

ayurveda



A Focus on Research and Development

*Fifty Years of Transforming Research and Development in Ayurveda
(1969-2018)*



CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES

Ministry of AYUSH

Government of India







आयुर्वेद

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SHRIPAD NAIK

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आयुर्वेद, योग व प्राकृतिक चिकित्सा, चूनाबी, सिद्ध एवं
होम्योपैथी (आयुष) मंत्रालय
भारत सरकार

MINISTER OF STATE (INDEPENDENT CHARGE) FOR
AYURVEDA, YOGA & NATUROPATHY
UNANI, SIDDHA AND HOMOEOPATHY (AYUSH)
GOVERNMENT OF INDIA



12th December, 2018

MESSAGE

It gives me immense pleasure in extending my good wishes to Central Council for Research in Ayurvedic Sciences, an apex organization for Research in Ayurveda, under this Ministry who is on its way to reach 50th milestone during its long chequered and meaningful existence in the field of researches in Ayurvedic sciences.

I must say, CCRAS has contributed significantly in field of Ayurvedic Research, including, validation of classical drugs, development of new formulations for diseases of national importance, Research oriented public health care services etc. Ayurveda is an ancient personalized and comprehensive sustainable system of natural health care; I believe it will be the answer to current health challenges faced by humanity. Ministry of AYUSH is putting efforts of inclusion of AYUSH systems of medicine in Ayushman Bharat.

I hope and believe that in the years to come, the council with all good will to its credit will further imbibe the ennobling and pristine essence of recent technologies in undertaking and promoting future endeavours of scientific activities in Ayurveda. I wish success in its current efforts continuing the past good practices and maintaining its status as an institution committed to excellence in research.

(Shripad Naik)

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AYURVEDA – A FOCUS ON RESEARCH AND DEVELOPMENT



सत्यमेव जयते

वैद्य राजेश कोटेचा
Vaidya Rajesh Kotecha



MESSAGE

सचिव

भारत सरकार

आयुर्वेद, योग व प्राकृतिक चिकित्सा
यूनानी, सिद्ध एवं होम्योपैथी (आयुष) मंत्रालय
आयुष भवन, 'बी' ब्लॉक, सी.पी.ओ. कॉम्प्लेक्स,
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I would like to convey my appreciation to Central Council for Research in Ayurvedic Sciences (CCRAS) for making outstanding contributions for research and development during past years. The growth rate witnessed in Ayurveda research and development over the years instils confidence and displays the instrumental spearheading role of CCRAS in finding affordable solutions to multifaceted problems of public health relevance.

The council through its 30 research institutes holds a key position and has laid special impetus on various scientific activities including Clinical Research, Medicinal Plant Research and Drug Standardization and Quality control, Pharmacological Research, Revival and retrieval of ancient Indian medical manuscripts and public health care through Research oriented public health care services. The researches have come out with useful findings & policy implications, on basis of this, many patents have been granted and technologies have been transferred successfully for public use. In the coming years, I wish the Council to take this endeavour to new heights.

I would like to congratulate the Council for completing their triumphant Journey of 50 years marked by both achievements and challenges and wish them best wishes for the future endeavours.

(Rajesh Kotecha)

New Delhi
Date: 12th December, 2018



AYURVEDA – A FOCUS ON RESEARCH AND DEVELOPMENT



PREFACE

Ayurveda is the first life care system to advocate an integrated approach to the holistic concept of health. The uniqueness of this science is that it has deep foundations of philosophical framework of Indian heritage providing individualized medical care taking into account the geographical, social, cultural and individual variations.

The Central Council for Research in Ayurvedic Science (CCRAS), an apex institution for Research in Ayurveda under the Ministry of AYUSH, established in 1969, since then it has been engaged in various domains of Research in Ayurveda including clinical research, medicinal plant research, pharmacological research, drug standardization, development of scientific tools and methods in Ayurveda, Research oriented public health care services, pharmaco-epidemiology studies, revival and retrieval of ancient medical documents etc. The activities are carried out through its 30 institutes across the country and also through collaborative studies with various academic and research institutes, universities, hospitals in India and abroad.

The Council has been putting efforts to translate the research findings into practice and make available to the needful at large. It has patented many formulations for diseases of national importance through extensive drug development research and has transferred them to industries for public use.

This book intends to provide a glimpse of various activities that have been undertaken by CCRAS since the last 50 years in order to disseminate evidence based Ayurveda across stakeholders.

*Prof. Vaidya K.S. Dhiman
Director General*

Central Council for Research in Ayurvedic Sciences



AYURVEDA – A FOCUS ON RESEARCH AND DEVELOPMENT



PROLOGUE

The science of Ayurveda has been in vogue in this country from the earliest times and serving the medical needs of most of our people. These systems were developed by ancient scholars on the basis of their own philosophy, oriental methodologies and practices prevalent in that era and have popularized and almost completed it in all aspects as a system of medicine.

The Central Council for Research in Ayurvedic Sciences was established in 1969, since then it has been engaged in quality research in the field of Ayurveda.

The core research activities of council comprises of Clinical Research, Medicinal Plant Research, Drug Standardization and Quality Assurance, Pharmacological Research, Literary Research, Fundamental Research and Research Oriented public health care activities. These Research work and activities are carried out through its 30 institutes across the country and also through collaborative studies with various academic and research institutes, universities, hospitals in India and abroad.

The Council has been putting efforts to translate the research findings into practice and make available to the needful at large.

This comprehensive coffee book will provide a quintessence of the work done by the council since inception. It will help the readers to know about various strength areas of Ayurveda and will help as a ready document for further planning of research moreover this book will provide a quintessence of various research work done by the council in the field of Ayurvedic research in various domains.

Dr. N Srikanth
Deputy Director General
CCRAS



AYURVEDA – A FOCUS ON RESEARCH AND DEVELOPMENT



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GENESIS AND OVERVIEW

- *The Central Council for Ayurvedic Research as an Advisory body was established in 1962*
- *After this the Central Council for Research in Indian medicine & Homoeopathy (CCRIM&H) came into existence in 1969.*
- *This Council initiated research programs in the Indian systems of Medicine & Homoeopathy in different parts of the country and started coordination at the National level for the first time.*
- *Later the Central Council for Research in Ayurveda & Siddha (CCRAS) was established in 30th March 1978 after reorganization of CCRIM&H.*
- *The Central Council for Research in Ayurvedic Sciences is a Registered Society under Societies Registration Act XXI of 1860 on 29.07.2011 (Formerly Registered as Central Council for Research in Ayurveda and Siddha on 30th March, 1978).*
- *The Central Council for Research in Ayurvedic Sciences was reconstituted with present name on 11th April, 2011; it is an autonomous body under Ministry of AYUSH, Government of India. It's an apex organization for formulation, co-ordination, development and promotion of research on scientific lines in Ayurveda and Sowa-Rigpa systems of medicine.*

CCRAS has been executing its research programmes with a network of 30 peripheral Institutes/ Centre's/ Units with the headquarters office responsible for control, monitoring and supervision. Recently, CCRAS has also opened a Collaborative Research Centre for Veterinary Ayurveda" (CCRAS) at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) Ludhiana

OBJECTIVES

- ❖ *Development of safe /effective products for diseases of national and global importance.*
- ❖ *Revalidation of certain classical formulations for evidence on safety and efficacy.*
- ❖ *Dissemination of research outcome through appropriate media*
- ❖ *Capacity building on research methodology.*
- ❖ *Patenting and commercialization of products and technologies developed by the Council.*



VISION AND MISSION

Vision

To develop scientific evidence in Ayurvedic Principles, drug therapies by way of integrating ancient wisdom with modern technology and to bring Ayurveda to the people through innovations related diagnostics, preventive, promotive as well as treatment methods and also introduce scientific research for sustained availability of quality natural resources, to translate them into product and process and in synergy with concerned organizations to introduced these innovations into public health systems.

Mission

- 1. To aim for AYUSHMAN Bharat by way of promoting better health through evidence based Ayurvedic principles and practices.*
- 2. To develop CCRAS into a dynamic, vibrant and model research organisation for undertaking, coordinating, aiding and promoting research in Ayurveda.*
- 3. To bring up modern scientific knowledge, technology to explore Ayurveda scientific treasure following prevalent scientific methods.*
- 4. To attain global leadership in research for treatment and prevention of emerging important lifestyle related disease and health requirement.*

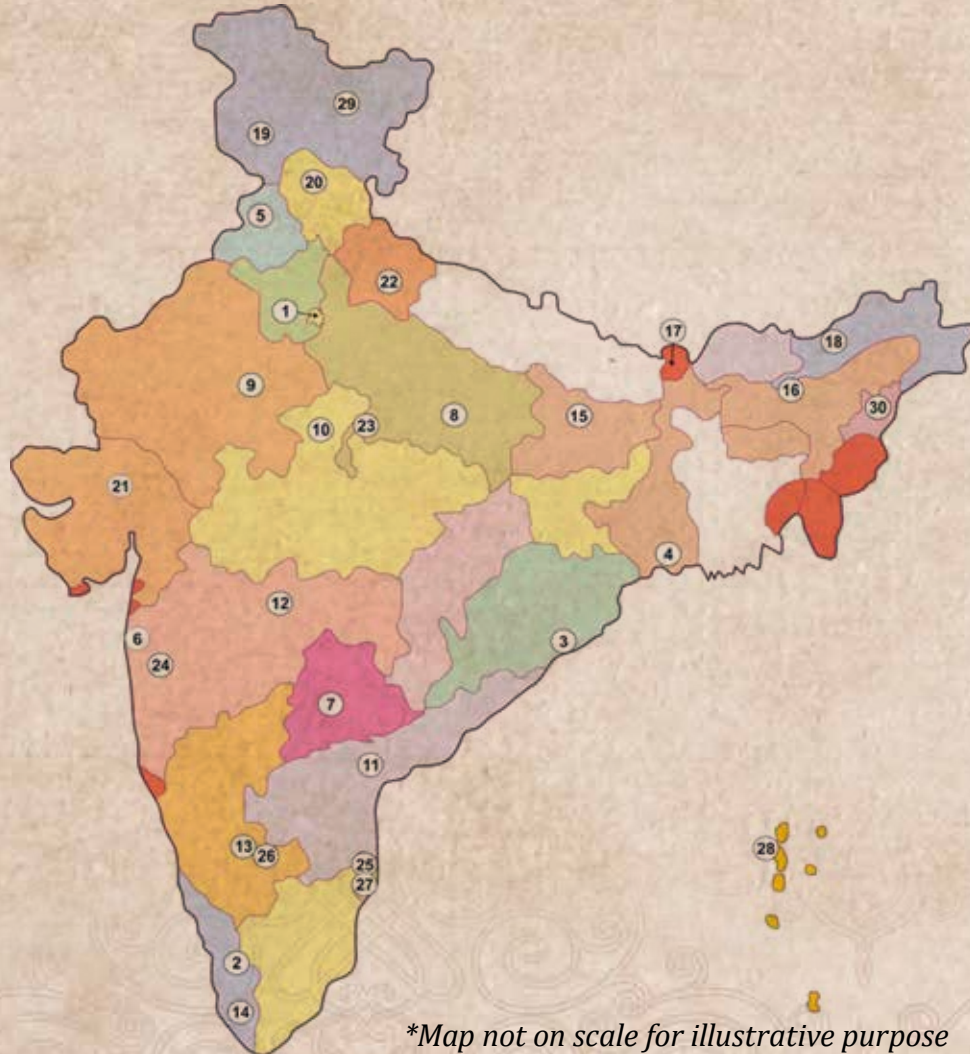


CCRAS NETWORK

1. *Central Ayurveda Research Institute for Cardiovascular Diseases, New Delhi*
2. *National Ayurveda Research Institute for Panchakarma, Cheruthuruthy*
3. *Central Ayurveda Research Institute for Hepatobiliary Disorders, Bhubaneswar*
4. *Central Ayurveda Research Institute for Drug Development, Kolkata*
5. *Central Ayurveda Research Institute for Respiratory Disorders, Patiala*
6. *Raja Ramdeo Anandilal Podar Central Ayurveda Research Institute for Cancer, Mumbai*
7. *National Institute of Indian Medical Heritage, Hyderabad*
8. *Regional Ayurveda Research Institute for Eye Diseases, Lucknow*
9. *M.S. Regional Ayurveda Research Institute for Endocrine Disorders, Jaipur*
10. *Regional Ayurveda Research Institute for Drug Development, Gwalior*
11. *Regional Ayurveda Research Institute for Skin disorders, Vijayawada*
12. *Regional Ayurveda Research Institute for Mother and Child Health, Nagpur*
13. *Regional Ayurveda Research Institute for Metabolic Disorders, Bangalore*
14. *Regional Ayurveda Research Institute for Life style related Disorders, Thiruvananthapuram*
15. *Regional Ayurveda Research Institute for Infectious Diseases, Patna*
16. *Regional Ayurveda Research Institute for Gastro- Intestinal Disorders, Guwahati*
17. *Regional Ayurveda Research Institute, Gangtok*
18. *Regional Ayurveda Research Institute, Itanagar*
19. *Regional Ayurveda Research Institute for Urinary Disorders, Jammu*
20. *Regional Ayurveda Research Institute for Nutritional Disorders, Mandi*
21. *Regional Ayurveda Research Institute for Skin Disorders, Ahmedabad*
22. *Regional Ayurveda Research Institute, Ranikhet*
23. *Regional Ayurveda Research Institute, Jhansi*

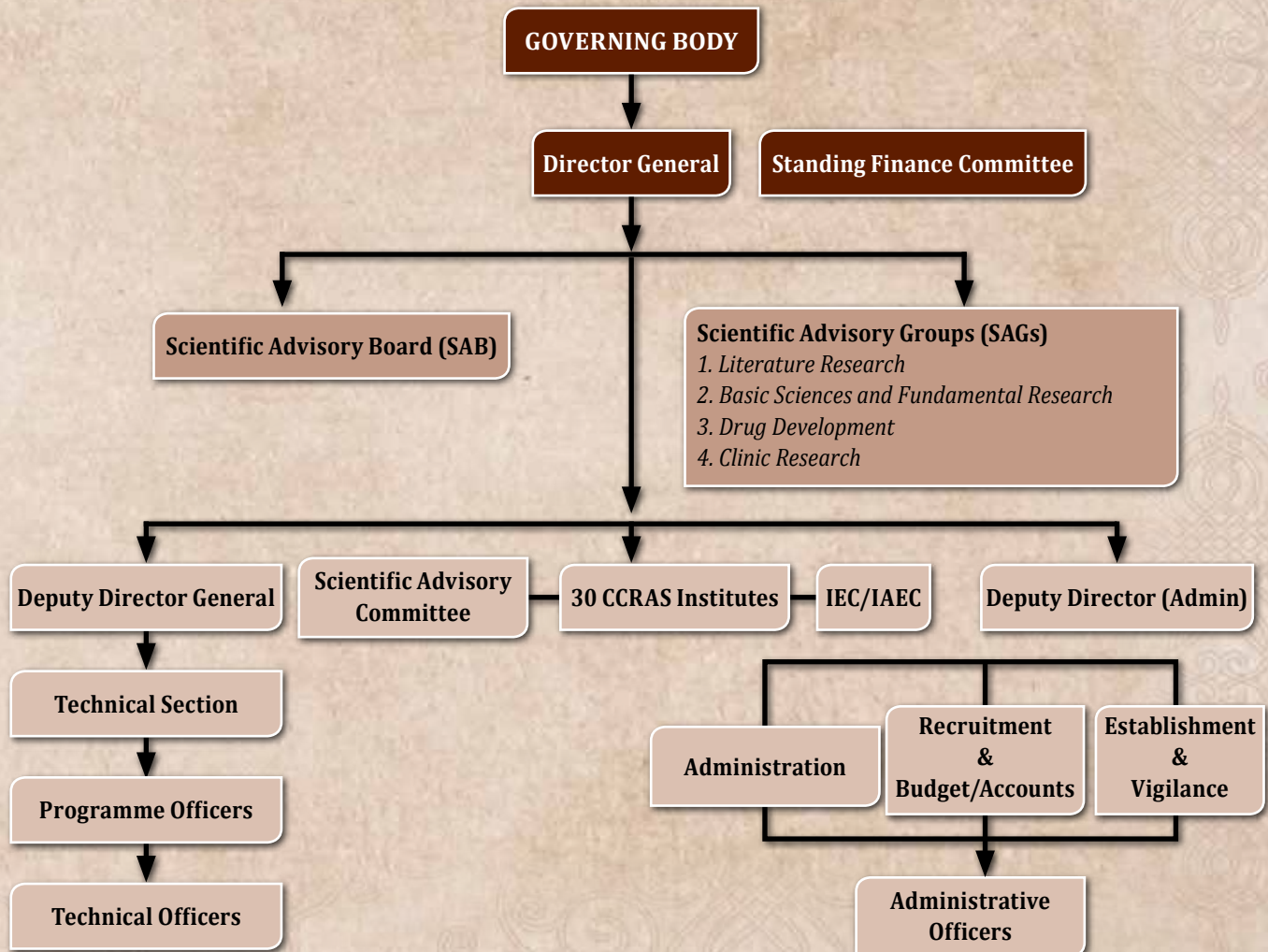


24. *Regional Ayurveda Institute for Fundamental Research, Pune*
25. *Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Chennai*
26. *Advanced Center for Ayurveda in Mental Health & Neurosciences, Bangalore*
27. *Dr. Achanta Lakshmiapati Research Centre for Ayurveda, Chennai*
28. *Regional Research Center of Ayurveda, Port Blair*
29. *National Research Institute for Sowa-Rigpa, Leh*
30. *Herbal Ayurveda Research Centre (HARC), Nagaland University, Lumami, Nagaland*



