

# **AYUSH SYSTEM**

***A focus on core achievements  
and potential areas for  
Intra-AYUSH collaboration***



**CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES**

**Ministry of AYUSH, Government of India**

**New Delhi**



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# AYUSH SYSTEMS

*A focus on core achievements and potential areas for Intra AYUSH  
collaboration*



**Central Council for Research in Ayurvedic Sciences  
Ministry of AYUSH, Government of India  
New Delhi**

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Ministry of AYUSH, Government of India, New Delhi - 110058

First Edition - 2018

**Publisher:** Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Government of India, New Delhi, J. L. N. B. C. A. H. Anusandhan Bhavan, 61-65, Institutional Area, Opp. D-Block, Janakpuri, New Delhi – 110 058, E-mail: dg-ccras@nic.in, Website : www.ccras.nic.in

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**ISBN : 978-93-83864-29-4**

**Printed at : JK Offset Graphics Pvt. Ltd., New Delhi-110020**

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# **AYUSH Systems and their Core Strength**

*A focus on core achievements and potential areas for Intra AYUSH  
collaboration*

## **Editors**

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

**Dr. Ishwar N. Acharya**  
Director, CCRYN

**Dr. Anil Khurana**  
Director General I/c  
CCRUM

**Prof. Dr.R.S. Ramaswamy**  
Director General, CCRS

**Dr.R.K.Manchanda**  
Director General, CCRH

## **Executive Editor**

**Dr. N. Srikanth**  
Deputy Director General, CCRAS, New Delhi

## **Anthology & Coordination**

**Dr.A.K.Mangal**  
Assistant Director (Pharmacognosy)  
CCRAS

**Dr.Shruti Khanduri**  
Research Officer (Ayurveda)  
CCRAS

**Dr.Babita Yadav**  
Research Officer (Ayurveda)  
CCRAS



**CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES**

Ministry of AYUSH, Government of India

J. L. N. B. C. A. H. Anusandhan Bhavan, 61-65, Institutional Area,

Opp. D-Block, Janakpuri, New Delhi – 110 058

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## **Contributors for Content Development**

<b>CCRAS</b>	Dr. S.N. Gaidhani, Assistant Director (Pharmacology ) Dr. Pramila Pant, Assistant Director (Chemistry ) Dr. Adarsh Kumar, Assistant Director (Ay.) Dr. V.K. Shahi, Assistant Director (Ay.) Dr. Sobaran Singh, Senior Consultant (Ayurveda)
<b>CCRYN</b>	Dr. Rajeev Rastogi, Assistant Director Dr. Vadiraj Research, Officer
<b>CCRUM</b>	Dr. Abdul Rahim, Research Officer (Unani) Dr. Ghazala Javed, Research Officer (Unani)
<b>CCRS</b>	Dr. V. Aarthi, Research Officer (Siddha)
<b>CCRH</b>	Dr. Renu Mittal, Research Officer (Homeo) Dr. Harleen Kaur, Research Officer (Homeo)

## **Technical Support**

**Dr. Sophia Jameela, Research Officer (Ay), CCRAS**

**Dr. Rakesh Narayanan V, Research Officer (Ay), CCRAS**





**Shri Shripad Yesso Naik**  
**Hon'ble Minister of State (Independent charge), Ministry of AYUSH**  
**Government of India**

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**Vaidya Rajesh Kotecha**  
**Secretary, Ministry of AYUSH**  
**Government of India**

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## PROLOGUE

AYUSH systems are the recognized healthcare system in India. These systems have their own philosophy, oriental methodologies and practices with some similarities. As the traditional systems of medicine are gaining popularity globally, the dissemination of knowledge is required for scientific understanding among physicians/researchers of other systems of medicines and scientists of allied sciences.

The National Population Policy 2000, National Health Policy 2002, National Health Policy 2017 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 for mainstreaming through integration and co-location.

The Research Councils functioning under Ministry of AYUSH were set up to undertake research in AYUSH systems through their own institutes as well as in collaboration with reputed institutes involving scientists of different disciplines. These AYUSH Research Councils have contributed significantly in AYUSH research and it is the need of hour that these systems integrate among themselves to showcase the strengths of these individual systems for further planning and mainstreaming of AYUSH.

Several scientific studies have been carried out to generate evidence on feasibility of integration of AYUSH with conventional system of medicine and have demonstrative benefits of this integrative approach in managing non communicable diseases and reproductive child health care.

To showcase the notable achievements of AYUSH Research Councils and possible areas of collaboration, this document “AYUSH systems –A focus on core achievements and potential areas of strength has been prepared to draw a future roadmap for integration among these systems.

This document will demonstrate the common research activities of AYUSH Research Councils, to evolve strategic research programme on identified areas and to prepare a common strategy for popularity and utilization AYUSH system at large.

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Section-I

## AYURVEDA



आयुः कामयमानेन धर्मार्थ सुखसाधनम् ।  
आयुर्वेदोपदेशेषु विधेयः परमादरः ॥



**CENTRAL COUNCIL FOR RESEARCH  
IN AYURVEDIC SCIENCES**





# AYURVEDA

## Background

### 1.1 Introduction

Quest for good health and long life is probably as old as human existence. According to Indian philosophy, health is prerequisite to pursue materialistic, social and spiritual upliftment of human being. It is believed that Lord Brahma, the creator of the universe was also the first preacher of Ayurveda. Four *Vedas*, considered as oldest Indian literatures composed between 5000 and 1000 BC have information on treatment by plants and natural procedures. Reference of medicine and surgery are also found in Indian epics like *Ramayana* and *Mahabharata*.

Ayurveda was established as a fully grown medical system from the period of *Samhita* (compendium) i.e. around 1000 BC. *Ayurveda* literally means "the knowledge of life". In Sanskrit, the word *Ayurveda* consists of the words *āyu*, meaning "life" and *veda*, meaning "knowledge" or "science". Therefore, Ayurveda is an ancient and comprehensive system of health care originated in India. *Ayurveda* considers health of an individual as dynamic integration of body, mind, senses and soul. *Ayurveda* lays great emphasis on preservation and promotion of health and prevention of the occurrence of disease(s) through natural means. Besides, it advocates holistic approach to understand all aspects of human life, healthy living including diagnosis and management of disease.

The compendia like *Caraka Samhita* and *Susruta Samhita* were written in a systematic manner with eight specialties during this period. In these treatises, the basic tenets and therapeutic techniques of Ayurveda got very much organized and enunciated. These treatises stressed the importance of maintenance of health and also expanded their vision to pharmaco-therapeutics. The therapeutic properties of plants, animal products and metals/minerals were extensively described in these compendia, which has made Ayurveda a comprehensive system of health care.

An analysis of Ayurvedic treatises signifies that the different aspects of Ayurveda were evolved and documented from time to time in the form of texts or compendia. For instance the *Caraka Samhita* an authentic source of internal medicine emphasizes on philosophy of life and line of treatment for different diseases. *Susruta Samhita* added a complete systematic approach to surgery and diseases of eyes, ear, throat, nose, head and dentistry. *Madhava Nidana*, authored by *Madhavakara* is a work on diagnosis of the diseases. *Bhava Prakasa* written by *Bhava Misra* gives additional emphasis on medicinal plants and diet. *Sarngadhara Samhita* focused on pharmaceuticals and Ayurveda was enriched with addition of more formulations and dosage forms. Subsequently, texts of Ayurveda were commented upon, updated and methodically written by many authors from time to time. A look into commentaries on the treatises by the scholars indicates that while the theoretical framework of Ayurveda remained more or less the same, the knowledge about drugs and techniques of therapy got expanded. The old concepts and descriptions were reviewed and updated in the light of contemporary understanding by the commentators in their commentaries thus reviving Ayurveda into an applied form. Present form of Ayurveda is the outcome of continued scientific inputs that has gone into the evolution of its principles, theories and practices.



### 1.1.1 Fundamental principles

Like any other system of medicine, Ayurveda is based on its fundamental principles such as *Pancamahabhuta*, *Tridosha*, *Saptadhatu*, *Mala*, *Srotas*, *Agni*, *Oja*, *Prakriti*, etc. Optimal health conceived in Ayurveda is a perfect harmony of body, mind and soul. Health or "*svasthya*" is a state of equilibrium of the *dosa* (regulatory physiological entities), *agni* (digestive and metabolic factors), function of *dhatu* (structural entities), *mala* (excretory entities) along with proper functioning of *jnanendriya* (sense organs), *manas* (cheerful mind) and *atma* (soul). Any disturbance in this equilibrium due to internal or external factor leads to diseases. Ayurveda emphasizes that *Prakriti* (psychosomatic constitution), which is specific to every individual, is responsible for the health or disease pattern in the individual. Human mind has *triguna* (three attributes) i.e. *sattva* (pure state of mind), *rajas* (mind with passion/desire/ attachment) and *tama* (inert/ignorant mind), which interact with the biological components, *vata*, *pitta* and *kapha* determine the psycho-somatic constitution of an individual. Ayurvedic approach to examination of psychosomatic constitution is important in assessing individual's health for planning preventive measures for selecting diet, medicine or treatment regimen.

- i. ***Pancamahabhuta* (five basic elements)**- The Universe according to Ayurveda is composed of five basic elements called *Pancamahabhuta* viz. *akasa* (basic ethereal element), *vayu* (basic air element), *agni* (basic fire element), *jala* (basic aqueous element) and *prithvi* (basic earth element) and so is the human body. There is a fundamental similarity between universe and man. A harmonious interaction between the microcosm (human being) and the macrocosm (universe) is the basis of health.
- ii. ***Tridosha* (Three Regulatory Physiological Entities)**- The doctrine of *Pancamahabhuta* is the origin and basis of the three regulatory physiological entities i.e. *vata*, *pitta* and *kapha*. *Vata* is derived from the basic element *vayu* and *akasa*, *pitta* from *agni* and *kapha* from *jala* and *prithvi*.

The important function of *vata* is to impart movement, generation and conduction of impulses, transportation of biological materials and elimination of waste products. In the normal condition, *vata* performs entire neurological functions of the body. *Vata* is responsible for functioning of five sensory organs (*Panca jnanendriya*) and motor functions also. It is a regulator of psychosomatic functions of the living body. All the basic emotions like worry, anxiety, fear, grief, anger etc. are governed by *vata*. Usually all functions of nervous system at central and peripheral level are correlated with *vata*. *Pitta* represents transformation. It governs digestion, absorption, assimilation, nutrition, metabolism, body temperature, skin coloration, luster of the eyes, intelligence, and understanding. Psychologically, *pitta* arouses anger, hate, and jealousy. Usually digestive juices, enzymes and hormones come under this entity. *Kapha* is responsible for the physical strength, built, stability of structures, cooling, adhesion, lubrication, maintenance of the smooth working of the joints etc. It also exhibits psychological phenomena such as courage, forbearance, zest, virility, knowledge, understanding etc.

*These tridosha are described as the main cause for health and disease. The health is maintained if they remain in balanced state and if they are deranged in any manner, they vitiate structural and excretory entities to cause vikara/roga(disease).*





**iii. Saptadhatu (Seven Structural Entities)**

The structural elements in the body are classified as *dhatu*. They are seven in numbers and are responsible for maintaining the body in a compact and composed state. They are *rasa* (primary product of digested food), *rakta* (blood), *mamsa* (muscle tissue), *medas* (adipose tissue), *asthi* (bone tissue), *majja* (bone marrow) and *sukra* (reproductive elements). Apart from this, there are seven *upadhatu* (supportive by products of *dhatu*), namely *stanya* (breast milk), *artava* (menstrual fluid), *kandara* (tendons), *sira* (blood vessels), *vasa* (fat), *tvak* (skin), *snayu* (ligament).

**iv. Mala (Excretory Entities)**

*Mutra* (urine), *purisa* (faeces) and *sveda* (sweat) are the three gross excretory entities. The exudates eliminated from eyes, nose, mouth, ears and reproductive organs and other structural entities etc. are also considered as Mala. Proper elimination of these excretory entities is also required to maintain health. Their hypo, hyper and irregular state results in diseases.

**v. Srotas (Micro and Macro Channels)**

The concept of *srotas* occupies an important position in the development of conceptual frame work of Ayurveda. According to Ayurveda whole body is made up of *srotas* (micro and macro channels), which transport all types of materials in the body. For normal functioning of the body, it is essential that these channels, both micro and macro remain intact.

**vi. Agni (Digestive and metabolic factors)**

The digestive and metabolic energy that is responsible for transformation of food to nutrients is called *agni*. It is responsible for digestion and metabolism in the body. In other words, *agni* signifies life process responsible for entire digestion, endocrine and metabolic activities.

**vii. Ojas (Essence of dhatu)**

Ayurvedic texts have vividly described the factor of immunity in terms of *vyadhiksamatva*, which is considered as the natural or acquired biological defense of an individual against diseases. This power is attributed to the presence of a biological factor called *ojas*, the essence of the structural entities (*dhatu*), which literally means vigor. Ayurveda also describes a number of methods to promote *ojas* and *vyadhiksamatva*.

**viii. Prakrti (Psychosomatic Constitution)**

The structural and functional variations are the fundamental characteristics of human being. No two individuals are exactly alike either in their morphological, physiological or behavioral dimensions. The every individual differ in their genetic makeup and also in morphological and psychological aspects including their endocrine activity and metabolic efficiency. Ayurveda has given maximum attention regarding the clinical significance of individual personality and also recognized the dichotomy between mind and body and classified psychological personality in terms of *sattvika*, *rajasika* and *tamasika* where as somatic constitution is determined by relative predominance of *vata*, *pitta* and *kapha* in an individual. Ayurvedic concept of *Prakrti pariksa* is to know body- mind constitution to predict the susceptibility of disease. *Prakrti* is considered while prescribing diet, medicine or treatment regimen to an individual.

**ix. Roga-Rogi Pariksa (Clinical diagnosis)**

The diagnosis in Ayurveda is based on two-fold approach viz. (1) examination of the patient i.e., *rogi*



*Pariksha* and (2) diagnosis of the disease *i.e. roga pariksa*. The *rogi pariksa* is essentially concerned with ascertaining the psychosomatic constitution and status of health & vitality of the individual. This is achieved through ten fold examination (*dasavidha pariksa*), eight fold examination (*astasthana pariksa*) and three fold examination (*trividha pariksa*) of the patient. For the proper treatment of diseases, it is mandatory to understand the exact nature of the disease with reference to *dosa*, *dhatu*, *mala* and *agni*. The diagnosis of the disease is also done with the help of *satkriyakala* (six stages of pathogenesis) and *nidana pancaka* (five fold approaches of diagnosis).

#### x. *Cikitsa Siddhant* (Principles of Management)

The approach of Ayurveda is holistic and individualistic. The promotive and preventive aspect of Ayurveda is called *svasthavrtta* that includes personal and social hygiene, regular daily and seasonal regime and appropriate social behaviour. The curative treatment consists of three major constituents, *ahara* (food), *vihara* (lifestyle) and *ausadha* (drug/medicament). Ideal treatment according to Ayurveda is one which cures the disease without causing adverse effect. Three classical therapeutic streams advocated by Ayurveda are (1) *daivavyapasraya cikitsa* (spiritual therapy) (2) *yuktivyapasraya cikitsa* (rational treatment) and (3) *satvavajaya cikitsa* (psycho-behavioral therapy).

The Ayurvedic treatment methods can be grossly divided into three methods *samsodhana* (bio-cleansing therapy), *samsamana* (palliative therapy) and *Nidana parivarjana* (avoidance of causative factors). *Samsodhana* is the modality by which effort is made to remove disease causing factors like metabolic wastes/toxins from the body. This is practiced through one or more therapies from *pancakarma*. *Samsamana* is the modality of treatment by which the disease causing factors are pacified inside the body and this is achieved through three types of therapies *viz.* food, lifestyle and medicine.

### 1.1.3 Strength of Ayurveda

- i. **Comprehensive definition of health:** Ayurveda defines health as a state of equilibrium of *dosa* (regulatory and functional entities of the body), *dhatu* (structural entities), *mala* (excretory entities) and *agni* (digestive and metabolic factors) alongwith healthy state of sensory and motor organs and mind with their harmonious relationship with the soul. As against definition of health, the diseased state is defined in Ayurveda as a loss of equilibrium of essential body constituents. The objective of disease management is to bring back the equilibrium, principally through lifestyle management rather than through curative therapies. The strength of Ayurveda lies in its three fold holistic approach of prevention of disease, promotion of health and cure of disease. This is achieved through care of body, mind and soul where physical, mental and spiritual aspects of health are considered.
- ii. **Acceptance by the community:** About 80-90% of population in India is reported to use *Ayurveda* and other traditional systems of medicine to meet their primary health care needs. Safety of this system is attributed to time-tested use substantiated by scientific evidences. Besides, synergy of ingredients in conjunction with individual need based treatment plan forms the basis of efficacy and safety of Ayurvedic formulations. Specific guidelines are prescribed for the use of apparently toxic medicinal plants with certain detoxification processing that also enhance the bioavailability and efficacy of the final product.



- iii. **Emphasis on promotion of health and prevention of diseases:** Considering health of an individual as dynamic integration of environment, body, mind and soul, Ayurveda lays great emphasis on preservation and promotion of health and preventing the occurrence of diseases. The treatment modalities of Ayurveda are based on the inherent ability of the living body to rejuvenate, regenerate and restore the natural equilibrium. While treating the patient, Ayurvedic treatment helps to enhance the natural healing process in the body. The prevention of disease and promotion of health is achieved by judicious practice of *dinacarya* (daily regimen), *rtucarya* (seasonal regimen) and *sadvritta* (ethical code of conduct) in accordance with *prakrti* (psychosomatic constitution). In this way significance of healthy life style for maintenance of health is emphasized by Ayurveda. Do's and don'ts on personal and social behavior are elaborated for attaining total health. Great emphasis is given on *Nidana parivarjana* i.e. keeping away from factors which cause or precipitate the disease, whereas therapeutic procedures like *pancakarma* help in eradicating the disease.
- iv. **Importance of diet and lifestyle:** The ultimate aim of this medical science is preservation of health and it can be attained in two ways, i.e. observation of lifestyle recommendations to prevent the diseases and eradication of already afflicted diseases. The prerequisites to attain the prevention include wholesome diet, conservation of environment, congenial social and cultural atmosphere. Diet is an essential factor for the maintenance of health. Ayurveda emphasizes on diversified aspects of dietetics and nutrition *viz.* quality, quantity, processing methods, rationale of combination of food articles, emotional aspects, nature of the consumer, geographical and environmental conditions etc. Advocacy of proper diet and life style, which is congenial to the individual, maintains normal body functions thus prevents the diseases.
- v. **Holistic concept of health:** Ayurveda considers a living being as a combination of body, mind and soul. All health management approaches are intended to maintain the harmony and homeostasis of these entities.
- vi. **Individualized approach:** Ayurveda considers that each individual has distinct psychosomatic constitution and health status. This is taken into account while advocating preventive, promotive and curative measures.
- vii. **Universal approach:** According to Ayurveda, the individual (microcosm) is a miniature replica of the universe (macrocosm). Every aspect of the universe is represented in the individual. Any change in the environment affects human being. Therefore, emphasis is laid on social and environmental factors which are interlinked with health.
- viii. **Stress on public health and eugenics:** The activities of the individual through his thought, word and deed have their good or bad effects on the environment. Ayurveda emphasizes upon healthy body, sound mind, benevolent speech and spiritual practices to create a healthy and happy environment. The pivotal role of eugenics mentioned in Ayurveda is to produce strong, healthy and ideal progeny.
- ix. **Use of natural products:** Ayurvedic products are derived mainly from plants and other natural resources. Supportive leads are emerging from revalidation of Ayurvedic drugs. Identification of active principles of some plants has led to discovery of many allopathic drugs. Some pharmacologically proven constituents of the Ayurvedic plants like *Aloe vera*, *Curcuma longa*, *Withania somnifera*, *Bacopa monnieri* etc. are used globally.



- x. **Areas of clinical strength:** Ayurveda provides healthcare within the physical and financial reach of rural India. Some of the Ayurvedic medicinal plants and spices are widely used as home remedies in India for a wide range of common ailments. The common users of Ayurveda are individuals suffering from chronic intractable diseases. Ayurvedic treatment is effective in chronic disorders like diabetes mellitus, hypertension, obesity; psychosomatic disorders like depression, insomnia; digestive disorders like irritable bowel syndrome (IBS), peptic ulcer, respiratory disorders like bronchial asthma and chronic obstructive pulmonary disease; musculo-skeletal disorders like arthritis, osteoporosis; neurological and neuro-degenerative disorders like paralytic conditions, sciatica, etc.
- xi. **Unique therapeutic approach:** Ayurveda advocates certain bio-cleansing and rejuvenating therapeutic measures such as *pancakarma*, *rasayana* for maintenance of healthy state as well as in the management of chronic diseases. *Ksarasutra*, a minimal invasive para- surgical procedure using medicated thread, widely cited in ancient medical literatures for its safety and efficacy is being successfully practiced as promising therapy for ano-rectal disorders. Such unique specialties of Ayurveda either as stand alone or add on therapies are proven to have an edge over conventional medical approach in disease management and improving quality of life.

#### 1.1.4 INFRASTRUCTURE AND REGULATORY STRUCTURE

A well-developed infrastructure of AYUSH systems exists in India which includes educational institutes, research organizations, public and private hospitals, dispensaries and registered private practitioners providing health care. At administrative level there is Ministry of AYUSH under Government of India, and there are separate Directorates of AYUSH in different States. Through culturally and socially interwoven network with the community, AYUSH systems have very deep roots in the India's health care delivery. About 80-90% of population in India is reported to use Ayurveda and other traditional systems of medicine to meet their primary health care needs. As on 2011 the health care services are being extended to the masses through a huge network of registered Ayurveda practitioners, Ayurveda hospitals, dispensaries, under graduate (UG) and post graduate (PG) colleges (includes exclusive PG colleges and UG colleges those run both PG and UG courses). This infrastructure includes both public and private sector. About 8000 licensed drug manufacturing units produce classical and proprietary Ayurvedic medicines.

##### Regulatory Structure

Education, practice, manufacturing for sale of medicines of Ayurveda are regulated by following Acts and Rules.

##### A. Major Acts:

- i. Indian Medicine Central Council (IMCC) Act, 1970 for regulation of education standards & clinical practices.
- ii. Drugs & Cosmetics Act, 1940 and Rules 1945 with a dedicated chapter for regulation of Ayurveda, Siddha and Unani drugs.



iii. Drugs & Magic Remedies (Objectionable Advertisements) Act 1954 to prevent the misleading advertisement of certain cure claims on specific disease condition.

**B. Other Relevant Acts:**

- i. Indian Forests Act 1927 to conserve the medicinal plants species used in medicines.
- ii. Wild Life Protection Act 1972 to preserve and protect the threatened animal species and their parts etc. used in medicines etc.
- iii. The Narcotic Drugs and Psychotropic Substances Act 1985.
- iv. Bio-diversity Act 2002 to regulate the exploitation of certain plants and animal species used in medicines etc.
- v. Food Standard & Safety Act 2006 to regulate the safety and standards of food items etc.

### **1.1.5 RESEARCH & DEVELOPMENT AND GLOBAL SCENARIO**

Like other systems of ancient Indian learning, Ayurveda is discovered through suitable sources of acquiring knowledge and producing evidence (*pramana*) viz. (1) *pratyaksa* (direct perception), (2) *anumana* (inference), (3) *aptopadesa* (authoritative and documentary testimony), (4) *yukti* (reasoning) etc.

Presently the research in Ayurveda is conducted through multi-disciplinary approach. The drug development phase includes selection of research area on the basis of national priority and literature, growing and collection of authentic raw materials by using good practices, standardization, safety/toxicity studies, targeted biological activities, phased clinical trials. The research proposal has to be approved by ethics committee and undergoes a scrutiny of scientific and monitoring committees, which includes experts from Ayurveda, Allopathy, Biostatistics, Pharmacology etc. Besides the infrastructure under the Ministry of AYUSH and Central Council for Research in Ayurvedic Sciences, the research in this sector is being undertaken by Indian Council of Medical Research (ICMR), Council of Scientific and Industrial Research (CSIR), Department of Science and Technology, Department of Biotechnology, various Universities, Medical Colleges, AYUSH Colleges, Non Government Organizations (NGOs), Hospitals, Pharmaceutical Industry etc.

#### **Global Scenario**

In spite of advances in biomedical research and development, many new diseases are emerging. Prevention and management of chronic, non-communicable diseases are posing a global challenge. Previously, communicable diseases were accounted for more incidents of death globally. whereas in the present scenario chronic and lifestyle disorders and their complications have been the cause of mortality and morbidity. These diseases need long-term treatment just for palliative care, which involves major economic liability on the individual and the country. Another serious issue is safety of synthetic medicines related to long-term use. A resurgence of interest in Ayurveda has resulted from the preference of many consumers for products of natural origin. The Ayurvedic preventive and health promotive approaches and therapeutic modalities either stand alone or as add on



therapies have an edge over the conventional medical approach in dealing with chronic and refractory disease conditions and life style related diseases. Ayurveda can offer solution in the management and improvement of quality of life in chronic diseases such as cancer, rheumatoid arthritis, bronchial asthma, skin allergies, eczema, psoriasis, liver disorders, obesity, hyper-lipidaemia and atherosclerosis, diabetes mellitus, hemiplegia and paraplegia, mal-absorption syndromes, ischemic heart disease, epilepsy and generalized anxiety disorder.

### **Initiatives**

Sensing the resurgence of global interest in Ayurveda, the Government of India has taken many initiatives for promotion and propagation of Ayurveda. Some of such initiatives are enlisted below:

- i. International exchange of experts and officers.
- ii. Incentive to drug manufacturers, entrepreneurs, AYUSH institutions etc. for international propagation of AYUSH and registration of their products by USFDA/EMEA/UK-MHRA for exports.
- iii. Support for international market development and AYUSH promotion-related activities.
- iv. Promotion of Ayurveda, Unani and Yoga abroad through young Post Graduates.
- v. Translation and publication of AYUSH literatures in foreign languages.
- vi. Establishment of AYUSH information cells/health centres in Indian embassies/missions and in the cultural centres set up by Indian council for cultural relations (ICCR) in foreign countries and deputation of experts.
- vii. International fellowship programme for foreign nationals for undertaking AYUSH courses in premier institutions in India.



## 1.2 BRIEF ON CCRAS

The Central Council for Ayurvedic Research as an Advisory body was established in 1962 and finally the Central Council for Research in Indian medicine & Homoeopathy (CCRIM&H) was established in 1969. This Council initiated research programmes in the Indian systems of Medicine & Homoeopathy in different parts of the country and started coordination at the National level for the first time.

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 30<sup>th</sup> March, 1978). It is an autonomous organization under Ministry of AYUSH, Govt. of India and is the apex body for formulation, co-ordination, development and promotion of research on scientific lines in Ayurveda and Sowa-Rigpa systems of medicine. The activities are carried out through its 30 Institutes/Centres/Units located all over India and also through collaborative studies with various Universities, Hospitals and Institutes and its Headquarter is situated in New Delhi.

Recently, CCRAS has also opened a centre at Collaborative Research Centre for Veterinary Ayurveda” (CCRAS) at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) Ludhiana.

The policies, directions and overall functioning of the Council are regulated by the Governing Body. Minister of State (Independent Charge), Ministry of AYUSH, Government of India is the president of the Governing Body and has general control on the affairs of the Council. There is a Standing Finance Committee (SFC) under the chairmanship of Joint Secretary, Ministry of AYUSH, Government of India to consider and recommend various financial proposals, developmental activities, etc.

### Vision

“To strive for excellence and global leadership in the field of Ayurveda by comprehensive Research for quality assured and cost effective products to prevent/ manage/ cure various diseases”.

### Mission

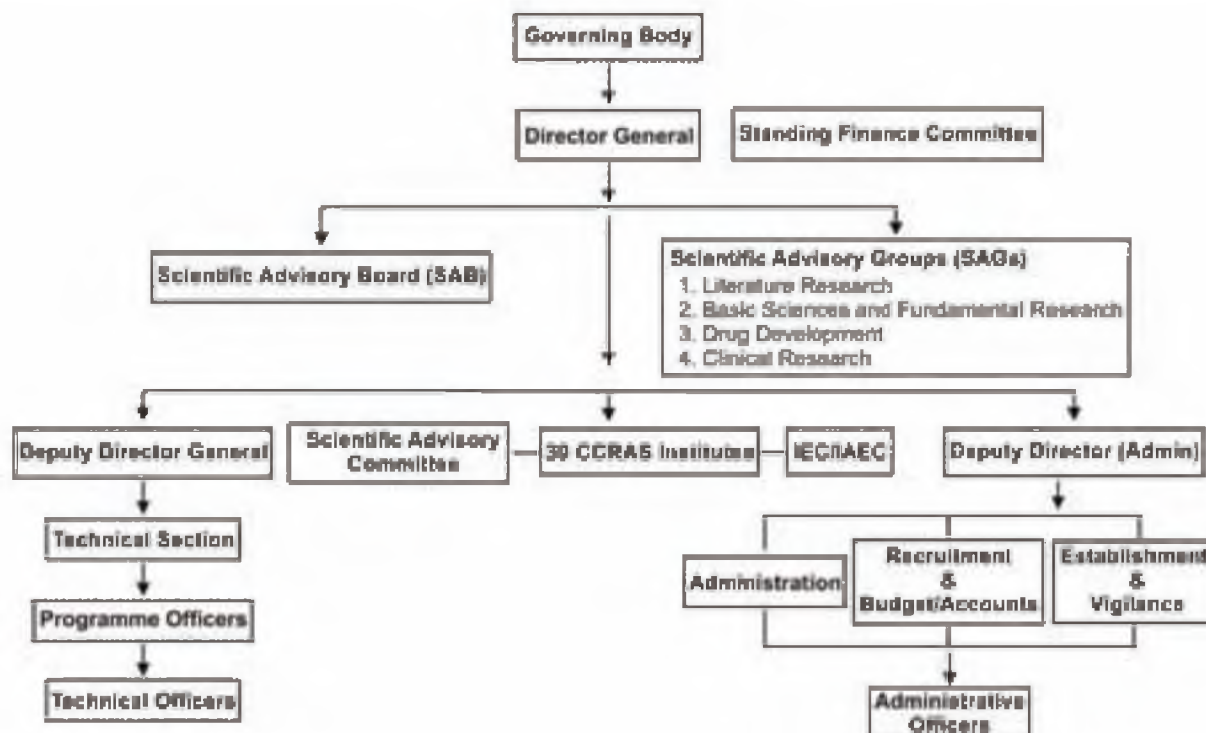
1. To develop CCRAS into a dynamic, vibrant, and model research organization for undertaking, coordinating, aiding, and promoting research in Ayurveda.
2. To bring-up modern scientific knowledge, technology to explore Ayurveda scientific treasure following prevalent scientific methods.
3. To attain global leadership in research for treatment and prevention of emerging important life style related disease and health requirement.

### Core Objectives

1. Development of safe, effective products and therapies for diseases of National and Global importance.
2. Validation of Classical Ayurvedic formulations & therapies for generating tangible evidence on safety and extent of use.
3. Capacity building programmes on Research methodology and drug development.
4. R&D support for academic, research institutes and industry.
5. Create awareness and promote competitiveness, excellence and innovation among the researchers in the field of Ayurveda.
6. Dissemination of research outcome through publications, research journals, websites etc.



