Total	<u>83,93,074.16</u>	Total	<u>83,93,074.16</u>

Sd/-
P.N.V. Kurup
Director
CCRAS

Sd/-
K.K. Subramanian
Assistant Director (Admn.)
CCRAS

Sd/-
J.K. Dass
Accounts Officer
CCRAS

ANNEXURE-I

**Details of Recoveries of I.T., C.P.F. etc. made in the pay
Bills (Headquarters Office and Direct Units)**

S.No.	Particulars	Amount
1.	Income Tax	15,392.00
2.	C. P. F.	1,09,722.00
3.	G. P. F.	705.00
4.	Professional Tax	1,926.00
5.	Festival Advance	5,704.00
6.	Cycle Advance	1,647.00
7.	Scooter Advance	1,017.00
8.	Flood Advance	2,175.00
9.	C. G. H. S.	380.75
10.	Rent	8.00
11.	Cyclone Relief Advance	480.00
12.	Interest on Advance	84.00
13.	Miscellaneous	580.65
		<u>1,39,821.40</u>

ANNEXURE-II

**Details of Recoveries made in the Pay Bills and Other
Receipts by the Decentralised Units**

S.No.	Particulars	Amounts
1.	Income Tax	16,721.60
2.	C. P. F.	71,744.40
3.	Festival Advance Recovered	8,860.00
4.	Cycle Advance recovered	823.90
5.	Scooter Advance recovered	6 3.00
6.	Flood advance recovered	1,500.00
7.	Warm Clothing advance recovered	467 00
8.	Purchase fee	334.55
9.	Subscription for Bulletin	106.00
10.	Auction fee and Tender fee	15.52
11.	Security Deposit	760 00
12.	C. P. F. Advance received from the Council	30,607.30
13.	Sale of old articles	145 50
14.	Pay, T.A. Contingencies etc. received from other Offices	26,079.82
15.	Professional Tax	660 50
16.	L. I. C.	1,929.70
17.	Festival Advance received from the Council	7,800.00
18.	C.D (D.A.) received from R.P.F.C.	31,916.67
19.	Loan	3,160.00
20.	G. P. F.	800.00
20.	Private use of vehicle—hire charges	190.85
21.	Cycle advance received from the Council	825.00
23.	Flood advance received from the Council	23,500.00
24.	Warm Clothing advance received from the Council	250 00
25.	Miscellaneous	1,510 15
	Total	<u>2,31,331.46</u>

ANNEXURE-III

**Details of I. T., C.P.F. etc.
Remitted by Headquarters**

S.No.	Particulars	Amount
1.	Income Tax	14,045 00
2.	C P F.	72,657 00
3.	G. P. F.	470
4.	Professional Tax	584.00
5.	L. S & P C.	8,393 30
	Total	<u>96,149.30</u>

ANNEXURE-IV

**Details of remittances of I. T., C.P.F. etc. and other
Payments by the Decentralised Units**

S.No.	Particulars	Amount
1.	I. T.	16,840.60
2.	C. P. F.	77,748.40
3.	Festival Advance	9,740.00
4.	Cycle Advance	903.90
5.	Scooter Advance	926.00
6.	Flood Advance	1,200.00
7.	Worm Clothing Advance	467.00
8.	Subscription for Bulletin	145.00
9.	Purchee fee	334.55
10.	Refund of C.D. (D.A.)	31,272.07
11.	Payment of Festival, C.P.F. advance received from the Council	68,886.30
12.	Payment of Pay, T.A. Contingencies etc. received from the Offices	17,366.00
13.	L. I. C.	1,976.70
14.	Professional Tax	660.50
15.	Loan	4,267.90
16.	G. P. F	800.00
17.	Refund of Security Deposit	260.00
18.	Vehicle hire charges	190.85
19.	Miscellaneous	3,770.25
	Total	<u>2,37,756.02</u>

Central Council for Research Ayurveda and Siddha
Statement of Receipt & Payment account for the period from 10.1.79 to 31.3.79
(Scheme financed by the Department of Family Welfare)

RECEIPTS	AMOUNT	PAYMENTS	AMOUNT
1. Opening Balance :		1. Headquarters	
Cash in hand	—	Pay & allowances	15,940.50
Cash at Bank	—	T.A.	—
2. Grant in aid received from the Department of Family Welfare	2,50,000.00	Contingencies	—
3. 1) Loan received from the Health A/c	1,36,000.00	2. Units	15,940.50
2) Multi Central Trial	13,813.88	Pay & allowances	67,419.40
4. Recoveries made in the Pay Bill		T A.	—
C.P.F.	6,771.00	Contingencies	13,228.11
Income Tax	790.00	3. Expenditure on Multi Central Trial	13,813.88
Professional Tax	36.00	4. Recoveries remitted	
C.G H.S.	17.25	C.P.F.	4,471.00
Festival advance	220.00	Professional Tax	24.00
Flood advance	375.00	Income Tax	750.00
	8,209.25	5. Loan refunded to Health A/c	1,77,034.24
		6. Advances :	
		Festival	800.00
		Flood	2,500.00
		7. Transfer to CPF A/c on a/c of Councils Contribution	
		Interest & Bonus	40,000.00
		8. Amount remitted to Unani Council	13,473.05
		9. Closing Balance Cash at Bank	58,568.95
Total	<u>4,08,023.13</u>	Total	<u>4,08,023.13</u>

Sd/-
(P.N.V. Kurup)
Director
CCRAS

Sd/-
(K.K. Subramanian)
Assistant Director (Admn.)
CCRAS

Sd/-
(J.K. Dass)
Accounts Officer
CCRAS

Central Council for Research in Ayurveda and Siddha
Statement of Income and Expenditure for the period from 10.1.79 to 31.3.79
(Scheme Financed by the Department of Family Welfare)