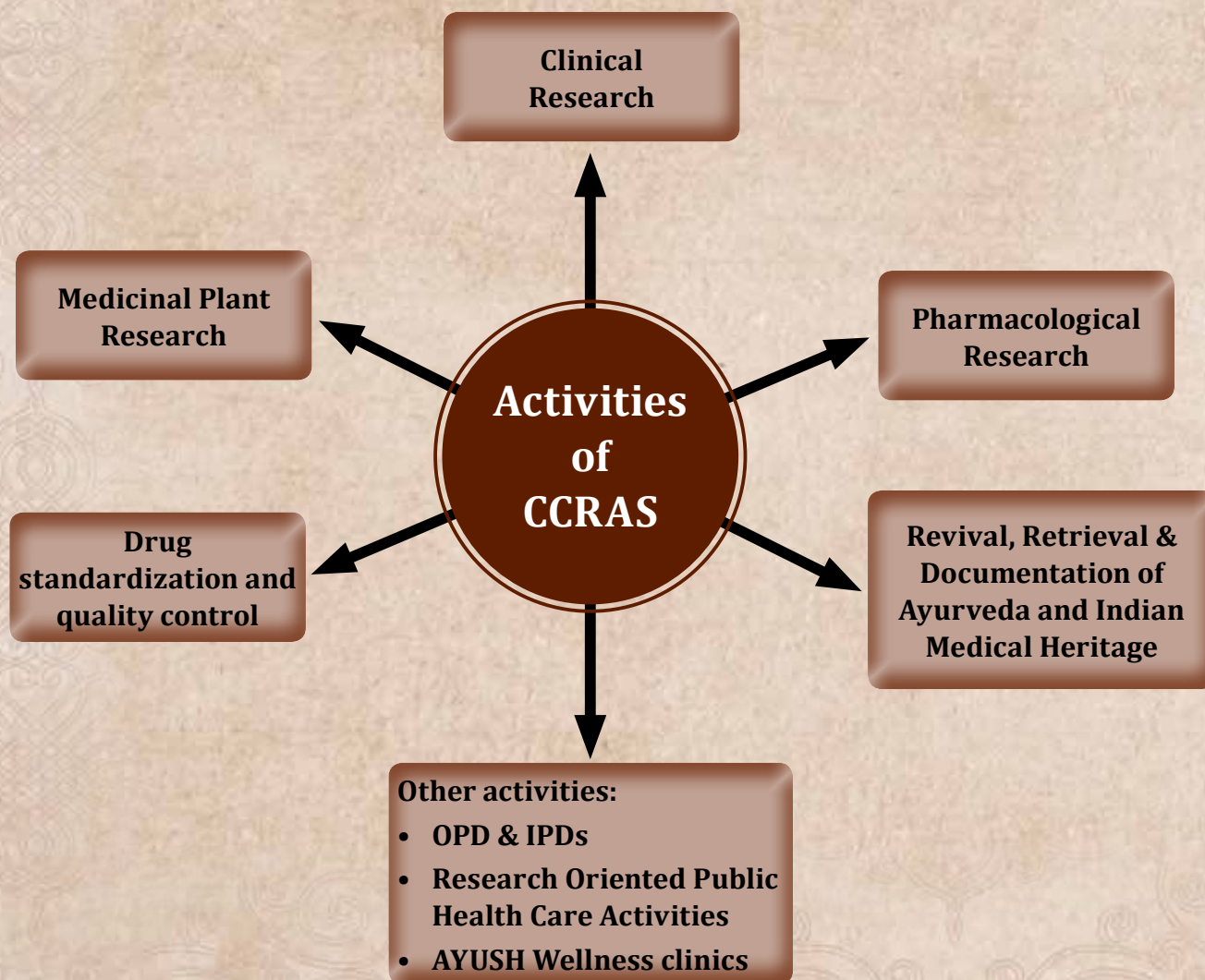


ORGANOGRAM





CORE RESEARCH AREAS





CCRAS RESEARCH POLICY

CCRAS is committed to promote research in important disease areas of national priority. Therefore, the Research Policy of CCRAS is aimed at encouraging its scientists for the formulation, submission and execution of research projects aimed at generating quality data for scientific validation of safety and efficacy of formulations/ therapies and other interventions including basic principles. To meet the objectives of quality research, CCRAS has formulated a research policy in 2015 to streamline research through intramural and collaborative modes

- 1. Intra Mural Research Scheme*
- 2. Collaborative Research Scheme at National level*
- 3. Collaborative Research Scheme at International level*
- 4. Collaborative research in Ayurveda with industries*



INTRA MURAL RESEARCH PROGRAM

Intra-Mural Research project submitted by the CCRAS scientists

Centrally initiated from CCRAS Hqrs

Preliminary screening

(Clinical, Medicinal Plant research/Drug standardisation and Quality control/Pharmacology and Literary Sections)

Internal Scrutiny Committee (ISC)

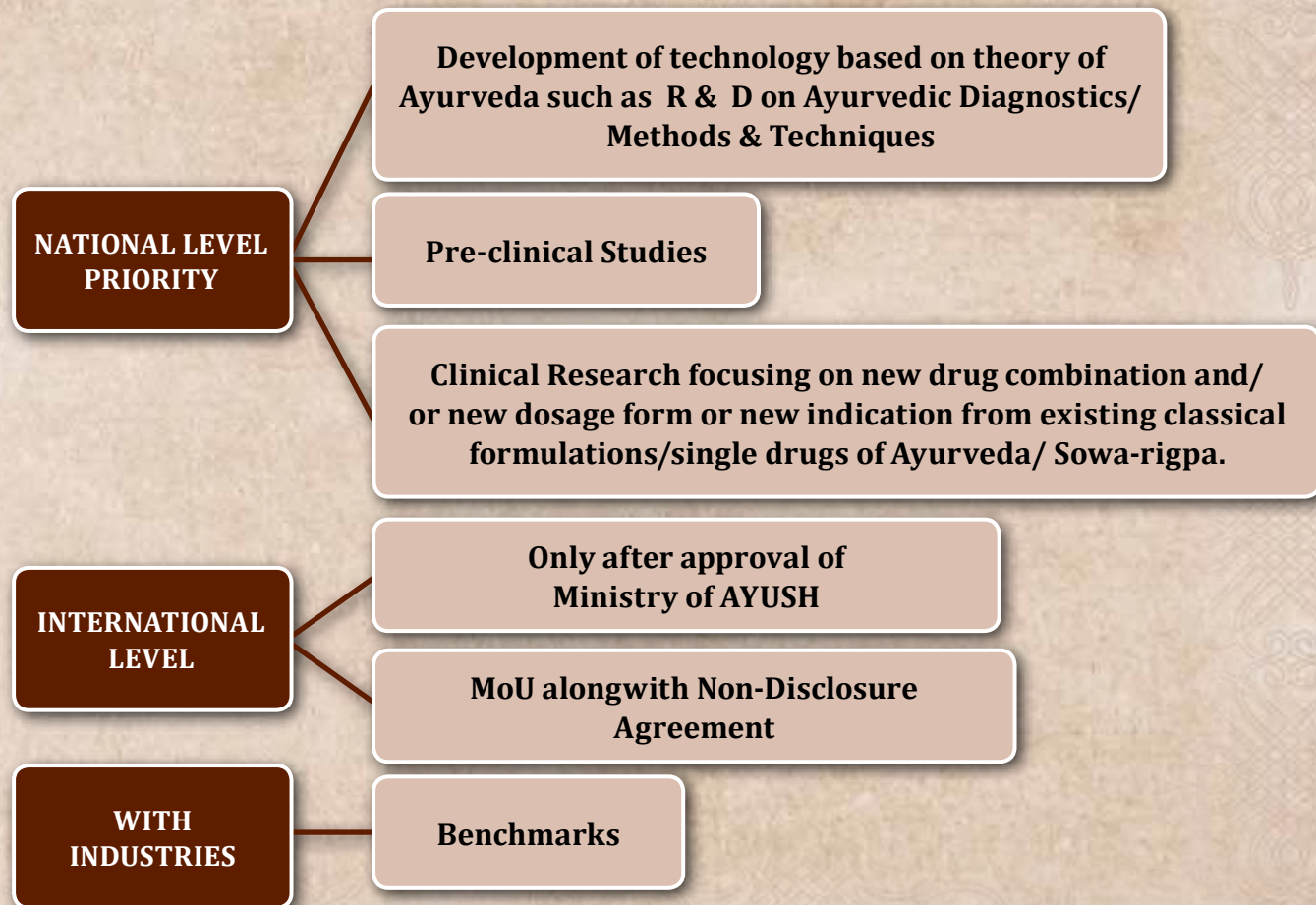
Project Evaluation and Monitoring Committee (PEMC)

**Duration of the Project: One year to maximum of 3 years.*

**In exceptional cases, especially requiring long-term studies the maximum duration may be upto five years subject to recommendation of PEMC.*



COLLABORATIVE RESEARCH





CLINICAL RESEARCH

Objectives

Generation of tangible evidence for safety and efficacy of classical Ayurveda formulations/therapies for their clinical use

Promotion of Evidence based practices

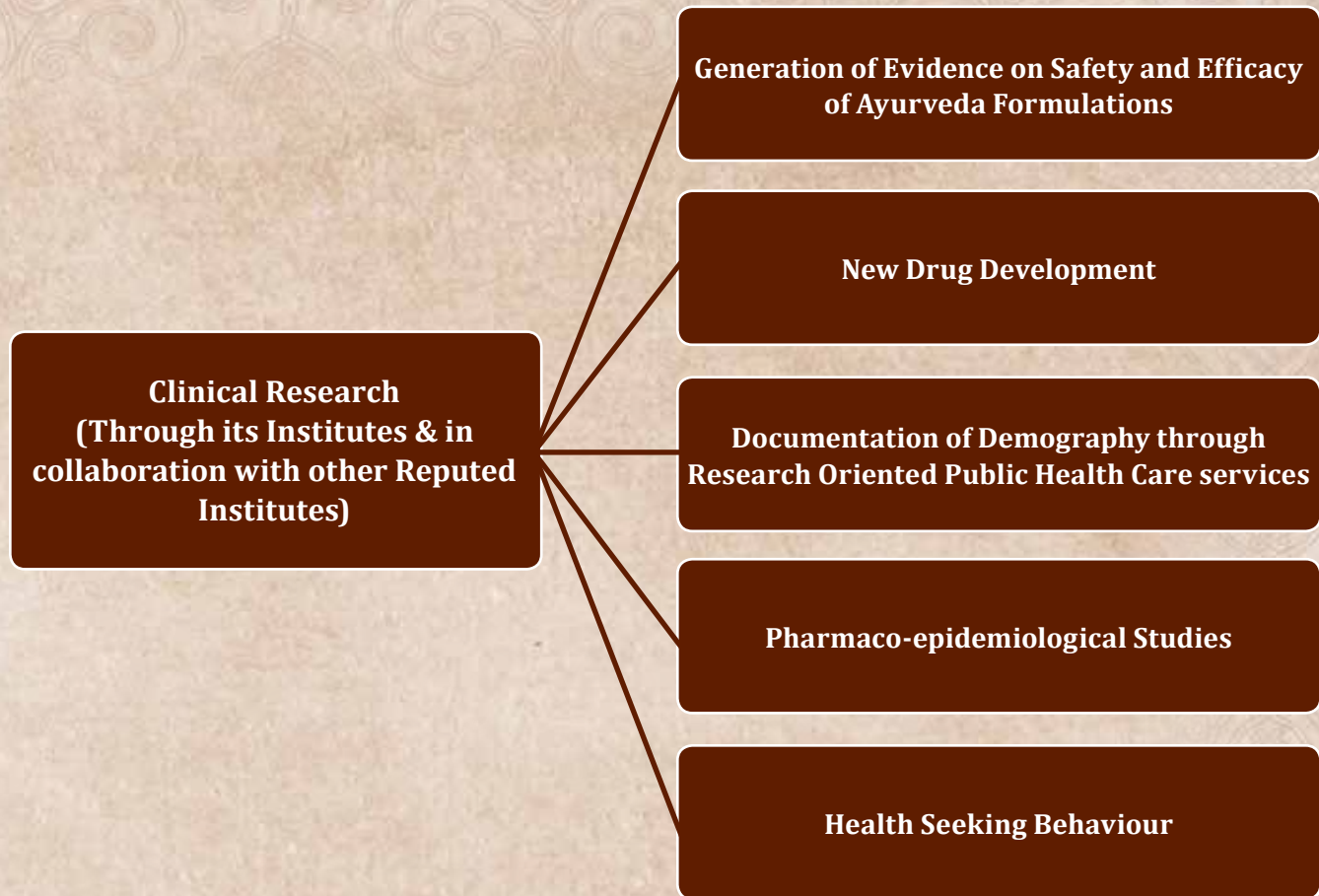
Development of New formulations taking leads from Classical Ayurveda texts and Ethnomedicines and LHTs

Development of Validated Ayurveda diagnostic tools and methods based on Ayurveda principles

Diagnostic tools

Clinical methods

Therapeutics



Development of Validated Ayurveda diagnostic tools and methods based on Ayurveda principles