## Organogram of CCRAS







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. Research Ayurveda Regional 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



## CCRAS NETWORK



### STATE WISE CCRAS INSTITUTES/CENTRES/UNIT

State	Name of CCRAS Institutes/Centres/Unit	Mandate assigned (focused area, other activities)
Andaman & Nicobar	1. Regional Research Center of Ayurveda (RRCA), Port Blair	Tribal Health Care Research <b>Other Activities:</b> Health care services through Out Patient Department (OPD) Special Clinics for Geriatric Health Care. Outreach Activities such as Tribal Health Care Research Programme etc.
Andhra Pradesh	2. Regional Ayurveda Research Institute for Skin disorders (RARISD), Vijayawada	Clinical Research in Skin Diseases and Vector Borne Diseases <b>Other Activities :</b> Health care services through Out-Patient Department (OPD) and In-Patient Departments (IPDs) Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Arunachal Pradesh	3. Regional Ayurveda Research Institute (RARI), Itanagar	Clinical research on lifestyle related and Non-communicable disorders focusing on Hypertension. Medico-Ethno-Botanical Survey <b>Other Activities:</b> Health care services through Out Patient Department (OPD) Special Clinics for Geriatric Health Care Demonstrative Medicinal Plants Garden Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Assam	4. Research Ayurveda Regional Institute for Gastro-Intestinal Disorders (RARIGID), Guwahati	Clinical Research focusing on Skin disorders, GIT disorders Medico-Ethno-Botanical Survey. <b>Other Activities:</b> Health care services through Out-Patient Department (OPD) Special Clinics for Geriatric Health Care. Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Bihar	5. Regional Ayurveda Research Institute for Infectious Diseases (RARIID), Patna.	Clinical research focusing on infectious diseases <b>Other Activities:</b> Health care services through Out Patient Department (OPD) Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Delhi	6. Central Ayurveda Research Institute for Cardiovascular Diseases (CARICD), New Delhi	Clinical research on lifestyle related and Non-communicable disorders focusing on Cardiovascular Diseases. <b>Other Activities:</b> Health care services through Out-Patient



		<p>Department (OPD) and In-Patient Departments (IPDs)</p> <p>Special facility for Ksharasutra &amp; Panchakarma</p> <p>Special Clinics for Geriatric Health Care</p> <p>Other Activities assigned from time to time.</p> <p>Training Center for Clinical Research and Para-medical Subjects</p> <p>Outreach Activities such as Swasthya Rakshan Programme etc.</p>
Gujarat	7. Regional Ayurveda Research Institute for Skin Disorders (RARISD), Ahmedabad	<p>Clinical Research focusing on Skin Disorders.</p> <p>Other Activities:</p> <p>Health care services through Out-Patient Department (OPD)</p> <p>Special clinics for Geriatric Health care</p> <p>Outreach Activities such as Swasthya Rakshan Programme etc.</p>
Himachal Pradesh	8. Regional Ayurveda Research Institute for Nutritional Disorders (RARIND), Mandi	<p>Clinical Research focusing on Nutritional Disorders</p> <p>Respiratory disorders, (Bronchial Asthma) and Rheumatoid Arthritis</p> <p>Other Activities</p> <p>Health care services through Out-Patient Department (OPD)</p> <p>Special Clinics for Geriatric Health Care</p> <p>Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.</p>
Jammu & Kashmir	9. Regional Ayurveda Research Institute for Urinary Disorders (RARIUD), Jammu	<p>Clinical Research focusing on Urinary disorders and Gout.</p> <p>Other Activities</p> <p>Health care services through Out Patient Department (OPD) &amp; IPD</p> <p>Special facility for Panchakarma</p> <p>Special Clinics for Geriatric Health Care</p> <p>Facility of Ksharsutra</p> <p>Outreach Activities such as Tribal Health Care Research, Swasthya rakshan Programme etc.</p>
	10. National Research Institute for Sowa-Rigpa (NRISR), Leh	<p>Health care services through Out Patient Department (OPD)</p> <p>Tribal Health Care Research</p> <p>Medico-Ethno-Botanical Survey</p> <p>Cultivation of Medicinal Plants</p> <p>Literary Research &amp; Documentation</p>
Karnataka	11. Regional Ayurveda Research Institute for Metabolic Disorders (RARIMD), Bangalore	<p>Clinical Research focusing on Metabolic disorders and Dietetics</p> <p>Other Activities:</p> <p>Health care services through Out-Patient Department (OPD)</p> <p>Special Clinics for Geriatric Health Care</p> <p>Botanical survey</p> <p>Outreach Activities such as: Tribal Health Care Research, Swasthya Rakshan Programme etc.</p>



	12. Advanced Center for Ayurveda in Mental Health & Neurosciences (ACAMHNS), Bangalore	Clinical Research on Mental disorders Health care services through Out Patient Department (OPD) and In-Patient Departments (IPDs) Special Clinics for Geriatric Health Care Outreach Activities such as Ayurveda Mobile health care programme etc.
Kerala	13. National Ayurveda Research Institute for Panchakarma(NARIP) , Cheruthuruthy	Clinical research focusing on validation of Panchakarma procedures especially in Neuromuscular & Musculo-Skeletal Disorders. Other Activities: Health care services through Out-Patient Department (OPD) and In-Patient Departments (IPDs) Special facility for Panchakarma Special Clinics for Geriatric Health Care Panchakarma training Outreach Activities such as Swasthya Rakshan Programme etc. Pharmacological Research & Drug Standardization
	14. Regional Ayurveda Research Institute for Life style related Disorders (RARILSD), Trivandrum	Clinical Research focusing on Life style related Disorders. Other Activities: Health care services through Out-Patient Department (OPD) Special Clinics for Geriatric Health Care Outreach Activities such as Swasthya Rakshan Programme etc.
Madhya Pradesh	15. Regional Ayurveda Research Institute for Drug Development (RARIDD), Gwalior.	Center for Pre-Clinical Research & Drug Standardization.  Other Activities: Clinical Research Health care services through Out-Patient Department (OPD) and In-Patient Departments (IPDs) Special Clinics for Geriatric Health Care Training Center for Pre-Clinical Studies Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Maharashtra	16. Raja RamdeoAnandilalPodar (RRAP) Central Ayurveda Research Institute for Cancer (RRAP-CARIC), Mumbai	Clinical research on lifestyle related and Non-communicable disorders focusing on Cancer. Other Activities: OPD and IPD Facility Special Clinics for Geriatric Health Care Special facility for Ksharasutra Special facility for Panchakarma& Physiotherapy Outreach Activities such as Swasthya Rakshan Programme etc.
	17. Regional Ayurveda	Clinical research focusing on Mother and Child



	Research Institute for Mother and Child Health (RARIMCH), Nagpur.	Health. Other Activities: Health care services through Out Patient Department (OPD) and In-Patient Departments (IPDs) Special facility for Panchakarma Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
	18. Regional Ayurveda Institute for Fundamental Research (RAIFR), Pune	Basic & Fundamental Research in Ayurveda In-vitro Pharmacology testing. Proteomics and metabolomics. Other Activities: Demonstrative Medicinal Plants Garden. Pharmacognosy Research Plant Tissue Culture Molecular Biology Research
Nagaland	19. Herbal Ayurveda Research Centre, Lumami (HARC), Nagaland	Health care services through Out Patient Department (OPD)
Orissa	20. Central Ayurveda Research Institute for Hepatobiliary Disorders (CARIHD), Bhubaneswar	Clinical research focusing on Hepatobiliary Disorders. Other Activities: Health care services through Out-Patient Department (OPD) and In-Patient Departments (IPDs) Special Clinics for Geriatric Health Care Special facility for Panchakarma Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Punjab	21. Central Ayurveda Research Institute for Respiratory Disorders (CARIRD), Patiala	Pharmaceutical Research and Clinical Research focusing on Respiratory disorders. Other Activities: Health care services through Out-Patient Department (OPD) IPD facility (25 beds) Special Clinics for Geriatric Health Care Outreach Activities such as Swasthya Rakshan Programme etc.
Rajasthan	22. M.S. Regional Ayurveda Research Institute for Endocrine Disorders (RARIED), Jaipur	Clinical research on lifestyle related and Non-communicable disorders focusing on Endocrine Disorders Other Activities: Health care services through Out Patient Department (OPD) and In Patient Departments (IPDs) Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Sikkim	23. Regional Ayurveda	Clinical research on lifestyle related and Non-



	Research Institute (RARI), Gangtok	communicable disorders focusing on Gout Other Activities: Health care services through Out Patient Department (OPD) Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Tamilnadu	24. Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute (CSMRADDI), Chennai.	Drug Standardization Research. Pharmacognosy, Pharmacological Research Center for Survey of Medicinal Plants.
	25. Dr. Achanta Lakshmipati Research Centre for Ayurveda (ALRCA), Chennai	Clinical Research on life-style related & non communicable diseases Other Activities: Health care services through Out Patient Department (OPD) Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.
Telangana	26. National Institute of Indian Medical Heritage (NIIMH), Hyderabad	Literary Research and documentation Revival and retrieval of texts from ancient manuscripts and rare books Search and collection of information descriptive notes, editing and publication of rare medical manuscripts/ books on AYUSH Documentation Ayurveda Encyclopedia Museum on History of Medicine Referral library on AYUSH systems of medicine and modern medicine. AYUSH Research Portal
Uttar Pradesh	27. Regional Ayurveda Research Institute for Eye Diseases (RARIED), Lucknow	Clinical research on lifestyle related and Non-communicable disorders focusing on Eye Diseases. Other Activities: Health care services through Out-Patient Department (OPD) Special Clinics for Geriatric Health Care Outreach Activities such as Swasthya Rakshan Programme etc.
	28. Regional Ayurveda Research Institute (RARI), Jhansi	Central herbarium Medico Ethno Botanical Survey Production Pharmacy Other Activities: Demonstrative Medicinal Plants Garden. Demonstrative crude drugs repository Authentication of the plant specimens
Uttarakhand	29. Regional Ayurveda Research Institute (RARI), Ranikhet	Medico-Ethno-Botanical Research Other Activities: Health care services through Out-Patient Department (OPD)



		Demonstrative Medicinal Plants Garden. Musk Deer Breeding Outreach Activities such as Swasthya Rakshan Programme etc.
West Bengal	30. Central Ayurveda Research Institute for Drug Development (CARIDD), Kolkata	Drug development Research covering: Pharmacognosy Research Drug Standardization Research Pharmacological Research Clinical Research as per requirement. Other Activities: Health care services through Out-Patient Department (OPD) and In-Patient Departments (IPDs) Special facility for Panchakarma and Ksharasutra therapy Special Clinics for Geriatric Health Care Outreach Activities such as Tribal Health Care Research, Swasthya Rakshan Programme etc.

26 CCRAS institutes viz. CARICD, Delhi; CARIRD, Patiala; NARIP, Cheruthuruthy; CARIHBD, Bhubaneswar; CARIDD, Kolkata ; RARIUD, Jammu; RARIND Mandi; RARIED, Lucknow ; RARI, Guwahati; RARI, Itanagar; RARI, Gangtok; RRAP- CARIC, Mumbai; RARIM&CH, Nagpur; RARIED, Jaipur; RARIDD, Gwalior; RARISD, Ahmedabad; RARI Patna; ALRCA, Chennai; RARIMD, Bengaluru; ACAMH&NS, Bengaluru ; ARIMCHC, Thiruvananthapuram; RARISD, Vijayawada; RRCA, Port Blair; NRISR Leh; RARI Ranikhet and HARC Nagalandare extending health care services through OPD/IPD out of which 22 institutes are engaged in clinical research.

05 CCRAS institutes viz. RARIMD Bengaluru, RARIGID Guwahati, RARI Itanagar, RARI Jhansi and RARI Tarikhet are engaged in medicinal plant research. Drug Standardization work is being carried out at 05 CCRAS institutes viz. CARIDD, Kolkata; CSMRADDI, Chennai; RARIDD, Gwalior; CARIRD, Patiala and NARIP, Cheruthuruhty. CSMRADDI Chennai is a NABL accredited laboratory since 2006, and also holds Drugs Testing Laboratory (DTL) License from Drugs Controller, Tamil Nadu State. The pharmacological research are carried out at 05 institutes viz. RARIDD Gwalior, CSMRADDI, Chennai; CARIDD, Kolkata; NARIP, Cheruthuruthy and RAIFR Pune. NIIMH Hyderabad is dedicated for Literary research.

### Research Activities:

The Council carries out its activities in the areas of Clinical Research, Medicinal Plant Research (Medico-ethnobotanical Survey, Pharmacognosy and Cultivation), Drug Standardization, Pharmacological Research, Literary Research & Documentation, and health care services through out-patient departments (OPDs) and in-patient departments (IPDs), special clinics for geriatric health care.

Further CCRAS is also engaged in public health oriented research activities viz. Tribal Health care Research Programme (THCRP) under TSP, Swasthya Raskshana Programme (SRP), Ayurveda Mobile Health care programme (AMHCP) under SCSP, integration of AYUSH (Ayurveda) in National Programme for Prevention and control of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS) . Moreover, the CCRAS has set up 20 Ayurvedic Health Centres in three North East States (Assam, Arunachal Pradesh and Sikkim) under North East Plan and extending health care services at President Estate through AYUSH Wellness centre .



The Council also conducts capacity building workshops on human resource development on contemporary areas viz. Research methodology, Good Clinical Practices (GCP), Good Laboratory Practices (GLP), bio-statistics, drug development, drug standardization, instrumentation, Good Cultivation Practices. Council also imparts structured training and short time course on Panchakarma.

The Council is also involved in IEC activities through participation in Arogya Melas, fairs, exhibitions for dissemination of knowledge and awareness of Ayurveda in public.

### **Research Management**

CCRAS has a Scientific Advisory Board (SAB) and 4 Scientific Advisory Groups viz. (i) Clinical research, (ii) Drug development, (iii) Literature research and (iv) Basic sciences & fundamental research to suggest the areas of research and review the work done by the Council from time to time.

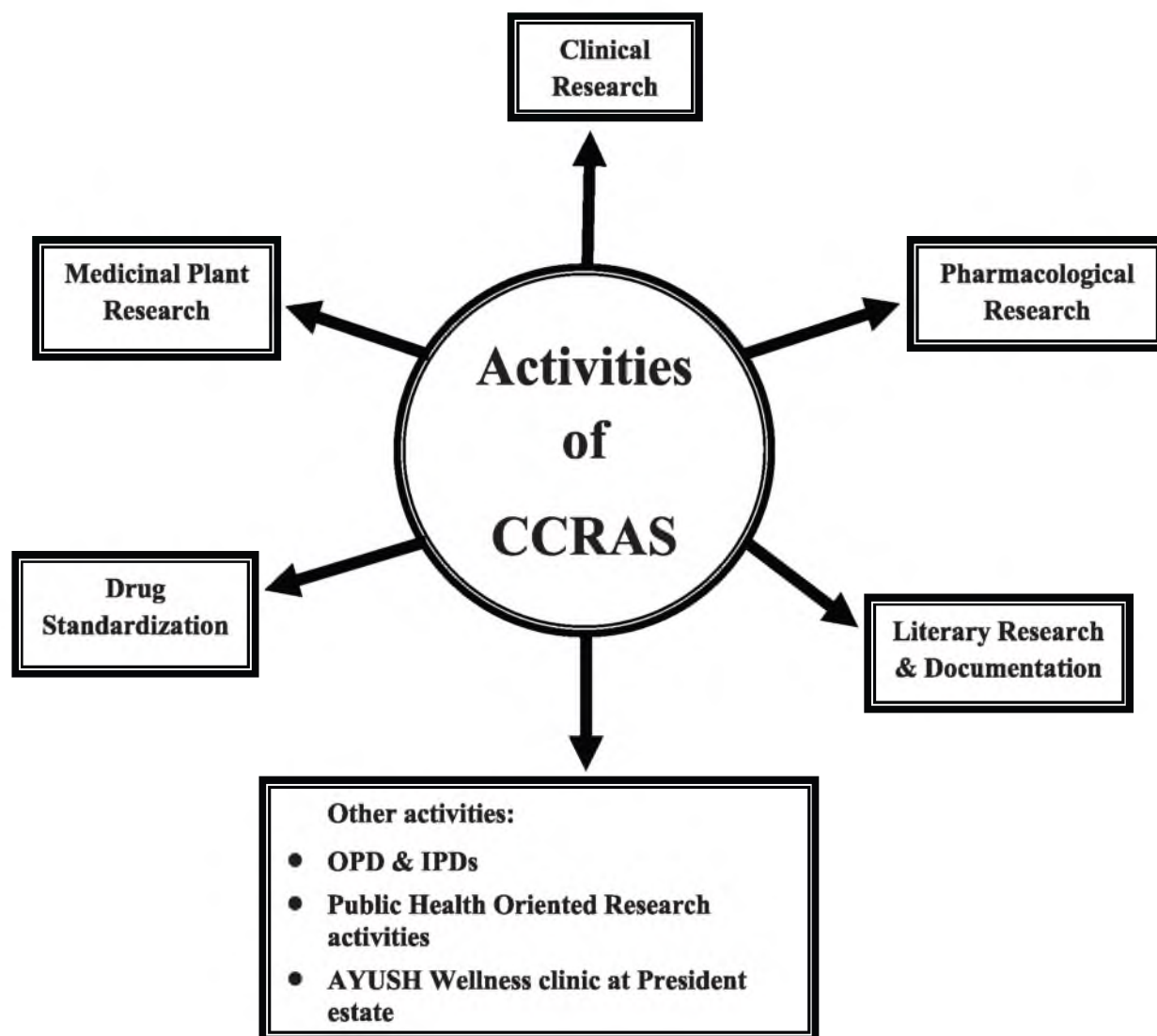
To streamline the research activities, the Council has formulated and implemented CCRAS Research Policy to undertake research in intramural and collaborative mode. Further, there is provision to undertake international collaboration as well as collaboration with pharmaceutical industries.

Considering the strength of Ayurveda, current unmet medical needs, the council formulated its vision document for next 15 years “Vision Document 2030” focusing on development of investigational new drugs based on leads from classical Ayurvedic for diseases of national importance besides systematic validation of classical formulations and therapies.





CORE ACHIEVEMENTS OF CCRAS SINCE INCEPTION





### Summary of notable achievements at a glance

- Generated scientific evidence of safety 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 Portal (NAMSTP) for uniform centralized collection of AYUSH morbidity statistics.
- Successfully launched and initiated Integration of AYUSH (Ayurveda) with NPCDCS (National Programme 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
- 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
- 12 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).





## 1. Clinical Research

The Council undertakes validation of classical Ayurvedic formulations already in the healthcare system through clinical studies to generate evidence on clinical efficacy and safety and scientific validation of new combinations (coded drugs) under drug development. The classical Ayurvedic formulations are already in the healthcare system and coded Ayurvedic drugs are made available into the healthcare system through systematic process of drug development viz. drug standardization and quality control, preclinical safety/toxicity studies and biological activity studies (as appropriate) and clinical trials as per requirement. The details are as under:

### I. Validation of classical Ayurvedic formulations for clinical efficacy and safety

The Council has undertaken validation of classical Ayurveda formulations for identified disease conditions referring to Ayurveda classics, Ayurvedic pharmacopeia /Ayurvedic Formulary of India, Essential Drug list of ASU medicines (2013), Ministry of AYUSH. These formulations are being validated through Council's institutes engaged in clinical research in a phased manner. Some of the formulations are clinically validated for different disease conditions and some are used in different combinations for the same or different disease conditions.

- Generated scientific evidence on safety and efficacy of approximately 100 classical Ayurvedic formulations on 36 diseases/conditions viz. Allergic Conjunctivitis, Dry Eye Syndrome/Computer Vision Syndrome, Bronchial Asthma, Chronic Bronchitis, Cognitive Deficit, Dyslipidemia, Type II Diabetes Mellitus, Essential Hypertension, Irritable Bowel Syndrome (IBS), Duodenal Ulcer, Jaundice, Diarrhoea, Fistula-in- ano, Iron Deficiency Anemia, Menopausal Syndrome, Osteoarthritis, Sciatica, Hemiplegia/Paraplegia, Filariasis, Obesity, Osteoporosis/Osteopenia, Rheumatoid Arthritis, Rasayana for healthy ageing (Geriatric health), Dysmenorrhoea, Psoriasis, Gout, Polycystic Ovary Syndrome, Hemorrhoids, Malaria, Generalized Anxiety Disorder, Mental Retardation, Epilepsy, Schizophrenia, Refractory errors, Urolithiasis, and Heart disease. The research outcomes are being published in reputed journals.
- Further, validation of 35 classical Ayurvedic formulations is continuing for generation of scientific evidence on safety and efficacy on 14 diseases/conditions viz. viz. Psoriasis, Urolithiasis, Uterine Fibroids, Rheumatoid Arthritis, Haemorrhoids, Osteoarthritis, Gout, Osteopenia/ Osteoporosis, Obesity, Iron Deficiency Anaemia, Menopausal Syndrome, Cervical Spondylosis, Cognitive Deficit and Chronic Allergic Conjunctivitis in various institutes of the Council engaged in clinical research.

*The research outcomes of these studies are being published in journals for wider dissemination. The evidence on clinical efficacy and safety of Ayurvedic formulations which are vogue and available in the market is highly useful to practitioners and consumers for their rational use. The evidence of their safety and rational use will also strengthen integration of Ayurveda with other systems of medicine and also help in convincing scientific community across the world which may also improve its market in the country and world at large.*

### II. Scientific validation of new formulations/drugs:

Besides validation of classical Ayurveda formulations, the council is engaged in drug development of new/coded formulations based on leads from classical texts, contemporary scientific and pharmacological leads for important diseases of National importance based on strength of Ayurveda.



- Till date, 12 technologies such as Ayush 64 for malaria, Ayush SG for Rheumatoid Arthritis, Ayush 82 for Diabetes mellitus have been developed and commercialized through National Research Development Corporation (NRDC) for wider public utility.
- CCRAS has undertaken the development of the various coded formulations for different disease conditions viz. AYUSH Manas for Mental retardation/cognitive deficit, AYUSH QOL 2C for improving Quality of Life of Cancer patients ,AYUSH Rasayan A & B in geriatric health ,AYUSH C1 Oil for wound healing, AYUSH PJ-7 for Dengue fever, AYUSH M-3 for Migraine, AYUSH SL for Filariasis ,AYUSH A for Bronchial Asthma ,AYUSH D for Type II Diabetes Mellitus ,Carctol S for Cancer , AYUSH K1 for Chronic Kidney Diseases, Ayush coded drug for non alcoholic fatty liver disease and Ayush coded drug for hepato-protection as adjuvant to ATT which are at different phases of drug development. These studies are being conducted in collaboration with reputed institutes like AIIMS New Delhi, NIMHANS Bengaluru, BHU, ICMR, St.John's Medical College Bengaluru etc.

### III. Other Collaborative projects:

Besides this clinical research has also been undertaken to develop Bio-medical instrumentation for Ksharasutra with IIT, New Delhi and for Development & validation of Prakriti Assessment Questionnaire/Scale with reputed organizations.

A clinical research study entitled " Effectiveness and safety of Ayurveda as a whole treatment system in Osteoarthritis of the knee-A Multicentre, Randomized controlled clinical trial based on Traditional Ayurveda Diagnosis" in collaboration with Charite University Medical centre, Germany was carried out. The study has been completed and two research papers have been published in International journals.

### 2. Medicinal Plant Research Programme:

Medicinal plants are the major natural bio resource for Ayurvedic Drugs. For preparation of Ayurvedic formulation, the basic key is the availability and correct identification of the raw material. Under Medicinal plant research major components covered are Medico Ethno Botanical Survey Programme, Demonstrative cultivation of Medicinal plants, study of propagation techniques including in vitro methods and Pharmacognosy research .

Under Medico-Ethno Botanical Survey Programme ,the survey has been conducted through its 5 peripheral Institutes, namely RARIMD Bengaluru, RARIGID Guwahati, RARI Itanagar, RARI Jhansi and RARI Ranikhet. The Council has surveyed part of every phyto-geographic region across the country including the Andaman & Nicobar Islands and Lakshadweep and conducted 974 survey tours covered more than 976 forest areas across the country. During survey more than 1.5 lakhs medicinal plants were collected along with 10,000 folk claims approximately. 19000 museum samples were preserved and one lakh herbarium sheets were documented.

The Council is having Herbarium and Museum containing samples of medicinal plants and crude drugs at most of its peripheral Institutes. Herbariums at four Institutes have got international recognition as these are accredited with acronyms by the New York Botanical Garden, USA viz. (i) Regional Research Institute of Himalayan Flora, Tarikhet – '*RKT*';(ii)National Vriksha Ayurveda Research Institute, Jhansi– '*JHS*';(iii)National Ayurveda Dietetics Research Institute, Bangalore– '*RRCBI*' and (iv) Ayurveda Regional Research Institute, Itanagar – '*ARRI*'

Further, 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)

Cultivation of medicinal plants under Medicinal Plant Research Programme is being carried out mainly in four gardens located at different climatic zones, viz., Regional Ayurveda Research Institute (RARI), Jhansi (Uttar Pradesh), Regional Ayurveda Institute for Fundamental Research (RAIFR), Pune (Maharashtra), RARI Itanagar (Arunachal Pradesh), and RARI, Ranikhet (Tarikhet) (Uttarakhand).

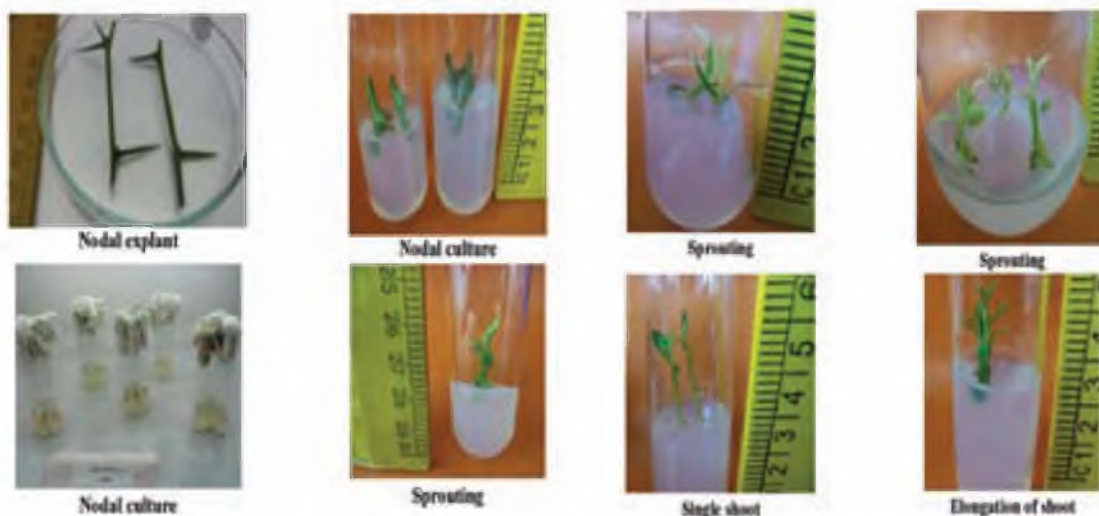
Totally, 533 species of medicinal plants are maintained in these four gardens, out of which, 332 plant species were maintained by RARI, Jhansi; in which 4 species are critically endangered, 20 species are least concerned and rare. In RAIFR, Pune, 159 species of medicinal plants were maintained; out of which 12 species are least concerned and 1 species is vulnerable. In RARI, Itanagar, 126 plant species of medicinal plants were maintained; out of which 4 species under cultivation are critically endangered, 6 species least concerned, 2 vulnerable and threatened. In RARI, Ranikhet, 119 plant species of medicinal plants were maintained; out of which 8 species under cultivation are rare, 4 species critically endangered and vulnerable. Saffron (*Crocus sativus* L.) is successfully cultivated in the Institute (RARI, Ranikhet) gardens situated at Ranikhet and Chamma.

Under development of agro techniques of medicinal plants, 30 protocols were prepared for conservation of these highly valued medicinal plants Viz. *Aconitum heterophyllum*, *Acorus calamus*, *Mucuna pruriens*, *Digitalis purpurea* etc.

*The live plants act as specimen for referencing and correct identification of the medicinal plants. Experimental application of agro techniques and adaptable practices are carried out to study the growth of corms and plants, yield of saffron, etc.*

*These gardens work as reference centers for researchers/ students/ academicians for identification of their plants/plant parts, and the genuine materials collected from the gardens are used as a reference material for herbarium and museums.*

Further, under plant tissue culture 7 plants species is under pipeline



**In vitro cultivation of Bilwa (*Aegle marmelos* (L.) Corr.)**



Under pharmacognosy research, the 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)

### 3. Drug Standardization:

Standardization is an essential step to ensure the quality of Ayurvedic drugs. Exploration of Ayurvedic drugs for chemical studies and quality assessment was initiated in the form of Chemical Research Studies and Standardization Studies with an approach plan to lay down analytical values and to identify the presence or otherwise of main ingredients in the preparation. Confirmation of identity, quality, purity, and detection of adulterants are the major objectives of standardization. One of the prime activities of the Council is Quality assessment of the single drugs and compound formulations and their method of preparation (standard operating procedures) through its Drug Standardization units.

Initially, the Drug Standardization Units were Chemistry departments of reputed Institutes and Colleges *viz.* National Chemical Laboratory (NCL), Poona (Now Pune); University College of Sciences, Osmania, University, Hyderabad; Delhi University, Delhi; University of Kerala, Trivandrum; University College of Science, Calcutta and Banaras Hindu University, Varanasi in 1969 while three Preliminary Standardization Units- 1. Capt. Srinivasamurthy Research Institute, Madras; 2. Department of Modern Pharmacy, Gujarat Ayurvedic University, Jamnagar; 3. Department of Dravyaguna, Institute of Medical Science Banaras Hindu University, Varanasi in 1970. In view of the application of Drugs and Cosmetics Act, 1940, as amended in 1964 it has been decided that preliminary standards are to be worked out for formulations as well as the ingredients (single drugs) for entering into the official pharmacopoeia. All this work was published as Pharmacopoeial Standards for Ayurvedic Formulations. This book consists of 431 formulations divided in 21 categories of dosage forms.

Since inception, the following activities were carried out:

- 2520 samples of single drugs.
- 1369 samples of the formulation/finished products has been standardized
- 356 samples were considered for analytical standardization.
- 512 samples of 392 Ayurvedic plants for chemical studies
- Shelf-life studies of 20 formulations.
- HPTLC/TLC studies of 256 drug samples.

At present, council has Drug standardization units *viz.* Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute (CSMRADDI), Chennai (NABL accredited lab); Central Ayurveda Research Institute for Drug Development (CARIDD), Kolkata; Central Ayurveda Research Institute for Respiratory Disorders (CARIRD), Patiala; Regional Ayurveda Research Institute for Drug Development (RARIDD), Gwalior and National Ayurveda Research Institute for Panchakarma, (NARIP) Cheruthuruthy etc.



Under Drug Development Programme, the Council has developed various formulations viz. Ayush 64, Ayush-56, 777 Oil, Ksharsutra, Ayush Ghutti, Balarasayan, Ayush 82. Besides, Council has coordinated Reproductive and Child Health Care Programme with 17 formulations for pre and post natal care viz. Ayush Candy, Ayush Ark Pudina, Ayush BL Oil (Bala Taila), Ayush Bala Rasayana Tablet, Ayush PK Avleha (Panchakola avaleha), Ayush Bala Rakshak Leham, Ayush PG Tablet (Punarnavadi yoga), Ayush SDM Tablet (Arogya sutika), Ayush SS Granules (Payaswini), Ayush KVM syrup (Vasadi panak), Ayush BC Tablet (Balamrita yoga), Ayush AG Tablet (Shatamuli mandoor), Ayush GG Tablet (Gokshura ghanavati), Ayush LND Tablet (Laksha durvadi yoga), Ayush VRG Tablet (Rajahpravartan yoga), Ayush KD ointment (Khadiradi malahara) and Ayush UT ointment (Rakshoghni malahara). Under new drug development programme 15 new formulation has been developed.

In order to provide third party certification, the concept of laboratory accreditation was developed and the Council got NABL accreditation for Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Chennai in 2008. Besides NABL accreditation this lab has authority to test drug samples from State Licensing Authority, Government of Tamil Nadu and has been declared as Drug Testing Laboratory (DTL) for ASU (Ayurveda, Siddha and Unani) drugs, Govt. of Tamil Nadu. Under the programme 59 samples were tested for various parameters.

The same institute, Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Chennai was recognized as a centre for pursuing Ph.D. by different Universities. Total 39 scholars have been awarded Ph.D. and four candidates are pursuing their Ph.D. work. Presently the Institute is recognised by University of Madras as a research centre for Ph.D.