EXPENDITURE	AMOUNT	INCOME	AMOUNT
1. Headquarters		1. Grant in aid received from the Department of family welfare	2,50,000.00
a) Pay & allowances	15,940.50	2. Recoveries made in the Bills	
b) T.A.	—	C.P.F.	6,771.00
c) Contingencies	—	Income Tax	790.00
2 Units		Professional Tax	36.00
a) Pay & allowances	67,419.40	3. Value of assets taken over from CCRIMH	7,597.00
b) T.A.	—	Non-consumable stores	61,440.11
c) Contingencies	13,228.11	Advances	420.00
3. Expenditure on Multi Central Trial	13,813.88	Amount due from health account on account of DA (CPF)	163.65
4. Recoveries remitted		Excess of expenditure	<u>84,020.70</u>
C.P.F.	4,471.00		<u>1,46,044.46</u>
Professional Tax	24.00		
Income Tax	750.00		
	5,245.00		
5. Councils contribution & interest on CPF transferred to CPF account	40,000.00		
6. Amount transferred to C.C.R.U.M.	13,473.05		
7. Liabilities received from C.C.R.I M H.			
1) Amount transferable & health account on account of cycle advance & C.G.H.S.	551.25		
2) C.P.F.	838.00		
3) Loan due to health grant	1,51,487.80		
	1,52,877.05		
8. Outstanding liabilities			
a) Pay & allowances	1,941.75		
b) Contingencies	227.45		
c) C.P.F.	2,287.00		
d) Profession Tax	32.00		
	4,488.20		
9. Excess of income over expenditure	77,156.27		
	Total		Total
	<u>4,03,641.46</u>		<u>4,03,641.46</u>

Sd/-
(P.N.V. Kurup)
Director
CCRAS

Sd/-
(K.K. Subramanian)
Assistant Director (Admn.)
CCRAS

Sd/-
(J.K. Dass)
Account Officer
CCRAS

Central Council for Research in Ayurveda and Siddha
Statement of receipt and payment of account CPF for the period from 10.1.79 to 31.3.79.

RECEIPT	AMUNT	PAYMENT	AMOUNT
1. Director CCRIMH A/c for opening bank a/c for Council's Contribution & interest, Bonus etc.	100.00 8,00,000.00	1. Amount transferred to following Council's on a/c of CPF subscription & Councils Contribution in respect of the staff transferred	
2. Director CCRIMH Saving A/c	2,35,272.25 28,927.00 <u>2,64,199.25</u>	CPF Subscription Council's Contribution	
3. By Family Welfare grant on A/c of Council's Contribution, Interest & Bonus on CPF	2,64,199.25 40,000.00	a) CCRH Ghaziabad 2,31,743.00 1,45,111.00 3,76,854.00	
4. CPF Subscription	1,40,095.00	b) CCRUM New Delhi 1,75,208.00 1,05,564.00 2,80,772.00	
		c) C. RYM New Delhi 12,309.00 4,518.00 16,727.00	
		<u>4,19,260.00</u> <u>2,55,093.00</u>	
		2. Amount remitted to CCRH on account of CpF subscription from CPF A/c instead of current a/c	40.00
		3. CPF Advance paid	82,895.00
		4. CPF Final withdrawal	
		Subscription account 14,111.30	
		Council's Contribution 9,882.00	
		<u>23,993.30</u>	23,993.30
		5. To fixed deposit account	40,00,000.00
		6. Closing Balance	57,666.00
		<u>54,46.95</u>	63,412.95
Total	<u>12,44,394.24</u>	Total	<u>12,44,394.25</u>

Sd/-
P.N.V. Kurup
Director
CCRAS

Sd/-
K.K. Subramanian
Assistant Director (Admn.)
CCRAS

Sd/-
J. K. Dass
Accounts Officer
CCRAS

Central Council for Research in Ayurveda and Siddha
Balance Sheet of C.P.F. account for the period from 10.1.79 to 31.3.79

LIABILITIES	AMOUNT	ASSETS	AMOUNT
1. Subscribers Account		1. To fixed deposit account	
a) Opening Balance	34,51,116.50	a) Opening Balance	53,45,785.00
b) Subscription received & credited in CPF	1,65,448.40	Add deposit during the period	4,00,000.00
b) Bonus credited	13,412.00		<u>57,45,785.00</u>
c) Interest credited	2,16,885.40	2. Amount transferred to CCRAS Saving account	
	<u>38,46,932.30</u>	Less received	2,64,199.25
Less CPF Advances	82,895.00	3. CPF Subscription credited into CPF subscription account in the year 1978-79 but deposited into CPF account in 4/79.	
Final payment	14,111.30	Opening balance	233.00
Transfer to other Council's	4,19,260.00	Add during the period	25,353.40
Amount received back from Unani Council (—)	10,162.00		<u>25,586.40</u>
	<u>5,06,104.30</u>	Amount in account of CPF subscription & Council Contribution transferred to Unani Council but received back & credited 1979-80 account	17,061.00
2. Contribution Account		4. Closing Balance	
a) Opening Balance	21,73,260.00	Cash in hand	63,112.95
b) Contribution due for 78-79	4,05,007.00	Cash in bank	63,112.95
c) Interest due for 78-79 due & credited	1,63,175.00		
	<u>27,41,442.00</u>		
d) i) Less withdrawal	9,882.00		
ii) Council's contribution transferred to other Councils	2,55,093.00		
	<u>2,64,975.00</u>		
Less amount received back from Unani Council (—)	6,899.00		
	<u>2,58,076.00</u>		
	<u>24,83,366.00</u>		
C/o	<u>24,83,366.00</u>	C/o	<u>58,51,545.35</u>