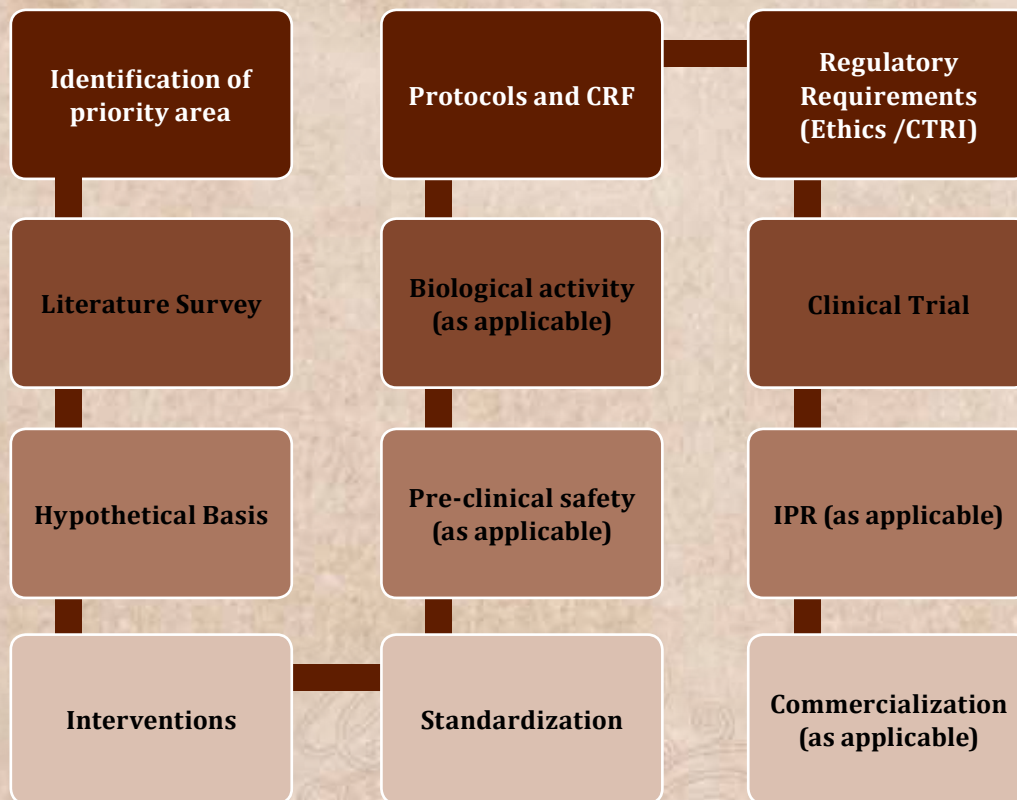
- **Validation and Reliability Testing of Ayurveda Diagnostic Tools**
 - o *Developing an interface for integration/ Customization and development of diagnostic gadgets which are integrated with latest information technology tools for accurate and easy diagnosis is the secondary objective.*
- **Standardization of Prakriti Assessment Scale**



GENERATION OF EVIDENCE ON EFFICACY AND SAFETY OF AYURVEDIC FORMULATIONS

Under Program Projection the Council has completed Clinical studies on 22 diseases/conditions and further under Intra Mural Research Program, the Council has completed 51 projects with Safety and efficacy of nearly 100 formulations in 26 diseases of national importance.

Process for drug Development





GENERAL METHODOLOGIES & GUIDELINES OF DRUG DEVELOPMENT

PREPARATORY PHASE (1)

Prevalence survey and Formulation of drug /combination for

Specific targeted indication and activity (1) (Appropriate basis of literary survey, previous clinical data of ingredients /any other data of claims, classical evidences, etc.)

Formulation of SOPs and Standardization, stability studies, Quality assurance (4) (Considering the classical methods and current available physical/ chemical, Biological parameters, microbial loads, heavy metal estimation, pesticide residues, etc. for standardization and safety).

Design of study and formulation of

Clinical protocols (7) (As per current guidelines and adopting Classical methodology)

Bulk preparation of quality assured Drug for clinical trial, packing labeling etc. as per requirement

DRUG DEVELOPMENT PHASES (2-8)

Collection of raw drugs (2) (considering current good agricultural practices good field collection practices and classical textual methods)

Pre clinical safety studies (5) (acute/sub-acute/chronic studies as per intended therapeutic use with IAEC approval)

Execution of Clinical Trial (8)

with approval of IEC/IRB and CTRI registration Trial conduct and monitoring

Data analysis

Botanical identification/ Pharmacognostic/Chemical studies of ingredients. (3) (based on available guidelines and classical methodology.)

Animal Studies for biological activity and /or mechanism of action for clinical correlation (6) with IAEC approval. (preparation of preclinical dossier)

Note: IPR Protection and issues of filing of patent to be addressed at suitable stage.

Figure 2: General Research Guidelines and Methodologies for Drug Development at a Glance



DEVELOPMENT OF NEW AYURVEDIC FORMULATIONS

S. N.	Product Name	Indications
1.	AYUSH-64	Malaria
2.	AYUSH 82	Type 2 Diabetes mellitus
3	BAL RASAYAN	General immunity and strengthening of children
4.	AYUSH Ghutti	Cough and cold
5.	AYUSH-56	Epilepsy
6.	AYUSH –SS Granules	Post natal care (for improving lactation)
7.	AYUSH AG Tablet	Ante natal care
8.	AYUSH PK Avleha	Post natal care (for care after delivery and other complications of puerperal period)
9.	AYUSH PG Tablet	Ante natal care
10.	AYUSH B R Leham	Paediatric care
11.	AYUSH SG	An Anti rheumatoid arthritis preparation



IMPORTANT RESEARCH COLLABORATIONS FOR NEW DRUG DEVELOPMENT

Completed

1.	<i>AYUSH Manas for Mental Retardation</i>	<i>RML hospital, New Delhi & NIMHANS, Bangalore</i>
2.	<i>AYUSH QOL-2C for Improvement of Quality of life in Cancer patients</i>	<i>AIIMS, New Delhi; St. John Bangalore & Bhagwan Mahavir Cancer Hospital, Jaipur-</i>
3.	<i>AYUSH Rasayana A and B for Geriatric Health</i>	<i>AIIMS, New Delhi , BHU & CARIDD, Kolkata</i>
4.	<i>Automized preparation of standardized Ksharasutra</i>	<i>ACRI, New Delhi and IIT Delhi</i>

Ongoing studies

1	<i>C-1 Oil for Wound Healing</i>	<i>AIIMS, New Delhi</i>
2.	<i>AYUSH D for Diabetes and Pre-Diabetes</i>	<i>AIIMS, New Delhi, RA Podar Ayurved Medical College, Mumbai, Sri BMK Ayurveda Mahavidyalaya, Belgavi, Karnataka & R.G. Govt. P.G. Ayurveda College Paprola</i>
3.	<i>AYUSH PJ 7 for Dengue</i>	<i>NITM-ICMR, Belgavi Sri BMK Ayurveda Mahavidyalaya, Belgavi and KLE University, JN medical college Belgavi and Shree Devraj URS Academy for higher education, Kolar, Karnataka</i>



NEW INITIATIVES

- 1 *Ayush-A for bronchial Asthma – AIIMS, New Delhi*
- 2 *Ayush SL for Filariasis -Kolkata School of Tropical Medicine*
- 3 *CARCTOL-S for Cancer -Tata Memorial Hospital and ACTREC , Mumbai - Clinical studies in pipeline.*
- 4 *Ayush-PTK for Hepato-Protective activity as an adjuvant for Anti-Tubercular Treatment (ICMR)*
- 5 *Ayush-GH for fatty liver degeneration in collaboration with ICMR*
- 6 *Ayush-56 for epilepsy in collaboration with AIIMS*
- 7 *Sarpgandha mishran for hypertension in collaboration with AIIMS*
- 8 *Ayush CCT for post operative cardiac care in collaboration with AIIMS*
- 9 *Ayush SC3 for sickle cell anaemia*
- 10 *Ayush K-1 for Chronic Kidney diseases.*
- 11 *Clinical Evaluation of the efficacy of Ayurvedic month wise regimen for Garbhini paricharya (Ante Natal Care)*
- 12 *Clinical evaluation of Ayush LND a coded Ayurvedic formulation and Pushyanuga Churna in the management of Abnormal Uterine Bleeding.*
- 13 *Clinical evaluation of the efficacy of Ayurvedic treatment regimen in the management of Kashtartava (Primary Dysmenorrhoea)*
- 14 *To evaluate the efficacy of Ayurvedic formulation Ayush Bala Rakshak Leham in clinical management of Moderate (-2Z score) Acute Malnourished Children (MAM)s*



INTERNATIONAL COLLABORATIONS

International collaborative project with Charite University Medical centre, Germany for the management of Osteo- Arthritis. The study evaluated the effectiveness of Ayurvedic treatment compared to conventional conservative care in patients with knee OA. Results suggest that Ayurvedic treatment is beneficial in reducing knee OA symptoms.

Witt et al. *Trials* 2013, **14**:149
<http://www.trialsjournal.com/content/14/1/149>



STUDY PROTOCOL

Open Access

Comparative effectiveness of a complex Ayurvedic treatment and conventional standard care in osteoarthritis of the knee – study protocol for a randomized controlled trial

Claudia M Witt^{1,2*}, Andreas Michalsen^{1,3}, Stephanie Roll¹, Antonio Morandi⁴, Shivnarain Gupta⁵, Mark Rosenberg⁶, Ludwig Kronpaß^{6,7}, Elmar Stapelfeldt³, Syed Hissar⁸, Matthias Müller⁹ and Christian Kessler¹

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Osteoarthritis and Cartilage



Effectiveness of an Ayurveda treatment approach in knee osteoarthritis – a randomized controlled trial

C.S. Kessler¹, K.S. Dhiman¹, A. Kumar^{1,5}, T. Ostermann⁸, S. Gupta^{1,11}, A. Morandi⁴, M. Mittwede^{1,12}, E. Stapelfeldt³, M. Spoo¹, K. Icke¹, A. Michalsen^{1,13}, C.M. Witt^{1,14,15,16}

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MEDICINAL PLANT RESEARCH

Core Objectives

- *R&D of In Situ and Ex-Situ Agro Techniques of Medicinal plants*
- *Documentation of Ethno Medical Practices and Local Health Traditions*
- *R&D on Botanical Reference Standards (BRS)*

Medico-Ethno-Botanical Survey

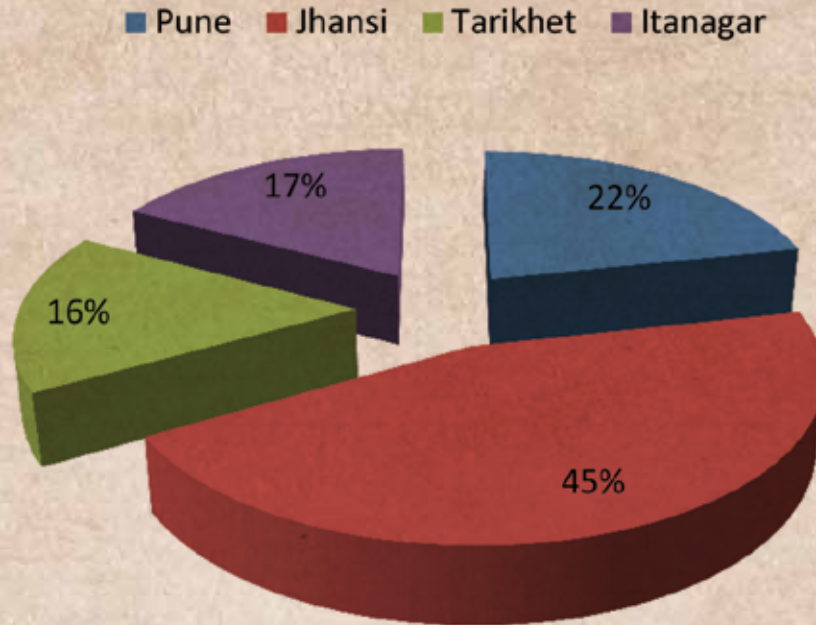
- *To access the distribution and availability of medicinal plant species in different phyto-geographic reason across the country*
- *Collection of Folk claims and local health tradition (LHT) information.*
- *Development of regional Herbarium and Museum for reference purpose*

Cultivation of Medicinal Plants

- *Studying their adaptability, growth pattern, flowering, fruiting and suitable maturity time of the drug part.*
- *Providing authentic raw drug materials*
- *Experimental study on propagation of medicinal plants including in-vitro methods.*
- *Act as ex-situ conservation sites and important germplasm collections of medicinal plants including several rare, endangered and threatened species.*
- *At four gardens located at different climatic zones, viz., RARI, Jhansi, RAIFR, Pune, RARI Itanagar, and RARI, Ranikhet (Tarikhet).*



Number of medicinal plant species maintained in CCRAS gardens



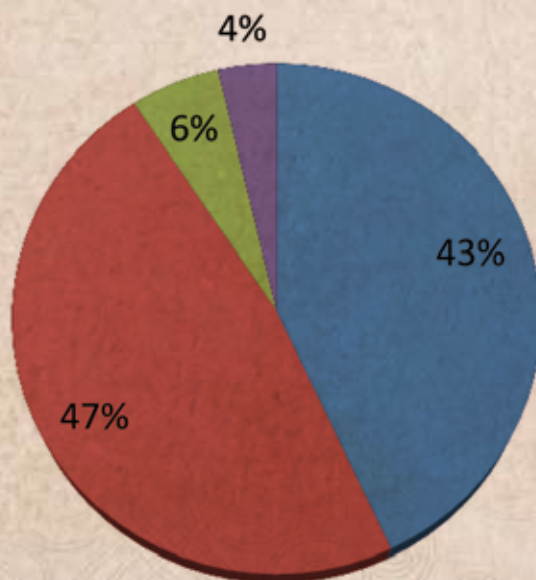
- *Pharmacognosy*
 - o *Development of standards for identification of authentic drugs, their substitutes and adulterants.*
- *In-vitro propagation techniques*
 - o *Initiation of in-vitro propagation trials*
 - o *Comparative analysis of secondary metabolites from the in vivo and in vitro grown plants*
 - o *Development of protocol by tissue culture techniques like micro propagation, somatic embryogenesis etc.*