Considerable work has been done by CCRAS in evaluation of Pharmacopoeia and Formularies. CCRAS remains member of Ayurvedic Pharmacopoeia of Committee (APC) since its beginning in 1969 to prepare, finalize and bring out the main task to bringing out Ayurvedic Pharmacopoeia in convenient installments on single and compound formulations and Ayurvedic formularies effectively. Director General, CCRAS was nominated as Member Secretary of APC in 2005. The Council has contributed a lot in finalization and publication of Ayurvedic Pharmacopoeia of India (API) and Ayurvedic Formulary of India (AFI). So Far, CCRAS has contributed 48 monographs in different volumes of API and 8 monographs in Siddha Pharmacopoeia of India (SPI).

Monographs on 95 plants have been contributed to the book "Quality standards of Indian Medicinal plants" in different volumes published by Indian Council for Medical Research (ICMR), New Delhi.

13 guggulu, 28 churna/kwath churna, 11 tablets/vati/gutika, 18 taila/ghrita, 4 arishta/asava, 8 avleha and sveta parpati, apamarga kshara, yashad bhasma under clinical research projects of IMR-PEMC-CCRAS have been examined.

#### **4. Pharmacological Research:**

Pharmacological studies determine biological effect, effective dose range and overall effectiveness of the optimized lead. It is very important to perform all pharmacological studies in relevant *in-vivo* and *in-vitro* test system, which has closest resemblance to human disease condition. These studies give a further understanding into the mechanism of action and an in depth



understanding of the drug action. While, toxicity studies support toxicity profiling evaluation for the drug candidate which includes a battery of *in-vivo* and *in-vitro* studies. The results eventually help to determine no adverse effect level (NOAEL) and maximum tolerated dose (MTD) for the drug which ultimately helps in calculation for a safer and potentially effective start up dose regimen for human studies.

Under pharmacology research, Ayurvedic drugs are studied for their safety evaluation and biological activity in various areas such as diabetes mellitus, bronchial asthma, anti-cancer, immunomodulation, wound healing, anti-urolithiatic, Anti-arthritis, migraine, dengue etc and toxicity study such as acute, sub-acute, chronic, dermal, ocular etc. Besides conducting studies through its own institutes viz. Central Ayurveda Research Institute for Drug Development, Kolkata; Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Chennai; Regional Ayurveda Research Institute for Drug Development, Gwalior; National Ayurveda Research Institute for Panchakarma, Cheruthuruthy; Regional Ayurveda Institute for Fundamental Research, Pune and the Council collaborates /outsources through institutes of national repute.

Approx. 636 studies have been carried out for toxicity evaluation/biological activities since inception. Approx. 50 medicinal plants have been studied out for toxicity evaluation/biological activities since inception. Screening of medicinal plants for their biological activity/pharmacological action and /or safety/toxicity study which may provide leads for further drug development viz. *Premna integrifolia* for anti-atherosclerosis, *Cardiospermum halicacabum* for hypolipidemic, *Nyctanthes arbor-tristis* for hypoglycemic, hepatoprotective and anti-dislipidaemia, *Ficus lacor Buch Ham*, *Callicarpa macrophylla Vahl*, *Thespesia populnea Soland ex Corr*, *Ficus bengalensis L*, *Ficus religiosa L*, *Holoptelia integrifolia (Roxb.) Planch*, *Albizia lebeck Benth*, *Balanites aegyptiaca (L.) Del*, *Sesbania grandiflora L*, *Cissampelos pareira (L.) Poir*, *Solanum xanthocarpum*, *Glycyrrhiza glabra*, *Berberis aristata*, *Piper longum*, *Zingiber officinalis*, *Picrorhiza kurroa*, *Tinospora cordifolia*, *Embelia ribes*, *Cedrus deodara*, *Withania somnifera*, *Phyllanthus emblica*, *Phyllanthus amarus*, *Acorus calamus*, *Bauhinia variegata*, *Terminalia chebula* for *in-vitro* anti-cancer activity

Safety profile of most commonly used classical Ayurvedic herbomineral formulations viz. Rasamanikya, Naga Bhasma, Hridyarnava Rasa, Swarna Bhasma, Tamra Bhasma, Trivanga Bhasma, Makaradhwaaja, Arogyavardhini Vati, Mahalaxmi Vilasa Rasa, Mahayograjaa Guggulu etc. was established.

Biological activity and/or Safety studies of Ayurvedic classical formulations viz. Jatyadi Grita for wound healing, Arogyavardhini Vati for hepatoprotective activity, Laghu Vishagarbha Taila for arthritis, Yograjaa Guggulu for arthritis, Vaisvanara Churna for rheumatoid arthritis, Gokshuradi Guggulu for urolithiasis, Panchagavya Ghrita for immunomodulatory activity, *Sveta parpati* for urolithiasis have been conducted.

Under new drug development, screening of 10 formulations for biological activity/efficacy and safety studies of Ayush QOL-2C for improvement of quality of life for patients receiving chemotherapy/radiotherapy, Ayush-Manas for mental retardation, Ayush-SL for filariasis, Ayush rasayana- A&B for immunomodulation, Ayush-D for diabetes, Ayush-A for asthma, Ayush M-3 for migraine, Ayush PJ-7 for dengue, Ayush SG for rheumatoid arthritis and Ayush AGT for wound healing have been completed. Further, 17 Ayurvedic formulations for RCH were evaluated for their safety. 16 Intra mural research projects have been completed and 10 Intra mural research projects are ongoing.





## 5. Literary Research and Documentation:

The Council's literary research and Documentation programme broadly relates to medico-historical studies, transcription, translation and publication of classical treatises, important/ rare works, unpublished texts and their commentaries in to Hindi, English or other languages. This work has been carried out by the Headquarter along with selected peripheral Institutes. National Institute of Indian Medical Heritage (NIIMH), Hyderabad with the objective of literary research additionally focuses on medico-historical survey, preparation of biography of eminent scholars, preparation of e-books on classics etc.

National Institute of Indian Medical Heritage (NIIMH) is actively engaged in the tasks of revival and retrieval of manuscripts and rare books since from its establishment. NIIMH, Hyderabad maintains repository of manuscripts of Ayurveda, Siddha and Unani manuscripts. The collection includes palm leaf and paper manuscripts in different languages: Sanskrit, Telugu, Tamil, Malayalam, Urdu, Arabic, Persian etc. The manuscripts are housed in the Institute are periodically subjected to curative and preventive conservation to reduce and prevent the deterioration. These manuscripts are retrieved in digital form too. The Institute has taken up of editing, translation and publication of several books/ works based on original manuscripts and rare books which are published from time to time. Apart from manuscripts, the Institute's library contains very rare and valuable collection of books on History of Medicine of different Systems and medical journals. NIIMH, Hyderabad is a great resource Institute for scholars engaged in the Medico-historical & Literary research in AYUSH Systems of medicine as well as Biomedicine.

Besides, CCRAS has surveyed and digitized more than 5000 Ayurveda, Yoga, Unani, Siddha, Sowa Rigpa etc., manuscripts/ rare books from Odisha, West Bengal, Bihar, Andhra Pradesh, Telangana, Tamilnadu, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Assam and Jammu & Kashmir (Leh) etc. Out of 5000 collection, more than 4000 digitized manuscripts are catalogued and the descriptive catalogues are published.

Further, the Council made continuous efforts to survey, collect, edit and publish the Ayurveda books mentioned in Schedule I of Drugs and Cosmetics Act, 1940. CCRAS, by extensive surveys, out of 54 books (of Schedule I, Drugs and Cosmetics Act 1940), manuscripts and published books/works of different editors/publishers/editions and in different languages pertaining to 48 books are collected and retrieved in print and digital form. Among these 48 books, the following 11 books viz. Abhinavacintamani, Astanga Hridayam, Astangasangraha, Basavarajiyam, Bhelasamhita, Cakradatta (residual portion of Ratnaprabha), Rasacandansu, Rasapradipika, Sahasrayoga, Vaidyaka cikitsa sara , Visvanathacikitsa based on original manuscripts/ rare books are published by the Council for wider accessibility and utility. These works are widely referred by students, researchers, practitioners, industries, indologists, linguistic experts etc.



### Retrieval from Manuscripts

Apart from editing and publication of manuscripts and rare books, the Council has taken major initiative to create a **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.

Under the “Survey, cataloguing and digitized inventory of medical manuscripts” program, about 5000 manuscripts are digitized from manuscript libraries, museums, educational and cultural institutions, private collections etc. across the country. Among the 5000 manuscripts, metadata of 2086 Ayurveda, 598 Siddha, 542 Unani, 628 Sowa-Rigpa, 49 Yoga and 179 other manuscript’s prepared under 44 fields. Apart from manuscripts, the metadata of 1336 rare books is presented in 18 fields. The entire data is published in 9 descriptive catalogues.

A web based portal has been created to provide comprehensive metadata of manuscripts of Ayurveda preserved in various Government Oriental Institutes, Libraries, museums, institutions related to education and culture as well private collections across India. The data in the portal include the details of Descriptive Catalogues of Ayurveda manuscripts published by CCRAS and descriptive catalogues/ Institute catalogues are published / available. *This portal facilitates scholars to identify and locate desired manuscripts for their studies and also to bring out critical editions.*

Apart from revival and retrieval of manuscripts and rarebooks, the Council has taken major initiative in bringing out electronic version of important treatises (Samhita) and compendia/lexicons (nighantu) and Pharmacopeia and Formularies of Ayurveda and Siddha. These e-books are designed and developed by using in house technology at National Institute of Indian Medical Heritage, Hyderabad. Apart from being used as a Search tool, the User can read the text of Carakasamhita, Susruta samhita, Madhavanidanam and 25 Nighantu in eight Oriental languages. These e-books are widely referred by students, research scholars, and faculty of Ayurvedic teaching/ Research Institutions.



The Council publishes books, monographs, technical reports and also the outcome of intramural researches, sponsored research projects, compilation of research related data, medico-historical data, which are useful and informative for researchers, academicians and students as well as public.

CCRAS has published several periodicals viz. Journal of Research in Ayurveda and Siddha, Journal of Drug Research in Ayurveda & Siddha and Journal of Indian Medical Heritage. Besides, a quarterly News Bulletin of CCRAS has also been published periodically.

**6. Extension activities:** CCRAS has also been engaged in informed that it has also been engaged in several extension activities. The major activities are listed below:

#### **6.1 Health care services:**

- i. Health care services were extended to approximately 1,29,56,841 patients through OPD/IPD
- ii. AYUSH Wellness Clinic was established in President Estate in July 2015. The Health care services were provided through OPD and Panchakarma therapy. A total 12694 patients were treated in OPD and Panchakarma therapy was given to 7688 patients

#### **6.2 Public Health Oriented Research activities**

- i. **Tribal Health Care Research Programme:** Tribal Health Care Research Program (THCRP) was initiated by the Council in 1982 with the core objectives encompassing to study the living conditions of tribal people including health related demography, documentation of folk claims and Local Health Traditions and use of common medicinal plants in the area, availability of medicinal plants in the area, propagation of knowledge about hygiene and prevention of diseases besides extending medical aid at their door steps. The program has been continued at 6 States Madhya Pradesh, Maharashtra, Bihar, Assam Arunachal Pradesh and Andaman & Nicobar from 1982 to till 2014. During this period, 5 independent Tribal Health Care research Units have been relocated through reorganization which came into force in the year 2000. Further during the year 2014-15 and 2016-17 the program has been extended in 10 more States viz. Rajasthan, Jammu & Kashmir, Himachal Pradesh, Karnataka, Tamil Nadu, West Bengal, Odessa, Andhra Pradesh, Sikkim and Telengana. Currently, the Tribal Health Care Research Program is being executed in 14 States through 15 Peripheral Institutes of CCRAS under Tribal sub-Plan (TSP). The gross physical achievements including the beneficiaries of health care services, details of villages, tribal's pockets covered, documentation of disease prevalence and local health traditions during period 1982-2017 were compiled summarized and presented based on the information available in the published monographs, technical reports and annual reports of CCRAS.

A critical appraisal reveal that 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 while



medical aid and counseling was offered to 377945 seekers and 929 Folklore Claims and Local Health Traditions (LHTs) were documented.



ii. **Swasthya Rakshan Programme:**

Council had initiated Swasthya Rakshan programme by undertaking outreach health care services through its 21 peripheral research institutes at 19 states viz. Kerala, Odisha, West Bengal, Punjab, Uttar Pradesh, Maharashtra, Rajasthan, Madhya Pradesh, Andhra Pradesh, Karnataka, Bihar, Assam, Sikkim, Arunachal Pradesh, Jammu & Kashmir, Himachal Pradesh, Gujarat and Tamil Nadu rendering clinical services. This programme has been executed by the concerned CCRAS institute by adopting at least 5 large colonies located in urban areas or 5 villages if the institute is located at Tehsil (Block level) per institute. It is a type of mobile community Health Care services through which health care services are provided to people. The Programme is linked with Swacch Bharat Mission. This programme has been initiated during the month of November, 2015. A total 164 villages/colonies covered through 4646 tours in 19 states and medical aid was provided to 138850 patients. During these tours, awareness about hygiene was also provided to the people

iii. **Ayurveda Mobile Health Care Programme under Scheduled Castes Sub Plan (SCSP):**

The Council implemented “Scheduled Caste Sub Plan (SCSP)” in 18 States through its 20 peripheral institutes. Through this programme special emphasis is giving on collection of the demographic information of the particular area. The focus is on socio-economic information, food habits, lifestyle, etc. of people and patients of that particular region. In addition, the OPDs and Camps are being organized in each village/ selected area on a weekly basis where qualified doctor assess the patient and provide suitable treatment/ medicine for various disease conditions. During the survey Health Camps are organized where Medicines are



distributed at free of cost and people are advised for hygiene and prevention of diseases and Ayurveda concepts on preventive health in relation to Pathya-apathya and Sadvritta.

This programme has been initiated during the month of November, 2015. A total 277 villages/colonies, 205287 SC population covered through 3713 tours in 18 states and medical aid provided to 134730 patients. During these tours, awareness about hygiene was also provided to the people.

iv. **Integration of AYUSH(Ayurveda) in National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases & Stroke (NPCDCS):**

The Council in collaboration with Directorate General of Health Services, Ministry of Health & Family Welfare has implemented and executed a programme viz. Integration of AYUSH (Ayurveda) component with NPCDCS ( National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases & Stroke ) programme in the identified districts of 3 states viz. Bhilwara (Rajasthan), Surendranagar (Gujarat) and Gaya (Bihar) to cater health care services and to reduce the burden of NCDs by combining the strength of Ayurveda and Yoga. The programme was launched during 2015.

The aforesaid programme is now successfully functional in 52 centres (49 CHCs and 3 District Hospitals) of the all 3 identified districts, through AYUSH- NPCDCS Clinic/Lifestyle modification Clinics, established for prevention and management of selected NCDs by Ayurvedic intervention, Lifestyle modifications and Yoga Advice.

An interim analysis has revealed that the dosage or components of conventional medicines/prescription were either reduced or discontinued, in consultation and supervision of Modern doctors after integrating the intervention of Ayurveda medicines, lifestyle modification & Yogic practices in patients of Diabetes, Hypertension and Dyslipidemia. Ayurveda -

Modern medicine integrative health care services seems to be successful attempt of functional integration through delivering in the context of Non-communicable diseases with encouraging benefits of stand-alone Ayurveda therapies as well as benefits as add-on therapies. Till January, 2018, 301102 patients have been screened and, out of which 59107 patients have been enrolled for selected NCDs under this programme.

- v. **Ayurvedic Health Centres under NE Plan:** 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. In **Arunachal Pradesh**, 6 Ayurvedic Health Centres viz. District Hospital, Bomdila; District Hospital, Namsai; District Hospital, Tezu; District Hospital, Seppa; CHC, Likabali and CHC, Ruksin/General Hospital Pasighat are continuing under the supervision of RARI, Itanagar and a total 3910 patients were attended in these Centres. In **Sikkim** - 2 Ayurvedic Health Centres viz. Gayzing, South Sikkim and Jorethang, South Sikkim are functioning under the supervision of RARI, Gangtok and a total 880 patients were attended in these Centres. Besides this, the remaining 2 Ayurvedic Health Centres viz. Mangan, North Sikkim and Singtham, East Sikkim will be opened shortly. In **Assam**, extended OPD at 5 centres viz. Kamrup, Nalbari, Morigaon, Darrang, Barpeta have been started and process for opening of remaining 5 centres is in progress.

A total 5964 patients were attended at 4 Ayurvedic Health Centres through RARI, Gangtok and in Arunachal Pradesh a total 8631 patients were attended at 6 Ayurvedic Health Centres through RARI, Itanagar.



## 7. AYUSH Research Portal

To disseminate the merits of AYUSH systems across the globe, a web based portal for Research publications in AYUSH was launched in 2011 which is being maintained by NIIMH Hyderabad. The portal is successfully continuing and the information is being updated periodically.



## 8. Memorandum of Understanding (MOU)

62 Memorandum of Understanding (MoUs) for collaboration in the field of academic, drug development and research have been signed with reputed institutes, organizations at national and international level, out of which 21 Memorandum of Understanding (MoUs) are operational at present.

## 9. Technologies Patented & Commercialized

**Total No. of Patent Awarded: 17**

**Total No. of Technology Transferred to Industry: 12**

S. No	Product Name	Process
1.	AYUSH-64	A process for the preparation of a therapeutically active anti-malarial preparation.
2.	*777 Oil	A process for the preparation of a medicated oil from <i>Wrightia tinctoria</i> for Psoriasis
3.	BAL RASAYAN	A process for the preparation of a herbo- mineral preparation for general immunity and strengthening of children
4.	AYUSH Ghutti	A herbo-mineral formulation for cough and cold
5.	AYUSH-56	Process for preparation of therapeutically active anti-epileptic preparation
6.	AYUSH –SS granules	A process for preparation of an Ayurvedic herbal compound preparation for post natal care ( to enhance the quality and quantity of breast milk in mother having deficient lactation)
7.	AYUSH AG Tablet	A process for preparation of an Ayurvedic herbal compound preparation of AYUSH AG Tablet (Shatamuli Mandura) for Ante



		natal care
8.	AYUSH PK Avleha	A process for preparation of an Ayurvedic herbal compound preparation of AYUSH Panchkola Avleha for post natal care  (to enhance the process of recovery after delivery and other complications of puerperal period)
9.	AYUSH PG Tablet	A process for preparation of an Ayurvedic herbal compound preparation of AYUSH PG Tablet for Ante natal care
10.	AYUSH B R Leham	A process for preparation of an Ayurvedic herbal compound preparation AYUSH Bala Rakshak Leham for paediatric care
11.	**AYUSH 82	An Anti Diabetic Ayurvedic Formulation
12.	***AYUSH SG	An Anti-Rheumatoid Arthritis preparation.

NB: - \* Transferred to CCRS, Chennai.

\*\* M/S, Dabur India Ltd, New Delhi; M/S Kudos Laboratory India Ltd, New Delhi; M/S LA Granade Herbs & Pharma Ltd, Haridwar; M/s Chaturbhuj Pharmaceutical Co., Haridwar; M/s Altis Life Sciences, Baddi Distt., Solan, Himachal Pradesh; M/s Multani Pharma Ltd, New Delhi; M/s Ayur Force Pvt. Ltd, New Delhi; M/s Swadeshi Ayurved Company, Haridwar and M/s Sanjivan Anusandhan Pvt. Ltd., New Delhi and M/s Ridhi Sidhi Medicare, New Delhi have already been granted licenses for manufacturing AYUSH-82.

\*\*\*M/S Kudos Laboratories India Ltd, New Delhi; M/s Multani Pharma Ltd, New Delhi; M/s Ayur Force Pvt. Ltd, New Delhi; M/s Altis Life Sciences, Baddi Distt., Solan, Himachal Pradesh M/s Chaturbhuj Pharmaceutical Co., Haridwar; and M/s Ridhi Sidhi Medicare, New Delhi have been granted licenses for manufacturing AYUSH-SG.

CCRAS has developed and commercialized the following three drugs which are readily available in the market:

1. AYUSH 64 An Anti Malarial Formulation.
2. AYUSH 82 An Anti Diabetic Ayurvedic Formulation
3. AYUSH SG An Anti-Rheumatoid Arthritis preparation.

**Premia/Royalty obtained from Patents and Commercialization of Technologies (Since Inception):** Approximately three crores twenty lacs obtained through commercialization of technologies developed by the Council

**10. Research Publications:** 3746 Research papers and more than 250 books/monograph/ technical report were published by CCRAS scientists.



## 11. Other important Research outcomes:

- **Healthcare seeking trends in Ayurveda:** The OPD data (app.62 lac patients) available in annual report of 24 CCRAS institutes for the period 1991-2012 was analyzed to present the healthcare seeking behaviour. The analysis showed that majority of patients (16.17%) suffered from diseases of digestive system followed by musculo-skeletal system (15.88%) and nervous system (11.55%). The data was suggestive of patients inclination towards Ayurveda treatment for chronic and lifestyle related diseases. A Report “**Healthcare seeking trends in Ayurveda A CCRAS Perspective**” was published in 2015
- CCRAS published “Evidence based Ayurvedic Practice” in 2015 on 18 disease conditions based on the several research studies conducted at CCRAS institutions for the last three decades. The document is an effort to translate research into practice.
- Some articles published in journals reported the toxicity, presence of heavy metal contents of certain classical/proprietary preparations which created misconceptions regarding the safety of Ayurvedic Rasa Kalpas and Bhasmas. Recognizing the therapeutic importance and safety concerns of such formulations, CCRAS compiled experimental studies conducted by CCRAS and other institutions on safety profile of 15 metal/herbomineral formulations and published a document “**Evidence based Safety of Ayurvedic Herbo-Mineral Formulations**” in 2015.
- 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. A Technical report of the study was published by CCRAS in 2007.
- **Feasibility of integration of Ayurveda in RCH programme:** The Central Council for Research in Ayurvedic Sciences (CCRAS) carried out the study in a pilot mode for introducing 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 viz. Ladbhadhol & Chauntra blocks of Mandi District; and Mahakal & Panchrukhi blocks of Kangra District of Himachal Pradesh. Total 2465 participants were enrolled in the study. 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 nil still birth and neonatal death were observed in the study. Whereas in Himachal Pradesh, Neonatal Mortality Rate (NMR) was 31 per 1000 live births and Infant Mortality Rate (IMR) were 40 according to Sample Registry survey (SRS-2010). Further, there was no mortality of women in the registered cases. No adverse drug reaction (ADR) or adverse event (AE) was reported during the study period. The responsiveness of study participants and the outcome of core indicators reveal the acceptability of study participants for Ayurveda during pregnancy. A paper has been published “Effectiveness of Ayurvedic





interventions for Ante-natal Care (Garbhini Paricharya) at Primary Health Care level - A multi-centre operational Study” in Journal of Research in Ayurveda and Siddha published by Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, New Delhi (2015).

- The Central Council for Research in Ayurvedic Sciences (CCRAS) has conducted scientific studies in collaboration with reputed institutes to establish safety profiles of most commonly used Ayurvedic Medicines viz. *Rasamanikya, Naga Bhasma, Hridyarnava Rasa, Swarna Bhasma, Tamra Bhasma, Trivanga Bhasma, Makaradhwaja, Rasa Sindoor, Arogyavardhini Vati, Mahalaxmi Vilasa Rasa, Vasanta Kusumakara Rasa, Yogaraja Guggulu, Mahayogaraja Guggulu and Kasisa Bhasma*. The Ministry of AYUSH, Govt. of India brought out the document “Evidence Based Safety of Ayurvedic Medicines” (2016) focusing on safety of Ayurvedic metal and mineral based formulations to present the scientific aspects, relevance and rationale of unique interventions in the public domain.
- Under Golden Triangle Partnership (GTP) programme, SOPs for preparation, chemical characterization and safety/toxicity studies of 8 Rasayogas (Herbo-mineral formulations) viz. *Rasa Manikya, Kajjali, Rasa Sindura, Basant Kusumakara Rasa, Arogya vardhini vati, Maha Yogaraja Guggulu, Makardhwaja, Mahalaxmivilas Rasa* were carried out in collaboration with CSIR. The articles/monographs are being published in reputed journals. Research protocols have also been developed in partnership with ICMR.
- CCRAS also contributed to TKDL in the matter of collection of published material on Ayurveda, compilation of formulations and generation of Traditional Knowledge Resource Classification (TKRC).

## 12. Recent Initiatives

### i. Development and Validation of Prakriti Assessment Questionnaire/Scale

The individualized treatment of diseases is the unique approach of Ayurveda which recognize every individual with a specific constitution vis-a-vis *Prakriti*. Ayurveda classifies all individuals into specific types of ‘Prakriti’ based on the theory of *Tridosha* (Three humours as functional entities of the body) i.e. *Vata, Pitta & Kapha* and their relative ratios. The determination of Prakriti has significant importance in healthy / unhealthy states of an individual. This information can be successfully applied clinically in diagnosis, treatment (for deciding appropriate drug, dose, duration, diet and life style) and prognosis of the disease. Even the daily and seasonal regimens adopted for promotion of health also vary according to Prakriti.

For the determination of Prakriti, the characteristic features mentioned in Ayurvedic texts are subjective in nature and the clinicians/Ayurvedic experts apply their own wisdom and experience to capture these features. Considering the need to develop a uniform method for capturing these predictors for assessment and reliability of the data, CCRAS has undertaken the initiative to develop the ‘Prakrit Assessment Scale’ with rationality, reliability, validity and reproducibility. The project comprises of (i) Development of a comprehensive questionnaire/ Scale for assessment of Prakriti, (ii) Development of Sops for the application of questionnaire/ scale in the form of User Manual (iii) Validation of the questionnaire/scale and (iv) Development of Software for the validated prakriti



assessment tool. The standard Operative Procedures (SoPs) for capturing each predictor have been developed and the same has been elaborately discussed in '*National Consultative Expert Group Meet*' comprising of learned experts from various fields of Ayurveda and other contemporary sciences for content validity. For construct validity the developed scale has been given to 20 Ayurvedic physicians, already trained on User manual, at 10 centers situated at different geographical regions of the country for a sample size of 500. Online Data capturing Form also been developed for easy collection of the data and its day to day monitoring.

After data analysis and inputs from the investigators, necessary changes as required will be made in the prakriti Assessment questionnaire to make it more comprehensive & user friendly making further reductions which will be subjected for final validation. After standardization of Prakriti Assessment Scale, the study on correlates of Prakriti with genomes and other relevant factors may be planned to establish the concept of Prakriti on scientific footings.

## **ii. National AYUSH Morbidity and Standardized Terminologies Portal (NAMSTP)**

National AYUSH Morbidities and Standard Terminologies Portal (NAMSTP) is a web based portal exclusively dedicated to the centralized collection of morbidity statistics of various health care provider institutions under the all AYUSH systems spread over the country. This portal was formally launched by Shri Narendra Modi, the Hon'ble Prime Minister of India on the occasion of 2<sup>nd</sup> Ayurveda Day (17<sup>th</sup> October 2017). This portal has the potential to revolutionize morbidity statistics data collection and may have a huge impact on the future policy making decision by bringing to light the contributions of various AYUSH systems in the healthcare delivery system of the country. The core objective of this portal is to accurately project the contribution of various AYUSH systems in the healthcare sector of the country through centralized data pooling into a common portal.

*The Major Benefits of this portal are real time morbidity data collection; Identification of areas of strengths of the various systems under AYUSH; Electronic Health Record (E.H.R.) systems integrated with morbidity codes; helpful in regulating the healthcare delivery system in AYUSH systems by providing standardizing diagnostic terminologies, thus overcoming the barrier of the diagnosis being written in Sanskrit-Tamil-Arabic languages in case of A-S-U systems and the diagnostic codes can serve as a tool for documentation in various other programmes such as outreach activities.*



Launching of NAMSTP on 2<sup>nd</sup> Ayurveda Day

### iii. Validation and reliability testing of Ayurveda Diagnostic Tools

Diagnosis forms the most important part of any medicine as this directly influence the outcome of any treatment. Diagnosis in Ayurveda can be grouped into Roga Pareeksha and Rogi Pareeksha. The examination of disease is done through nidana panchaka (Nidana, Purvarupa, Rupa, Upasaya-Anupasaya and Samprapthi) and Rogi Pareeksha is done through Astasthana and Dasavidha Pareeksha commonly. Ayurveda has dealt with these examination methods in depth but attaining a uniform diagnosis encompassing all these factors after detailed examination still remains difficult. Bio-medicine has come up with excellent tools of case recording for the purpose of diagnosis. Current Ayurveda graduates are exposed to both systems and though there is an arbitrary system in place to achieve the objective of clinical case recording, the reproducibility in terms of measurable parameters is non-uniform and hence the diagnosis comes out vague. Keeping in view, it's the need of the hour to “prepare standardized diagnostic protocol(s)/tools” which are aptly integrated with latest Information Technology tools such as *Internet of things* (IoT) to aid Ayurvedic Physician in proper diagnosis and assessment of roga, rogibala and achieve the objective of “*Anapayi Chikitsa*”.

Considering this, CCRAS has undertaken a project on reliability testing and validation of Ayurveda diagnostic tools focusing on development of Standardized Ayurvedic Case Taking Protocol(SACTP) in consideration with elements of diagnosis/Case recording from Ayurveda and current Standard health record format(s) ,developing standard diagnostic protocols for selected diseases frequently managed is considered in conjunction for uniform diagnosis and development of an interface for integration/ Customization and development of diagnostic gadgets which are integrated with latest information technology tools for accurate and easy diagnosis.

For this purpose, a Standardized Ayurvedic Case Taking Protocol incorporating comprehensive patient history, recording the disease in Subjective, Objective, Assessment and Plan (SOAP)format wherein subjective and objective parameters are recorded in problem oriented medical record



format (POMR) examination of etiology ,recording of parameters of Dasavidha Pareeksha, in-depth recording of Samprapthi Ghataka to assess pathogenesis of the disease has been planned.

#### **iv. AYUSH Ph.D. Fellowship Scheme**

CCRAS was nominated as Nodal Council by Ministry of AYUSH to initiate AYUSH Ph.D. Fellowship Programme to encourage research in AYUSH Systems and to further enhance Research Opportunities for meritorious AYUSH Scholars. The AYUSH- National Eligibility Test for Ph.D. Programme (a computer based online examination) was successfully conducted and total 45 candidates qualified the AYUSH-NET in Ayurveda, Yoga & Naturopathy, Unani and Homoeopathy Streams. AYUSH-NET Qualifying Certificates have been issued to all qualified candidates for getting registered themselves in CCRAS Institutes or Ayurveda Institutes/ Universities (conducting Ph.D. Programme) of their choice during 2 years validity period.

Two other Advertisements regarding “*Ph.D. Fellowships/ Junior Research Fellowships (JRF) for Non-AYUSH Candidates of Bio-medical Sciences related to Life Sciences in Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy*” and regarding “*Selection of Universities/ Institutes running Ph.D. Fellowships/ Junior Research Fellowships (JRF) for streams in Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy*” were published in Employment News and other national newspapers. Two Scholars of Non-AYUSH fields were awarded Scholarship (JRF) after selection by Expert Committee. Selection of Universities for AYUSH Ph.D. Fellowship Programme is under process for which an Expert Committee has been constituted.



## CHAPTER - 3

### SPECIFIC AREAS OF STRENGTH FOR INTRA AYUSH COLLABORATION

#### Clinical research

- Diabetes mellitus with its complications
- Obesity and Metabolic syndrome
- Cardiac disorders
  - Hypertension
  - Coronary Artery Disease(CAD)
  - Dyslipidemia
- Respiratory Disorders
  - Bronchial Asthma
  - Bronchitis
  - Sinusitis
  - Allergic Rhinitis
- Musculo-skeletal disorders
  - Osteoarthritis
  - Cervical spondylosis
  - Lumbar Spondylosis
- Gastrointestinal Disorders
  - Irritable Bowel Syndrome
- Generalized Anxiety Disorder
- Cognitive deficit
- Reproductive and child health care
- Geriatric Health
- Skin diseases such as Psoriasis
- Vector Borne Diseases
- Iron Deficiency Anaemia

#### Other Areas of collaboration:

- Development of integrated monographs of medicinal plants
- Development of comprehensive monographs of metals and minerals used in ASU system
- Development of comprehensive monographs on safety of medicinal plants/ASU drugs



Section-II

## YOGA & NATUROPATHY



अभ्यास वैराग्याभ्यां तन्निरोधः ॥

*Practice and intense dispassion  
help to conquer the mental vibrations.*

*Yoga sutra 1:12*



**CENTRAL COUNCIL FOR RESEARCH  
IN YOGA & NATUROPATHY**







## YOGA & NATUROPATHY (CCRYN)

### Background

#### 4.1 Introduction

Yoga & Naturopathy are ancient Indian drugless system of practices being used as a complementary and mind body therapy in both Indian and western populations. There is a growing awareness today about health and fitness among the masses. Most healthcare specialists today believe that many diseases from which the mankind is afflicted today are the outcome of the stress, wrong living style and the food habits and of the increasing pollution of the environment. Yoga & Naturopathy is becoming the panacea for many of these disorders, as these therapies or practices focuses on bringing perfect harmony between body and mind, correction of life style and to lead a stress free life.

Yoga a spiritual science and art of healthy living is derived from the root "Yujir Yoge ", it means "to unite" or "to bind" or "to yoke". According to Yajnavalkya, Yoga means "the Union" i.e. union of the individual spirit (Jivatman) with the universal spirit (Parmatman). Maharshi Patanjali describes yoga as cessation of modifications of Chitta *yogaschittavrittinirodhaha*. Chitta is conglomeration of *manas* (mind), *buddhi* (intellect) and *ahankara* (ego). According to Bhagwad Gita, the word Yoga means "Equanimity of Mind". The system of Yoga is much older than the archaeological record available to us today and its origin can be traced in Upanishads and ancient Vedic texts. The first archaeological evidence of existence of Yoga is found in Stone Seals excavated from Indus Valley. Yoga was special feature of Indus Valley Civilisation (3000 BC). Maharishi Patanjali, who around 300 BC compiled, modified, systematized and refined Yoga as a system of all round development of human personality through Ashtanga Yoga in his Yoga aphorism, is called the father of Yoga. This pragmatic description enumerates eight stages of Yoga, which if practised systematically allows one to attain a state of sublimation of all mental modifications in the mind and super consciousness (*Samadhi*). These systematic Yoga techniques include *yamas* (moral doctrines), *niyamas* (disciplines), *asanas* (postures), *pranayama* (regulated nostril breathing/breath control), *pratyahara* (introspection/in drawing mind away from perceptible external sensory stimuli), *dharana* (concentration), *dhyana* (meditation) and finally to attain a state of *Samadhi* (absorption). Apart from Ashtanga Yoga mentioned by sage patanjali, the other classical Yoga texts known as Hathayoga, Gheranda Samhita etc prescribes other techniques such as Kriyas (Purificatory practices), Bandhas (locks and holds which regulate the flow of energy), Mudras (Gestures), Surya namaskara (Sun salutation), Japa, Bhajans, stsang etc.

Nature cure is an art and science of healthy living and a drugless system of healing based on well-founded philosophy. It has its own concept of health and disease and the principles of treatment. Nature cure is defined as a system of man developing in harmony with the constructive principles of nature on physical, mental, moral and spiritual planes of living. It has a great health promotive, curative and rehabilitative potential. The main concepts of nature cure are Morbid matter theory and the concept of vital force having its own fundamental principles. The main difference of



Naturopathy with other systems is that Naturopathy depends only on the inherent curative power (vitality) within the body whereas other systems lay stress on the curative powers of the medicines. According to Naturopathy as defined by Dr. Henry Lindlahr, “The primary cause of disease, barring accidental or surgical injury, is violation of Nature’s laws”, Enervation, Toxemia, Abnormal Composition of Blood and Lymph and Lowered Vitality. The important therapies or therapeutic modalities of Naturopathy which are employed not only for curative purposes but also for prevention of diseases and promotion of health are *Upvas Chikitsa* (Fasting Therapy), *Aahar Chikitsa* (Diet Therapy), *Mitti Chikitsa* (Mud Therapy), *Jala Chikitsa* (HydroTherapy), *Malish Chikitsa* (Massage Therapy), *Surya Kiran Chikitsa* (Helio Therapy), *Vayu Chikitsa* (Air Therapy), *Yoga Chikitsa* (Yoga Therapy), *Chumbak Chikitsa* (Magnet Therapy), *Marma Chikitsa* (Reflexology).

Yoga & Naturopathy as a complementary and mind body therapies are being practiced increasingly in both Indian and western populations. Important facets of a yoga program such as relaxation and mental awareness are known to alter the perceptions, and mental responses to both external and internal stimuli, slow down reactivity and responses to such stimuli and instill a greater control over situations in the participants. Naturopathy treatments like Fasting, Hydrotherapy, Mud therapy, Massage etc ancient therapies helps in detoxifying the body, retards the ageing process and rejuvenates the body. Several research studies over the years have shown the effect of yoga & Naturopathy in numerous health problems where mental stress and life style was believed to play a role. Yoga & Naturopathy practices have shown to reduce airway sensitivity and improve pulmonary functions and decrease medication score in asthmatics. They have been used in rehabilitating patients with arthritis in elderly population. They have been found to retard progression of coronary artery disease and control blood glucose levels in NIDDM. They have also been found useful in pulmonary tuberculosis, in preventing epileptic seizures, improving pregnancy outcomes, reducing anxiety, depression in both healthy as well as diagnosed cases, reducing negative affect, improving positive affect and quality of life among cancer patients. These practices have also shown to improve immunity and reduce stress hormone levels.

## 4.2 Premier organizations of Yoga

### Central Council for Research in Yoga & Naturopathy (CCRYN)

CCRYN is an autonomous organisation fully funded by Govt. of India, Ministry of AYUSH. CCRYN was established in 1978 under the Society Registration Act, 1860. The objective of the Council is to conduct scientific research in the field of Yoga & Naturopathy. In order to fulfil this objective and to evaluate the efficacy of Yoga & Naturopathy in various disease conditions, the Council provides financial assistance to premier Medical as well Yoga and Naturopathy Institutions of the country for undertaking clinical research studies. The findings of some of the research studies are very encouraging and the utility and efficacy of Yoga & Naturopathy in the treatment of different psychosomatic and life style disorders is being established. The main objectives of the Council are as under:

- The formulation of aims and patterns of research on scientific lines in Yoga & Naturopathy.



- To undertake any education, training, research and other programmes in Yoga & Naturopathy.
- The prosecution of and assistance in research, the propagation of knowledge and experimental measures generally in connection with the causation, mode of spread and prevention of diseases.
- To initiate, aid, develop and coordinate scientific research in different aspects, fundamental and applied of Yoga and Naturopathy and to promote and assist institutions of research for the study of diseases, their prevention, causation and remedy.
- To prepare, print, publish and exhibit any papers, posters, pamphlets, periodicals and books for furtherance of the objects of the Central Council and to contribute to such literature.
- To offer prizes and grant of scholarships, including travelling scholarships in furtherance of the objects of the Central Council.

### **Morarji Desai National Institute of Yoga (MDNIY)**

MDNIY is an autonomous institution fully funded by Govt. of India, Ministry of Health and Family welfare, Department of AYUSH. MDNIY is a focal institute for Planning, Training, Promotion and Coordination of Yoga Education, Training, Therapy and Research in all its aspects. MDNIY aims to promote deeper understanding of Yoga philosophy and practices based on classical Yoga amongst people. The main vision and Mission of the Institute is “Health, Harmony and Happiness for all through Yoga”.

### **National Institute of Naturopathy (NIN), Pune, Maharashtra**

The National Institute of Naturopathy (NIN), Pune was established in 1986 under the Societies Registration Act, 1860 with the objective to conduct, facilitate & encourage research activities in all aspects concerning human health and to develop Naturopathy as a system of medicine and as a way of life beside other objectives. It is located at the historical place called “Bapu Bhavan”, named after Mahatma Gandhi, Father of the Nation, who stayed here during his visits from 1944 to 1947, and conducted his experiments on Nature Cure.

### **Yogic Practices & Treatment**

YOGA is an ancient Indian science and is one among the six great Indian philosophies. In the spiritual dimension yoga is a path towards attainment of super conscious states beyond sensory perception and knowledge.

There are many methods of yoga catering to the needs of different persons in society to bring about the transformation of the individual. They are broadly classified into four streams. Swami Vivekananda puts them as work and worship, philosophy and psychic control.

1. **Karma Yoga:** This path of working in relaxation involves doing action with an attitude of detachment to fruits of action. This makes man release himself from the strong attachments and thereby brings in him a steadiness of mind which verily is Yoga-‘*Samatvam yogah*



*Uchyate*'. Instruments of action and understanding (Karmendriyas and Jnanendriyas) get cleansed.

2. **Bhakti Yoga:** The control of emotions is the key in the path of worship that involves pure love to the divine and is characterized by total surrender. In this modern world, man is tossed up and down due to emotional onslaughts. The path of Bhakti is a boon to gain control over emotional instabilities by properly harnessing the energy involved in it. It teaches egolessness and surrender.
3. **Jnana Yoga:** The present age of science has made man a rational being. Intellectual sharpness is imminent. Analysis forms the tool. The path of philosophy (jnana Yoga) is apt for the keen intellectuals and is centered around the analysis of 'happiness', the vital contribution of Upanishads. Also many other fundamental questions regarding the mind, the outside and inside world and the reality are taken up. Basic questions are raised even involving the intellect itself to reach the very basis of intellect. It follows steps of **shravana** (Listening carefully), **manana** (contemplation) and **nididhyasana** (forming own views).

According to Maharshi Patanjali Yoga is defined as the process of sublimation of all mental modifications in the mind through a systematic process of yamas (moral doctrines), niyamas (disciplines), asanas (postures), pranayama (regulated nostril breathing/breath control), pratyahara (introspection/ in drawing mind away from perceptible external sensory stimuli), dharana (concentration), dhyana (meditation) and finally to attain a state of Samadhi (absorption). Attainment of such a contemplative absorptive state has been elucidated to confer a blissful state of mind and body.

Each step of Yoga not only enlightens the soul but also increases physical strength, endurance, power of mind, establishes emotional stability and social security. The practices of Yoga leads to promotion of health, prevention of disease, effective management of all mental disturbances and better understanding of higher level of consciousness.

### **Yama & Niyama:**

The Classical text of Yoga written by Maharshi Patanjali advocates eight stages of practice known as Ashtanga Yoga. The first two, Yama and Niyama are universal and individual disciplines (Restraints & Conduct) that teach us the art of living gracefully. They are

<b>Yama (Restraints)</b>		<b>Niyama (Rules of conduct)</b>	
Ahimsa	Non-Violence	Shaucha	Purity of body and mind
Satya	Truth	Santosha	Contentment
Asteya	Non-Stealing	Tapas	Austerity
Brahmacharya	Continenence	Svadhya	Self study
Aparigraha	Non-Coveting	Ishwarapranidhana	Surrender and devotion to God

The practice of Yama promotes psychological, social and spiritual well-being of an individual and reduces stress and resultant emotional disturbance caused by violence, lies, stealing and possessiveness. Practice of Yama paves way to increase the power of concentration, mental purity



and steadiness. Whereas observance of Niyamas provides sense of discipline in personal life which results in good health of body and mind.

### **Shatkriyas – Six Cleansing Techniques**

Gheranda Samhita and Hatha Yoga advises cleansing of body before taking further course of yogic practices. Shatkriyas are cleansing techniques using ‘external objects’ These are 6 types and therefore termed as ‘shat’ kriyas. Each one of which consists of many sub-sections. Shatkriyas bring control on different reflexes and establish psycho-physiological balance. The main effects of kriyas are:

- 1) Cleansing, activating and revitalizing the organs.
- 2) Tones up the functions of the organs.
- 3) Desensitization.
- 4) Development of deep internal awareness.

These kriyas are as under :

- 1) **Dhauti** for cleansing upper Gastro Intestinal Track (GIT) up to stomach.
- 2) **Basti** for cleansing Lower Gastro Intestinal Track (GIT) especially the rectum.  
**(Shankha Prakshalana is for the entire GIT).**
- 3) **Neti** for cleansing upper nasal tract (from throat to nostrils).
- 4) **Trataka** for cleansing the eyes.
- 5) **Nauli** for cleansing the abdominal organs and
- 6) **Kapalabhati** for cleansing the lower respiratory tract (from nostrils to lungs).

### **Asanas:**

Yogasanas are physical postures. Asanas are not just physical exercises, they have to be performed in a very systematic way without any haste, with an attitude of total awareness. Maharshi Patanjali defines asana as

*“Sthirsukhamasanam” PYS.II.46*

*“Posture which is steady and comfortable is Asana”*

Asanas are postures which are to be maintained in the final posture with ease and effortlessness. The maintenance of the final posture for a long duration with deep relaxation can be achieved by continuous effort *prayatna shaithilya*. Leading to a state of *anantasamapatti*

*“ Prayatnashaithilyanantasamapattibhyam” PYS.II.47*

Regular practice of asanas lead to

*“Tato dvandvanabhighataha”PYS.II.48*

*“Thereby the pairs of opposites cease to have any impact”*

There are as many Asanas as the number of living beings! Although Patanjali does not specifically name any Asana, he gives the characteristics of Asana such as firmness and stability and leading to a non-dual state. Patanjali mentions asanas only as a pre-requisite to other advanced practices of *Pranayama, Pratyahara, Dharana, Dhyana and Samadhi*. Subsequent texts such as Hathayoga Pradipika do mention the names of specific asanas. Asanas are not to be treated merely exercises; they are postures which involve the body (skeleton-muscles as well as mind, breath, senses and intelligence). To perform them one needs a clean airy place, a blanket and determination. By



practising them one develops agility, balance, endurance and great vitality. Asanas brings steadiness, health and lightness of body. A steady and pleasant posture produces mental equilibrium and prevents fickleness of mind.

## Pranayama

*Pranayama*, the fourth constituent of yoga, deals with the control of *prana* and energy, grossly translated as breath. *Pranayama* does not allow the vital energy (*prana*) to dissipate, but stores it in the cells for the better use of life. *Prana* means breath, respiration, life, vitality, wind, energy or strength. *Ayama* means length, expansion, stretching or restraint. *Pranayama* thus connotes extension of breath and its control. This control is mainly over the three aspects of breathing, namely, (1) inhalation or inspiration, which is termed *puraka* (filling up), (2) exhalation or expiration, which is called *recaka* (emptying) and (3) retention or holding the breath either after inhalation or after exhalation. This is termed *kumbhaka* (pot either full or empty).

*“Tasmimsati shvasaprashvasayorgati vichhedah pranayamah” PYS.II.49*

*After mastering posture (Asana) one must practice control of the prana (pranayama) by regulating the motions of inspiration, and expiration.*

*Pratyahara*, the fifth constituent, begins with the inner quest and acts as a foundation in the path of renunciation. *Pratyahara* helps the senses of perception and memory to reside quietly, each in its place, and to cease importuning the mind for their gratification, making them let go the tastes and flavours to which they are addicted. The mind, which till now acted as a bridge between the senses and the seer, draws back from the contact of the senses, and turns inwards to explore spiritual wealth, and the domain of the seer. In fact *pratyahara* is an effect of *Pranayama*.

*Dharana*, *dhyana* and *samadhi* are the last three aspects of *astanga yoga*. *Dharana* is the confinement of attention to an object or region outside or inside the body. *Dhyana* is the attention flowing uninterruptedly, and *samadhi* is total absorption in the object of meditation. These three constituents of yoga are experiencing states. They cannot be presented with explanations

## Bandhas and Mudras

Bandha means restraints. The bandhas are locks and holds which regulate the flow of energy. They play a crucial role in pranayama. There are different types of bandhas like *uddiyana* wherein the energy is made to flow from the lower abdomen upwards towards the head. The *jalandhara* bandha is a ‘lock’ in the pit of the throat. The third important bandha is the *mula bandha* wherein the excretory orifice gets ‘locked.’

## SURYANAMASKARA (Salutations to Sun)

Adoration and worship of the sun was one of the man’s first and most natural forms of inner expression. Most of the ancient traditions included some forms of sun worship, incorporating various solar symbols and deities, but nowhere have these traditions been as well as preserved as they are in the Vedic culture. Human culture lies in the ancient Vedic scriptures, which contains numerous shlokas referring to the sun. *Suryanamaskar* comprises of 12 positions and 12 mantras that are recited at the beginning. The practice of *Suryanamaskara* energizes the entire system of the body. Its regular practice ensures a perfect harmony to all the systems of the body.



## **SCIENTIFIC BASIS OF USING YOGA AS A THERAPY:**

Extensive research on Yoga being done all over the world has shown promise with regard to various disorders and diseases that seem to be amiable to Yoga therapy. These include psychosomatic, stress disorders such as bronchial asthma, diabetes mellitus, hypertension, irritable bowel syndrome, gastro intestinal ulcer diseases, atherosclerosis, seizure disorder and headache. It also includes physical disorders such as heart disease, lung disease, and mental retardation. Psychiatric disorders such as anxiety disorders, obsessive-compulsive disorder, depression and substance abuse can also be managed along with other therapies. Musculoskeletal disorders such as lumbago, spondylosis, sciatica and carpal tunnel syndrome can be tackled effectively with Yoga practices that offer a lot of hope in metabolic disorders such as thyroid and other endocrine disorders, immune disorders, obesity and the modern metabolic syndrome.

Some of the researched benefits that are quite well proven are given below to facilitate an understanding of how Yoga works at least at the physical level though we are yet to research and understand subtler effects of Yoga.

- **PHYSIOLOGICAL BENEFITS OF YOGA:** It has been found that Yoga produces stable autonomic nervous system equilibrium, with a tendency toward parasympathetic nervous system dominance rather than the usual stress-induced sympathetic nervous system dominance. This is of great potential in psychosomatic stress related illness abounding in populations worldwide. Cardiovascular and cardio-respiratory efficiency increases. Heart rate and blood pressure decrease implying a better state of relaxation leading to reduced load on the heart. Respiratory rate decreases with improved respiratory efficiency. The amplitude and smoothness of respiration increases, along with all parameters of pulmonary function such as tidal volume, vital capacity and breath-holding time. EEG - alpha waves increase. Theta, delta, and beta waves also increase during various stages of meditation. Gastrointestinal function and endocrine function normalizes with improvement in excretory functions. Musculoskeletal flexibility and joint range of motion increase. Posture improves with improvement in strength, resiliency and endurance. Body weight normalizes and sleep improves with increased energy levels and the immunity increases with improved ability of pain tolerance.
- **PSYCHOLOGICAL BENEFITS OF YOGA:** It has been found that somatic and kinesthetic awareness increase with better self-acceptance and self-actualization. There is better social adjustment with decrease in anxiety, depression and hostility. Psychomotor functions such as grip strength, balance, dexterity and fine motor skills, eye hand coordination and reaction time, steadiness and depth perception, and the integrated functioning of body parts improve. Mood improves and subjective well-being increases while cognitive functions such as attention, concentration, memory, and learning efficiency improve
- **BIOCHEMICAL EFFECTS OF YOGA:** The biochemical profile improves, indicating an anti-stress and antioxidant effect which is important in the prevention of degenerative diseases. There are decreased levels of blood glucose, total white blood cell count, total cholesterol, Triglycerides, LDL and VLDL. At the same time it has been reported that there are increased levels of: HDL cholesterol, ATPase, hematocrit, hemoglobin, thyroxin, lymphocytes, vitamin C and total serum protein following Yoga.



It is well established that stress weakens our immune system. Scientific research in recent times has showed that the physiological, psychological and biochemical effects of Yoga are of an anti-stress nature. Mechanisms postulated included the restoration of autonomic balance as well as an improvement in restorative, regenerative and rehabilitative capacities of the individual. A healthy inner sense of wellbeing produced by a life of Yoga percolates down through the different levels of our existence from the higher to the lower producing health and wellbeing of a holistic nature.

Streeter et al (Med Hypotheses 2012;78: 571-9) recently proposed a theory to explain the benefits of Yoga practices in diverse, frequently comorbid medical conditions based on the concept that Yoga practices reduce allostatic load in stress response systems such that optimal homeostasis is restored.

They hypothesized that stress induces an:

1. Imbalance of the ANS with decreased parasympathetic and increased sympathetic activity,
2. Under activity of the gamma amino-butyric acid (GABA) system, the primary inhibitory neurotransmitter system, and
3. Increased allostatic load.

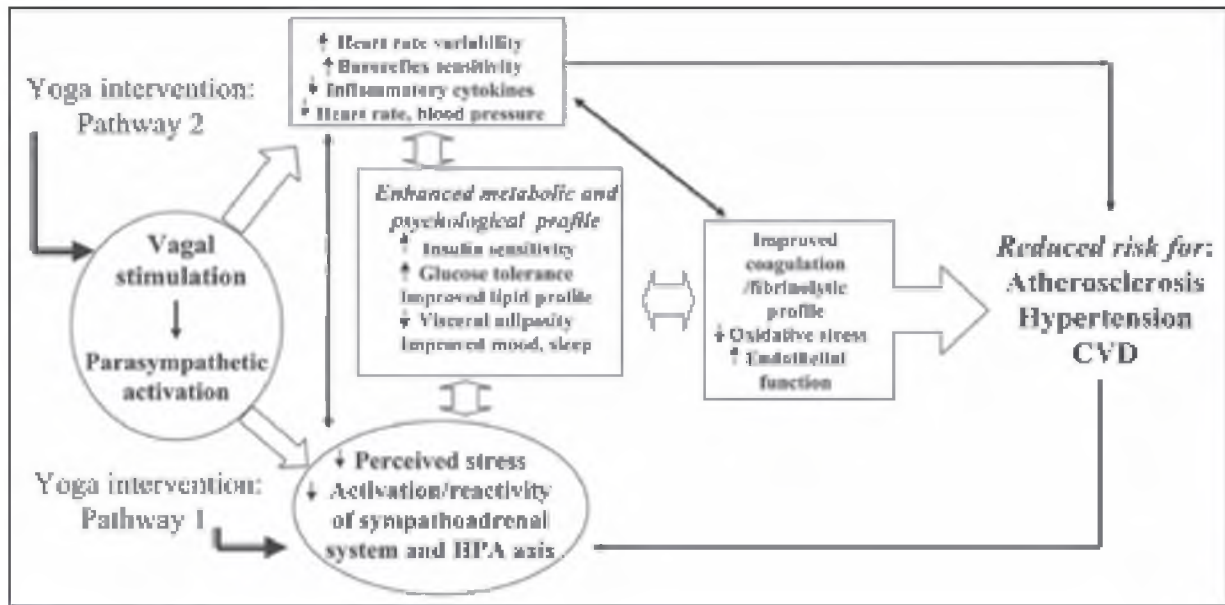
They further hypothesized that Yoga-based practices

1. Correct underactivity of the parasympathetic nervous system and GABA systems in part through stimulation of the vagus nerves, the main peripheral pathway of the parasympathetic nervous system, and
2. Reduce allostatic load.

According to the theory proposed by Streeter and colleagues, the decreased parasympathetic nervous system and GABAergic activity that underlies stress-related disorders can be corrected by Yoga practices resulting in amelioration of disease symptoms. HRV testing has a great role to play in our understanding intrinsic mechanisms behind such potential effects of Yoga.

Innes et al had earlier (J Am Board Fam Pract 2005; ,18: 491-519) also postulated two interconnected pathways (given below) by which Yoga reduces the risk of cardiovascular diseases through the mechanisms of parasympathetic activation coupled with decreased reactivity of sympathoadrenal system and HPA axis.





## Fundamental Principles of Naturopathy

Some of the fundamental principles of Naturopathy are outlined as under:

1. Naturopathy believes in the concept of unity of disease and unity of cure. According to it root cause of all diseases are one that is accumulation of morbid matter in the body and the remedy also is one i.e. elimination of those toxins from the body.
2. Naturopathy considers bacteria and virus to be secondary cause of disease. The primary cause of disease is toxemia in the body. The microbes survive in the body only when a favourable atmosphere (environment) for their growth is established by the accumulation of morbid matter. Hence, the basic cause of disease is morbid matter and microbes are only the secondary findings.
3. Acute diseases are self-healing efforts of the body. Hence, they are taken as our friends, not enemies. Chronic diseases are outcome of wrong treatment and suppression of the acute diseases.
4. Human body has remarkable recuperative powers when left alone. Nature is the greatest healer. The human body is a self healing machine (the human body as a self healing capacity). It is endowed with inherent healing power to prevent itself from disease and regain health when fallen ill.
5. In Naturopathy the patient is at the centre of intervention and treatment, cure of disease is effected automatically with the increase in vitality and detoxification of body.
6. Naturopathy believes in holistic treatment. It not only treats the body as a whole, instead of specific organs but also take into account intervention at mental, moral and spiritual planes.
7. Naturopathy does not use medicines. According to it, "Food is Medicine".
8. Naturopathy accepts prayer also as a modality of treatment. According to Gandhiji "Rama Nama is the best Natural Treatment" means doing prayer according to one's own faith is an important part of treatment.



## Cause of Disease according to Naturopathy:

According to Naturopathy as defined by Dr. Henry Lindlahr, “The primary cause of disease, barring accidental or surgical injury, is violation of Nature’s laws”.

Violation of Nature’s Laws

Enervation

Toxemia

Abnormal Composition of Blood and Lymph

Lowered Vitality

To prevent the diseases one has to obey the universal laws of nature in life by adopting the natural methods of living and of treatment. These methods which are applicable in the prevention and management of most of the disorders have been described by Dr. Lindlahr as under:

- **Return to Nature** by the regulation of eating, drinking breathing, bathing, dressing, working, resting, thinking, the moral life, sexual and social activities, etc. establishing them on a normal and natural basis.
- **Elementary remedies**, such as water, air, light, earth, magnetism, electricity, etc.
- **Chemical remedies**, such as scientific food selection and combination,
- **Mechanical remedies**, such as exercise therapy, corrective gymnastics, massage, magnetic treatment, structural adjustment and in cases of accident, surgery.
- **Natural and spiritual remedies**, such as yoga therapy, scientific relaxation, auto-suggestions, counseling, constructive thought, the prayer of faith etc.

## Therapeutic Modalities of Naturopathy

Following are some of the important therapies or therapeutic modalities of Naturopathy which are employed not only for curative purposes but also for prevention of diseases and promotion of health.

1. *Upvas Chikitsa* (Fasting Therapy)
2. *Aahar Chikitsa* (Diet Therapy)
3. *Mitti Chikitsa* (Mud Therapy)
4. *Jala Chikitsa* (HydroTherapy)
5. *Malish Chikitsa* (Massage Therapy)
6. *Surya Kiran Chikitsa* (Helio Therapy)
7. *Vayu Chikitsa* (Air Therapy)
8. *Yoga Chikitsa* (Yoga Therapy)
9. *Chumbak Chikitsa* (Magnet Therapy)
10. *Marma Chikitsa* (Reflexology)

## Scientific Research on Medical Applications of Yoga

A large number of research studies have been published in the last few decades and the finding can be understood under two broad categories:



- A. application of yoga in disease including rehabilitation and
- B. promotion of positive health at physical, mental, social and spiritual levels.

### **Application of Yoga in disease including rehabilitation**

The use of Yoga as a complementary and mind-body therapy is rapidly increasing worldwide. The psychosomatic, stress relieving, health benefits of yoga in numerous conditions has been established and systematic reviews published by Funderburk (1977), Khalsa (2004), Innes (2005 and 2007) and Yang (2007). The benefits of yoga as a lifestyle modification have also been reported by Bijlani (2005) and Sharma (2008). Yoga as a therapy is also cost effective, relatively simple to learn, and carries minimal risk; hence it should be advocated as an adjunct, complementary therapy in our search for an integrated system of medicine capable of producing health and wellbeing for all.

Some of the important studies reporting the therapeutic effects of yoga are given below:

#### **Hypertension and Heart disease**

Yoga has preventive, promotive as well as curative potential. Yoga based lifestyle confers so many advantages to the practitioner that beyond doubt it is the best ever designed lifestyle in the history of mankind. Scientific studies have started giving documented evidence to this belief of the practitioners. Since lifestyle related diseases such as coronary artery disease, obesity and hypertension are alarmingly on the rise in our modern society, yoga based lifestyle should be given a special place in preventing and managing these diseases. As early as 1930's Swami Kuvalayananda of Kaivalyadhama started studying the effects of yogic practices on blood pressure, heart rate etc. in yogis. Madanmohan et al (1983) studied the effect of shavasan and savitri pranayam in trained subjects and found significant decrease in oxygen consumption, heart rate and diastolic blood pressure. They attributed it to the ability of the subjects to achieve a state of deep psychosomatic relaxation. Shavasan alone has been shown to be effective in the treatment of hypertension (Datey et al 1969; Patel and North 1975). This was attributed to decrease frequency and intensity of proprioceptive and enteroceptive impulse traffic reaching the hypothalamus. In another open study there was a reduction in blood pressure after just 2 months of yogic life style change (Sachdeva et al 1994).

Schmidt et al (1997) found out that there was significant reduction in cardiovascular risk factors after 3 months of residential yoga and meditation training program that included low fat lacto-vegetarian diet. Body mass index, total serum and LDL cholesterol, fibrinogen, and blood pressure were significantly reduced especially in the subjects with elevated levels. Obesity is an independent risk factor for coronary artery disease (Tani et al 2009). In a study on 40 male student volunteers (12-15 years), Bera and Rajapurkar (1993) found that after 1 year of yoga practice, there was significant improvement in ideal body weight, body density, cardiovascular endurance and anaerobic power. Mahajan et al (1999) demonstrated that subjects with known ischemic heart disease and as well as healthy subjects practicing yoga showed a regular decrease in all lipid parameters except HDL. Thus, the effect of yogic lifestyle on some of the modifiable risk factors could probably explain the preventive and therapeutic beneficial effect observed in coronary artery



disease. Murugesan et al (2000) have demonstrated that regular yoga practice of 1 hour/day done for a period of 11 weeks was as effective as medical therapy in controlling high blood pressure in hypertensive subjects. Selvamurthy et al (1998) found that baroreflex sensitivity was reduced in essential hypertension. They administered 3 week course of yoga exercises consisting of head-up and head-down tilt asanas and reported significant reduction in blood pressure with gradual improvement in baroreflex sensitivity with progressive attenuation of sympatho-adrenal and renin-angiotensin activity. Manchanda et al (2000), Ornish et al (1990) and Yogendra et al (2004) have conducted prospective, randomized and controlled trials on angiographically proven coronary artery disease patients with yoga intervention and demonstrated that yoga based lifestyle modification helps in regression of coronary lesions and improvement in myocardial perfusion. This translated into clinical and symptomatic improvement.

The work of Dean Ornish in reversing heart disease has become a major land mark in preventive cardiology. Various studies using lifestyle and stress reduction interventions have shown to reduce the risk factors associated with the disease and reduce incidence of cardiovascular events. Studies have shown yoga to improve endothelial function and reduce autonomic reactivity (Sivasankaran et al 2006), reduce oxidative stress (Yadav et al 2005) and inflammatory markers, dyslipidemia (Mahajan et al 1999), improve health behaviours and also reduce blocks in the coronary arteries. These studies and earlier studies using lifestyle interventions offer conclusive evidence for utility of yoga interventions in CAD and as such yoga interventions can also facilitate both acute and long term changes in risk factor reduction (Jatuporn et al 2003, Yadav et al 2005). This intervention if used in conjunction with conventional treatment can help reduce health care costs, prevent secondary complications and improve quality of life (Jayasinghe 2004).