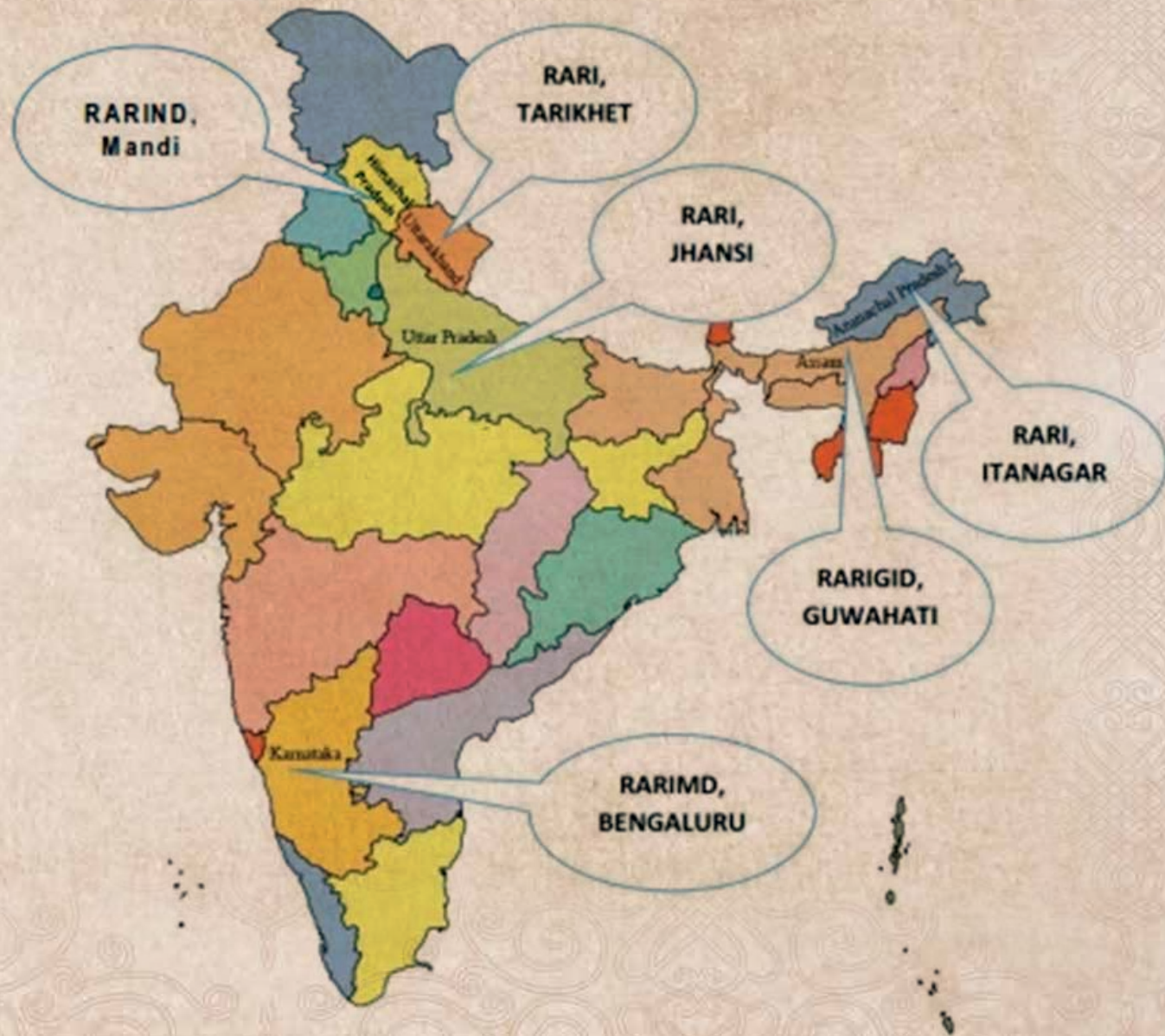
- *Agro-technique Development*
 - o *Experimental application of agro techniques for the cultivation of the plant in the form of package of practices.*
 - o *Studying the growth pattern, maturity and other issue related to cultivation*
- *Medico-Ethno Botanical Survey (MEBS) was initiated by Central Council for Research in Ayurvedic Sciences (CCRAS) in 1969. Through its 6 field Institutes.*
- *Since inception total 947 surveys conducted covering 964 number of Forest Area under Medico Ethno Botanical Survey Program*

Plant specimen collected during survey

- Total number of specimens collected
- Number of Herbarium sheet prepared
- Number of museum sample Collected
- Number of Folk claims collected



LOCATION OF MAP SHOWING VARIOUS MEDICO-ETHNO BOTANICAL SURVEY UNITS OF CCRAS





Total number of plants specimens collected



Details of Hitherto New Plant Reports for Indian Flora

- Extensive field explorations resulted in finding 10 new species to plant kingdom.
- The research findings were published in book form like *Flora of Chikmangalur*, *Flora of Coorg*, *Medicinal Plants of Karnataka*, *Medicinal Plants of Tamil Nadu (Volume 1 & 2)* and *Monograph of Tribal Pockets of Nilgiris (Ooty)*

Herbarium at four CCRAS institutes has got international recognition as these are accredited with acronyms by the New York Botanical Garden, USA.

- Regional Ayurveda Research Institute, Tarikhet— “RKT”
- Regional Ayurveda Research Institute, Jhansi—“JHS”
- Regional Ayurveda Research Institute for Metabolic Disorders, Bengaluru—“RRCBI”
- Regional Ayurveda Research Institute, Itanagar— “ARRI”



HERBARIUM
REGIONAL RESEARCH INSTITUTE (AYU.)
JUNAGADH (Gujarat)
Accession No. 9686

HERBARIUM
Regional Research Institute (Ayu.),
(C. C. R. A. S., Govt. of India)
JUNAGADH (Gujarat)

Coll No. 3262 Date 18-2-1989
Family Acanthaceae
Bot. name *Adhatoda zeylanica* Medic.
Sans name *Varaka* Local name *Ardusi*
Habit Shrub upto 2 m tall. FLS./FRS. white
Locality Junagadh in Agri. Campus. Dist. Junagadh
Distribution & Abundance Planted as a hedge plant. not wild to this region
Collector's name M.C. Joshi



Pharmacognosy and Contribution to Development of Ayurvedic Pharmacopeia:

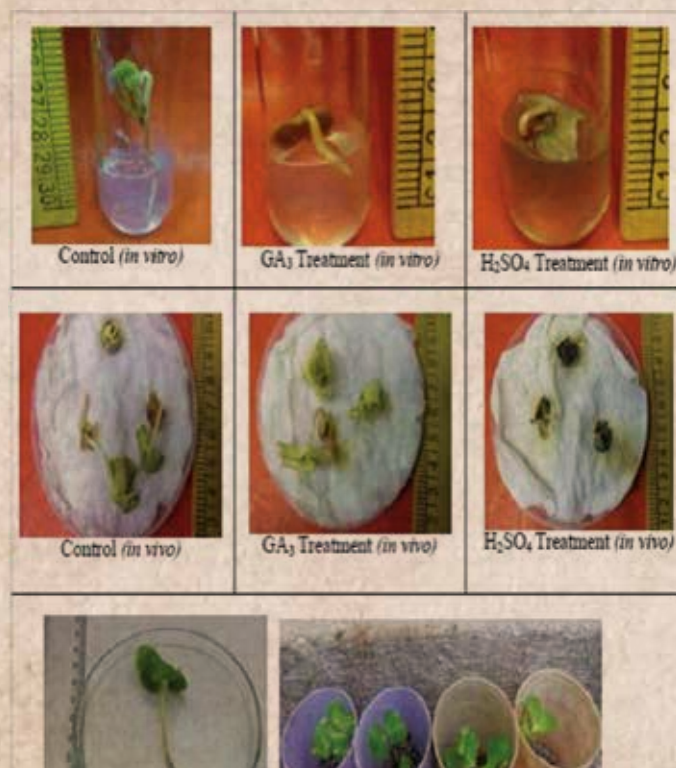
- Since inception till now council has taken up Pharmacognostical studies on 312 plants at 3 laboratories of CCRAS.
- The outcome of the Pharmacognostical studies has been documented in 3 Volumes of Book entitled Pharmacognosy of Indigenous Drugs (Vol 1-3)

In-Vitro Propagation

- In vitro propagation trial conducted on 14 plants species
- In vitro propagation trial under pipeline 7 plants species



In vitro grown shoots roots, and hardening of the plant *Rubia cordifolia* L.



In vivo grown seeds of the plant *Oroxylum indicum* (L.) Vent. Showing 1-2 cm shoots and 1-1.5 cm roots were transferred in a Plastic glass containing soilrite and checked for survival.



In-vitro cultivation Response of Gmelina arborea Roxb.

Agro-technique Development and Protocols of Medicinal plants

- Total 30 protocols were prepared for conservation of these highly valued medicinal plants viz *Aconitum heterophyllum*, *Acorus calamus*, *Mucuna pruriens* & *Digitalis purpurea*.



Launch of project Aushadh Aranyam

Aushadh Aranyam is a new initiative by Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, it is an experimental Development of Micro Forest of Medicinal Plants by using Miyawaki Method of plantation at three in house Gardens



CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES
Ministry of AYUSH, Government of India



“औषध अरण्यम्”

Experimental Development of Micro Forest of Medicinal Plants by using Miyawaki Method of plantation at CCRAS in-house Gardens

FIELD TRIAL CENTERS:

1. Regional Ayurveda Institute for Fundamental Research (RAIFR), Pune
2. Regional Ayurveda Research Institute (RARI), Ranikhet
3. Regional Ayurveda Research Institute (RARI), Jhansi

OBJECTIVES:

1. To conduct experimental trials to create mini forest of medicinal plants by using **Miyawaki Method**.
2. To develop forest of medicinal plants under controlled condition without **Miyawaki Method** for comparison.
3. To study of growth pattern of medicinal plant species grown under experimental trial and controlled condition as per standard protocol.
4. To develop standard agro technique protocol using **Miyawaki Method** for different medicinal plants forest.

EXPECTED OUTCOMES & BENEFITS:

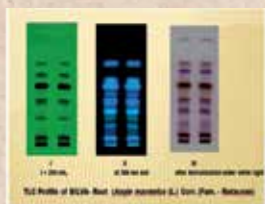
1. Restoration of land and ecological flora of selected region.
2. Conservation of native flora at one place.
3. Natural organic leachate will improve the richness of soil and facilitate the natural growth and germination of seeds.
4. Know how technology of successful model will be transferred for the development of mini forest.



DRUG STANDARDISATION AND QUALITY CONTROL RESEARCH

Core objective

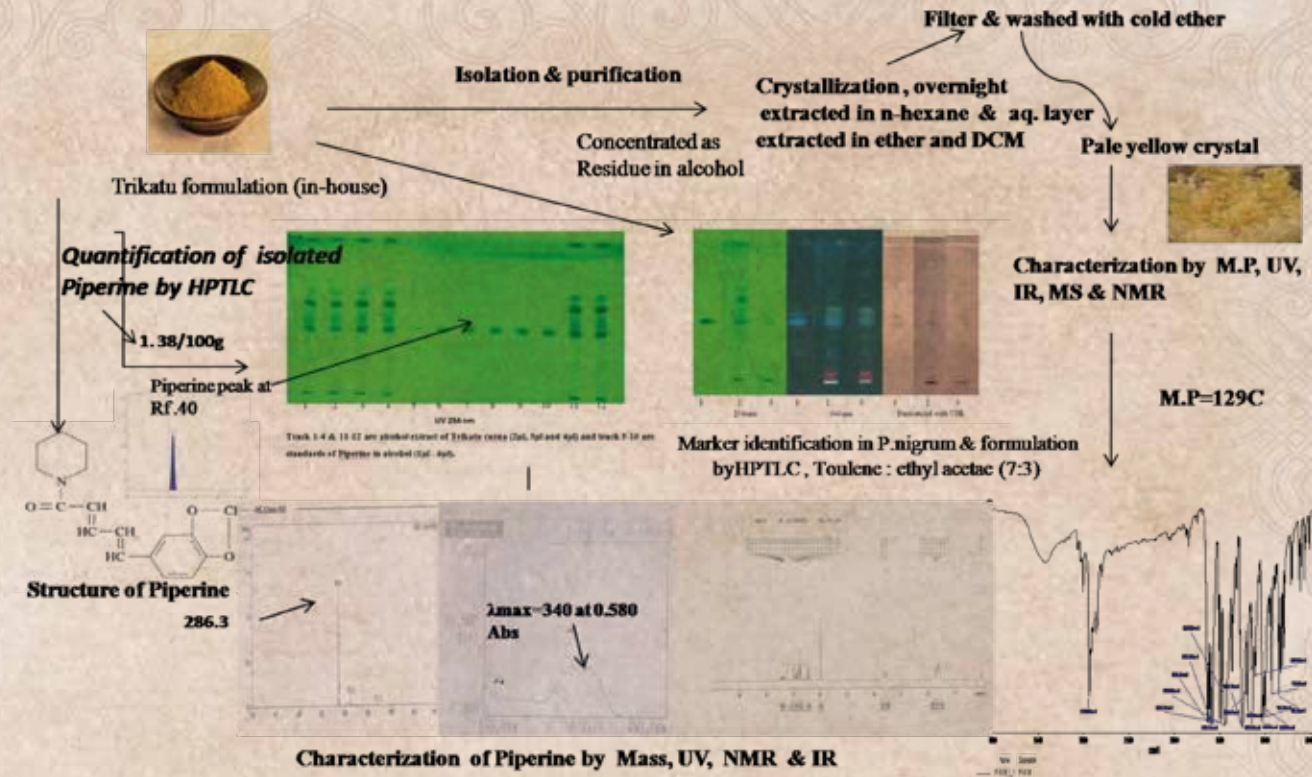
- *Research and Development of Quality assurance and Quality control of Ayurveda medicine*
- *Research and Development for Isolation of Primary Reference Standards (PRS) from Ayurveda Drugs*
- *Development of Pharmacopoeial Standards of Raw Drugs and Ayurvedic Classical Formulations*
- *Contributions to the Ayurvedic Pharmacopoeia of India and the Ayurvedic Formulary of India.*
- *Extension of Testing services to stakeholders of Drug Testing Laboratory (DTL) through NABL facility and State Licensing Authority.*
- *Pharmaceutical Research and Development of Ayurvedic formulations*



Core Achievements

- Drug Testing Laboratory (DTL) and NABL recognition; CSMRADDI, Chennai is recognized as State DTL for ASU (Ayurveda, Siddha and Unani) drugs by Tamil Nadu Government.
- Marker compounds from 53 plants were isolated successfully.
- Academic Activities through Doctoral Research Support : Total 39 scholars have been awarded Ph.D.
- **95 monographs** on Quality Standards of Indian Medicinal Plants were developed by CSMRADDI Chennai and published by ICMR, New Delhi.

Isolation, Spectral Characterisation of Piperine from Trikatu & Quantification Via HPTLC



HPTLC Identification of Formulation and Raw Drugs

Development of Pharmacopoeial Standards

- 38 Standards Developed for Ayurvedic formulations for inclusion in Ayurvedic Pharmacopoeia of India (At CSMRADDI, Chennai)
- 10 Monographs were developed by CCRAS, Hq. and were published in API Part II, Vol. IV (2016)
- 8 Monographs were contributed to Siddha Pharmacopoeia of India.



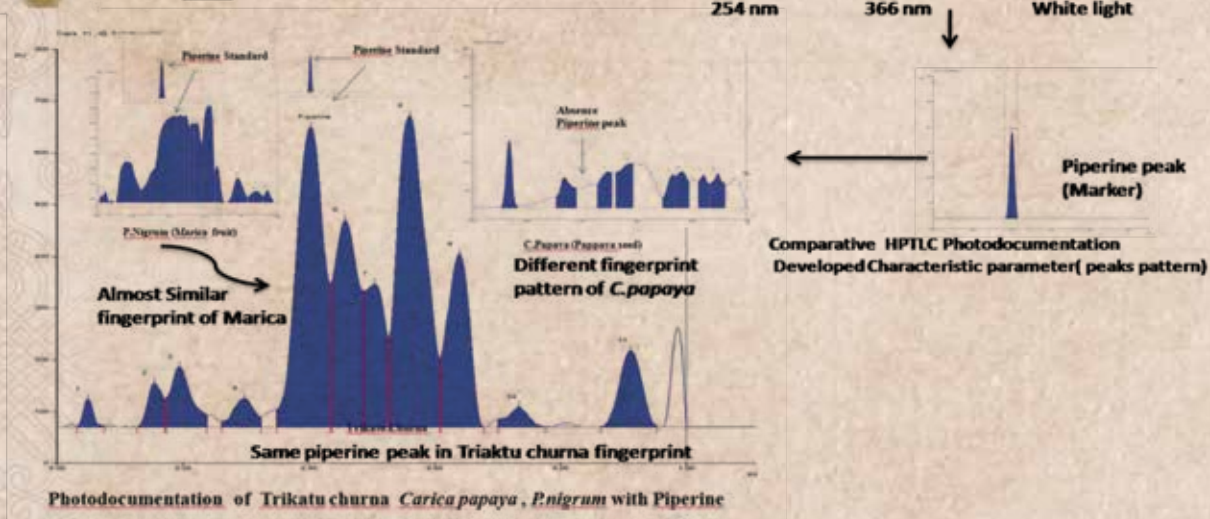
Morphological similarity of adulterant *P. nigrum* (peppercorns) *C. Papaya* seed Adulterant (*C. papaya*) detection in Trikatu (Marica) via HPTLC



Toluene: Ethyl acetate (5: 1.5)
HPTLC fingerprinting



Track-1, 2 & 3 are 10 µl of each alcohol extracts of Marica, seeds of Papaya and Trikatu churna.