Innes and Vincent (2007) suggested that yoga reduces the risk profile in cardiovascular diseases by decreasing activation of the sympatho-adrenal system and the hypothalamic-pituitary-adrenal axis and also by promoting a feeling of wellbeing along with direct enhancement of parasympathetic activity via the vagus nerve. Recent works on yoga and hypertension have explored intrinsic mechanisms behind beneficial changes in such a population and both long term as well as short terms effects of yogic techniques have been elucidated (Selvamurthy et al 1998, Vijayalakshmi et al 2004, Pramanik et al 2009, Bhavanani et al 2011 and 2012).

## **Diabetes Mellitus**

Diabetes is a major global health problem. India now has the largest population of diabetics internationally, 19 million. India is also expected to show the highest increase in prevalence internationally by 2025 (195% growth) (WHO report, 2004) Moderate weight loss and increased physical activity can prevent or delay the development of type 2 diabetes in high-risk groups, such as those with impaired glucose tolerance (Eriksson and Lindgarde 1998, Pan et al 1997, Tuomilehto et al 2001). Lifestyle changes have been shown to be nearly twice as effective as metformin therapy (31% reduction in incidence of diabetes) in preventing type 2 diabetes (Tuomilehto et al 2001). Moderate weight loss (5% of body weight) can improve insulin action, decrease fasting blood



glucose concentrations, and reduce the need for diabetes medications. Comprehensive reviews by Innes et al (2005, 2007) found beneficial changes in several risk indices, including glucose tolerance, insulin sensitivity, lipid profile, anthropometric characteristics, blood pressure, oxidative stress, coagulation profiles, sympathetic activation and pulmonary function, as well as improvement in specific clinical outcomes. They suggested that yoga may improve risk profiles in adults with NIDDM and may have promise in the prevention and management of cardiovascular complications in such a population. Many studies have reported the benefit of yoga in patients of diabetes. Sahay and colleagues demonstrated a significant reduction in fasting and post-prandial blood glucose levels, insulin-glucose ratio, and a reduction in oral hypoglycemic and insulin requirements in 35 diabetic subjects after yoga practices (Jain et al 1993, Sahay 1986 and 2002). Another controlled trial of 21 subjects with type 2 diabetes found that fasting blood glucose and glycosylated hemoglobin levels were significantly reduced in the group who practiced the integrated program of daily yoga for 12 weeks as compared to a matched control group (Malhotra et al 2002). They have also reported improvements in nerve conduction and pulmonary function. Madanmohan et al (2012) reported that a comprehensive six-week yoga therapy training program produces significant improvement in reaction time, blood glucose and lipid profile of peri and post-menopausal diabetes patients. They concluded that a comprehensive yoga therapy program has the potential to enhance the beneficial effects of standard medical management of DM and can be used in an effective complementary or integrative therapy program. These studies provide some preliminary evidence of the beneficial effects of yoga on glucose tolerance and long-term glycemetic control, however randomized controlled studies are needed to validate these findings.

### **Asthma and Allergies**

The scientific basis of using yoga as an adjunct therapy in chronic obstructive pulmonary diseases is well established with significant improvements in lung function, quality of life indices, and bronchial provocation responses coupled with a decreased need for regular and rescue medicinal usage. (Nagarathna and Nagendra 1985, Vempati et al 2009). Behera (1998) reported perceptible improvement in dyspnea and lung function in patients with chronic bronchitis after 4 weeks of yoga therapy that used a variety of postures and breathing techniques. Yogic cleansing techniques such as neti kriya (warm saline nasal wash) remove excessive mucous secretions, decrease inflammation, and reduce bronchial hypersensitivity thereby increasing provocation threshold while kapalabhati (a yogic breathing technique), through forceful exhalations, improves the capacity to exhale against resistance (Satyaprabha 2001). A nonspecific bronchoprotective or bronchorelaxing effect has also been postulated by Singh (1987) while improved exercise tolerance has been reported following yoga therapy in patients with chronic severe airways obstruction (Tandon 1978). It has been reported that well-performed slow yogic breathing maintains better blood oxygenation without increasing minute ventilation, reduces sympathetic activation during altitude-induced hypoxia (Bernardi 2001) and decreases chemoreflex sensitivity to hypoxia and hypercapnia (Spicuzza 2000). All of these mechanisms can help bring about both objective and subjective improvements in the condition of patients with bronchitis.

Numerous studies have given evidence of the beneficial effects of yoga in patients of respiratory conditions. Most of these studies show equivocal evidence for improvement in lung function (Birkel and Edgren 2000, Fluge et al 1994, Jain et al 1993, Khanam et al 1996, Nagarathna and Nagendra



1985, Makwana et al 1988), decreased medication score (Cooper et al 2003, Vedanthan et al 1998), improvement in quality of life and mood (Manocha et al 2002) and decrease symptomatology (Cooper et al 2003, Singh 1987, Tandon 1978). Studies have also shown decrease in airway reactivity (Manocha et al 2002, Singh 1987), decreased sympathetic reactivity (Khanam et al 1996), additive effect of yoga with medications (Fluge et al 1994, Vempati et al 2009) and sustained benefits with regular practice and practice for a longer duration (Nagendra and Nagarathna 1986). Most of these studies are proof of concept and outcome studies and evidence regarding the mechanism of action of yoga intervention is still lacking. The concepts of this holistic and integrated mindful yoga program have been elaborated in earlier studies (Goyeche et al 1982, Nagarathna and Nagendra 1985). This integrated yoga module which is a combination of breathing exercises, asanas, kriyas, pranayama, meditation and relaxation has shown improved pulmonary function, decreased symptomatology, reduced medication score in the long run and decrease in duration of acute asthma episodes.

### **Mood and Psychiatric Disorders**

A large number of studies show that the practice of yoga can produce significant decrease in the basal anxiety scores. Khalsa et al (2009) found that two months of yoga and meditation techniques can reduce performance anxiety and mood disturbance in young professional musicians. Javnbakht et al (2009) reported that participation in a two-month yoga program lead to a significant reduction in perceived levels of anxiety in women who suffered from anxiety disorders. Kozasa et al (2008) reported significant reduction in scores on anxiety, depression, and tension after one month practice of yoga program. Woolery et al (2004) found that subjects who participated in a 5 week yoga course demonstrated significant decreases in self-reported symptoms of depression and trait anxiety. Sharma et al (2005) found that two months of sahad yoga meditation by patients of major depression who were on anti-depressant medication led to higher rates of remission, statistically more reduction in Hamilton depression and anxiety scores as compared to those patients who were only on anti-depressant medication. Similarly, Michalsen et al (2005) reported that 3 month Iyengar yoga program for women suffering from mental distress resulted in significant improvements in perceived stress, state and trait anxiety, subjective well-being, vigor and decrease in salivary cortisol, fatigue and depression. Physical well-being also increased, and those subjects suffering from headache or back pain reported marked pain relief. From this it is clear, yoga has got a potential role as a component in the management of depressive and anxiety disorders. Malathi and Damodaran (1999) studied the effect of yogic practices on anxiety status during routine activities and prior to examination in first year MBBS students. They found a decrease in their anxiety status as assessed by Spillberger's anxiety scale. In addition, the anxiety scores which rose prior to exams showed a statistically significant reduction on the day of exam. The results of the exam indicated a statistically significant reduction in number of failures in yoga group as compared to the control group. The improvement in various parameters such as sense of well being, feeling of relaxation, improved concentration, self confidence, improved efficiency, good interpersonal relationship, increased attentiveness, lowered irritability levels, and an optimistic outlook in life were some of the beneficial effects enjoyed by the yoga group as indicated by feedback score. These results point to the beneficial role of yoga in not only causing reduction in basal anxiety level but also attenuating the increase in anxiety score in stressful states such as examinations. Apparently, a decrease in anxiety scores in yoga practitioners leads to their better adjustment to the environmental



and internal stressors. Therefore, they are able to perform their duties with calm disposition which improves their performance. Gupta et al (2006) reported a decrease in state and trait anxiety scores in healthy subjects as well as patients after 10 days of yoga based lifestyle intervention program.

Regular practice of yoga and meditation alters levels of various neuro-transmitters in the brain. Kjaer et al (2002) used PET scan technique to demonstrate 65% increase in endogenous dopamine release in the ventral striatum during yoga nidra meditation. Yoga nidra is associated with decreased blood flow in prefrontal, cerebellar and subcortical regions, structures thought to be organized in open loops subserving executive control. In the striatum, dopamine modulates excitatory glutamatergic synapses of the projections from the frontal cortex to striatal neurons, which in turn project back to the frontal cortex via the pallidum and ventral thalamus. They found that increased striatal dopamine release during meditation is associated with the experience of reduced readiness for action. They suggested that being in the conscious state of meditation causes a suppression of cortico-striatal glutamatergic transmission which provides in vivo regulation of conscious states at the synaptic level. Streeter et al (2007) demonstrated that in experienced yoga practitioners, brain GABA levels increase after a session of yoga. Yoga practitioners completed a 60 minute yoga session and comparison subjects completed a 60 minute reading session. This suggests that the practice of yoga should be explored as a treatment for disorders with low GABA levels such as depression and anxiety disorders.

### **Effect on pregnancy**

Preliminary evidence from various scientific studies supports Yoga's potential efficacy, particularly if started early in the pregnancy. A study by Beddoe et al showed that women practicing Yoga in their second trimester reported significant reductions in physical pain from baseline to post intervention compared with women in the third trimester whose pain increased. Women in their third trimester showed greater reductions in perceived stress and trait anxiety. Another study by Sun et al (2009) reported that women who took part in the prenatal Yoga programme reported significantly fewer pregnancy discomforts at 38-40 weeks of gestation. The subjects who participated in the Yoga programme exhibited higher outcome and self-efficacy expectancies during the active stage of labour and the second stage of labour. They also suggested that the provision of booklets and videos on Yoga during pregnancy may contribute to a reduction in pregnancy discomforts and improved childbirth self-efficacy. Satyapriya et al (2009) concluded that Yoga reduces perceived stress and improves adaptive autonomic response to stress in healthy pregnant women while Chuntharapat et al (2008) concluded that Yoga produced higher levels of maternal comfort during labor and 2hour post-labor with a decrease in subject evaluated labor pain. They also reported shorter duration of the first stage of labor, as well as the total time of labor in the subjects practicing Yoga. A study by Narendran et al (2005) reported a lower trend in the occurrence of complications of pregnancy such as pregnancy-induced hypertension, intrauterine growth retardation and pre-term delivery in subjects who practiced Yoga. He also concluded that an integrated approach to Yoga during pregnancy is safe. It improves birth weight, decreases preterm labor, and decreases IUGR either in isolation or associated with PIH, with no increased complications. A review by Field (2008) reported that alternative therapies have been found effective for reducing pregnancy-related back and leg pain and nausea and for reducing depression



and cortisol levels and the associated prematurity rate. It also said that the labor research generally shows that alternative therapies reduce pain and thereby the need for medication.

### **Yoga in rehabilitation**

Yoga practices have been tried in the rehabilitation of various socially disadvantaged groups like inmates of jails, drug abusers, alcoholics, congenitally blind, mentally retarded and children from community (remand) homes. In all these socially disadvantaged groups yoga can be of use through providing better awareness and mastery over repressed anger or depression or anxiety which could be a common underlying factor that can interfere with their efficiency in any new learning for better living or for improved performance.

Children in community homes although physically normal were socially and emotionally traumatized. Significantly higher level of sympathetic arousal as seen by heart rate, respiratory rate, skin resistance was seen in community home girls in Bangalore compared to regular school children (Telles et al 1997). In a comparative study, there was a significant reduction in breath rate, skin resistance, performance on muscle power, dexterity skill and visual perception in the yoga group compared to the group practicing games in 14 pairs of girls in the age group 12-16 years, from a community home (Raghuraj and Telles 1997).

### **Yoga for behavioural disorders**

Special education for the mentally retarded has now been well streamlined and these children are getting integrated into general education. Yoga has been tried out as an adjunct in education of children with mental retardation, learning disabilities and attention deficit hyperactivity syndromes. Krishnamacharya Yoga Mandiram (1983) documented and reported subjective improvements and also described the practices of yoga adopted for these children. In a matched control study on 90 retarded children (mild to moderate retardation) practising Integrated yoga program daily for one hour over a period of one year as an adjunct to the standard techniques of special education have shown significant improvement in IQ and social adaptation in addition to improvement in locomotor skills (Uma et al 1989). They suggested that the breath control obtained through yoga increases psycho-motor coordination. They concluded that yoga improves concentration, attention-span and enhances IQ and memory power by gaining conscious control over the mind. Bhavanani et al (2012) studied the immediate effect of mukha bhastrika (a bellows type pranayama) on reaction time in mentally challenged adolescents and suggested that such yogic breathing techniques be used as an effective means of improving neuromuscular abilities in special children.

### **Yoga for promotion of positive health**

Yoga interventions are known to affect physical health by increasing motor control and performance (Telles et al 1994, Telles et al 1993), alter metabolism and autonomic function (Telles et al 1994) and improve ventilatory functions of the lungs including a prolongation of breath holding time (Joshi et al 1992). There have also been a number of studies suggesting that yoga produces acute physiological changes (Madanmohan et al 1983, 1992, 2003, 2004, Telles and Desiraju 1992, Telles et al 1994, Telles et al 2000, Udupa et al 2003) and promotes physical health by improving performance. Bera and Rajapurkar (1993) have reported that yoga training results in





significant improvement in cardiovascular endurance and anaerobic threshold. This is consistent with the findings of Muralidhara and Ranganathan (1982) who have reported an improvement in cardiac recovery index after 10 week yoga training program as indicated by Harvard step test. Raju et al (1994) have found that subjects who practised pranayam could achieve higher work rates with reduced oxygen consumption per unit work and without increase in blood lactate levels. Madanmohan et al (2004) have demonstrated that after 2 months of yoga training, a given level of exercise leads to a milder cardiovascular response, suggesting better exercise tolerance. These findings are consistent with findings of Ray et al (2001) that yoga training increases muscular endurance, delays onset of fatigue and enables one to perform work at lesser  $VO_2$  max.

A positive mental health would be achieved by sharpening of perception of information arriving to the brain through all our special senses, better analytical faculty (IQ), sharper memory and on the overall improvement in personality characteristics. Studies show that practice of yogic techniques cause improvement in aspects of perception, thinking, reasoning, and remembering the task. Yogic techniques improve attentiveness and this in turn decreases response time or reaction time, a simple means of determining sensory-motor performance. Madanmohan et al (1992) reported that yoga practice for 12 weeks results in significant reduction in visual and auditory reaction times in the normal adult male volunteers. Malathi and Parulkar (1989) also reported reduction in auditory and visual reaction time after yoga training. Similar, findings were also demonstrated immediately after the practice of mukh bhastrika pranayama (Bhavanani et al 2003). Sarang and Telles (2007) reported that yoga practice brings about a greater improvement in this task which requires selective attention, concentration, visual scanning abilities, and a repetitive motor response. In an another study (Sarang and Telles 2006), they reported a reduction in the peak latencies of P300 after yoga based relaxation technique as meditation enhances cognitive processes underlying generation of P300.

Yoga affects every cell of the body. It brings about better neuro-effector communication, improves strength of the body, increases the optimum functioning of all organ-systems, increases resistance against stress and diseases and brings tranquility, balance, positive attitude and equanimity in the practitioner which makes him lead a purposeful and healthier life.

### **Scientific Research on Applications of Naturopathy**

Naturopathy provides benefit in numerous health care concerns in which mental stress and lifestyle factors are believed to play a major role. Naturopathy treatments like Fasting, Hydrotherapy, Mud therapy, Massage therapy, Sun bath etc. help in detoxifying the body. The potentials, simplicity and cost effectiveness of Naturopathy has convinced the people to look towards this system. Advancement in the medical field has started exploring the beneficial effects of Naturopathy in the treatment of various disorders especially the lifestyle related and psychosomatic disorders/conditions. Considering this, WHO has initiated a separate agency National Center for Complementary and Alternative Medicine (NCCAM) to validate the efficacy of all the traditional systems of medicine.



## **Role of Hydrotherapy**

The evidence for the therapeutic uses of water, past and present, showing how ancient Egyptian, Greek, Roman, Celtic and Hebrew societies used water for medicinal purposes, sometimes in conjunction with herbal medicine. Water treatments consisted of hydrotherapy (techniques of therapeutic bathing and use of water), balneotherapy (therapeutic bathing in medicinal and thermal springs) and thalassotherapy (the therapeutic use of ocean bathing and marine products) and these treatments continue to be used to the present day. Hippocrates evidently had an excellent understanding about the physiological properties of water. In the 5<sup>th</sup> century B.C. Hippocrates wrote about his experiences in using hydrotherapy and one of the most famous Roman hydrotherapy spas is Aquae Sulis built in AD 43. Subsequent to this, in sixteenth and seventeenth centuries there were treatises from Western Europe which documented the use of hydrotherapy. For example 'Kneipp's method' is famous all over Germany for the water treatment modalities mainly propagated by Fr. Sebastian Kneipp.

Hydrotherapy is used to treat psychosomatic disorders and also found to have a significant analgesic effect and it does not appear to have noticeable side effects (Shevchuk NA. et al 2008, Michalsen A, et al 2003). There are several animal and human studies shown thermal therapy (Hot Baths) benefit in various life style related disorders such as diabetes mellitus, obesity, dyslipidemia and congestive heart disease (Hooper PL. Et al 1999).

Drinking water is beneficial because it acts like an expectorant and can assist in removing sputum (Hannaway, et al 2004).

Hydrotherapy, used alone or in combination with other treatments, could be considered as one form of care in providing effective management of the chronic inflammatory dermatoses (Merial-Kieny C, et al 2011). Avène hydrotherapy significantly improved the quality of life of patients suffering from skin diseases (Taieb C, et al 2011). Hydrotherapy may be added a reduction of the adverse gastrointestinal events of NSAIDs, in patients under rheumatology treatments (Queneau P, et al 2011).

An application of a cold chest pack increases the PEFr as an immediate effect and this effect is augmented following 21 days of other naturopathy treatments along with yoga (NK Manjunath, et al 2006). Complex spa therapy improves psychological factors in patients with bronchial asthma. (Yokota S, et al 1997)

The spa therapy showed an improvement in steroid-dependent intractable asthma (SDIA) and therapy showed decreased airway inflammation, improved Ventilatory function, suppression of Bronchial hyper reactivity to methacholine following the Spa therapy. (Y Tanizaki, H Kitani, et al 1993).

## **Role of Fasting Therapy**

Various studies have been conducted on role of fasting and role of various Naturopathy treatments in the management of different disorders i.e. Diabetes mellitus, Bronchial asthma, Hypertension,



Anxiety and Migraine etc. and it is revealed that Naturopathy treatments are found effective in the management of these life style and psychosomatic disorders.

Intermittent continuous energy (IER) is as effective as Continuous energy restriction (CER) with regard to weight loss, insulin sensitivity and other health biomarkers, and may be offered as an alternative equivalent to CER for weight loss and reducing disease risk (Harvie MN, et al 2011).

Intermittent fasting and Calorie restriction enhance cardiovascular and brain functions and improve several risk factors for coronary artery disease and stroke including a reduction in blood pressure and increased insulin sensitivity (Mattson MP, et al 2005). Chronic intermittent fasting markedly improves the long-term survival after Chronic Heart Failure by activation through its pro-angiogenic, anti-apoptotic and anti-remodeling effects (Katare RJ, et al 2009). Intermittent fasting protects the heart from ischemic injury and attenuates post-MI cardiac remodeling, likely via antiapoptotic and anti-inflammatory mechanisms (Ahmet I, et al 2005).

Body mass index and plasma leptin concentrations concomitantly and significantly decreased during fasting, whereas serum orexin-A concentrations significantly increased and were negatively correlated with plasma leptin concentrations in non-obese adults (Komaki G, et al 2001).

Fasting affects immune variables such as T cell subsets and natural killer cell activity at least in part through changes in adrenal gland-related hormones (Komaki G, et al 1997).

Fasting therapy caused rapid changes in high magnitude in immune and endocrine variables, similar to those that occur during various psychological and environmental stresses (Manuck SB, et al 1991).

### **Role of Massage therapy**

Studies done on various types of massage with various durations have shown the effect of massage in improving the range of motion in arthritis (Topolska M, et al 2012), peak heart rate, peak VO<sub>2</sub>, and peak minute ventilation in Spouses of patients with cancer (Goodfellow LM, et al 2003), and in children received a massage before exercise testing (Beider S, et al 2010). Therapeutic back massage may enhance mood and reduce perceived stress. Studies using slow-stroke back massage and hand massage showed statistically significant improvements on physiological or psychological indicators of relaxation (Harris M, et al 2010).

Massage helps to reduce pain, restore normal muscle activity and thus re-establish normal function (Geoffrey C. Goats, et al 1994). 60-minute/week dose of massage therapy in osteo arthritis of knee showed significant improvement in pain as assessed by WOMAC subscales of pain and functionality, as well as the visual analog pain scale (Perlman AI, et al 2012).

Swedish massage to daily routines; exercise, diet and medication regimens, is an effective intervention to reduce blood glucose level in diabetic children (Sajedi F, et al 2011).



A combined programme of exercise and massage improves arterial blood pressure and ankle brachial index values in type 2 diabetics with peripheral arterial disease (Castro-Sánchez AM, et al 2010). Connective tissue massage improves blood circulation in the lower limbs of type 2 diabetic patients (Castro-Sánchez AM, et al 2011).

Massage therapy is a safe, effective, applicable and cost-effective intervention in controlling BP of the prehypertension women and it can be used in the health care centers and even at home (Moeini M, et al 2011).

### **Role of Mud therapy**

Recent article by Rastogi (2012) showed the beneficial effects of mud therapy which plays an effective role in the treatment and management of various disease conditions.

Hot mud therapy appears to be indicated for chronic low back pain, stabilized rheumatoid arthritis, ankylosing spondylitis and fibromyalgia (Françon A, et al 2009). Studies showed that Mud therapy has the most beneficial effect on general and intracardiac hemodynamics, at different temperatures (10, 20-24, and 36 degrees C) in patients with osteoarthritis and concomitant hypertensive disease and coronary heart disease (L'vova NV, et al 2009).

Studies showed that mud-bath therapy significantly improves the clinical conditions of patients with knee osteoarthritis and significantly reduces the frequency and severity of symptoms and the disability they cause (Fraïoli A, et al 2009). A combination of daily locally applied mud-packs and bicarbonate-sulphurous mineral bath have shown a significant reduction of the pain and a significant increase of the knee flexion with an improved quality of life (Costantino M, et al 2011). Study has demonstrated that sulphurous mud and bath therapy has induced a significant improvement of overall quality of life with reduction of pain at rest and during daily activities in osteoarthritis (Costantino M, et al 2012). Mud pack and hot pack therapy were both demonstrated to be effective in symptomatic treatment of knee OA until the end of the 2-week treatment period, whereas only mud pack therapy was shown to be effective in functional status over time (Güngen G, et al 2012).

### **Role of Chromo therapy**

Phototherapy (light therapy) was practiced in ancient Egypt, Greece, China and India. The Egyptians utilized sunlight as well as color for healing (Coclivo A, et al 1999). Research also confirmed that certain parts of the brain are not only light sensitive but actually respond differently to different wavelengths; it is now believed that different wavelengths (colors) of radiation interact differently with the endocrine system to stimulate or reduce hormone production (Peterson A., Et al 2001.). The critical review on chromo therapy and its scientific evolution illustrates that the development of science in the field of electromagnetic radiation energy can be very helpful in discovering new dimensions of this old theory. (Samina T et al 2005). Schauss worked on the tranquilizing effect of colors and found that color reduces aggressive behaviour and violence with its effect on the neuroendocrine system which is opening up a new frontier of behavioural technology (AG Schauss, et al 1979).



### **Role of Magneto therapy**

Studies shown that the Pulsatile electromagnetic field has an anti-inflammatory and analgesic effect. It causes vasodilatation, myorelaxation, hyper-production of connective tissue and activation of the cell membrane in asthmatic children (Sadlonova J, et al 2003). Pulsed electromagnetic therapy (PEMT) has been proved to be effective in soft tissue injuries in both pain and the range of movement and can be used at home easily in the treatment of patients with neck pain and without side effects. (Foley-Nolan D, et al 1990). Low energy high frequency pulsed electromagnetic therapy for acute whip lash injury (Foley-Nolan D, et al 1992)

### **Role of Naturopathy in the Management of CAD**

Coronary artery disease is considered to be an important public health problem in developed countries as well as in developing countries such as India. Mortality due to Coronary Artery Disease (CAD) is increasing and is a major cause of death all over the world. Asians specially Indians, show increased risk for atherosclerosis and have the highest mortality rates due to CAD amongst all ethnic groups studies so far. Epidemiological studies in India have revealed that the prevalence of CAD has increased from 1.05% in 1960 to about 7.59% in 1990 in the urban population and from 2.03% in 1974 to 3.70% in 1995 in the rural population. It is predicted to assume epidemic proportions by the year 2015 (Enas et al, 1995). Asian Indians residing in different countries have higher rates of incidence, hospitalization, prevalence, morbidity, mortality, and case fatality from CAD than people of other ethnicity (Enas et al, 1996). The CAD rates in urban India over the past 40 years have increased dramatically and are now similar to that of overseas Indians and several times higher than in other Asian countries (Yusuf et al, 1998, Mohan V et al, 2001). Various risk factors contribute to the development of CAD, these risk factors include obesity, hypertension (Brown MJ, 2000), uncontrolled diabetes (Kendall DM, 2002; Ninomiya JK, 2004) and abnormal lipid profiles (Pan WH, 1995). With increasing understanding of various risk factors as causative agents of coronary artery disease, lot of interest is generated in prevention and regression of the coronary arterial disease.

Though the scientific literature available on Naturopathy in the management of CAD is less, the published articles are concentrated on individual therapies of integrated Naturopathy. These published articles have showed the beneficial effects in reducing the coronary risk factors in CAD and documented the benefits and complications. Leading Naturopathy hospitals/institutions are also using different protocols in the management of CAD. Given the growing domestic and international acceptance of these therapies, it is essential to upgrade the quality of research work.

### **Role of Diet Therapy**

Majority of the Health initiatives and studies all over the world have focused on improvement of diet, particularly in those with a high risk of cardiovascular diseases. Trials have shown that diets rich in fruits and vegetables reduce blood pressure (Rouse IL, et al) Dietary Approaches to Stop Hypertension. The protective effects of these vegetarian diets have been attributed to the high antioxidant vitamin content. Recently studies have shown that a vegetable Beetroot is responsible



for reduction of Blood pressure. Research published in the American Heart Association journal Hypertension showed drinking 500 ml of beetroot juice led to a reduction in blood pressure within one hour. The reduction was more pronounced after three to four hours, and was measurable up to 24 hours after drinking the juice. The effect is attributed to the high nitrate content of the beetroot. The study correlated high nitrate concentrations in the blood following ingestion of the beetroot juice and the drop in blood pressure. Dietary nitrate, such as that found in the beetroot, is thought to be a source for the biological messenger nitric oxide, which is used by the endothelium to signal smooth muscle, triggering it to relax. This induces vasodilation and increased blood flow. Other studies have found the positive effects of beetroot juice on human exercise and performances. In studies conducted by Exeter University, scientists found cyclists who drank a half-litre of beetroot juice several hours before setting off were able to ride up to 20% longer than those who drank a placebo blackcurrant juice. Pomegranate juice is rich in tannins, possesses anti-atherosclerotic properties, has anti-aging effects, and potent anti-oxidative characteristics. As some antioxidants have been shown to reduce blood pressure, Pomegranate juice consumption may reduce systolic blood pressure, inhibits serum ACE activity, and is convincingly a heart-healthy fruit [Aviram M, Dornfeld L. Pomegranate juice consumption inhibits serum angiotensin converting enzyme activity and reduces systolic blood pressure. (Stowe CB, et al, 2011).



## CHAPTER - 5

### CORE ACHIEVEMENTS OF CCRYN

#### Completed Research Projects

S. No.	Name of the Institute	Title of the project
1.	Deptt. of Nephrology, Institute of Medical Sciences, Banaras Hindu University, Varanasi	Evaluation of effect of some Hatha Yogic exercises on primary and secondary hypertension with special references to Body Immunity
2.	Deptt. of Nephrology, Institute of Medical Sciences, Banaras Hindu University, Varanasi	To evaluate the efficacy of Dhouti Kriya (Gastro-intestinal Dialysis) in comparison to other yogic/traditional methods of dialysis/purification with special reference to cellular and humoral immunity
3.	Centre of Psychosomatic and Biofeed-back Medicine, Faculty of Ayurveda, Instt. of Medical Sciences, Banaras Hindu University, Varanasi	Role of Vipassana Meditation on attention, memory span and learning abilities among the student population
4.	Deptt. of Cardiology, All India Institute of Medical Sciences, New Delhi	Coronary Atherosclerosis reversal potential of Yoga Life Style Intervention
5.	Vivekananda Kendra Yoga Research Foundation, Bangalore	An integrated approach of Yoga therapy for stress related ailments
6.	Deptt. of Psychopharmacology, National Institute of Mental Health & Neuro Sciences, Bangalore	Understanding of Neurodynamical complexities of meditative process from the EEG signals
7.	Jeevan Rekha Parishad, Bhubaneshwar, Orissa.	A comparative study on Yoga, Perfect Health and Fertility behaviour among Yogic & Non-Yogic couples
8.	Atma Darshan Sadhna Kendra, New Delhi	Yoga for memory development among school children
9.	Defence Institute of Physiology & Allied Sciences (DIPAS), Delhi	Coronary artery disease regression through life style changes – vegetarianism, moderate exercise, stress management through Rajyoga meditation
10.	Defence Institute of Physiology & Allied Sciences(DIPAS), Delhi	Effect of Yogic practices on the physiological & anti-oxidant systems in man
11.	Kaivalyadhama, Lonavla, Pune	To evaluate the efficacy of Yoga treatment with or without Biofeed back procedures in the management of three disorders
12.	Kaivalyadhama, Lonavla, Pune	Rendomized Controlled trial to determine the efficacy of the Yoga therapy on the patients of obesity as compared to the conventional treatment
13.	Department of Physiology, All India Institute of Medical Sciences, New Delhi	Yoga & Biofeed back for the treatment of Irritable Bowel Syndrome



14.	Department of Respiratory Critical Care and Sleep Medicine, Safdarjung Hospital, New Delhi	To study the effect of Yogic practices on symptomatology and Physiological Parameters in Bronchial Asthma
15.	Swami Vivekananda Yoga Research Foundation, Bangalore	Integrated Approach of Yoga Therapy in the Management of Cancer
16.	Swami Vivekananda Yoga Research Foundation, Bangalore	Uni-nostril Yoga breathing & Obesity : A study of efficacy and mechanisms
17.	Navjyoti- Delhi Police Foundation, Sarai Rohilla, Delhi	To Study the efficacy of Yoga & Naturopathy in the management of withdrawal of drug dependence
18.	Deptt. of Clinical Immunology, M.S. Ramaiah Medical Teaching Hospital, Bangalore	Influence of Yoga in immune modulation & outcome of Rheumatoid Arthritis
19.	Deptt. of Physiology, Jawaharlal Institute of Post Graduate Medical Education & Research, Pondicherry	The effect of Asanas and Pranayamas on Neurological, Neuromuscular & Cardio-respiratory functions in Healthy Human Volunteers
20.	Swami Vivekananda Yoga Research Foundation, Bangalore	Yoga for computer related health problems
21.	Instt. Rotary Cancer Hospital, AIIMS, New Delhi	Effect of breathing techniques & meditation on normal individuals & those with cancer in remission
22.	Deptt. of Pharmacology, Jawaharlal Institute of Post Graduate Medical Education & Research, Pondicherry	Effect of Yoga based therapy in insomnia
23.	Department of Physiology, All India Institute of Medical Sciences, New Delhi	A randomized controlled trial on the efficacy of Yoga in the Management of Bronchial Asthma
24.	Deptt. of Neurophysiology, NIMHANS, Bangalore	Autonomic function tests in epilepsy –Effect of Hatha Yoga
25.	ALN Rao Memorial Ayurvedic Medical College, KOPPA, Karnataka	A study of efficacy of Yogic & Naturopathic measures in Psoriasis and Eczema
26.	Krishnamacharya Yoga Mandiram, No. 16, Fourth Cross Street, Ramakrishna Nagar, Chennai	The therapeutic effect of Yoga on patients with generalised epileptic seizures
27.	Holistic Medicine and Stress Research Unit, Deptt. of Medicine, Govt. Medical College, Thiruvananthapuram, Kerala	Therapeutic effects of Yoga on stress disorders
28.	Department of Physiology, AIIMS, New Delhi	Yogic relaxation in the management of ulcerative colitis
29.	Shri Nath Naturopathy & Yoga Centre, Kanpur, U.P.	Efficacy of Naturopathy and Yoga modalities in the management of Rh. Arthritis, Osteo-arthritis and Gout
30.	Vivekananda Yoga Anusandhan Sansthan, Gavipuram Circle, KG Nagar, Bangalore	Effect of integrated approach of Yoga therapy for metastatic breast cancer patients and study of DNA repair mechanisms relevant to cancer





31.	Deptt. of Biophysics, All India Institute of Medical Sciences, New Delhi	Randomized Control trail (RCT) of reflexology therapy and usual drug treatment in the management of intractable epilepsy
32.	Indian Research Institute for Integrated Medicine, IRIIM Bhavan, Mourigram, Station Para, P. O. Unsani, Distt. Howrah – 711302	Development of Traditional Tongue Diagnosis aided by Information Technology for Standardization of Nature Cure Diagnostic Methods
33.	Deptt. of Neurophysiology, National Institute of Mental Health and Neurosciences, Bangalore	Assessment of the efficacy of Vipassana Meditation on different age groups: A polysomnographic and endocrine function evaluation
34.	Council's Project	Efficacy of Yogic intervention for the management of migraine – a randomized controlled trial
35.	Deptt. of Psychiatry,. Dr. R.M.L. Hospital, New Delhi	An exploratory analysis of genetic correlates and effects of Yoga on circadian rhythms, cognitive functions and social burden in major mental disorders: schizophrenia, bipolar disorder and depression and their comparison with a cardiac group
36.	Department of Physiology, AIIMS, New Delhi.	A Study to assess acute mental stress induced changes in EEG, Cognitive behavior and Neurosteroids across the menstrual cycle and effect of meditation on stress induced changes
37.	Department of Neurology, Sir Ganga Ram Hospital, New Delhi	A Randomized Controlled Trail of Yoga to manage the adverse stress reactions at work in health professionals
38.	Bharath Charitable Cancer Hospital & Institute, #18-19, Hebbal Industrial Area, Metagally Post, Mysore-570016	Comparison of effects of yoga vs. relaxation on CINV outcomes following adjuvant chemotherapy
39.	Department of Laboratory Medicine, All India Institute of Medical Sciences, New Delhi-110029	Effect of Yoga on Serum Interleukin levels in Adolescents with Depression
40.	Patanjali Yogpeeth , Haridwar, Uttarakhand.	Effect of a Yoga Program on Anthropometric and Biochemical Measures in Obese Persons
41.	Add Life-PRAKRUTI, Indo American Cancer Institute & Research Centre, Hyderabad.	Efficacy of Naturopathy & Yoga therapy as an adjuvant in the management of Non-Hodgkin's Lymphoma [NHL]
42.	ALN Rao Memorial Ayurvedic Medical College, Koppa, Karnataka	A study of efficacy of Yogic and Naturopathy measures in Varicose Veins
43.	CSM Medical University, Lucknow.	Effect of Yogic Practices on Serum Lipid Profile & Insulin Resistance in Obese subjects
44.	Nisarga Nature Cure, Yoga,	Randomized Control Trial to evaluate the



	Physiotherapy and Acupuncture Hospital, Nadiggalli, Sirsi, Karnataka	effectiveness of cold and hot Immersion baths on impaired glucose tolerance in pre-diabetes
45.	Yoga and Nature Cure Home, Khundrakpam, Awang Leikai, Imphal Saikul Road, Imphal East – Manipur-795114	Naturopathy and Yoga Intervention for post-stroke Rehabilitation & Quality of Life Improvement-a controlled study
46.	Vardhman Mahavir Medical College and Safdurjung Hospital, New Delhi	Comparison of cardiovascular autonomic functions in two groups of post myocardial infarction patients (age 30-55 yrs): A randomized trail involving 2 groups of patients.(1) On pharmacotherapy alone (2) On Yoga & pharmacotherapy life style intervention therapy & Pharmacotherapy.
47.	National Institute of Mental Health and Neurosciences, Bangalore	Effect of Yoga & Hydriatic application on migraine– A Clinical, Electrophysiological and Immunological study.
48.	INYS Medical Research Society, Bangalore	Efficacy of Mustard pack on knees in Osteoarthritis
49.	U.C.M.S., G.T.B. Hospital, Dilshad Garden, Delhi	The effect of Yoga Therapy on Coagulation Profile, Lipid profiles, Lung Diffusion capacity and Quality of Life in Patients with Coronary Artery Disease
50.	Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru	The effect of Yoga in prevention of pregnancy Complications in High Risk Pregnancies
51.	Vivekananada Aroghya Dhama, Kasarkod, Karnataka	Comparison of effects of two Yoga interventions versus Exercise therapy in the management of mechanical Low Back pain
52.	Yog Research Department, Patanjali Yogpeeth , Haridwar, Uttarakhand.	Effect of Yoga on Physical, Cognitive and Emotional Development in Children.



## Research Papers published out of the research projects sanctioned by CCRYN

S.No.	Title of the Paper/Abstract	Author	Name of Journal	Year of Publication
1.	Retardation of Coronary Atherosclerosis with Yoga Lifestyle Intervention	Manchanda SC, R Narang, KS Reddy et al.	Journal of Association of Physicians of India	2000
2.	Modulation of cold pressure – induced stress by shavasana in normal adult volunteers	Madan Mohan, Kaviraja Udupa, Ananda Balayogi Bhavanani et al.	Indian Journal of Physiology and Pharmacology	2002
3.	Sudarshan Kriya practitioners exhibit better antioxidant status and lower blood lactate levels.	Sharma H, Sen S, Singh A, Bhardwaj NK, Kochupillai V, Singh N.	Journal of Biological Psychology	2003
4.	Electrophysiological Evaluation of Sudarshan Kriya: an EEG, BAER, P300 study	M.Bhatia, A. Kumar, N. Kumar et al.	Indian Journal of Physiology and Pharmacology	2003
5.	Effect of Yoga Training on Handgrip, Respiratory Pressures and Pulmonary Function	Madanmohan, Lakshmi Jatiya, Kaviraja Udupa, and Ananda Balayogi Bhavanani	Indian Journal of Physiology and Pharmacology	2003
6.	Effect of Pranayam Training on Cardiac Function in normal Young Volunteers	Kaviraja Udupa, MadanMohan, Ananda Balayogi Bhavanani et al.	Indian Journal of Physiology and Pharmacology	2003
7.	Acute Effect of Mukh Bhastrika (A Yogic Bellows Type Breathing) on Reaction time	Ananda Balayogi Bhavanani, Madan Mohan, and Kaviraja Udupa	Indian Journal of Physiology and Pharmacology	2003
8.	Tilt Table Testing in the Diagnostic Evaluation of Presyncope and Syncope: A case-Series Report	E. S. Prakash, Madan Mohan, Sunil K. Narayan et al.	Indian Journal of Physiology and Pharmacology	2004
9.	Modulation of Cardiovascular response to exercise by Yoga Training	Madan Mohan, Kaviraja Udupa, Ananda Balayogi Bhavanani et al	Indian Journal of Physiology and Pharmacology	2004
10.	Modulation of stress induced by Isometric Handgrip Test in Hypertensive patients following Yogic	Vijayalakshmi P., Madan Mohan, Bhavanani A. B. et al.	Indian Journal of Physiology and Pharmacology	2004



	<b>Relaxation Training</b>			
11	Awareness of computer use Related health risks In software companies in Bangalore	Shirley Telles, Rajendra Deginal & Lokesh Hutchappa.	Indian Journal Of Medical Sciences	2004
12.	Cardiovascular autonomic regulation in subjects with normal Blood Pressure, high-Normal Blood Pressure and Recent-Onset Hypertension	E Sankaranarayanan Prakash, Madan Mohan, K Raman Sethuraman et al.	Clinical and Experimental Pharmacology and Physiology	2005
13	Influence of Yoga & Ayurveda on self-rated sleep in a geriatric population	N. K. Manjunath and Shirley Telles	Indian Journal of Medical Research	2005
14.	Effect of yoga on self-rated visual discomfort in computer users	Shirley Telles, K.V.Naveen, Manoj Dash et al.	Head & Face Medicine	2006
15.	Effects of an integrated yoga programme on chemotherapy induced nausea and emesis in breast cancer patients	Raghavendra R. M., Nagarathna R, Nagendra H. R. et al.	European Journal of Cancer Care	2006
16.	Cardiac autonomic dysfunctions in chronic refractory epilepsy	T.N. Sathyaprabha, P. Satishchandra, K. Netravathi et al.	Epilepsy Research	2006
17.	Modulation of cardiac autonomic balance with adjuvant yoga therapy in patients with refractory epilepsy	T.N. Sathyaprabha, P Satishchandra, B.T.C. Murthy, et al.	Epilepsy & Behavior	2008
18.	Anxiolytic effects of a yoga program in early breast cancer patients undergoing conventional treatment: A randomized controlled trial	M. Raghavendra Rao, Nagarathna Raghuram, H. R. Nagendra et al.	Complementary Therapies in Medicine	2008
19.	Influence of yoga on mood states, distress, quality of life and immune outcomes in early stage breast cancer patients undergoing surgery	Raghavendra M Rao, Nagendra H R, Nagarathna Raghuram et al.	International Journal of Yoga	2008
20.	Influence of yoga on postoperative outcomes and wound healing in early operable breast cancer patients undergoing surgery	Raghavendra M Rao, Nagendra H R, Nagarathna Raghuram et al.	International Journal of Yoga	2008
21.	Effects of Yoga on natural killer cell counts in early breast	Raghavendra M Rao, Shirley Telles, Hongasandra R Nagendra	Medical Science Monitor	2008



	cancer patients undergoing conventional treatment	et al		
22.	A Nonrandomized Non-Naive Comparative Study of the Effects of Kapalabhati and Breath Awareness on Event-Related Potentials in Trained Yoga Practitioners	Meesha Joshi and Shirley Telles	The Journal of Alternative and Complementary Medicine	2009
23.	Non-pharmacological management of nasal polyp : A case report	Rajiv Rastogi, B.T.C. Murthy and Vinudha	Indian Journal of Physiology and Pharmacology	2009
24.	Autonomic Dysfunctions in Patients with Inflammatory Bowel Disease in Clinical Remission	Purnima Sharama, Govind K. Makharia, Vineet Ahuja et al.	Digestive Diseases and Sciences	2009
25.	Practitioners of vipassana meditation exhibit enhanced slow wave sleep and REM sleep states across different age groups	Ravindra Pattanshetty, Sulekha Sathiamma, Sathyaprabaha Talakkad et al.	Sleep and Biological Rhythms	2009
26.	Effects of yoga program on quality of life and affect in early breast cancer patients undergoing adjuvant radiotherapy: A randomized controlled trial	H. S. Vadiraja, M. Raghavendra Rao, Raghuram Nagarathna et al.	Complementary Therapies in Medicine	2009
27.	Effects of yoga on symptom management in breast cancer patients: A randomized controlled trial	S. Hosakote Vadiraja, M Raghavendra Rao , R Hongasandra Nagendra et al.	International Journal of Yoga	2009
28.	The efficacy of a comprehensive lifestyle modification programme based on yoga in the management of bronchial asthma: a randomized controlled trial	Ramaprabhu Vempati, Ramesh Lal Bijlani and Kishore Kumar Deepak	BMC Pulmonary Medicine	2009
29.	Effects of a Yoga Program on Cortisol Rhythm and Mood States in Early Breast Cancer Patients Undergoing Adjuvant	H.S. Vadiraja, Rao M. Raghavendra , Raghuram Nagarathna et al.	Integrative Cancer Therapies	2009



	Radiotherapy: A Randomized Controlled Trial			
30.	Effect of Yoga practice in the management of risk factors associated with obesity: A pilot study	Sunita Tiwari, Dhananjai S.	Indian Streams Research Journal	2011
31.	Adjunctive Cognitive remediation for schizophrenia using Yoga: an open, non-randomized trial	Bhatia T, Agarwal A, Deshpande SN et al.	Acta Neuropsychiatrica	2011
32.	Clinical and genetic correlates of severity in schizophrenia in India: an ordinal logistic regression approach	Thomas P, Chandra A, Deshpande SN et al.	Psychiatry Research	2011
33.	Differences among Major Mental Disorder in Disability quality of Life and family burden- a short term study	Chakraborty S, Mehar H, Bhatia, T, Deshpande SN	Indian Journal of social psychiatry	2011
34.	Cost of Major Mental Disorder in Delhi, India	Thakral S, Mishra NN, Bhatia T, Deshpande SN	Asian Journal of Psychiatry	2011
35.	A study on quality of life in patients following Myocardial infarction	Gupta S, Das S, Sahewalla R, Gupta D, Gupta I et al.	Indian J Physiol Pharmacol	2012
36.	Reducing psychological distress and obesity through Yoga practice.	<u>Dhananjai S, Sadashiv, Sunita Tiwari, Krishna Dutt and Rajjan Kumar</u>	Int J Yoga	2013
37.	Yoga for high-risk pregnancy: a randomized controlled trial.	Deshpande C, Rakshani A, Nagarathna R et al.	Ann Med Health Sci Res.	2013
38.	Effect of yoga or physical exercise on physical, cognitive and emotional measures in children: a randomized controlled trial	Telles S, Singh N, Bhardwaj AK, Kumar A, Balkrishna A.	Child Adolesc Psychiatry Ment Health	2013
39.	Effect of the integrated approach of yoga therapy on platelet count and uric acid in	Jayashree R, Malini A, Rakhshani A, Nagendra H, Gunasheela S,	Int J Yoga. 2013 Jan;6(1):39-46	2013



	pregnancy: A multicenter stratified randomized single-blind study.	Nagarathna R.		
40.	A comparative controlled trial comparing the effects of yoga and walking for overweight and obese adults	Telles S, Sharma SK, Yadav A, Singh N, Balkrishna A.	Med Sci Monit	2014
41.	Effect of Yoga on migraine: A comprehensive study using clinical profile and cardiac autonomic functions.	Kisan R, Sujan M, Adoor M, Rao R, Nalini A, Kutty BM, Chindanda Murthy B, Raju T, Sathyaprabha T.	Int J Yoga. 2014 Jul;7(2):126-32.	2014
42.	Effects of yoga on utero-fetal-placental circulation in high-risk pregnancy: a randomized controlled trial.	Rakhshani A, Nagarathna R, Mhaskar R, Mhaskar A, Thomas A, Gunasheela S	Adv Prev Med. 2015;2015:373041	2015
43.	Effects of an integrated Yoga Program on Self-reported Depression Scores in Breast Cancer Patients Undergoing Conventional Treatment: A Randomized Controlled Trial.	Rao RM, Raghuram N, Nagendra HR, Usharani MR, Gopinath KS, Diwakar RB, Patil S, Bilimagga RS, Rao N.	Indian J Palliat Care. 2015 May-Aug;21(2):174-81.	2015
44.	Effect of yoga regimen on lung functions including diffusion capacity in coronary artery disease patients: A randomized controlled study	Yadav A, Singh S, Singh K, Pai P	Int J Yoga. 2015 Jan;8(1):62-7	2015
45.	Influence of hydrotherapy on clinical and cardiac autonomic function in migraine patients	Sujan MU, Rao MR, Kisan R, Abhishekh HA, Nalini A, Raju TR, Sathyaprabha TN.	J Neurosci Rural Pract. 2016 Jan-Mar;7(1):109-113	2016
46.	Effect of Yoga on Sleep Quality and Neuroendocrine	Rao RM, Vadiraja HS, Nagarathna R, Gopinath KS, Patil S, Diwakar RB,	Indian Journal of Palliative Care	2017



	Immune Response in Metastatic Breast Cancer Patients	Shashidhara HP, Ajaikumar BS, Nagendra HR		
47.	Effects of Yoga in Managing Fatigue in Breast Cancer Patients: A Randomized Controlled Trial	Vadiraja HS, Rao RM, Nagarathna R, Nagendra HR, Patil S, Diwakar RB, Shashidhara HP, Gopinath KS, Ajaikumar BS,	Indian Journal of Palliative Care	2017
48.	Cardiovascular Risk Factors Assessment in Individuals Performing Yoga and Residing in State of Delhi	Siew M, Goel MK, Rastogi R, Binita	IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)	2018

### Research Monographs Published

S.No.	Title of Monograph
1.	Coronary Atherosclerosis Reversal Potential of Yoga Life Style Intervention
2.	Clinical Research Profile
3.	Yoga and Biofeedback for the treatment of Irritable Bowel Syndrome
4.	Research Methodology in Naturopathy & Yoga
5.	Yoga For Computer Related Health Problems
6.	Yogic Relaxation in the management of Ulcerative Colitis
7.	Uni-Nostril Yoga Breathing and Obesity- A study of Efficacy and Mechanisms
8.	Effects of Asans and pranayams on Neurological, Neuromuscular & Cardio- Respiratory Functions in Healthy Human Volunteers
9.	Autonomic Function Tests in Epilepsy- Effect of Hatha Yoga
10.	Assessment of the efficacy of Vipassana Meditation on different age groups: A Polysomnographic & Endocrine Function Evaluation
11.	A Randomised Controlled Trail on the efficacy of Yoga in the Management of Bronchial Asthma
12.	Research Methodology in Yoga & Naturopathy – II





### Specific areas of strength for Intra-AYUSH collaboration

The Council has identified some of the priority areas of Research in Yoga & Naturopathy for Intra-AYUSH collaboration as given under:

- Diabetes mellitus with its complications
- Metabolic disorders: Obesity/Hypo/Hyperthyroidism, Metabolic syndrome
- Cardiac disorders: Hypertension/CAD/Dyslipidemia
- Respiratory Disorders: Sinusitis, Bronchial Asthma, Bronchitis, COPD, Allergic Rhinitis etc.
- Musculo-skeletal disorders, Backache, Cervical and lumbar spondylosis, Fibromyalgia, Fatigue syndrome, Sports injury.
- GIT Disorders: Constipation, Piles, Peptic Ulcer, Indigestion, Anorexia, Hyperacidity, Ulcerative colitis, IBS
- Psychiatry and Neurological Disorders: Anxiety Neurosis, Mental Disorders, Depression, Schizophrenia, Epilepsy, Headache, Drug dependence, Parkinsonism, Delirium, Dementia, Cognitive impairment disorders, Alzheimer's disease etc.
- Rheumatology (immunology): Rheumatoid arthritis, Osteoarthritis, Ankylosing spondylitis, Systemic lupus erythematosus, Interstitial lung disease, Sclerosis
- Women & Child Health disorders: Menopausal syndrome, Menstrual disorders, Uterine fibroids, Pregnancy, Child development, Infertility, Polycystic Ovarian Syndrome
- Basic physiological Research in Yoga & Naturopathy
- Oncology
- Geriatric problems
- Skin diseases: Psoriasis
- Refractive disorders
- Research on Preventive and promotive aspects of Yoga and Naturopathy Practices and therapies



Section-III

# UNANI



**CENTRAL COUNCIL FOR RESEARCH  
IN UNANI MEDICINE**





## UNANI SYSTEM OF MEDICINE

### Background

#### 7.1 Introduction

The Unani System of Medicine, as its name suggests, owes its origin to Greece. The roots of this system go to Egypt and its sister civilization Mesopotamia. It was further adopted by the Arabs, and was developed and improved tremendously by them. The herbal basis of Unani therapy can be traced back to its earliest originators in ancient Egypt who gave primary place to plants in disease treatment. They had also initiated surgery as a method of treatment. The studies of Papyri show the ability of Egyptians in the field of Medicine. Imhotep (2800 BC) and Amenhotep (1550 BC) are some noted physicians of Egyptian period.

It was the Greek philosopher-physician Hippocrates (460-370 BC) who freed Medicine from the realm of superstition and magic, and gave it the status of Science. He emphasized the natural causes of disease and recorded the existing medical knowledge to set the grounds for Medicine to develop as a systematic science.

The three fundamentals of Hippocratic Medicine were observation, experience, and rational principles, which still remain valid in the field of Medicine and Science.

The Alexandrian School (*Madrassa Iskandariyya*), established in the third century BC, needs a special mention, for being the first institution to deal with dissection of human body formally. The contribution of Herophilus, Erasistratus and other physicians in the field of Anatomy cannot be ignored. Even today, certain anatomical terms are named after Herophilus. Dioscorides (40-90 AD), who had the tremendous knowledge of medicinal herbs, was the first person to write an illustrated book comprising 600 herbal drugs i.e. *De Materia Medica (Kitab al-Hashaish)*. Apart from original additions by Dioscorides, the book contained all the previous pharmacological knowledge.

The closing years of the creative age of Greece were graced by the great Roman scholar Galen (129-200 AD) stabilized the foundation of this science on which Arab and Persian scholars and physicians like *Rabban Tabri (775-890 AD)*, *Al-Razi (865-925 AD)* and *Ibn Sina (980-1037 AD)* developed Unani System of Medicine to great heights.

Unani Medicine was introduced to India by the Arabs in the eighth century and soon it took firm roots in the soil and developed as a comprehensive medical system due to multi-pronged original contribution and new applications by scholars of successive generations. It has been practiced, taught and scientifically documented in different parts of the country and flourished as a scientific medical system. The Delhi Sultans, the Khiljis, the Tughlaqs and the Mughal Emperors provided state patronage to the scholars and even enrolled some as state employees and court physicians. During the 13th and 17th century, Unani Medicine had its heyday in India. Among those who made valuable contributions to this system in the period were, to name only a few, *Abu Bakr bin Ali Usman Kashani*, *Sadrudin Dimashqui*, *Bahwa bin Khwas Khan*, *Ali Geelani*, *Akbar Arzani* and *Mohammad Hashim Alvi Khan*. The continuing creativity of Indian scholars of Unani System of Medicine is testified by the emergence of the encyclopedic author *Uakém A'zam Khān (1813-1902 AD)* in the nineteenth century, who is well known for his outstanding works in the areas



of Medicine and Pharmacology viz. *Muàëö-i A'zam, Iksér-i A'zam, Rumüz-i A'zam* and *Nayyar-i A'zam*.

It was mainly the Sharifi Family in Delhi, the Azizi Family in Lucknow and the Nizam of Hyderabad due to whose efforts Unani Medicine survived in the British period. An outstanding physician and scholar of Unani Medicine, Hakim Azam Khan (1815-1902 AD) and Hakim Ajmal Khan (1868 -1927) championed the cause of Unani System of Medicine in India. The Hindustani Dawakhana and the Ayurvedic and Unani Tibbia College in Delhi are the two living examples of his immense contribution to the multipronged development of the two Indian systems of medicine – Unani Medicine and Ayurveda.

The Majeedi family of Delhi, especially Hakim *Abdul Hameed* (1908-1999), made valuable contribution towards modernization of Unani drug industry. Hakim *Abdul Hameed* also established an Institute of History of Medicine and Medical Research (IHMMR) in New Delhi that developed into a deemed university– the Jamia Hamdard in 1989.

During the British rule, Unani Medicine suffered a setback, but since the system enjoyed faith among the masses, it continued to be practiced. The development of Unani Medicine as well as other Indian systems of medicine gained considerable momentum after independence.

The Government of India facilitated the growth and development of Unani Medicine by recognizing its utility and scope and integrated it into healthcare delivery system. With its wide network of quality educational institutions, comprehensive healthcare facilities, state of the art research institutions and quality drug manufacturing industries and on account of its utilization by a large number of people for their healthcare needs, India has emerged as the global leader in Unani Medicine.

A Health Survey and Development Committee appointed in the year 1943 underscored the future role to be played by the indigenous systems of medicine of India. In 1946, the conference of health ministers resolved that adequate provisions should be made at the Centre and provinces for research in indigenous systems of medicine, Ayurveda and Unani.

Initially, the Indian Systems of Medicine and Homoeopathy (ISM&H) were taken care of by a division within the Ministry of Health and Family Welfare. In March 1995, it was replaced by a full-fledged Department of Indian Systems of Medicine and Homoeopathy in the ministry, which was renamed as Department of AYUSH in November, 2003 for overall development of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy. With the aim of providing focused attention to the development of education and research in AYUSH systems of medicine, the Department of AYUSH has been elevated to a full-fledged Ministry of AYUSH with effect from 09 November, 2014.



## 7.2 Brief on Central Council for Research in Unani Medicine

The Indian Systems of Medicine and Homoeopathy including Unani Medicine got a boost in 1969 with the Government of India establishing Central Council for Research in Indian Medicine and Homoeopathy (CCRIMH) to conduct research and scientific activities. The dissolution of CCRIMH in 1978 to accord focused attention for research in individual systems led to setting up of four separate research councils – one each for Ayurveda & Siddha, Unani Medicine, Yoga & Naturopathy, and Homoeopathy. The Central Council for Research in Unani Medicine (CCRUM) started functioning from 10<sup>th</sup> January 1979 as an autonomous organization. The main objectives of the Council are as follows:

- Formulation of aims and patterns of research on scientific lines in Unani Medicine
- To undertake research or any other programmes in Unani Medicine
- Prosecution of and assistance in research and propagation of knowledge and experimental measures generally in connection with the causation, mode of spread and prevention of diseases
- To initiate, aid, develop and coordinate scientific research on different aspects, fundamental and applied, of Unani Medicine, and to promote and assist institutions of research for the study of diseases, their prevention, causation and remedy
- To finance enquiries and researches for the furtherance of objectives of the Council
- To exchange information with other institutions, associations and societies interested in the objectives similar to those of the Council, especially in the observation and study of diseases in the East in general, and in India in particular
- To prepare, print, publish and exhibit any papers, posters, pamphlets, periodicals and books for furtherance of the objectives of the Council and to contribute to such literature

The policies, directions and overall functioning of the Council are regulated by the Governing Body. Minister of State (Independent Charge), Ministry of AYUSH, Government of India is the president of the Governing Body and has general control on the affairs of the Council. There is a Standing Finance Committee (SFC) under the chairmanship of Joint Secretary, Ministry of AYUSH, Government of India to consider and recommend various financial proposals, developmental activities, etc. The Scientific Advisory Committee (SAC), headed by an expert of Unani Medicine as its chairman and reputed scientists in different disciplines as members of the committee, provides direction to the research activities. The SAC helps the Council in formulation, appraisal, implementation, monitoring and evaluation of the research projects and identify topics of research for the development of the system. Sub-committees, e.g. clinical research subcommittee, drug research subcommittee, literary research subcommittee, survey and cultivation of medicinal plants and claim for cure subcommittee have also been constituted for assisting SAC. A committee for claim-of-cure has been constituted to examine the claim for treatment of various diseases. Local scientific advisory committees have also been constituted for the close monitoring of the research activities of the institutes. In accordance with the standard guidelines to look into the ethical issues involved in research studies undertaken by the Council, the Institutional Ethics Committees (IECs) have been constituted in all the clinical research institutes/centers of the Council.

The Council has its headquarters at New Delhi with 23 centers functioning in different parts of the country. The institutional network of the Council includes two Central Research Institutes of Unani Medicine (CRIUMs) - one each at Hyderabad and Lucknow; eight Regional Research Institutes of Unani Medicine (RRIUMs) - one each at Chennai, Bhadrak, Patna, New Delhi,



Mumbai, Kolkata, Aligarh and Srinagar; two Regional Research Centres (RRCs) – one each at Allahabad and Silchar; six Clinical Research Units (CRUs) - one each at Bhopal, Burhanpur, Meerut, Bengaluru, Kurnool and Edathala; Hakim Ajmal Khan Institute for Literary & Historical Research in Unani Medicine (HAKILHRUM) at New Delhi; Drug Standardization Research Institute (DSRI) at Ghaziabad; Drug Standardization Research Unit (DSRU) at New Delhi; Chemical Research Unit (Grant-in-aid) at Aligarh; and Clinical Research Pilot Project at Imphal, Manipur. Besides, the Council has two co-location centres in allopathic hospitals in New Delhi for providing free Unani treatment under one roof. These include a Unani Medical Centre at Dr. Ram Manohar Lohia Hospital and a Unani Specialty Centre at Deen Dayal Upadhyay Hospital. Further, the AYUSH Wellness Clinic (AWC) has been established at the President’s Estate, New Delhi on 25th July, 2015. The AWC is providing medical services to the residents of the President’s Estate. All manpower needs and medical facilities related to Unani Medicine is catered by the CCRUM. In a move to strengthen its research infrastructure and institutional network, the Council has upgraded the laboratories at CRIUM, Hyderabad and RRIUMs, Chennai and Srinagar. It has also constructed buildings for its three institutes – Regional Research Institute of Unani Medicine (RRIUM), Patna and Bhadark, and Central Research Institute of Unani Medicine (CRIUM), Lucknow. the Council has up grading Regional Research Center to Regional Research Institutes of Unani Medicine at Silchar (Assam).



The research programme of the CCRUM mainly comprises clinical research including toxicological and pharmacological studies of Unani drugs, validation of the fundamentals, drug standardization and quality control, survey and cultivation of medicinal plants, and literary research. Information, education and communication (IEC) activities, and human resource development (HRD) are also part of the Council’s activities in addition to extension of healthcare services. Over the years, the CCRUM has emerged as the global leader for research in Unani Medicine.