Adulteration Detection in Trikatu Churna

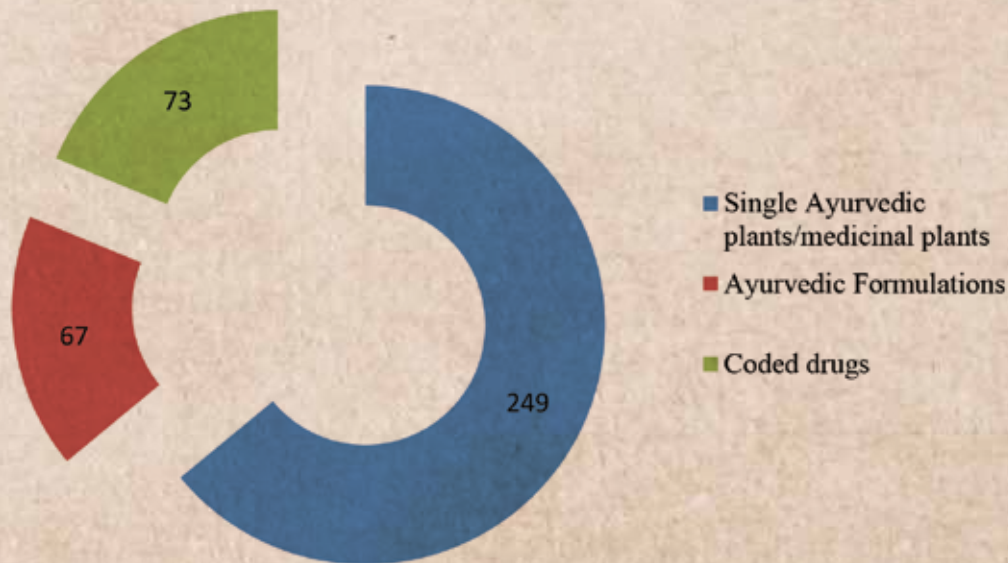


PHARMACOLOGY RESEARCH AND SAFETY STUDIES

- *Generate scientific evidence on safety of most commonly used classical Ayurvedic herbo-mineral formulations*
- *Biological screening of Ayurveda drugs for efficacy and biological activity*
- *Generation of Evidence in Safety of Ayurveda medicines*

Biological screening of Ayurvedic formulations

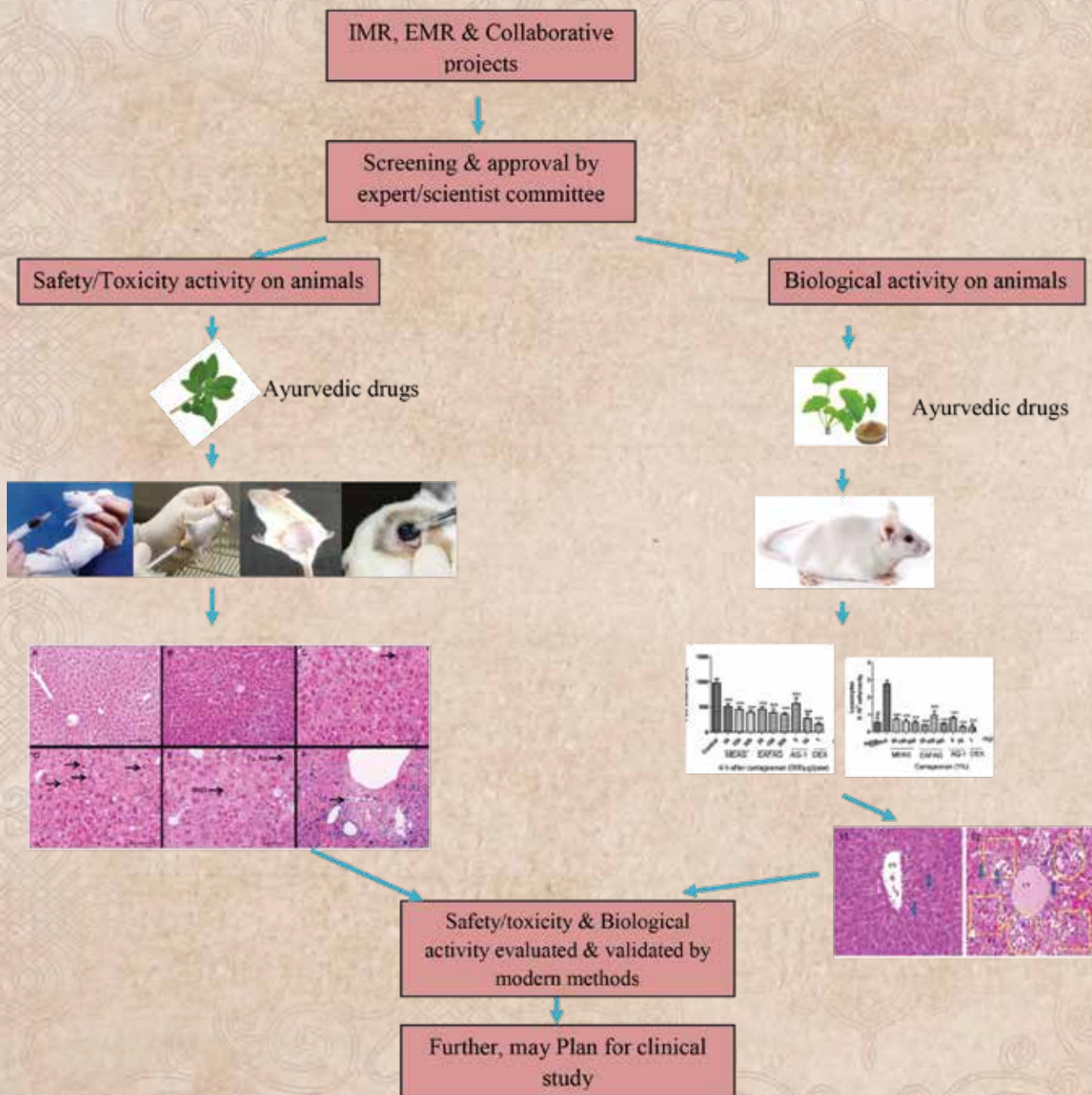
- *389 drugs were screened for various biological screening studies in last 50 years.*



Biological screening in last 50 years



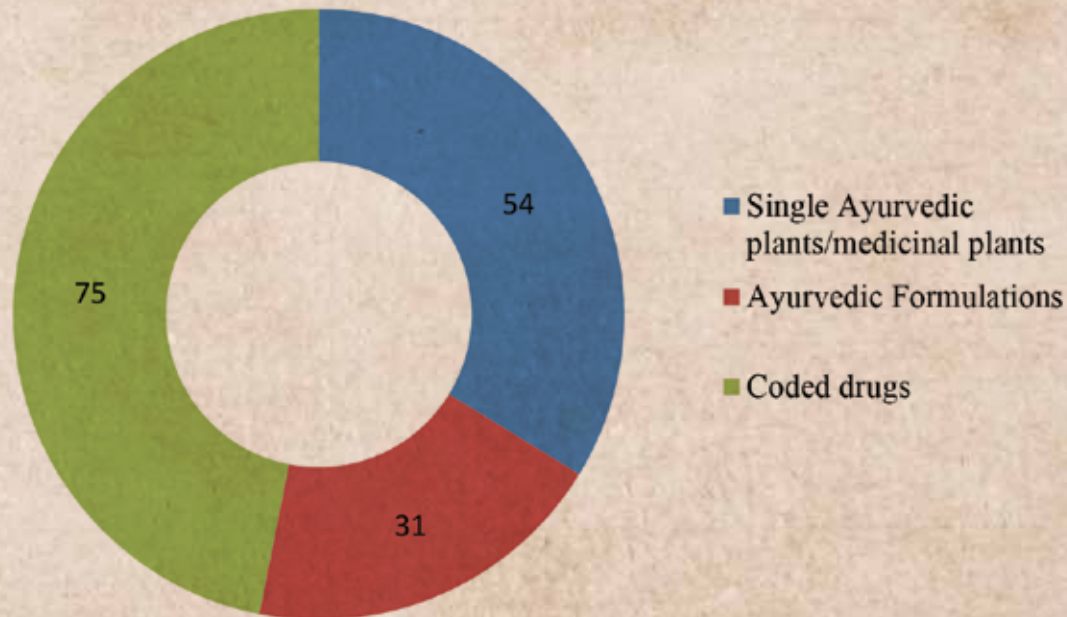
Modus Operandi





Safety studies of Ayurvedic formulations

- 160 drugs were screened for various safety/toxicity
- 54 Single drug have been screened for safety/toxicity
- 31 Ayurvedic Formulations have been screened for safety/toxicity
- 75 Coded drug have been screened for safety/toxicity



Safety/toxicity screening in last 50 years



REVIVAL, RETRIEVAL AND DOCUMENTATION OF AYURVEDA AND INDIAN MEDICAL HERITAGE

OBJECTIVES

Revival and Retrieval of ancient manuscripts/rare books & bringing them into domain

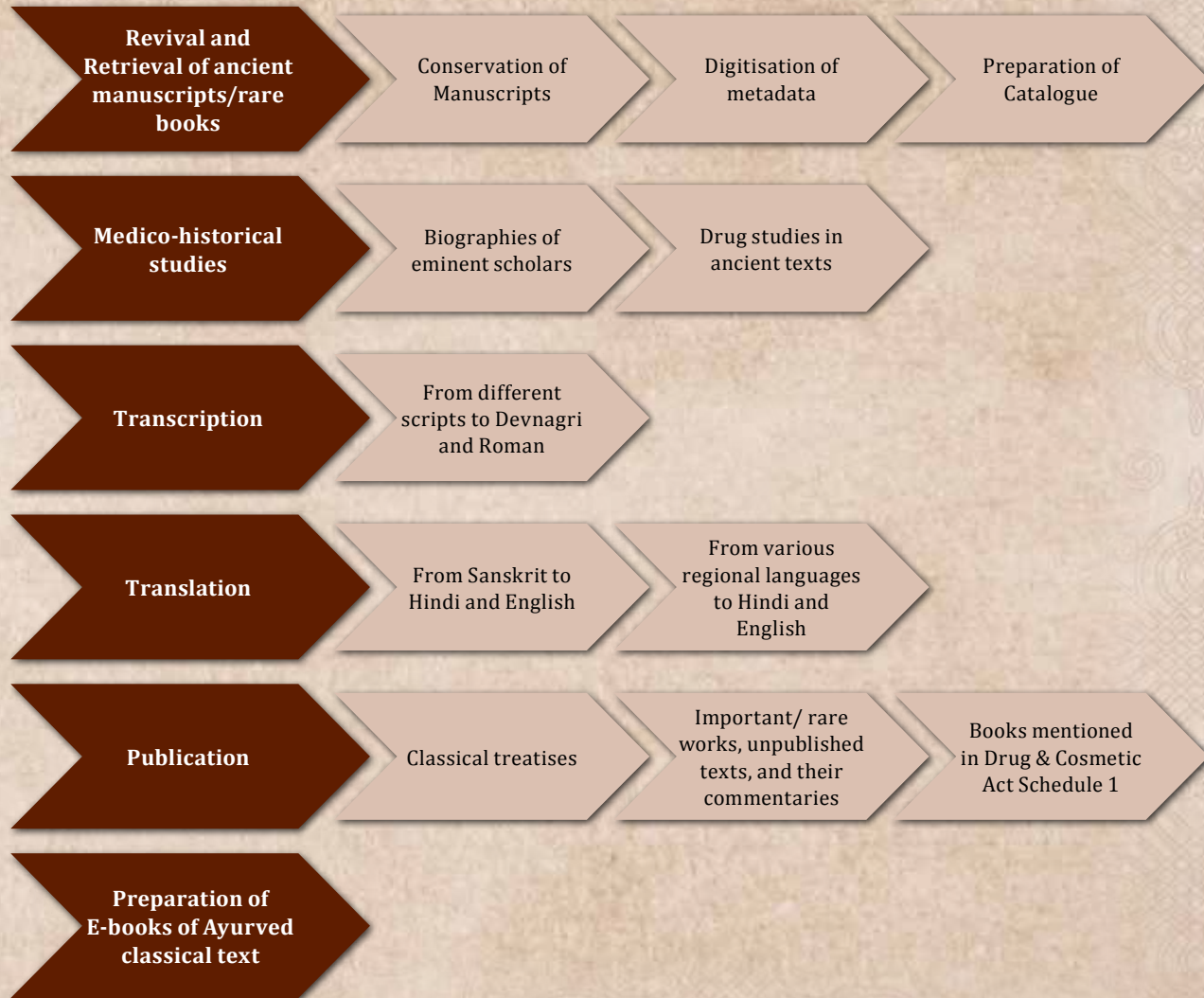
Medico-historical studies

Transcription

Translation

Publication of classical treatises, important/ rare works, unpublished texts and their commentaries

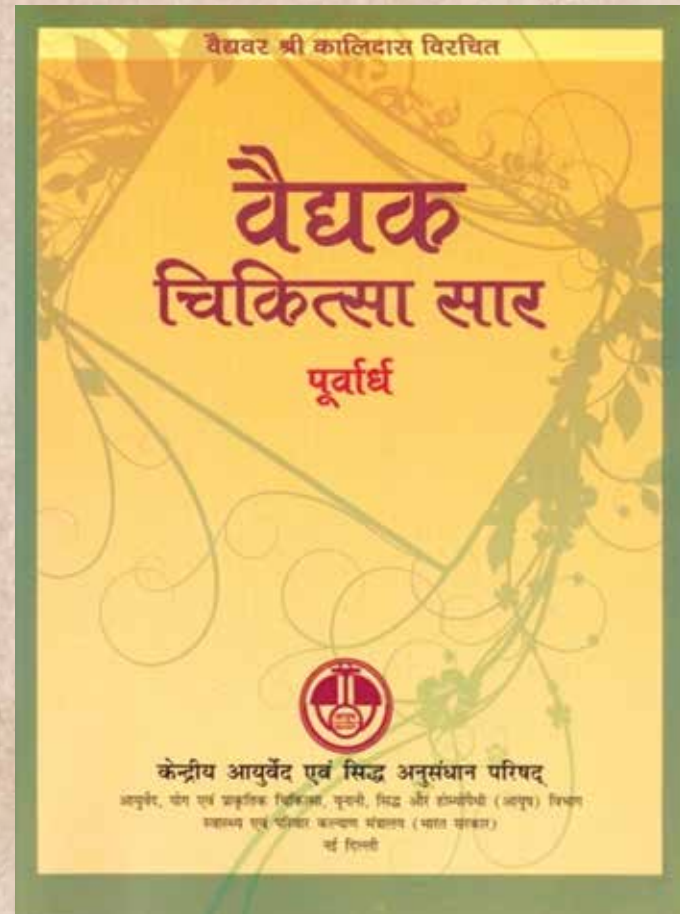
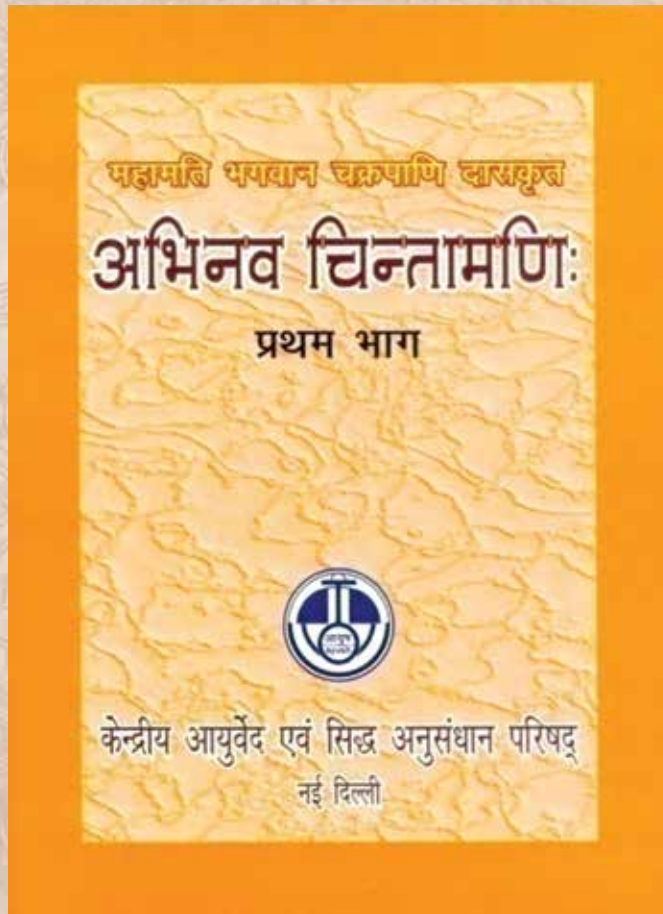
Preparation of E-books of Ayurved classical text