## CENTRE-WISE ACTIVITIES

CENTRE	ACTIVITIES
Central Research Institute of Unani Medicine (CRIUM), Hyderabad	<ul style="list-style-type: none"><li>● Survey and Cultivation of Medicinal Plants Programme</li><li>● Drug Standardization Research Programme</li><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li><li>➤ Validation of Regimen Therapies</li><li>➤ Validation of Fundamentals</li></ul></li><li>● Research-oriented Healthcare<ul style="list-style-type: none"><li>➤ General Outpatient Department (GOPD) Programme</li><li>➤ Mobile Clinical Research Programme</li></ul></li><li>● School Health Programme</li><li>● Swasthya Rakshan Programme</li></ul>
Central Research Institute of Unani Medicine (CRIUM), Lucknow	<ul style="list-style-type: none"><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li><li>➤ Validation of Regimen Therapies</li></ul></li><li>● Research-oriented Healthcare<ul style="list-style-type: none"><li>➤ General Outpatient Department (GOPD) Programme</li><li>➤ Mobile Clinical Research Programme</li></ul></li><li>● School Health Programme</li><li>● Swasthya Rakshan Programme</li><li>● National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) Programme</li></ul>
Regional Research Institute of Unani Medicine (RRIUM), Chennai	<ul style="list-style-type: none"><li>● Survey and Cultivation of Medicinal Plants Programme</li><li>● Drug Standardisation Research Programme</li><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li><li>➤ Validation of Unani Pharmacopoeial Fast-acting Drugs</li><li>➤ Validation of Regimen Therapies</li></ul></li><li>● Research-oriented Healthcare<ul style="list-style-type: none"><li>➤ General Outpatient Department (GOPD) Programme</li><li>➤ Mobile Clinical Research Programme</li></ul></li></ul>



Regional Research Institute of Unani  
Medicine (RRIUM), Bhadrak

- School Health Programme
- Swasthya Rakshan Programme
- Survey and Cultivation of Medicinal Plants Programme
- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Validation of Unani Pharmacopoeial Fast-acting Drugs
  - Validation of Regimen Therapies
- Research-oriented Healthcare
  - General Outpatient Department (GOPD) Programme
  - Mobile Clinical Research Programme

Regional Research Institute of Unani  
Medicine (RRIUM), Patna

- School Health Programme
- Swasthya Rakshan Programme
- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Validation of Unani Pharmacopoeial Fast-acting Drugs
  - Validation of Regimen Therapies
- Research-oriented Healthcare
  - General Outpatient Department (GOPD) Programme
  - Mobile Clinical Research Programme

Regional Research Institute of Unani  
Medicine (RRIUM), Aligarh

- School Health Programme
- Swasthya Rakshan Programme
- Survey and Cultivation of Medicinal Plants Programme
- Drug Standardization Research Programme
- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Pharmacological Research Programme
- General Outpatient Department (GOPD) Programme
- Swasthya Rakshan Programme

Regional Research Institute of Unani  
Medicine (RRIUM), Mumbai

- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Validation of Unani Pharmacopoeial Fast-acting Drugs
  - Validation of Regimen Therapies
- Research-oriented Healthcare



Regional Research Institute of Unani  
Medicine (RRIUM), Srinagar

- General Outpatient Department (GOPD) Programme
- Mobile Clinical Research Programme
- Swasthya Rakshan Programme
- Survey and Cultivation of Medicinal Plants Programme
- Drug Standardization Research Programme
- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Pharmacological Research Programme
  - Validation of Regimen Therapies
- Research-oriented Healthcare
  - General Outpatient Department (GOPD) Programme
  - Mobile Clinical Research Programme
- School Health Programme
- Swasthya Rakshan Programme

Regional Research Institute of Unani  
Medicine (RRIUM), Kolkata

- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Mobile Clinical Research Programme
- General Outpatient Department (GOPD) Programme
- Swasthya Rakshan Programme

Regional Research Institute of Unani  
Medicine (RRIUM), New Delhi

- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Validation of Regimen Therapies
- General Outpatient Department (GOPD) Programme
- Unani Speciality Clinics at Allopathic Hospitals
- Swasthya Rakshan Programme

Regional Research Centre (RRC),  
Allahabad

- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Mobile Clinical Research Programme
- General Outpatient Department (GOPD) Programme
- School Health Programme
- Swasthya Rakshan Programme

Regional Research Centre (RRC),  
Silchar with Extension Centre at  
Karimganj

- Clinical Research Programme
  - Validation of Unani Pharmacopoeial Drugs
  - Validation of Unani Pharmacopoeial Fast-acting Drugs



- |   |  |
|---|--|
| Clinical Research Unit (CRU),<br>Bengaluru                          | <ul style="list-style-type: none"><li>● General Outpatient Department (GOPD) Programme</li><li>● Swasthya Rakshan Programme</li><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li></ul></li><li>● General Outpatient Department (GOPD) Programme</li></ul> |
| Clinical Research Unit (CRU), Meerut                                | <ul style="list-style-type: none"><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li></ul></li><li>● General Outpatient Department (GOPD) Programme</li></ul>   |
| Clinical Research Unit (CRU), Bhopal                                | <ul style="list-style-type: none"><li>● Clinical Research Programme</li><li>● General Outpatient Department (GOPD) Programme</li></ul>   |
| Clinical Research Unit (CRU),<br>Burhanpur                          | <ul style="list-style-type: none"><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li><li>➤ Mobile Clinical Research Programme</li></ul></li><li>● General Outpatient Department (GOPD) Programme</li></ul>  |
| Clinical Research Unit (CRU), Edathala                              | <ul style="list-style-type: none"><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li></ul></li><li>● General Outpatient Department (GOPD) Programme</li></ul>   |
| Clinical Research Unit (CRU), Kurnool                               | <ul style="list-style-type: none"><li>● Clinical Research Programme<ul style="list-style-type: none"><li>➤ Validation of Unani Pharmacopoeial Drugs</li><li>➤ Validation of Unani Pharmacopoeial Fast-acting Drugs</li></ul></li><li>● General Outpatient Department (GOPD) Programme</li></ul>                                |
| Drug Standardisation Research Unit<br>(DSRU), New Delhi             | <ul style="list-style-type: none"><li>● Drug Standardization Research Programme</li></ul>  |
| Drug Standardisation Research Institute<br>(DSRI), Ghaziabad        | <ul style="list-style-type: none"><li>● Drug Standardisation Research Programme</li></ul>  |
| Literary Research Institute of Unani<br>Medicine (LRIUM), New Delhi | <ul style="list-style-type: none"><li>● Literary Research Programme</li></ul>  |
| Chemical Research Unit (CRU) (Grant-<br>in-aid), Aligarh            | <ul style="list-style-type: none"><li>● Chemical Investigations of Unani Medicinal Plants</li></ul>  |



### Core Achievements of CCRUM since inception

The Unani medicine is a comprehensive system of medicine that can play an effective role in the dealing of core health issues of masses. The concept, method and treatment in Unani Medicine can be further explored by validation, evaluation and standardization of Unani drugs, along with intensive quality research (pre-clinical and clinical levels).

The CCRUM is one of the premier institutes under Ministry of AYUSH that plays a significant role in promoting and propagating Unani medicine by way of Research and Development, standard settings and providing general medicare. The institute has taken a lead to further advancements in Unani medicine by exploring ways to address issues of various therapies their validation, standardization, quality control, safety and efficacy of Unani medicine through scientific data. The Council is working to fulfill the desired parameters of medicine on Unani drugs as required by WHO, USFDA, ICMR and other international regulatory agencies.

Achievements are reflected under each core area of research:-

#### 8.1 Clinical Research Programme

##### Pre-clinical studies

Preclinical safety and pharmacological studies on classical Unani drugs and new drugs developed by the Council including modified dosages form of drugs were undertaken at the Council's pharmacological units at Central Research Institute of Unani Medicine (CRIUM), Hyderabad and Regional Research Institute of Unani Medicine (RRIUM), Srinagar. Achievements in the programme are as follows;

- Toxicological studies on 101 Single / compounds Unani drugs
- Pharmacological studies on 99 Single / compounds Unani drugs

##### Clinical studies

The clinical research programme of the Council deals with the methods of diagnosis and treatment of diseases and aims at critical appraisal of the theory of pathogenesis, symptomatology, clinical methods of diagnosis, principles and methods of treatment, and the drug and diet therapies peculiar to Unani Medicine. Under this programme, clinical studies on different diseases were undertaken with a view to develop safe and effective Unani treatments. Besides, clinical validation of safety and efficacy of Unani Pharmacopoeial formulations was also conducted. Clinical validation of Unani Pharmacopoeial fast-acting drugs was also undertaken in different diseases. This programme continued at various centres of the council.

Achievements in the programme are as follows;

- Diseases undertaken for clinical studies – 30.
- Drugs/formulations undertaken for screening – 120
- Formulations undertaken for extensive clinical trials – 55



- Studies completed on formulations/drugs – 31
- Formulations decoded and studies published – 12
- Developed safe and cost effective Unani treatments for diseases such as; vitiligo, eczema, psoriasis, bronchial asthma, rheumatoid arthritis, sinusitis, infective hepatitis etc.
- Conducting Multi-centric randomized controlled trials on four diseases viz., Diabetes mellitus, Essential hypertension, Vitiligo and Infective hepatitis.
- Validated efficacy and safety of 36 pharmacopoeial / classical formulations in 22 diseases. Studies on another 51 formulations in 47 diseases are progress.
- Validating the efficacy of different regimenal therapies such as Hijamat (Cupping) and Taleeq (Leeching).
- Conducted validation of Unani drugs in different Cosmetic diseases.
- The CCRUM has initiated Multi-centric Randomised Control Trials (RCTs) on three diseases viz; Diabetes mellitus, Vitiligo and Hypertension.
- Collaborative studies on cervical erosion with Institute of Cytology and Preventive Oncology (ICPO), Noida (ICMR) and Pulmonary Tuberculosis with National Institute of Research on Tuberculosis (NIRT), Chennai ICMR continued.
- Commercially exploited sixteen drugs for common / seasonal ailments through NRDC.
- To utilize the full potentials of the scientists working in the different centres and to conduct studies based on region-specific needs, the Council adopted a new Intramural Research (IMR) Policy. The policy also aims to conduct studies in a time-bound manner. Studies under the IMR policy were conducted at Central Research Institute of Unani Medicine, Hyderabad. So far three IMR projects have been completed whereas five projects are in progress.
- Following eleven patents have been awarded to the Council by the Indian Patent Office (IPO) –
  1. A Novel Herbal Composition (Sugar Coated) Effective against Rheumatoid Arthritis
  2. A Herbal Composition Effective against Nazfuddam and a Process for the Preparation Thereof
  3. A Herbal Composition Effective against Arthritis and to Process for the Preparation Thereof
  4. A Novel Herbal Composition Effective against Coryza and a Process for Preparing Thereof
  5. A Novel Herbal Composition Effective as Anti Pyretic and to a Process for the Preparation Thereof
  6. A Herbal Composition against Bronchial Asthma and Process for Preparation Thereof
  7. Scar and A Kit for the Authentication of Single Drug Tukhm-E-Kasoos (*Cuscuta Reflexa*) and Its Adulterant Aftimoon Vilayati (*Cuscuta Chinensis*)
  8. A Novel Herbal Composition and a Process for Preparation Thereof Effective against Constipation
  9. A Novel Herbal Composition and a Process for Preparation Thereof Effective against Abdominal Worm
  10. Scar Primers and a Kit For The Authentication Of Unani Drug Filfil Siyah (*Piper Nigrum*) and Its Adulterant Carica Papaya
  11. Scar Primers and a Kit for the Authentication of Unani drug Zarishk (*Berberis aristata*) and its Adulterant Daru Haridra (*Coscinium fenestratum*)



## 8.2 Fundamental Research

### Theory of *Akhlāt wa Mizāj* (Humours and Temperament)

The objective of the programme was to test scientifically the concept of Akhlāt (Humours) and Mizāj (Temperament), and its relevance to the states of health and diseases. This programme was undertaken at the Central Research Institute of Unani Medicine (CRIUM), Hyderabad. The programme was aimed at studying the clinical, physiological, pathological, biochemical and genetic parameters of the subjects of different temperaments, conducting clinical assessment of Mizāj (Temperament) in different diseases, and scientifically establishing correlation among them. Genetic studies on the theory of humours with special reference to diabetes mellitus, essential hypertension, vitiligo, hepatitis, Sawdāwī and other related diseases were carried out; and healthy volunteers served as control. Pharmacogenomic studies of Unani formulations in vitiligo were also conducted.

### Validation of *Ilaj bi'l-Tadbir* (Regimenal Therapies)

Apart from the simple physical and clinical methods to treat the diseases Unani Medicine also offers regimenal therapies such as Hajamat (cupping), Qai (vomiting), Riyazat (exercise), Taleeq (leeching) etc. for certain conditions. Documentation of four regimenal therapies including Riyazat (Exercise), Dalak (Massage), Hajamat (Cupping) and Kai (Cauterization) has been undertaken by the Council. The Council is establishing scientific relevance of these therapies in successfully combating various chronic diseases. Validation of regimenal therapies e.g. Hajamat (Cupping) in Waja-ul-Mafasil (Rheumatoid arthritis) and leeching in Zaghtuddam Qawi (Essential Hypertension) and Duali (Varicose Veins) was done.

Other regimen therapy procedures like Wet Cupping, Fire Cupping, Moving Cupping, Steam Bath, Moderate Massage, Sauna Fomentation and Vaporization was also done in the Councils institutes.

## 8.3 Drug Standardization Research Programme

The drug standardisation research programme is mainly concerned with evolving pharmacopoeial standards for single drugs and compound formulations of Unani Medicine included in various volumes of *National Formulary of Unani Medicine* and *Essential Drugs List* for their incorporation in the *Unani Pharmacopoeia of India*. The work on compound formulations includes development of Standard Operating Procedures (SOPs) for their manufacture followed by the development of their pharmacopoeial standards. Besides, standardisation of investigational drugs for clinical trials at the Council and estimation of heavy metals, microbial load, aflatoxin content and pesticidal residues in the drugs are also undertaken as a part of this programme. Chemical investigations of Unani medicinal plants are also being carried out under this programme. The standardisation work is carried out in accordance with the format approved by Unani Pharmacopoeia Committee of the Government of India through the following research centres of the Council:

- Drug Standardization Research Institute (DSRI), Ghaziabad.
- Central Research Institute of Unani Medicine (CRIUM), Hyderabad
- Regional Research Institute of Unani Medicine (RRIUM), Chennai
- Regional Research Institute of Unani Medicine (RRIUM), Srinagar
- Regional Research Institute of Unani Medicine (RRIUM), Aligarh



- Drug Standardization Research Unit (DSRU), New Delhi
- Chemical Research Unit (Grant-in-Aid), AMU, Aligarh

Programme has been undertaken for the following objectives:

- Development of standard operating procedures (SOPs) for manufacture of compound Unani formulations and their pharmacopoeial standards
- Development of pharmacopoeial standards of single drugs
- Quality control of research drugs
  - Quality control of single drugs
  - Quality control of compound formulations
- Development of Unani Pharmacopoeia of India
- Shelf-life Studies of Unani Formulations
- Redesigning of Dosage Forms of Unani Formulations

Achievements in the programme are as follows;

- Standardization of 250 Single Drugs of Unani Medicine published in five volumes.
- Evaluation of Physico-chemical standards of 350 Unani formulations published in four volumes.
- Developed pharmacopoeial standards for 298 single drugs published in six volumes of Unani Pharmacopoeia of India part-I.
- Developed of Standard Operating Procedure (SOPs) for method of manufactures and pharmacopoeial standards for 150 compound formulations published in three volumes of Unani Pharmacopoeia of India part-II.
- Redesigning / modification in the dosage form of 12 Unani drugs completed.
- Shelf life studies continued on four drugs.
- Chemistry of Medicinal Plants Part-I, comprising 52 plants
- National Formulary of Unani Medicine. in six volumes containing 1,229 formulations
- Chemical Investigations of Some Unani Medicinal Plants, containing 76 plants

#### **8.4 Survey and Cultivation of Medicinal Plants Programme**

The Council has undertaken programme of extensive surveys of medicinal plants in different parts of the country, primarily with a view to collect and identify medicinal plants and recording basic data on ethno-pharmacological uses of plants from the tribal and other rural folks of the study area. The broad objectives of the programme are:

- To survey, collect and identify medicinal plants in different forest zones of the country
- To study distribution, availability, ethno-pharmacological uses and threats of medicinal plants
- To carry out experimental and field-scale cultivation of medicinal plants
- To maintain herbarium of medicinal plants and raw drugs for demonstration purposes
- To maintain a demonstrable herbal garden
- To document folk knowledge on medicinal uses of plants
- To collect samples of genuine drugs from the forests for Pharmacopoeial standards
- To develop nursery of medicinal plants for demonstration purpose with a view to popularize them among masses.

This programme is being carried out at following research centers of the Council:

- Central Research Institute of Unani Medicine, Hyderabad
- Regional Research Institute of Unani Medicine, Chennai





- Regional Research Institute of Unani Medicine, Srinagar
- Regional Research Institute of Unani Medicine, Bhadrak
- Regional Research Institute of Unani Medicine, Aligarh

Achievements in the programme are as follows;

- Ethno-Botanical surveys conducted in different forest zones in 13 states in India.
- Collected over 1,04,089 plants specimens from different forest areas comprising of 32,628 species.
- Samples of authentic raw drugs collected and maintained in the Museum: 1033.
- Medicinal folk claims collected from different tribal pockets: 16170.
- Herbarium sheets have been digitized:525.
- Conducted experimental and filed scale cultivation of 33 important Unani medicinal plants species at the herb gardens of the Council's Institutes.
- Research papers published in the scientific journals – 200.
- Published 19 Monographs / Books on medicinal flora / folklore claims.

### 8.5 Literary Research Programme

The Councils continued literary research through its Hakim Ajmal Khan Institute for Literary & Historical Research in Unani Medicine, New Delhi. Achievements in the programme are as follows;

- Published translation of **20** important classical books/manuscripts in **58 volumes** in different languages.
- Reprinted 70 out of print rare books.
- Compiled **25** books/brochures/leaflets on Unani Medicine and medicinal plants as IEC material and other related topics in English, Urdu, Hindi and other regional languages.
- Developed a database of Unani therapeutics from classical Unani books/manuscripts.
- Conducted survey of Unani manuscripts in different libraries in India and prepared catalogue of 4000 books.
- A document on Unani Standard Terminology published.
- A dictionary of names of Unani drugs published.
- Published Standard Treatment Guidelines of Unani Medicine in two volumes.

### 8.6 Collaboration / MOUs with other scientific organisation

The Council signed Memorandum of Understanding for collaborative research with other scientific organisations including the following.

#### National Collaborations

- ICMR for collaborative studies in Malaria, Filariasis and Kala Azar, Cervical erosion and Pulmonary Tuberculosis and Human Resource Development.
- CSIR for development of bioactive molecules in classical Unani formulations.
- NRDC, New Delhi for IPR and commercial exploitation of drugs.
- Vallabh Bhai Patel Chest Institute, Delhi for collaborative study in Bronchial asthma.
- Lady Harding Medical College, New Delhi for collaborative studies in Infective hepatitis.
- All India Institute of Medical Sciences, New Delhi for collaborative studies in the areas of Obesity, Psoriasis and Vitiligo.



- Deccan Medical College, Hyderabad for collaborative studies in the areas of viral hepatitis and duodenal ulcer.
- King George Medical University, Lucknow on Infective hepatitis.
- Regional Research Laboratory, Srinagar for chemical studies on some tribal plants of Kashmir valley.
- Jamia Hamdard, New Delhi for collaborative clinical studies on redesigning of dosages form of Unani formulations.
- UDAAN for collaborative clinical studies on Autism.
- Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh on obesity.
- Ajmal Khan Tibbia College, Aligarh Muslim University, Aligarh on drugs development.

### **International Co-operation**

- International conference on Unani Medicine during Unani day
- MoU signed with Hamdard University, Bangladesh for establishment of Unani chair.
- Establishment of Unani Chair at University of Western Cape, South Africa.

### **8.7 Research Oriented Extension Health Services**

#### **General Outpatient Department (GOPD) Programme**

The GOPD programme which also includes Geriatric OPD and RCH/ MCH OPD is aimed at promoting, protecting, and preserving public health through Unani Medicine. Besides, OPDs for Post-trial access (PTA) were also conducted in order to provide treatment facility to the research patients after completing the trial. This programme continued at Central Research Institutes of Unani Medicine (CRIUMs), Hyderabad and Lucknow; Regional Research Institutes of Unani Medicine (RRIUMs), Chennai, Bhadrak, Patna, Aligarh, Mumbai, Srinagar, Kolkata and New Delhi; Regional Research Centres, Allahabad and Silchar (with an extension at Karimganj); Clinical Research Units (CRUs), Bengaluru, Bhopal, Burhanpur, Meerut, Kurnool and Edathala; Clinical Research Pilot Project, Manipur; Hakim Ajmal Khan Institute for Literary and Historical Research in Unani Medicine, New Delhi, AYUSH Wellness Centre, President's Estate, New Delhi and All India Institute of Ayurveda, Sarita Vihar, New Delhi. About 6 lakhs patients are benefited annually. These patients are also assessed for their temperaments and various other factors responsible for occurrence of the disease, thus generating data for research feedback and Unani treatment was prescribed accordingly.

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

The mobile clinical research programme is aimed at providing healthcare to the population residing in rural areas, urban slums, Scheduled caste and Scheduled tribe pockets; besides, reducing the disease burden in the society by creating health awareness among them. The Council's researchers visit the adopted pockets at regular intervals and provide free Unani treatment to the patients at their door steps, and thus serve as a potential source of healthcare delivery to the masses. The cases of different ailments are also referred to the Council's institutes / units and also to other hospitals for treatment of specific diseases for clinical research. Besides, health awareness is also created among the population under coverage particularly the women and senior citizens through health lectures and group meetings on the preventive, promotive and curative health aspects based on the principles of Unani Medicine. They are also made aware of the therapeutic uses of medicinal plants growing in their vicinity in the management of different common/ seasonal ailments. About 25,000 patients are benefited under the programme. Predominant diseases as observed were



Rheumatoid Arthritis, Osteoarthritis, Joint Pain, Piles, Leucorrhoea, Skin Infections, Fever, Cough, Catarrh, etc.

### **Extension of Healthcare Services**

#### **SCHOOL HEALTH PROGRAMME**

School Health Programme is aimed at improving the health and hygiene status of school children and to reduce morbidity rate among them through healthcare and health education. Under this programme, the Council's researchers performed visits to the selected Primary and Secondary Schools, particularly those in rural areas and urban slums. A baseline health check-up of school children is conducted and those found suffering from any ailment are treated with Unani medicines. Thereafter, health education is provided to them through lectures on different preventive, promotive and curative health aspects; and health related literature is distributed. The children are also educated about the potentialities of the commonly available plants in their vicinity for the management of different diseases. Specific lectures are given on oral hygiene, cleanliness of body and environment, safe drinking water, nutrition, balanced diet, etc. About 5,000 school children are covered annually under this programme.

#### **UNANI MEDICAL CENTRES IN ALLOPATHIC HOSPITALS**

Under the scheme of collocation of AYUSH centres in Allopathic hospitals in Delhi, a Unani Medical Centre was established at Dr. Ram Manohar Lohia (RML) Hospital on 14 January, 1998 with a view to provide Unani treatment facility to the patients desirous of taking treatment of this system. On the demand of the public, another Unani Specialty Centre started functioning at Deen Dayal Upadhyay (DDU) Hospital, New Delhi on 01 November, 2010. These centres are run by the Council. Besides the general out-patient department (GOPD) facilities, these centres also provide specialized Unani treatment for some selected disorders like vitiligo, eczema, psoriasis, rheumatoid arthritis, bronchial asthma, sinusitis, infective hepatitis, diabetes mellitus, etc. About 50,000 patients are treated annually at these centres.

#### **HEALTH CAMPS**

The Council organised health camps through its Institutes/Units with a view to create health awareness among the masses and to provide treatment through Unani System of Medicine. During the reporting period, 24 health camps were organised and 18,944 patients were treated in these camps. Lectures on preventive and promotive health aspects were also delivered by the physicians of the Council. Referral of the patients to the Council's centres as well as other hospitals was also done. The council also participated in one month long Magh Mela at Sangam, Allahabad (U.P.) and treated 5,726 patients with different ailments.

#### **Participation in the Swasthya Rakshan Programme**

On the lines of 'Swachh Bharat Abhiyan' (Clean India Mission) initiated by the Government of India to accomplish the vision of 'Clean India', the Ministry of AYUSH initiated *Swasthya Rakshan* Programme (SRP) through its national institutes and research councils to protect and promote health. The main objective of the programme is to provide AYUSH treatment and organize camps for screening and early diagnosis of diseases in rural areas. It also aims to create health awareness through health education and distribution of IEC material in local languages for better outreach and compliance.



The CCRUM initiated this programme during 2015–2016 through its 12 institutes/centres: Central Research Institutes of Unani Medicine (CRIUMs), Hyderabad, Lucknow; Regional Research Institutes of Unani Medicine (RRIUMs), Delhi, Mumbai, Kolkata, Chennai, Srinagar, Patna, Aligarh and Bhadrak; and Regional Research Centres (RRCs), Allahabad and Silchar. Five villages predominantly populated by underprivileged and weaker sections nearer to each institute/centre were identified for undertaking the programme.

The programme is undertaken by a team of six personnel comprising two doctors at each centre / institute. The team runs weekly OPD clinic in each village where screening of the visitors is conducted and healthy individuals are made aware about the disease preventive and health promoting measures and importance of hygiene and sanitation, whereas the diseased individuals are provided proper treatment along with awareness services. The team also conducts household survey of the village in order to record health data of the inhabitants. Besides, community awareness programme on sanitation and nutrition is also organized through health camps for educating the villagers on strategies for prevention of disease and improving health. A total of 60 villages/colonies have been covered throughout and medical aid has been provided to 1,23,187 patients so far.

### **Participation in the NPCDCS programme**

The CCRUM, under the aegis of the Ministry of AYUSH, Government of India, launched a pilot project for integration of Unani Medicine in National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS) at Lakhimpur Kheri, Uttar Pradesh. With the objective to ensure prevention and early diagnosis of lifestyle diseases, reduce complications and drug dependency, and supplement NPCDCS in preservation and promotion of health, the CCRUM started this project through its Central Research Institute of Unani Medicine, Lucknow at 17 Community Health Centres (CHCs), 54 Primary Health Centres (PHCs) and NPCDCS Cell at District Hospital of Lakhimpur Kheri. The project was launched on 1 June 2016 by Shri Shripad Yesso Naik, Hon'ble Minister of State (Independent Charge), Ministry of AYUSH, Government of India.

Under this programme, a Lifestyle Clinic was set up at each of the 17 CHCs where after due screening healthy individuals are educated about preventive measures and healthy lifestyle and high risk individuals are offered diet therapy, regimen therapy and Yoga therapy, whereas the diseased people are provided Unani medicinal treatment along with the above therapies. Besides, all the 54 PHCs in the district are covered through health camps for screening, health awareness and propagation of healthy lifestyle. The visitors suffering from any disease covered under the programme are referred to the Lifestyle Clinic for proper treatment. The persons susceptible to develop NCDs are subjected to diet therapy, Regimenal Therapy and Yoga. The patients suffering from NCDs are advised Unani drugs besides the above mentioned therapies. More than 2 lakhs patients have been screened so far.

### **Scheduled Caste Sub-Plan (SCSP)**

Schedule Caste Sub-Plan with the aim to provide free Unani treatment and distribution of health based literature to create awareness was initiated by the Council. A total of 18 predominately SC inhabited pockets were covered by eight clinical centers of the Council and medical aid was provided.



### **Tribal Sub-Plan (TSP)**

Tribal Sub-Plan with the aim to ensure better quality of life for schedule tribes by providing free Unani treatment and creating health awareness was initiated by the Council. The Council has extended health services through its two clinical centres at four predominately ST inhabited pockets.

### **8.8 Information, Education and Communication (IEC) Activities**

- Organised 03 International Conferences/ seminar on Unani medicine and over 50 national seminars and 62 workshops in different subject / disciplines.
- Over 1400 Research Papers were presented by the Council's researchers in different seminars/ conferences.
- Over 1000 research papers published in the National / Internationals scientific Journals.
- Published 250 monographs, books, brochures, leaflets, etc.
- Produced, video films, spots, audio and video, CDs on Unani medicine different diseases and Unani Medicinal Plants in English, Hindi, and other regional languages.
- Council's publishes bimonthly Newsletter, quarterly Scientific Journals 'Hippocratic Journal of Unani Medicine' and 'Jahan-e-Tib'.
- Participated in all Arogyas organized by the Ministry of AYUSH.
- Organised/participated in over 410 Health Melas/Health Expositions in different parts of India and abroad with a view to popularize the Unani system of medicine.

### **AYUSH Research Portal**

- Updating of Unani contents on AYUSH research portal continued.

### **8.9 Extra Mural Research (EMR) Scheme**

The Extra Mural Research Scheme of Ministry of AYUSH is designed to encourage R&D in priority areas based on disease burden in alignment to National Health programme. It also aims to utilize the vast research infrastructure available within the country for standardization and validation of classical drugs. Currently number of projects sanctioned to EMR (Unani) are 73, in which 23 projects have been completed and 40 projects are ongoing. Number of publication under EMR is 73.

### **8.10 LINKING EDUCATION WITH RESEARCH**

With a view to link education with research and utilize the comprehensive facilities available at its institutes, the CCRUM, with the approval of the Ministry of AYUSH, Government of India, started postgraduate (MD) and doctoral (PhD) programmes in Unani Medicine.

### **Postgraduate Programme**

The postgraduate programme (MD) in Unani Medicine was started at Central Research Institute of Unani Medicine (CRIUM), Hyderabad and Regional Research Institute of Unani Medicine, Srinagar in affiliation with Kaloji Narayana Rao University of Health Sciences, Warangal (Telangana) and University of Kashmir, Srinagar respectively. The Ministry of AYUSH approved the proposal to start the programme in two disciplines of Unani Medicine namely



*Mu'āljāt* (Medicine) and *'Ilm al-Adwia* (Pharmacology) with seven seats each at the two centres in September 2016. Consequently, the CCRUM issued admission notification for the academic session 2016–2017 after completing the modalities for affiliation with the respective universities. On the basis of online application and entrance test, admission process of 28 students was completed at the two centres by the end of December 2016. The requirement of teaching faculty was fulfilled by engaging Council's experienced research officers into teaching and also by recruiting senior faculty on contractual basis.

Classes of MD (Unani) Preliminary as per the syllabus prescribed by the Central Council of Indian Medicine were in progress at the end of the reporting period. The students were also engaged in literature review for identification of research problems in order to choose appropriate research topics for their dissertation work.

### **Doctoral Programme**

The CCRUM, after obtaining approval from the Ministry of AYUSH, started doctoral (PhD) programme in two disciplines of Unani Medicine – *Mu'āljāt* (Medicine) and *'Ilm al-Adwia* (Pharmacology) with three seats in each at Central Council for Research in Unani Medicine, Hyderabad in affiliation with Jamia Millia Islamia, New Delhi.

A memorandum of understanding to this effect was signed by the CCRUM and Jamia Millia Islamia and various committees of experts in research and academia were constituted to advise and monitor the progress and outcome of the programme. These included Research Advisory Committee, Academic Advisory Committee and Board of Studies. Subsequently, the admission process for the programme was completed by Jamia Millia Islamia under the supervision of its Faculty of Natural Sciences. A pre-PhD course with emphasis on research methodology in *Mu'āljāt* (Medicine) and *'Ilm al-Adwia* (Pharmacology) was also designed and the classes started accordingly.



## CHAPTER - 9

### Specific areas of strength for Intra-AYUSH collaboration

The AYUSH systems of medicines have co- existed in the country since ages. Despite a few common dimensions, the systems have a different method of diagnosis and principles of treatment. Therefore the systems can be used together according to their strength areas. The Strategies for Intra-AYUSH collaboration under the clinical / pharmacological research programmes can be explored in following ways: -

- i) Unani medicine as standard therapy/ adjuvant therapy in the management of diseases where leads have already been achieved or there is strong documented literary evidence
- ii) Unani regimenal therapies like *Hijamah* (Cupping), *Fasd* (Venesection), *Dalk* (Massage), *Hammam* (Turkish Bath), *Kai* (Cauterisation), *Riyazat* (Exercise) etc can be used with drug therapies of other systems
- iii) Sharing of infrastructure and facilities among AYUSH

Unani medicine as standard therapy/ adjuvant therapy in the management of diseases where leads have already been achieved or there is strong documented literary evidence

The Unani medicine can be used as a standalone therapy for the management of various disorders which have proved safe and efficacious through preclinical and clinical studies carried out New Investigational Drugs conducted at various institutes of the council as under:

#### Vitiligo (*Baras*)

The Council has conducted extensive multi-centric clinical studies on various Unani formulations in 45,885 patients of various types of Vitiligo mainly at CRIUM, Hyderabad and other centres including RRIUM, Srinagar; RRIUM, Kolkata; RRIUM, Mumbai; and RRIUM, Patna. A collaborative study is ongoing in Dept of Dermatology, AIIMS, in New Delhi on efficacy and safety of coded Unani drug in management of Vitiligo.

Besides publishing a number of research papers, the Council has brought out two monographs on Vitiligo:

- Clinical Studies on *Baras* (Vitiligo), (1986)
- Monograph on *Baras* (Vitiligo), (2006)

#### ii. Eczema (*Nar Farsi*) and Psoriasis (*Da al-Sadaf*)

Different combinations of Unani formulations have been studied to evaluate their efficacy in 4,584 patients of eczema and in 971 patients of psoriasis in four clinical research units of the Council.

A clinical study on coded Unani drugs UNIM-401 (O)+ UNIM 403 (L) with and without *munzij mushil* therapy in *Da-al-Sadaf* (Psoriasis) patients” has been conducted to evaluate the efficacy of Unani drug.

A publication entitled “Success Story on Eczema and Psoriasis” has been brought out by the Council.



iii. Rheumatoid Arthritis (*Waja ' al-Mafāsil*)

Clinical and therapeutic studies were conducted at eight centres of the Council on a combination of two Unani drugs used orally and locally on 8000 patients of Rheumatoid Arthritis. The efficacy of the treatment further enhanced when concoctive (*Munzij*) and purgative (*Mushil*) drugs were used before treatment with the above regimens.