Major Outcomes

- *Centralized Digital Repository of Medical Manuscripts of AYUSH Systems of Medicine with an objective to conserve and preserve rich cultural and medical heritage of India for posterity as well as to provide easy access, it is established at NIIMH Hyderabad.*
- *“Survey, cataloguing and digitized inventory of medical manuscripts” program executed in various states across the country, about 5000 manuscripts are digitized from different libraries, museums, educational and cultural institutions, private collections etc.*
- *9 descriptive catalogues have been published and further 12 are ready to print.*



Retrieval from Manuscripts



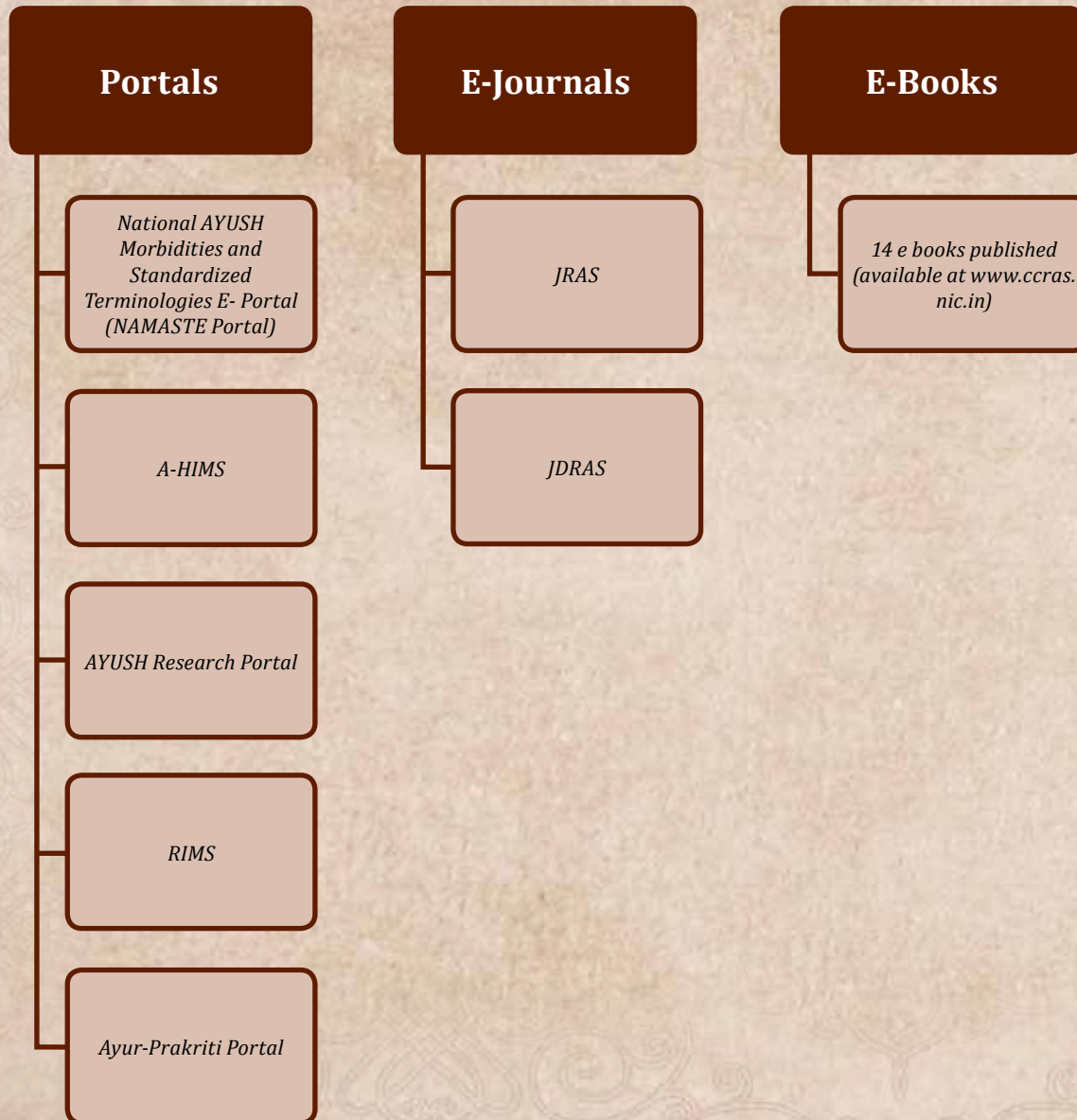
Publications

1	<i>Books and Monographs Published</i>	315
2	<i>E- Books</i>	14
3	<i>Journals of CCRAS</i>	
	• <i>Journal of Research in Ayurvedic Sciences (JRAS)</i>	<i>Quarterly</i>
	• <i>Journal of Drug Research in Ayurvedic Sciences (JDRAS)</i>	<i>Quarterly</i>
	• <i>Journal of Indian Medical Heritage (JIMH)</i>	<i>Half yearly</i>
4	<i>E-Journals of JRAS & JDRAS</i>	<i>Available from 2017 onwards</i>
5	<i>AYUSH Research Portal (web based maintained by CCRAS incorporating published research information of all Ayush system of medicines)</i>	<i>25906 Research papers/ abstracts</i>
6	<i>Ongoing Literary Research projects</i>	8
7	<i>Proposed literary Research Projects</i>	4
8	<i>Total number of research articles published</i>	3946

- *Journal of Research in Ayurvedic Sciences (JRAS)" available at www.jrascrras.com*
- *Journal of Drug Research in Ayurveda Sciences (JDRAS)" available at www.jdrascrras.com*
- *Journal of Indian Medical Heritage (JIMH)" available at www.ccras.nic.in.*



INFORMATION & TECHNOLOGY APPLICATIONS IN AYURVEDA





Information & Technology Applications in Ayurveda

National AYUSH Morbidities and Standardized Terminologies E- Portal (NAMASTE Portal)

An AYUSH Informatics Initiative for centralized collection of morbidity statistics pertaining to various systems of medicine under the Ministry of AYUSH



Shri Narendra Modi, Hon'ble Prime Minister of India, launched NAMASTE Portal on the occasion of 2nd Ayurveda Day on October 17, 2017 at the All India Institute of Ayurveda, Sarita Vihar, New Delhi





STANDARDIZED AYURVEDA TERMINOLOGIES

CCRAS has taken up the task of Standardization of Ayurvedic Terminologies in consultation with all the stakeholders and also taking leads from previous attempts in this regard. The document has been published in ten parts in the name 'Standardized Ayurveda Terminologies' and also be uploaded on National AYUSH Morbidities and Standardized Terminologies E- Portal (NAMSTE Portal) for wider utility. One salient feature of the document is that the terms are arranged in tree form with a major term followed by related sub-terms so that all terms of similar context being grouped together for contextual understanding. Both short and long definitions for each term have been given. Another feature is the emphasis given to the grammatical correctness of the terms in terms of Sanskrit grammar. The National Ayurveda Morbidity Codes (NAMC) is an important part of this document which is also being used for morbidity data collection under NAMSTE Portal.

The screenshot shows the interface of the NAMSTE Portal. The header includes the Ministry of Ayush logo and the portal title. The navigation bar contains links for About Us, Morbidity Codes, Standard Terms, Dashboards, NAMASTE Launch, Name Change Notification, and Login. The main content area is titled 'STANDARDIZED AYURVEDIC TERMINOLOGIES' and features a tabbed interface with 'SAT-A' selected. Below the tabs, there are options for 'SAT-A Table View' and 'SAT-A Tree View'. A search bar and a language dropdown (set to Devanagari) are present above the table.

Term ID	Parent ID	Code	Word	Short Definition	Long Definition	Reference
1	0	SAT-A	मूलभूत-शब्दः	fundamental terms	terms related to fundamental principles of Ayurveda	
2	1	SAT-A.1	आयुर्वेदः	science of life	science where advantageous and disadvantageous, happy and unhappy (states of) life along with what is good and bad for life, its measurement and life itself are described	
3	2	SAT-A.2	आयुः	life; lifespan	combination of the body, sense organs, mind and soul	
4	3	SAT-A.3	धारि	that which sustains	the sustenance of life or the aspect of life which prevents decay	

*Visit at namstp.ayush.gov.in



About A-HMIS

- *A-HMIS is a comprehensive IT platform to effectively manage all functions of health care delivery systems and patient care in AYUSH facilities.*
- *It is the first of its kind citizen centric service from Government of India to provide Electronic Health Record and Personal Health Records facility to the recipients of AYUSH Health Services catered through Research Councils, National Institutes and other related agencies under Ministry of AYUSH, Government of India.*

Objectives of A-HMIS

- *To improve patient care in AYUSH*
- *To improve work efficiency in AYUSH*
- *Efficient management of AYUSH hospital*
- *Effective documentation of AYUSH*
- *To derive comprehensive data of all AYUSH hospital, which helps in effective AYUSH health policy.*
- *To improve research in AYUSH*
- *To eliminate the chances of errors in AYUSH hospital*
- *To collect data on National AYUSH morbidities*

Benefits

- *Effective Clinical documentation*
- *Effective data management including medical data retrieval*
- *Adoptive new features of dual coding ICD 10, and National AYUSH Morbidity Code*
- *Supports full range of Data capture and Data management functions.*
- *State of art report generation.*
- *Boon for getting the NABH and NABL accreditation*
- *Comprehensive collection of National AYUSH Morbidity codes*



CCRAS-RESEARCH MANAGEMENT INFORMATION SYSTEM (RMIS)

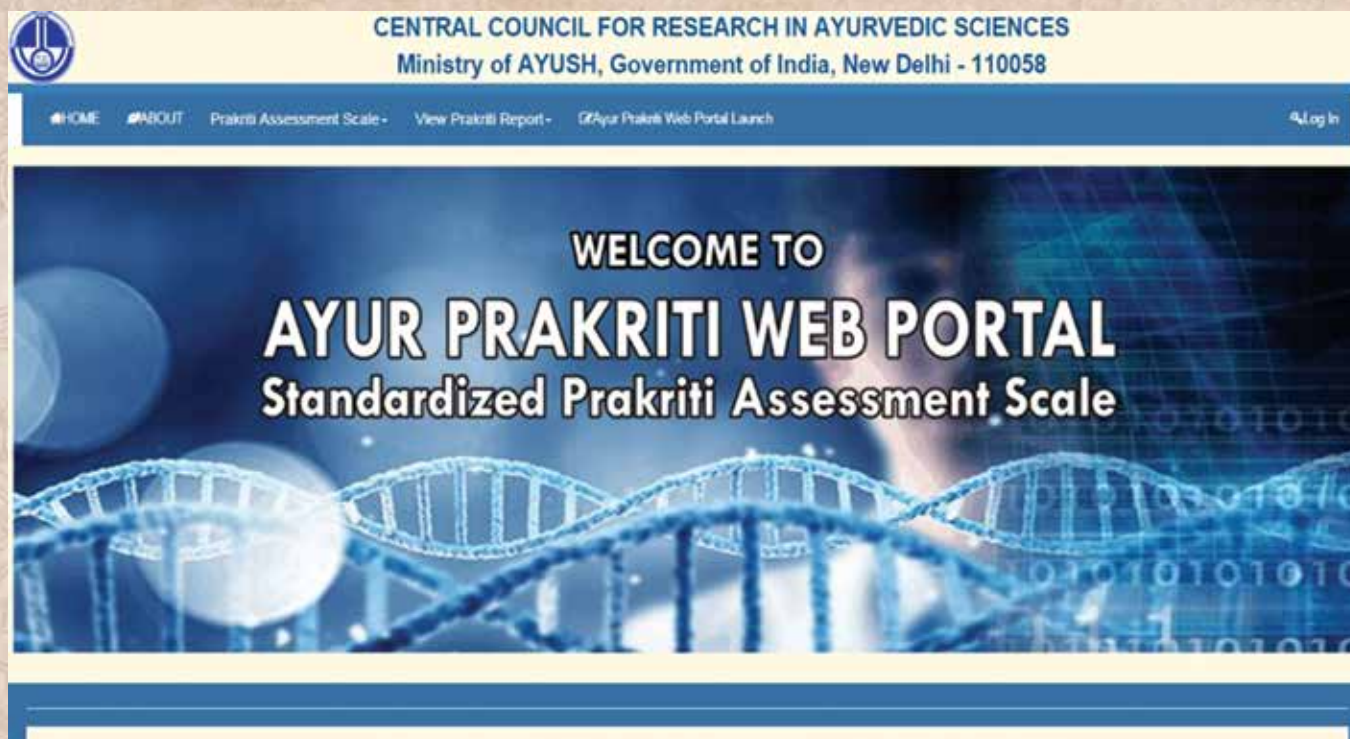
- CCRAS has initiated a dedicated 'Research Management Information System' at National Institute of Indian Medical Heritage, Hyderabad and CCRAS, Hqrs for offering
 - o Suggestions/inputs related to planning/designing/protocol related sampling and statistical issues etc as required by M.D./M.S. and Ph.D. scholars and guides across Ayurvedic Institutes/Colleges in the country.

The screenshot shows the homepage of the Research Management Information System (RMIS) website. The browser address bar displays 'Not secure | rmis.nic.in/#/home'. The website has a dark blue header with the 'RMIS' logo and navigation links: HOME, ABOUT, SERVICES, AYUSH FELLOWSHIP, AYURVEDA MD/PG-DIPLOMA, and CONTACT. Below the header is a blue banner with the CCRAS logo and the text: 'Research Management Information System (RMIS)', 'Central Council for Research in Ayurvedic Sciences (CCRAS)', and 'Ministry of AYUSH, Government of India'. The main content area features a section titled 'CCRAS-RESEARCH MANAGEMENT INFORMATION SYSTEM (RMIS)' with two paragraphs of text. The first paragraph discusses the requirement for thesis work submission by scholars. The second paragraph describes the initiative to enhance research quality through a dedicated RMIS. To the right, there is a 'Menu' section with links to SERVICES, AYUSH FELLOWSHIP, AYURVEDA MD/PG-DIPLOMA, and CONTACT. Below the menu is an 'e-books' section featuring a book cover for 'e-Carakasamhita'.

**Visit at www.rmis.nic.in*



STANDARDIZATION OF PRAKRITI ASSESSMENT SCALE & AYUR PRAKRITI WEB PORTAL



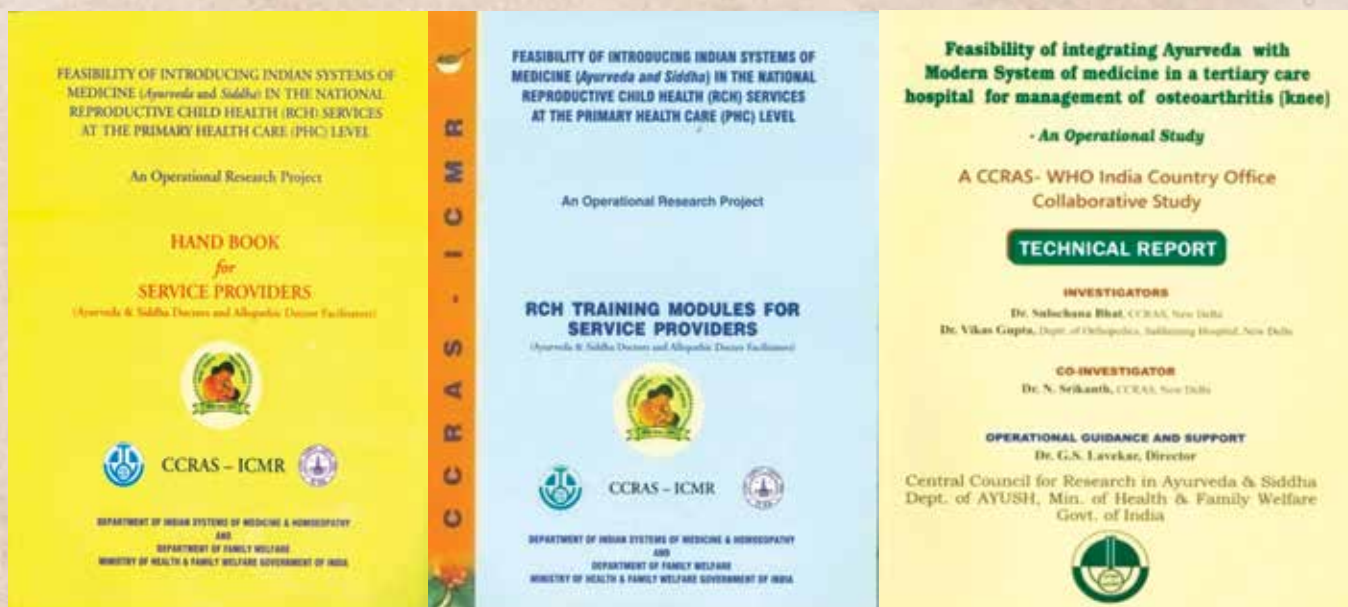
Ayurveda advocates individualized treatment; hence the CCRAS has taken up the work to standardize Prakriti (a major parameter to assess health and disease in individualized form).

CCRAS has developed Standardization of Prakriti Assessment Scale & AYUR Prakriti Web Portal to provide a standardized 'Prakriti Assessment Scale' developed on scientific lines to capture Prakriti (constitution of an individual) accurately by all the stakeholders of Ayurveda.



AYURVEDA & INTEGRATIVE MEDICINE - SOME SUCCESS STORIES

- *Feasibility of introducing Indian systems of medicine (Ayurveda & Siddha) in the National RCH at the primary health care (PHC) Level: An Operational Study : 17 drugs developed through R&D by integration through 50 PHCs/CHCs*
- *Feasibility integrating Ayurveda with Allopathic system of medicine in a tertiary health care hospital to the management of Osteoarthritis (Knee) - An operational Study*
- *Integration of AYUSH (Ayurveda) in NPCDCS*





CCRAS initiatives and achievement toward integration of AYUSH with modern system of medicine

Integration of all system of medicine with true medical pluralism can be the way forward to achieve the ultimate goal of health for all in preventive and curative aspect without putting burden on national budget as mentioned in National Health Policy 2017. CCRAS has undertaken following work toward integration of AYUSH system of medicine.

Integration of Ayurveda in RCH program

- *Introduction of Ayurveda health care system in the conventional system for Antenatal, postnatal and neonatal care with technical support from Indian Council of Medical Research (ICMR), Government of India.*
- *It was implemented in some selected areas of Himachal Pradesh.*
- *Significant improvement in various outcome indicators such as improvement in Hb%, minimal complications such as vomiting, Edema etc. during pregnancy, achievement of full term pregnancy and zero still birth and neonatal death were observed in the study.*
- *No adverse drug reaction (ADR) or adverse event (AE) was reported during the study period.*

Osteoarthritis (Knee)

- *The Council-WHO India country office conducted an operational study to explore the feasibility of integrating Ayurveda with modern system of medicine in a tertiary care hospital (Safdarjung Hospital New Delhi) for the management of Osteoarthritis (Knee) in 2007.*
- *The Ayurvedic treatment provided to 201 patients was found effective in the management of Osteoarthritis Knee with respect to reducing the symptoms, improving the quality of life and reducing the intake of rescue medication (analgesics).*
- *The project established a cross referral system and revealed a shift in service seeking behaviour of the patients.*



INTEGRATION OF AYUSH (AYURVEDA) WITH NATIONAL PROGRAM FOR PREVENTION AND CONTROL OF CANCER, DIABETES, CARDIOVASCULAR DISEASES AND STROKE (NPCDCS)



Ministry of AYUSH in collaboration with Directorate General of Health Services, Ministry of Health & Family Welfare has implemented and executed a program viz. Integration of AYUSH (Ayurveda) component with NPCDCS program since January, 2015, in 52 centres of the identified districts of 3 states, **Bhilwara (Rajasthan), Surendranagar (Gujarat) and Gaya (Bihar)** to cater health care services and reduce the burden of NCDs by combining the strength of Ayurveda and Yoga.

Outcome

- A total number of 672750 patients of selected NCDs have been screened out of which 79894 patients are enrolled under this programme at various Lifestyle Modification Clinics of the selected Districts.
- 4177 camps have been conducted at PHC level for awareness generation through IEC and 363051 patients have attended the camps.
- 748205 patients have been enrolled for Yoga classes organized regularly at various levels (Distt. Hosp./CHC).
- The Overall observation & Interim-analysis has revealed a successful attempt of functional Integration through delivering Ayurveda-Allopathy Integrative Health Care Services in the management of Non- Communicable Diseases with encouraging benefits of stand-alone Ayurveda therapies as well as benefits as add-on therapies.



RESEARCH ORIENTED PUBLIC HEALTH CARE SERVICES

- *The Council is providing Health care services through its Research Oriented Public Health Care Services in many parts of the country.*
- *Presently Council has undertaken five major Programs viz.*
 - o *Tribal Health Care Research Program (THCRP)*
 - o *Ayurveda Mobile Health Care Program under Scheduled Castes Sub Plan (SCSP)*
 - o *Swasthya Rakshan Program (SRP)*
 - o *North East Health Program*
 - o *National Program National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS).*

Core objectives

- *Providing medical aid at door step*
- *Extension of Health Care Services providing health care delivery at door step*
- *Study of Health related demography*
- *Documentation of Ethno medicine and LHTs*



Research Oriented Public Health Care Services

TRIBAL HEALTH CARE RESEARCH PROGRAMME

- *Tribal Health Care Research Program (THCRP) was initiated by the Council in 1982*
- *Currently, the Tribal Health Care Research Program is being executed in 14 States through 15 Peripheral Institutes of CCRAS under Tribal sub-Plan (TSP).*

Outcomes

- *From 1982 up to March 2017 CCRAS has extended Health Care Services at 1737 Villages/Tribal pockets across 16 States covering a population of 1065957*
- *Medical aid and counseling was offered to 377945 seekers and 929 Folklore Claims and Local Health Traditions (LHTs) were documented.*

Glimpses of THCRP Health camp





AYURVEDA MOBILE HEALTH CARE PROGRAMME UNDER SCHEDULED CASTES SUB PLAN (SCSP)

- *Central Council for Research in Ayurvedic Science (CCRAS) under Ministry of AYUSH has taken forward by initiating “SCHEDULED CASTE SUB PLAN PROGRAMME (SCSP)”, launched in October, 2015, in SC Population in 19 State through its 20 peripheral institutes.*

Outcomes

- *No. of tour conducted: 3713*
- *Population covered: 250387*
- *Patients treated: 134730*

Glimpses of Ayurveda Mobile Health Care (SCSP) Health camp





Research Oriented Public Health Care Services

SWASTHYA RAKSHAN PROGRAMME

- Council had initiated Swasthya Rakshan programme during the month of November, 2015, by undertaking outreach health care services through its 21 peripheral research institutes at 19 states rendering clinical services.

Outcomes

- No of Tour conducted: 4646
- No. of Patients treated: 138850

Glimpses of SRP Health camp





NORTH EAST HEALTH PROGRAMME

- CCRAS has set up Ayurveda health centres in 20 districts of North-East states during 2015-16, viz. 10 OPD in Assam state, 6 OPD in Arunachal Pradesh state and 4 OPD in Sikkim state.

Outcome

Medical aid provided to 1,91,548 patients.





REVITALISATION OF LOCAL HEALTH TRADITIONS (LHTs) AND ETHNO-MEDICAL PRACTICES (EMPs)

- *The Central Council for Research in Ayurvedic Sciences (CCRAS) has been putting efforts to document and validate LHTs, and EMPs prevalent among individuals and communities.*
- *Separate formats* have been developed by the council for generating information on LHTs*

Objectives:

- *Screening Local health traditions (LHTs) and folk claims collected under Research Oriented Public Health Services and MEBS Program.*
- *Validation of the LHTs and folk claims*
- *Identification of the LHTs and folk claims pertaining to new indication of the plant already mentioned in Ayurvedic literature and also therapeutic indication of a (plant) part mentioned other than in Classics for further scientific validation*
- *Publication of the LHTs and folk claims, which are not novel/ found in classics.*

* For further reading and formats:

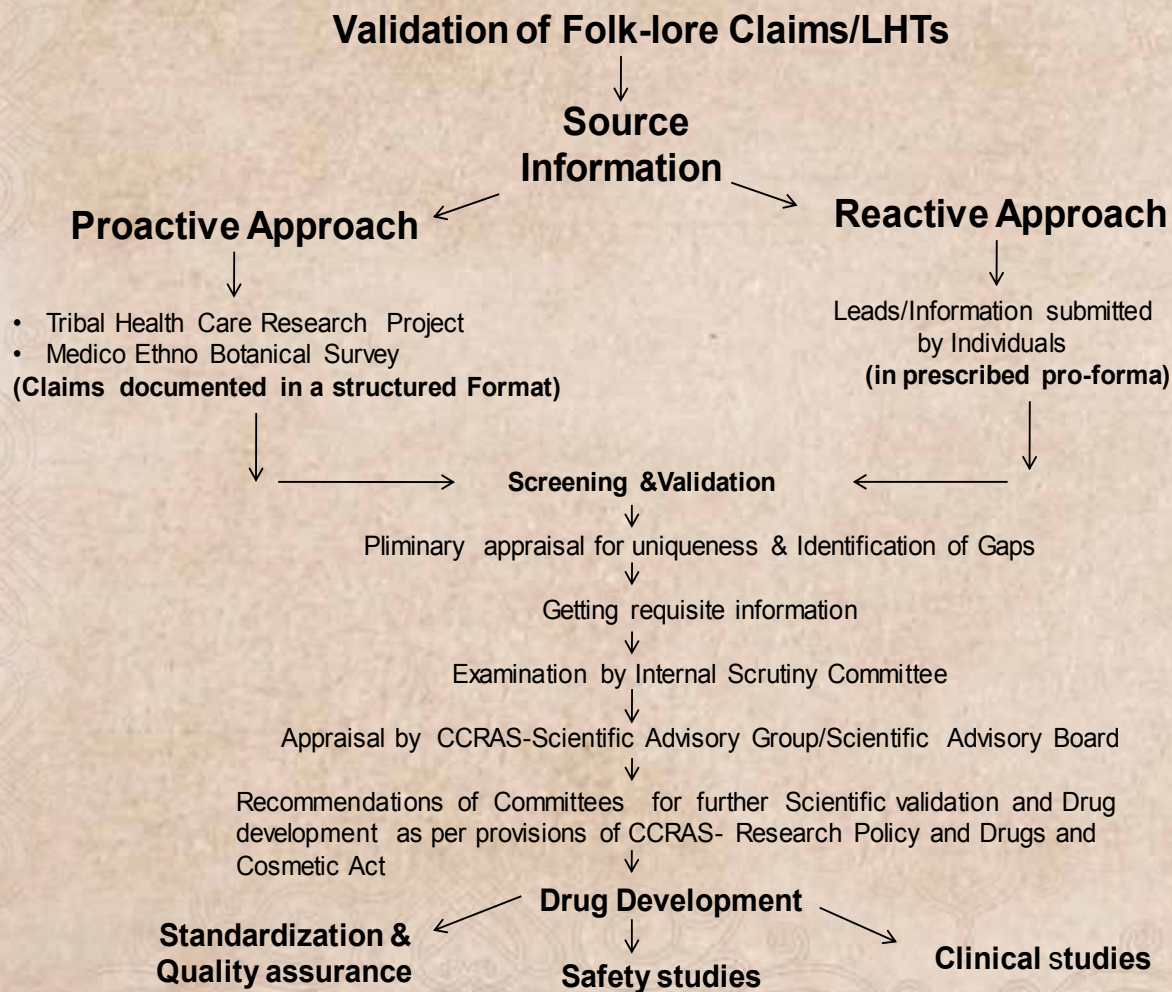
- *Srikanth N, Maheswar T, Sunita, Tripathi AK, Rath C, Khanduri S, Sharma MM, Sahi VK, Singh S, Mangal AK, Gaidhani SN. Generation of Basic information on Claims pertaining to Local Health Traditions, Oral Health Traditions, and Ethnomedical Practices for Validation: An Elective Pro Forma for Documentation by Individuals. J Drug Res Ayurvedic Sci 2017;2(4):306-312.)*
- *Srikanth N, Maheswar T, Singh S. Methodical documentation of local health traditions and folklore claims: scope, relevance and suggested format. J Drug Res Ayurvedic Sci 2017;2(2):149-155.*
- *Maheswar T, Singh S, Singh R, Khanduri S, Ota S, Srikanth N. Suggested format for documentation of demographic data, living conditions, and health status for research-oriented health care programs. J Drug Res Ayurvedic Sci 2017;2(3):241-146.*



Success Stories

Certain leads which are promising has been taken for drug development through systematic Quality, Safety and Clinical studies for certain identified diseases such as

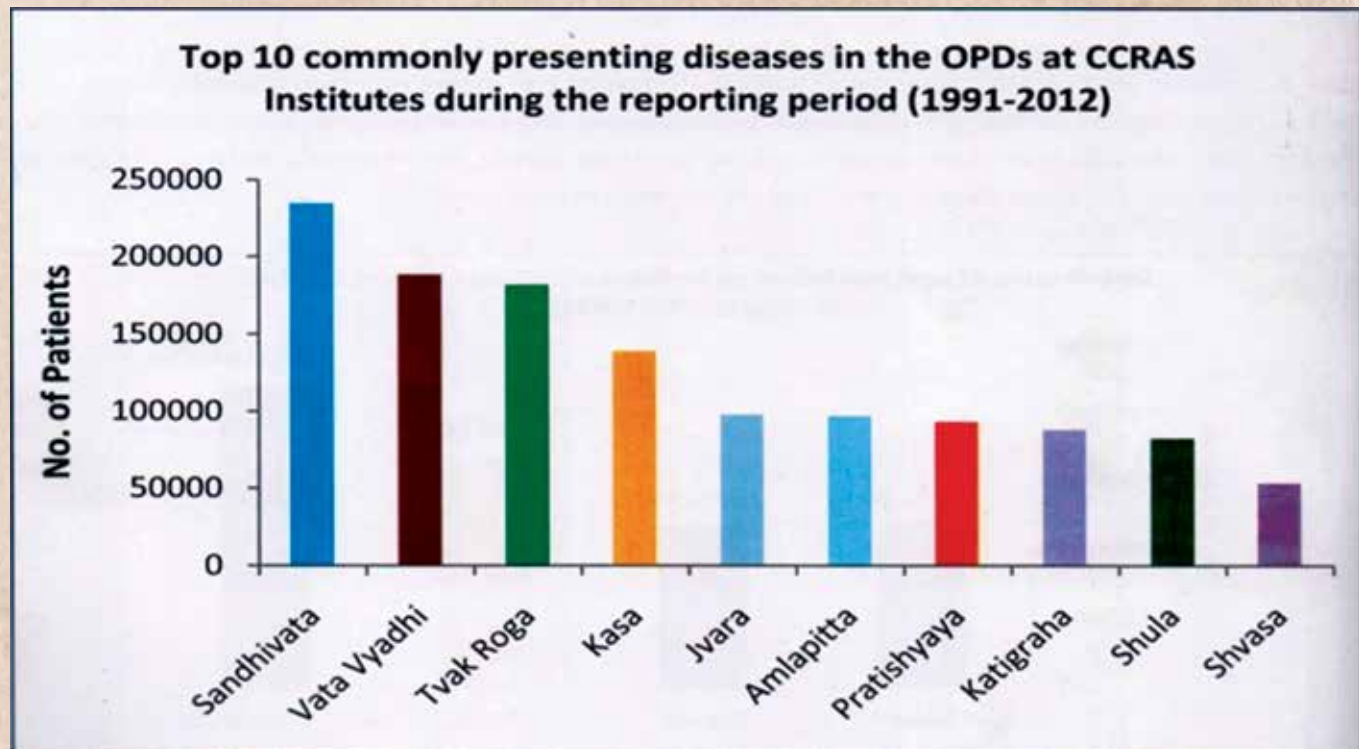
- C1 oil for wound healing
- AYUSH D for Diabetes Mellitus
- AYUSH A for Bronchial Asthma





R & D IN HEALTHCARE SEEKING TRENDS IN AYURVEDA - A CCRAS PERSPECTIVE

- The OPD data (app. 62 lac patients) for the period 1991-2012 was analyzed to present the healthcare seeking behaviour.
- The data was suggestive of patients inclination towards Ayurveda treatment for chronic and lifestyle related diseases.





DEVELOPMENT OF RESEARCH GUIDELINES IN AYURVEDA



CCRAS has developed three comprehensive and concise Guidelines for Ayurvedic Formulations / Interventions focusing on

- **Drug development (Standardization and quality assurance)**
- **Safety / Toxicity**
- **Clinical evaluations**



AYUSH AWARD SCHEMES OF CCRAS

CCRAS is giving award each year for outstanding research contributions made primarily in the field of Ayurveda in following major categories.

- *AYUSH Award Scheme- Best Research Paper Award*
- *AYUSH Award Scheme: Young Scientist Award*
- *AYUSH Award Scheme: Life Time Achievement Award*
- *AYUSH Award Scheme: Best Teacher Award*

AYUSH-NET

- *For promotion and coordination of Research Activities in AYUSH systems of medicine, UGC has mutually recognized AYUSH-NET and UGC-NET for admission to the Ph.D. program in the subjects covered under AYUSH except for those subjects in which UGC is conducting NET, such as “YOGA” and accordingly, the Ministry of AYUSH has requested all Universities to exempt AYUSH-NET qualified candidates from their own Entrance Test for admission to Ph.D. Program*
- *In this the fellowship will be provided for pursuing Ph.D. under a recognized University/Institution of choice by the candidates and during their fellowship, they will be termed as Senior Research Fellows (SRFs).*
- *This scheme will also be open to Senior Research Fellows under various research schemes/ projects of the Research Councils for each individual AYUSH stream for a specified duration. Such SRFs will also be permitted to complete Ph.D. while working with Council in their respective project/ scheme, if enrolled.*

***CCRAS award scheme and further information regarding AYUSH NET can be accessed at: www.ccras.nic.in**



CCRAS VISION DOCUMENT 2030

Central Council for Research in Ayurvedic Sciences (CCRAS), Ministry of AYUSH, Government of India, has formulated and projected “CCRAS Vision Document 2030” with a strategy of research and development for research outcomes in next 15 years considering the strength of Ayurveda and current unmet medical needs. The core components of the document comprise sustainable development goals (SDGs) of CCRAS for vision 2030 for 15 years, 7 years strategy (long-term vision), and 3 years action document, fundamentally harmonized with the goals and recommendations of major national and international health policy documents.

CCRAS has laid its vision document 2030 To develop scientific evidence in Ayurvedic Principles, drug therapies by way of integrating ancient wisdom with modern technology and to bring Ayurveda to the people through innovations related diagnostics, preventive, promotive as well as treatment methods and also introduce scientific research for sustained availability of quality natural resources, to translate them into products and processes and in synergy with concerned organizations to introduce these innovations into public health systems.

The National Population Policy 2000, 6 National Health Policy 2002, and the National Commission on Macroeconomic and Health—2005 of the Ministry of Health and Family Welfare, Government of India, emphasized on reorientation and prioritization of research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) and to validate therapy and drugs in chronic and lifestyle-related diseases, mainstreaming from Indian systems of medicine and homoeopathy (ISM&H). Further, the recent three major documents related to health policy, viz., National Health Policy (NHP) 2017; Situation Analyses—Backdrop to NHP 2017, Ministry of Health and Family Welfare, Government of India; and Three-Year Action Agenda 2017–2020 (draft),¹⁰ NITI Aayog, Government of India, highlighted on prevention through lifestyle advocacy, health care delivery through integration, co-location, and medical pluralism.



In the same way, considering the strength of Ayurveda in current unmet medical needs, the council has proposed a strategy of research and development with focused research outcomes in next 15 years emphasizing on development of new drugs based on leads from classical Ayurveda texts for diseases of national importance and systematic validation of classical formulations and therapies with a vision statement “To develop scientific evidence in Ayurvedic Principles, drugs, therapies by way of integrating ancient wisdom with modern technology and to bring Ayurveda to the people through innovations related to diagnostics, preventive, promotive as well as treatment methods and also introduce scientific research for sustained availability of quality natural resources, to translate them into products and processes and in synergy with concerned organizations to introduce these innovations into public health systems.” Principally analogous with the larger goals and strategies of important health-related policies, core strength of Ayurveda, and current health needs, the document is framed with core components, viz., SDGs of CCRAS for vision 2030 (15 years), 7 years strategy (long-term vision), and 3 years action document.

15 years strategy: *SDGs of CCRAS for vision 2030 (15 years) emphasizes on broader goals set for 15 years, such as translation of research outcomes into practice and making them accessible to health care providers and public, mainstreaming of Ayurveda therapies through integration, generation of evidence on safety and efficacy of classical Ayurveda approaches, dissemination of research outcomes, and infrastructure development for research and development.*

7-years strategy: *From 2017–2018 to 2023–2024 (long-term vision) to convert the long-term vision into implementable policy and action as a part of the National Development Agenda with a mid-term review after 3 years, i.e., the year ending March 2020, focuses on development and validation of Ayurvedic drugs and regimen for inclusion in the important national programs, such as add-on and adjunct therapies for multidrug-resistant tuberculosis; generation of evidence for prevention and management of disorders of vision, reproductive and child health, human immunodeficiency virus/acquired immunodeficiency syndrome, cancer; important communicable diseases, viz., malaria, dengue, filariasis, and non-communicable diseases like diabetes, osteoarthritis, anemia; improvement of memory and cognitive function other psychiatric diseases, such as anxiety neurosis, dementia, etc.; scientific evidence on safety of selected Ayurveda herbo-mineral drugs, etc.*



3-years strategy: A 3-years action document from 2017–2018 to 2019–2020 aligned to the predictability of financial resources during the 14th Finance Commission Award period. This is also to help translate into action the goals of the government to be achieved by 2019 highlights upon development of the directives addressing different research needs; validation of fundamental principles of Ayurveda including Ayurveda biology; development of standard Ayurvedic terminologies, modules on behavioral change communication focusing on Ayurveda-based lifestyle interventions for prevention, health promotion, formats for clinical diagnosis, and clinical examination based on Ayurveda principles: Clinical decision support systems and hospital information management system (HIMS); projects on occupational health; drug development and commercialization of research products for cancer, wound healing, dengue, diabetes; dosage forms of hepato-protective agents; validation of classical Ayurveda formulations or classical Ayurveda drugs for chronic and refractory diseases, rheumatoid arthritis, osteoarthritis, hypertension, gout, urolithiasis, polycystic ovary syndrome, bronchial asthma, and chronic bronchitis; and dissemination of research outcomes.



SUMMARY OF NOTABLE ACHIEVEMENTS AT A GLANCE

- *Generated scientific evidence of safety and efficacy of approximately 100 classical Ayurveda formulations of 36 disease conditions.*
- *Developed an automatic working prototype model for preparation of Kshara sutra.*
- *Developed and launched National AYUSH Morbidity and Standardized Terminology E-Portal (NAMASTE Portal) for uniform centralized collection of AYUSH morbidity statistics.*
- *Successfully implemented Integration of AYUSH (Ayurveda) with NPCDCS (National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases & Stroke) in three districts to demonstrate the feasibility of integration of Ayurveda.*
- *Set up Digital Centralized Herbarium at Regional Ayurveda Research Institute (RARI) Jhansi for wider utility by industry, academicians and researchers.*
- *Herbariums at four Institutes have got international recognition and accredited with acronyms by the New York Botanical Garden, USA*
- *Contributed in development of monographs in different volumes of Ayurvedic Pharmacopoeia of India (API) and Monographs on medicinal plants for "Quality standards of Indian Medicinal plants" in different volumes published by Indian Council for Medical Research (ICMR), New Delhi.*
- *Generated safety of 14 commonly used Ayurvedic metal based / Herbo mineral medicines and published as Evidence Based Safety of Ayurvedic Medicines, available at www.ccras.nic.in*
- *Repository of manuscripts of Ayurveda, Siddha and Unani manuscripts at Preserved National Institute of Indian Medical Heritage (NIIMH) Hyderabad*
- *A web based portal for Research publication in AYUSH "AYUSH Research portal" functional since 2011*
- *Successfully conducted feasibility study for integration of Ayurveda in RCH at selected districts of Himachal Pradesh*



- *Introduced Ph.D fellowship and Ayurveda Award Scheme*
- *11 technologies transferred through NRDC*
- *Successfully launched online version of Journal of Research in Ayurvedic Sciences (JRAS) and Journal of Drug Research in Ayurvedic Sciences (JDRAS).*
- *A comprehensive Prakriti Assessment Scale based on Ayurvedic texts and Ayur-Prakriti web portal has been developed*



PATENTS ON TECHNOLOGIES DEVELOPED BY CCRAS

S. No.	Name of the patent	Patent Granted No./Date
1	<i>A process for the production of a Lactonic glycoside from Nerium indicum Mill. (syn. N. odorum Sol.)</i>	138350/ Dt. 26.09.73
2	<i>A process for the production of an Extract useful in the treatment of Bronchial asthma from Mesua ferrea Linn. Seeds</i>	139868/ dt.04.04.74
3	<i>A process for the production of a Sodium Salt of a natural 2-methyl chromone isolated from the pods of Cassia siamea</i>	140032/ Dt. 04.04.74
4	<i>A process for the isolation of a Pongaflavone from Pongamia pinnata (L.) Pierre (syn. P.glabra)</i>	140321/ Dt. 04.04.74
5	<i>A process for the production of a Benzofuran derivative from kojic acid and catechol</i>	139869/ Dt. 04.04.74
6	<i>AYUSH-56 – Process for preparation of therapeutically active anti-epileptic preparation</i>	141170/ dt. 28.07.1976
7	<i>A process for the preparation of 9,13-Epoxy-6β-hydroxy-8α-Labdone-16,15, 19,20-diolactone 2 known as Nepetaefolinol from the whole plant of Leonotis nepetaefolia Linn</i>	147936/ Dt. 14.08.78
8	<i>A process for the isolation of Vincristine from Vinca rosea</i>	150019 /Dt. 12.06.79



S. No.	Name of the patent	Patent Granted No./Date
9	<i>A process for the preparation of vinblastine from Vinca rosea</i>	150024/Dt. 12.06.79
10	<i>AYUSH-64 – A process for the preparation of a therapeutically active anti-malarial preparation.</i>	152863/ dt.28.07.1980
11	<i>A process for preparation of an Ayurvedic formulation for the treatment of Leukemia</i>	191708/ Dt. 23.8.1999
12	<i>Ksharsutra - A medicated thread for Ano- rectal diseases</i>	186243/ dt.15.02.2002
13	<i>A Process for the Preparation of Novel Composition from Swertia chirata Buch. Ham. (Gentianaceae) having Anti-carcinogenic (cancer Preventive) and anti- Tumor (Cancer Therapeutic) Action</i>	191128/ Dt. 26.3.2002
14	<i>A Process for the Isolation of Amarogentin, Novel Seco-Iridoid Glycoside Possessing Anti-carcinogenic (Cancer Preventive) and Anti- Tumor (Cancer Therapeutic) Action</i>	191129/ Dt. 26.3.2002
15	<i>AYUSH Ghutti -“A herbo-mineral formulation” for cough and cold</i>	193336/ dt. 8.11.2004
16	<i>Pharmaceutical ayurvedic preparation</i>	US 6,939,567B1 Dt. 06. 09.2005
17	<i>BAL RASAYAN - A process for the preparation of a herbo- mineral preparation for general immunity and strengthening of children</i>	196916/ dt.07.07.2006



TECHNOLOGIES TRANSFERRED TO INDUSTRY

S. No	Product Name	Process
1	AYUSH-64	<i>An Anti-Malarial preparation.</i>
2	BAL RASAYAN	<i>A preparation for general resistance in children.</i>
3	AYUSH Ghutti	<i>A preparation for Cough, Cold, Fever & Diarrhoea of children.</i>
4	AYUSH-56	<i>An Anti-Epileptic preparation.</i>
5	AYUSH –SS granules	<i>A preparation to enhance the quality and quantity of breast milk in mother having deficient lactation.</i>
6	AYUSH AG Tablet	<i>A preparation for Ante Natal Care (Anemia).</i>
7	AYUSH PK Avleha	<i>A preparation for Post Natal Care (to enhance the process of recovery after delivery and other complications of puerperal period).</i>
8	AYUSH PG Tablet	<i>A preparation for Ante Natal Care (Oedema).</i>
9	AYUSH B R Leham	<i>A preparation for Pediatric Care.</i>
10	AYUSH 82	<i>An Anti Diabetic Ayurvedic Formulation</i>
11	AYUSH SG	<i>An Anti-Rheumatoid Arthritis preparation.</i>











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