The outcome of the study has been published by the Council in the form of a booklet entitled “Unani Treatment for *Waja ul Mafasil* (Rheumatoid arthritis) – A Success Story”.

iv. Bronchial Asthma (*Zeeq al-Nafas*)

Studies to evaluate the therapeutic effects of Unani formulations were conducted on 2700 patients of Bronchial asthma at two regional centres of the Council. The outcome has been published in the form of a monograph.

v. Chronic Sinusitis (*Waram Tajawif al- Anaf Muzmin*)

Therapeutic efficacy of two Unani formulations was evaluated in 4974 patients of Sinusitis at Central Research Institute of Unani Medicine (CRIUM), Hyderabad.

The outcome of the study has been published by the Council in the form of a booklet entitled “Clinical study of Polyherbal Unani formulations in *Waram Tajawif al- Anaf Muzmin* (Chronic Sinusitis)”.

vi. Diabetes mellitus (*Ziyabetus Sukkari*)

Clinical trials on a Unani formulation were conducted in 240 patients of type-II Diabetes mellitus at CRIUM, Lucknow; and RRIUM, New Delhi.

vii. Hyperlipidaemia (*Kasrat-i Shahm al-Dam*)

A clinical study was conducted on a Unani drug in 98 cases of Hyperlipidaemia at CRIUM, Hyderabad. The formulation showed significant effect in decreasing the Serum Cholesterol, Triglycerides, and LDL levels.

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- **Vector borne disease-** Leads have been achieved in vector borne diseases as the Council intervened in the area of vector borne diseases by conducting observational studies on the efficacy of some Unani drugs diseases such as; *Humma-e-Ijamia* (Malaria), *Daul Feel* (Filariasis) and *Humma-e-Aswad* (Kala Azar) through its different research centers.
  - The Council conducted therapeutic trials of two coded Unani drugs UNIM-151 and UNIM-152 in cases of Malaria at its research centers. Therapeutic trials of coded drugs UNIM-251 and UNIM-254 were conducted in cases of lymphatic filariasis at the Council’s research centers located at Chennai.
  - On the basis of the concept of the disease available in the Unani classics the Council formulated a combination of drugs for trial in cases of Kala-Azar at Regional Research Institute of Unani Medicine, Patna.
  - The Council formulated a combination of some Unani drugs such as; *Majoon-e-chobchini* and capsule *Musaffi* which are immune-modulatory and Melanogauge in nature respectively for oral





use along with local application of *Raughan-e-Surkh* which is anti-inflammatory, analgesic and muscles relaxant. This combination of the drugs was given to 585 patients attending the special health camps organized by Central Research Institute of Unani Medicine, Hyderabad during the outbreak of *Chikungunya* in May to July 2006.

- **Cognitive impairment-** Unani formulations are known for their active role in the management of cognitive impairment like dementia and amnesia. Formulations like *Khameera Abresham* and various single drugs have proven efficacy in the cognitive impairment at clinical as well pre-clinical studies.

The adjuvant therapies are mainly used either to enhance the efficacy of main drug for the management of disease or to reduce or minimize the side effect of the drug used for the same. Unani medicine can play a role in adjuvant therapy for its hepato-protective, nephro-protective and neuro-protective action proven on the basis of use since ages and also on scientific parameters. Council has allotted new project to evaluate the experimental studies on the hepato-protective and immunomodulatory effects of Unani formulations at its cellular and molecular mechanism. Also to elaborate the anti-cancer potential of Unani phamacopoeal formulation and to explore the effect of Unani single drugs on human cancer cell lines. These drugs are also being evaluated on scientific parameters in various clinical studies conducted other than council for evaluation of their hepato-protective, neuro-protective and nephro-protective action. Also, drugs are familiar for unique holistic approach, they could be used as adjuvant in management of various debilitating disorders like Cancer, HIV, Tuberculosis etc., as the treatment of such disorders are associated with severe side effects.

Recently, the council has initiated two such projects in collaboration with ICMR on tuberculosis (at RRIUM Chennai with NIRT, Chennai) and cervical erosion (at RRIUM Aligarh with ICPO Noida)

**Unani regimenal therapies like *Hijamah* (Cupping), *Fasd* (Venesection), *Dalk* (Massage), *Hammam* (Turkish Bath), *Kai* (Cauterisation), *Riyazat* (Exercise) etc can be used with drug therapies of other systems**

The unani regimenal therapies like *Hijamah* (Cupping), *Fasd* (Venesection), *Dalk* (Massage), *Hammam* (Turkish Bath), *Kai* (Cauterisation), *Riyazat* (Exercise) etc could be used as adjuvant as well standard therapy for the treatment pf various diseases.





The council is conducting Regimenal therapy OPD/IPDs at the various institutes of the council with promising results. The council's scientists have also initiated a few projects based on regimenal therapy at RRIUM Chennai and Patna. Regimenal therapy units are being developed at CRIUM lucknow and RRIUM Chennai for further exploring the full potential of these therapies.

Much progress has been made in exploring potential of Unani Medicine for strengthening Primary Health Care programmes by way of co-location. There is, however, room for further improving these efforts, particularly in terms of integrating traditional and Intra-AYUSH collaboration into the public health programmes and development of reliable information on the most commonly used traditional therapies, based on results from clinical studies and other scientific studies.

### **Sharing of infrastructure and facilities among AYUSH**

All Research Councils of AYUSH system have their institutes/units established all over India. However, there is virtually no interface within the Research Councils. It is the need of the hour to bring all systems together for collaboration in research in the interest of health for all. The infrastructure and facilities available in different centres of Research Councils can be utilized on sharing basis. Some special infrastructures available with Institutes of CCRUM that can be shared with other AYUSH Councils is mentioned below-

#### **Facilities available at Central Regional Institute Hyderabad-**

- Physiology Lab
- Micro-biology Lab
- Cell and Molecular Biology Lab
- Drug Standardization Research Unit
- Pharmacological Studies
- Survey and Cultivation of Medicinal Plants Units
- Mobile Clinical Research Unit with Radiology, Statistics and Medical Record sections
- Licensed animal house
- Herbal Garden





#### **Facilities available at Regional Research Institute Chennai-**

- Mobile clinical research unit, SCSP & SRPP
- Ilaj bit Tadbeer unit (Regimental Therapy unit)
- Chemistry department (Drug Standardisation)
- Pharmacognosy section
- Microbiology section
- Botany department (Survey of medicinal plants)
- Radiology section
- Statistics section
- Library section
- Pharmacy section

#### **Facilities available at Regional Research Institute Sri Nagar-**

- Phytochemistry Lab
- Toxicology Lab
- Histopathology lab
- Animal Holding House

The CCRUM may explore Intra-Council Collaboration with the Institutes/Units of other Research Councils either at same place or in its vicinity. Also, in States where the Institutes/ Units of any Research Council is not present, collaboration with Institute / Unit of other Research Council can be made by way of availing some dedicated space for offering authentic information/general medicare to masses.



## List of Centers and Units of different AYUSH systems.

State	CCRUM unit	Other Councils Unit
<b>Telangana</b>	Central Research Institute (CRI), Hyderabad	<ul style="list-style-type: none"> <li>• National Institute of Indian Medical Heritage, Hyderabad</li> </ul>
<b>Uttar Pradesh</b>	Central Research Institute (CRI), Lucknow Regional Research Institute (RRI), Aligarh Drug Standardisation Research Institute (DSRI), Ghaziabad Regional Research Centre (RRC) Allahabad Clinical Research Unit (CRU), Meerut Chemical Research Unit (CRU) Aligarh	<ul style="list-style-type: none"> <li>• Regional Ayurveda Research Institute for Eye Diseases, Lucknow</li> </ul>
<b>Delhi</b>	Regional Research Institute (RRI), New Delhi	<ul style="list-style-type: none"> <li>• Central Ayurveda Research Institute for Cardiovascular Diseases, New Delhi</li> <li>• CRIYN, New Delhi</li> <li>• Morarji Desai National Institute of Yoga, New Delhi</li> <li>• Dr. D.P. Rastogi, Central Research Institute, Homeopathy, Noida</li> </ul>
<b>Jammu &amp; Kashmir</b>	Regional Research Institute (RRI), Sri Nagar	Regional Ayurveda Research Institute for Urinary Disorders, Jammu
<b>Bihar</b>	Regional Research Institute (RRI), Patna	<ul style="list-style-type: none"> <li>• Regional Ayurveda Research Institute for Infectious Diseases, Patna</li> <li>• National institute of Naturopathy, Pune</li> </ul>
<b>Maharashtra</b>	Regional Research Institute (RRI), Byculla	<ul style="list-style-type: none"> <li>• Raja Ramdeo Anandilal Podar (RRAP) Central Ayurveda Research Institute for Cancer, Mumbai</li> <li>• Regional Research Institute, Homeopathy, Tripura</li> </ul>
<b>Tamil Nadu</b>	Regional Research Institute (RRI) Chennai	<ul style="list-style-type: none"> <li>• Dr. Achanta Lakshmiapati Research Centre for Ayurveda, Chennai</li> <li>• Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Chennai</li> <li>• National Institute of Siddha, Chennai</li> </ul>
<b>Karnataka</b>	Clinical Research Unit (CRU), Bengaluru	<ul style="list-style-type: none"> <li>• Advanced Center for Ayurveda in Mental Health &amp; Neurosciences, Bengaluru</li> <li>• Regional Ayurveda Research Institute for Metabolic Disorders, Bengaluru</li> <li>• Siddha Clinical Research Unit, Bengaluru</li> <li>• National Institute of Unani Medicine, Bengaluru</li> </ul>
<b>West Bengal</b>	Regional Research Institute (RRI), Kolkata	<ul style="list-style-type: none"> <li>• Dr. Anjali Chatterjee Regional Research Institute, Homeopathy, Kolkata</li> <li>• Central Ayurveda Research Institute for Drug Development, Kolkata</li> <li>• National Institute of Homoeopathy, Kolkata</li> </ul>

## Section-IV

# SIDDHA



**CENTRAL COUNCIL FOR RESEARCH IN SIDDHA**





## SIDDHA SYSTEM

### Background

#### 10.1 Introduction:

Siddha is one of the ancient comprehensive medical systems in India. It is considered the mother medicine of ancient Tamils / Dravidians in South India which flourished during the Indus valley civilisation period. Siddha literature focuses on diverse topics like science of life, drugs, kayakalpam, anatomy, physiology, pathology, diagnostic parameters, surgery, alchemy, astrology, atomic theory and space travel. The Healing Dimension revealed by the Siddhars with highly systematized technology is 'Siddha medicine'. The evolution of Siddha system is believed to date back 10000 – 4000 BC.

The Siddha system provides preventive, promotive, curative, rejuvenative and rehabilitative health care with holistic approach. Siddha system is said to be divine and holistic system of medicine as it offers excellent medicines and lifestyle guidelines for healthy living. “Siddha system” is a unique system of medicine as it is both medicinally and spiritually enriched. Siddha heritage is invaluable as it helps to acquire health for physique, peace for mind and purity for the soul.

The word ‘Siddha’ is derived from the root word ‘Citti’, which means attaining perfection, heavenly bliss and accomplishment in life arts such as philosophy, yoga, wisdom, alchemy, medicine and above all the art of longevity. The Siddha system comprises essentially of philosophical concepts including the four main components: 1. Iatro-chemistry, 2. Medical practice, 3. Yogic practice and 4. Wisdom

Siddha system is named after the founders called ‘Siddhars’ who explored and explained the reality of nature and its relationship to man by their yogic awareness and experimental findings. Siddhar Agasthiyar is called the Father of Siddha Medicine.

Siddhars are the enlightened scientists who attained perfection physically, mentally, intellectually and spiritually and their yogic powers enabled them to explore the world around them and they utilised its natural resources for the sake of humanity through Siddha system of medicine. They practiced the eight kinds of yogam (Attanga yogam) and did great miracles with their divine power. Agathiyar, Thirumoolar, Yugi, Theraiyar, Bogar, Pulippani and Nagamuni are some of the Siddhars who have significantly contributed for the growth of Siddha system.

Siddha is popular in the treatment of acute and chronic ailments like arthritis, respiratory diseases, diabetes mellitus, obesity, hyperlipidaemia, neurological conditions like hemiplegia, paraplegia, Parkinsonism, muscular disorders, digestive disorders, skin diseases

including psoriasis and vitiligo, and gynaecological disorders are also successfully managed in Siddha system.



## **Basic principles and Fundamental aspects of Siddha system**

Siddha system is a psychosomatic system of medicine that deals with the relationship between the mind and body and aims at maintaining the physical, mental and moral health of an individual. The Siddha system is evolved based on ninety-six tools or principles (Thathuvas) which include physical, physiological, psychological and intellectual aspects of every human being. According to the Siddha system, matter and energy are the two major entities, which account for the formation of the Universe and its contents. They are called Siva and Sakthi in the Siddha system. Matter cannot exist without energy and vice-versa.

### **Relation between Microcosm and Macrocosm**

Man is said to be the microcosm and the Universe, the macrocosm; what exists in the Universe also exists in man. Hence, man must be looked upon as an integral part of the Universe. Further, the matters in the microcosm or man are identical with those of the macrocosm or the Universe.

### **Pancha Bhootham**

The universe is made up of the five primordial elements called bhoothams (elements) namely Earth, Water, Fire, Air and Space. That is, they are Mann (solid), Neer (fluid), Thee (radiance), Vayu (gas) and Aagayam (ether). These subtle components combine in various proportions to form gross substances. This manifestation is explained as ‘fivefold combination’ (panchabootha panjeekaranam).

### **Uyir Thathukkal (Mukuttram)**

In Siddha, Uyir thathukkal means vital life factors. They are vaatham, pitham and kabham which are responsible for the creation, preservation and destruction of the human body and health. When they are in the state of equilibrium (4:2:1-the ratio in which they exist) our body remains in a healthy state while any alteration in this ratio leads to a diseased state or death. In each and every cell of the body these three kutrams (doshas) coexist and function harmoniously.

- Vali (Creative force) - Represents the elements ‘air’ and ‘space’. It is responsible for all the movements of the body. Motor and sensory activities are said to be governed by vaatham.
- Azhal (Sustaining force) - Represents the element-‘fire’ in our body and is responsible for the preservation of health. It helps in digestion, blood cell production, maintenance of body temperature, intellect and vision, lustre to the skin
- Aiyam (Destructive/ Eliminating force)- Formed by the elements ‘earth and water’. It is responsible for Strength and stability of the body structures, supports the functions of respiration, appreciation of taste, cooling of eyes, function of digestion, lubricating joints. (Destructive/ Eliminating force)

### **Udal Thathukkal (Body Constituents)**

From the subtle elements, gross structures like bone, muscle, fat etc. i.e. the physical constituents of human beings develop which are identical to the various types of tissues and are





called Udal Thathukkal (Body Constituents). As per Siddha medicine various psychological and physiological functions of the body are attributed to seven physical constituents.

1. Saram (Digestive juice). Saram means Prana vayu (Oxygen) responsible for growth, development and nourishment;
2. Seneer (blood) is responsible for nourishing muscles, imparting color and improving intellect;
3. Oon (muscle) responsible for shape of the body;
4. Kollzuppu (fatty tissue) responsible for lubricating joints;
5. Enbu (bone) responsible for body structure, posture and movement;
6. Moolai (Bone marrow) - responsible for the production of RBC, etc.
7. Sukilam / Sronitham (semen) responsible for reproduction.

### Diagnosis

The Siddha diagnostic methodology is based on the clinical examination by the physician and these diagnostic tools are very important because they assist in diagnosis and prognosis of diseases. Siddha physicians base their diagnosis on three humors (Mukkuttram) and eight vital tests (Ennvagai Thervu) as follows:

- Pulse reading, (Naadi - Vali, Azhal and Aiyam)
- Examination of the tongue (Naa)
- Complexion of body, (Niram)
- Study of voice, (Mozhi - Kural)
- Examination of eyes, (vizhi)
- Urine examination, (Neer kuri & Neikuri)
- Examination of faeces, (Malam)
- Status of the sensation of human body (Sparism).

Among these, urine examination (Neerkuri and Neikkuri) is a unique diagnostic method. The color of the urine, smell, density, quantity and froth are noted and Neikkuri is a method, in which the surface tension and the pattern of gingelly oil spreading on the surface of the urine provide clues in diagnosis as well as prognosis of the disease.

### Wrist Circumferential Sign (Manikkadai Nool)

In Siddha system, apart from the eight investigatory tools of diagnosis described above, the measurement of wrist circumference by an inelastic thread expressed in terms of four finger-breadth (excluding thumb) of the patient forms another diagnostic tool called **Manikkadai nool**. A standard inelastic thread is used to measure the wrist circumference of every patient and the same is compared with the list of diseases and health chart mentioned in classical literature of Siddha.

### Siddha Treatment Principles

The treatment in Siddha system is aimed at keeping the three vital life factors in equilibrium and in the maintenance of the seven body thathus. Therefore, proper diet, medicine and a



disciplined regimen of life are advised for a healthy living and to restore equilibrium of humors in a diseased condition.

The main principle in treating diseases through Siddha system is by normalizing the altered vital life factors (mukuttram).

- Therapeutic purgation normalizes vali
- Therapeutic emesis normalizes Azhal
- Therapeutic (instillation of) nasal drops and collyrium normalizes the Aiyam.

There are three types of treatment strategies -- i) Synergistic method (Oppurai), ii) Antagonistic method (Ethirurai) and iii) Mixed method (Kalappurai).

### **Siddha Materia Medica:**

The classical text Thirumantiram defines Siddha medicine as the one that cures physical and mental ailments, prevents diseases and the one that ensures longevity.

*“Marupadhu Udalnoi marundhena lagum  
Marupadhu ullanoi marundhena salum  
Marupadhu ini noi varathirukka  
Marupadhu savai marundhena lamae”*

*- Thirumoolar*

In Siddha system there are three main sources of drugs origin which find their use in several single drugs / formulations of internal and external medications. These Siddha medicines help in the regeneration and longevity of cells and thus speeding up the restoration of normal health. For treating particular diseases, the specific characters like taste (Suvai), quality (Gunam), potency (Veeryam), post-digestive taste (Pirivu), and specific action (Prabhavam) of the drugs are considered.

Three major sources of Siddha medicines are:

- **Plant origin (Mooligai/Thavaram vaguppu)** – root, stem, leaf, flower, resin, gum, seeds, bark and fruits are used in multiple preparations
- **Inorganic substances (Thathu vaguppu)** – metals and minerals
- Metals like gold (thangam), silver (velli), copper (chembu), iron (logam), zinc (naagam), lead (karuvangam), Tin (vel vangam), magnet (kaantham)
- Rasam (mercury) and its different forms like red sulphide of mercury, Chlorides of mercury and red oxide of mercury, mercury (rasam), cinnabar (lingam), calomel (pooram), Mercuric per chloride (veeram),
- Padanam- sulphur (gandagam), arsenic sulphide (manoseelai), thalagam (AS<sub>2</sub>S<sub>2</sub>), arsenic oxide(gouri)
- Uparasam -mica (abrakam), asbestos (kalnar),copper sulphate (thurusu),chalcopyrite (nimilai), crab fossil (nandukkal)



- Salts (kaara saaram): fuller's earth (pooneeru), salt peter (vediuppu), alum (seenam), borax (vengaram), borneo camphor (pacchai karpooram), kalluppu (salt found in lumps on deep sea rocks), sal ammoniac (navacharum).

### **Animal products (Jeeva vaguppu)**

Marine products, egg shells of birds, kizhijal, conch shell (sangu), crab shell (nandu odu), fresh water shell (nathai odu), egg shell (muttai odu) are being used after proper purification and processing techniques.

Siddha medicines with long shelf life such as parpam (calcinated), red oxide (chenduram) or chunnam form with higher efficacy, smaller dosage, easy palatability, long shelf life, easy absorption and sustainable quicker results with lower drug dosage for multiple disease treatment through variable adjuvants. The processed Siddha formulations comprising nano particles aid in better bio-availability and bio-equivalence.

### **Purification Process (sutthi)**

Raw drugs of animal, mineral and herbal origin are subjected to purification before they are added in the preparation of medicines. Purification helps in detoxification and enhancing the potency.

### **Classification of Siddha medicine:**

Siddha has an extensive history of scientific background. Siddhar's knowledge of minerals and metals and their suitable combination for preparation of medicines according to laws of nature is miraculous. Siddha system classified medications into 64 pharmaceutical forms (Dosage forms) of which 32 are internal medications and 32 are external medication and treatment procedures.

- Internal medicines (Aga Marundugal) - based on their forms, methods of preparation, shelf-life, etc, they are administered through the oral route. They are Surasam, Charu, Kudineer, Karkam, Utkalee, Adai, Choornam, Pittu, Vadagam, Vennai, Manappagu, Nei, Rasayanam, Ilagham, Ennai, Mathirai, Kadughu, Pakkuvam, Thenural, Theeneer, Mezhugu, Kuzhambu, Pathangam, Chenduram, Neeru or Parpam, Kattu, Urukku, Kalanghu, Chunnam, Karpam, Chatthu and Gurukuligai.

### **Unique Dosage form:**

Some unique drugs like Kattu are prepared by a process where the mercurial and the arsenic compounds, which are volatile, are converted into non-volatile form by adding dravagam, cheyaner, leaf juice, honey etc.,

Chunnam is prepared by heating or calcining a metal / mineral / animal product to convert it into a calx as per the procedure mentioned in the recipe. They possess alkaline properties similar to that of limestone. When treated with a pinch of turmeric powder chunnam turns red.



Gurukuligai is prepared by the transformation of sublime mercury into beads in its amalgam form. Mercury could be called the sheet anchor of Siddha therapeutics. These mercurial pills possess marvellous properties of transmuting metals and rejuvenating the entire human system.

- External medicines (Pura marundugal) - Certain forms of drugs and also external applications like nasal, eye and ear drops and procedures like leech application. They are Kattu, Patru, Ottradam, Poochu, Vedhu, Pottanam, Thokkanam, Pugai, Mai, Podi thimirdhal, Kallikam, Nasiya, Oodhal, Nasiga paranam, Kazhimbu, Seelai, Neer, Varthi, Suttigai, Sallagai, Pasai, Kazhi, Podi, Murichal, Keeral, Karam, Attai-vidal, Aruvai, Kombu kattal, Urinjal, Kuridhi Vangal and Peechu.

Podi thimirdhal is done by rubbing the body with horse gram flour or turmeric powder with or without camphor.

Attai-vidal is done by Leech application to locally affected areas with block or swelling.

Murichal and Kombu kattal is useful for bone setting and it is a process of physical manipulation by which dislocated bone or joint are brought to their normal position.

### **Branches of Siddha Medicine**

Siddha system of medicine has various branches such as Pharmacology (Gunapadam), Toxicology (Nanju Maruthuvam), Pathology (Noi Nadal), General Medicine (Maruthuvam), Obstetrics and Gynaecology (Sool and Magalir Maruthuvam), Paediatrics (Kuzhanthai Maruthuvam), Surgery (Aruvai Maruthuvam), Dermatology (Thol Maruthuvam), E. N. T (Kathu, Mooku, Thondai Maruthuvam), Ophthalmology (Kann Maruthuvam), Psychiatry (Kirikai noi Maruthuvam), Pressure Manipulation Therapy (*Varmam*), Physical Manipulation Therapy (Thokkanam), Geriatrics (Muthiyor Maruthuvam), Yoga (Siddhar Yogam Maruthuvam) and Rejuvenation therapy (Kayakarpan).

- Siddha Maruthuvam deals with diseases, their aetiology, classification, signs and symptoms, complications, prognosis and treatment. It also suggests dietary pattern and restrictions.
- Siddha Pharmacology (Gunapadam) deals with raw drugs of plants, minerals and substances of animal origin, their purification, methods of preparation of medicines and their therapeutic usages with appropriate doses.
- Siddha Surgery (Aruvai Maruthuvam) deals with surgical procedures such as Kaaram (use of Kaara seelai i.e. medicated gauze or Kaara nool i.e. medicated thread), Cautery or Scorching techniques (suttigai), Bone setting consisting of Reduction (Murichal) and Splinting (Kompu Kattal) i.e. therapeutic fracture manipulation, Excision (Aruvai), Incision, Leech therapy (attai vidal ) etc. and surgical conditions like haemorrhoids, uro-genital diseases including urinary calculi, filariasis, fistula-in-ano, hernia, ophthalmic, ENT and dental diseases. Ancient methods of surgically treating cataract and pterygium and prevention of eye diseases are also highlighted.
- Siddha Pathology (Noi Nadal) deals with diagnosis of diseases.



- Siddha Toxicology (Nanju Maruthuvam) deals with toxic conditions, toxic effects of drugs of plant, mineral and animal origin and the poisonous effects of animal bites, insect stings etc. and their management. It also deals with antidotes, synthetic drugs (Vaippu sarakku)
- Siddha Obstetrics (Sool Maruthuvam) deals with antenatal, perinatal (labour), postnatal care and related diseases.
- Siddha Gynaecology (Magalir Maruthuvam) deals with conditions associated with menstrual irregularities, female infertility, inflammatory diseases and cancers of female uro-genital tract.
- Siddha Paediatrics (Balavagadam) deals with diseases of children including the newborn and their management.

### **Kaya karpam**

Kaya karpam called Rejuvenation Elixir in Siddha medicine helps to keep the body as strong as stone; Siddhars have developed kayakarpam for prevention, treatment of ailments and to maintain healthy long life. Kayakarpam is the process of rejuvenation which helps in health promotion, memory, intelligence, youthful feeling and consciousness.

According to Siddha Materia Medica, Kayakarpam medicines include single herbs or formulations involving minerals and animal kingdom. Kayakarpam drugs have been classified into general (pothu) karpam which are indicated for optimum health, longevity and beauty and special (Sirappu) karpam indicated during the period of illness and physical imbalance.

### **External Therapies**

Certain special therapies/external therapy techniques such as Pressure Manipulation Therapy (Varmam), Physical Manipulation Therapy (Thokkanam), Bone setting (Otivu Murivu Maruthuvam) are there in Siddha system.

### **Siddhar Yogam**

Yogam is a precious art and part of Siddha system of medicine for the benefit of human kind. The term 'Yogam' means 'Union'. Siddhars have defined Yogam as an art, which controls the mind by preventing it from distracting through sense and sense organs and unite it with the divinity after realizing the true entity of eternal bliss.

'Yogam' is one of the Kayakarpam methods that preserve physical and mental health by preventing the approach of grey hair, wrinkling, disease and death. Thirumoolar's Tirumantiram deals elaborately with Attanga yogam i.e. the eight steps or limbs of Yogam.

*“Iyama niyamamae ennilla aadhanam  
nayamuru praanayaa mamprathi yaharam  
sayamigu dhaaranai dhiyanam Samathi  
ayamurum attaanga maavadhu maame”*

- Thirumoolar

- Iyamam – discipline / purity of mind
- Niyamam - Purity of action



- Asanam - posture or pose,
- Pranayamam - scientific art of controlling one's breathing
- Prathiyaharam- practice of controlling or withdrawing of senses
- Dharanai - concentration or fixation of the mind
- Dhiyanam- art of gaining complete control over (mastering) the mind
- Samathi- attaining the state equal to God

Selection of food according to the landscape where one lives, the climate one is exposed to and the lifestyle one adopts are essential for a healthy life.

### **Dietetics and Nutrition in Siddha:**

'Food itself is medicine and medicine itself is food' is one of the basic principles of Siddha system of medicine. Food, climate, landscape and lifestyle are the major factors that influence healthy life.

Imbalance in the state of the three vital life factors will lead to disease and therefore emphasis is laid on a balanced diet to keep the three vital life factors in a balanced state. According to Siddha, the consumption of food should be in proportion to a person's appetite.

In Siddha system of medicine, food has been categorized into three types, i.e. the food that promotes noble qualities (sathuvam), the food that promotes energetic (active) qualities (rasatham) and the food that promotes inert qualities (Tamasam).

### **Lifestyle Management**

Siddhars have recommended certain basic lifestyle guidelines to be followed for healthy living and they include observation of certain regimen as mentioned in preventive measures (pinianugaa vithi) that help to prevent diseases. The concept of rejuvenating procedures for prevention of diseases is highly admirable as it increases our immunity. The concepts pertaining to habitat, seasons, diet etc. are easily adaptable preventive measures for a disease - free life.

### **Do's**

- Drink warm water after boiling.
- Take food twice a day.
- Take diluted buttermilk and melted ghee.
- Take sufficient quantity of cow's milk.
- Always have food to the level of hunger.
- Always consume well-fermented curd.
- Practice short walking after food.
- Have therapeutic emesis once in six months.
- Have therapeutic purgation once in four months.
- Instill nasal drops once in 45 days.
- Take oil bath (applying oil all over the body and scalp and taking bath) once every four days.



- Use warm water while taking oil bath.
- Apply collyrium (medicated eye-liner) once in three days.
- Lie in the left lateral position while sleeping.
- Stay away from water splashing from hairs and nails.
- Worship cow, God, ancestors and teachers

### Don'ts

- Never eat root tubers except yam – *Typhonium trilobatum* (L.) Schott.
- Never consume food that was prepared the previous day.
- Don't drink water during the course of a meal.
- Avoid sleep during daytime.
- Avoid excessive sexual indulgence.
- Avoid sex after consumption of heavy food.
- Never smell fragrant flowers during midnight.
- Never lie close to articles producing dust.
- Never sleep under a tree or near a burning lamp during night.
- Never suppress any natural urge.

The above instructions when followed carefully promote longevity.

**Daily regimen (Naal ozhukkam):** Daily regimen enumerates the systematic order of everyday activities that every person needs to follow in order to avoid lifestyle disorders. It describes the procedure to be followed and materials to be used for taking good care of our body and mind from rising from bed till retiring to bed (oral hygiene, excretion of urine and stools, bathing methods, oil bath, dress materials for men and women, sleeping methods and bed materials)

**Concepts regarding Habitat and Season:** Siddha science, which visualizes man as a microcosm, believes that planetary changes and natural rhythms that occur in six seasons of a year (Perumpozhuthu) and six periods of a day (sirupozhuthu) produce corresponding physiological changes in living beings in the macrocosm, viz., the Universe. The geographical regions are classified as hilly mountains, forest, agrarian, coastal and desertified regions. Disease pattern is also based on these geo-climatic zones. Siddha system recommends specific life style and food habits for each geo-climatic zone based on the natural resources available in that region.

## 10.2. Brief on CCRS

The Central Council for Research in Siddha (CCRS) is an autonomous body registered under societies act in July 2010 under Dept. of AYUSH, presently Ministry of AYUSH, Government of India, New Delhi. It is an apex body in India for initiating, undertaking, formulating, developing, co-ordinating and promoting research in Siddha on scientific lines. Central Council for Research in Siddha is recognized as a Scientific and Industrial Research Organization (SIRO) by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India from 21.08.2014.

In September 2010, the Central Council for Research in Siddha (CCRS) was formed by bifurcation of the erstwhile Central Council for Research in Ayurveda and Siddha (CCRAS).



## **Vision**

To endeavor for quality and global governance in the discipline of Siddha by broad research for assuring the safety and cost effective products to restrict /control / heal various disease conditions.

## **Mission**

- For developing CCRS into a successful and model research organization to enterprise, coordinate, support and develop research in Siddha medicine.
- For translating and propagating Siddha concepts and practices into updated versions for global reach for further advancements.
- For attaining global leadership in research in Siddha treatment modalities to address the emerging non-communicable disorders and other health related issue

## **Objectives**

- Development of safe, effective Siddha medicines and therapeutic techniques for diseases of national and global importance.
- Validation of classical Siddha formulations and therapies.
- Capacity building programmes on Research methodology and drug development.
- R &D support for academic, research institutes and industry.
- Dissemination of research outcome through publications and research journals.

## **Committees and Regulations:**

- The Government of India set up the Siddha Pharmacopoeia Committee (SPC) in 1975 for prescribing standards for single drugs and compound formulations mentioned in Siddha literature for the use of manufacturers and practitioners.
- All Intra Mural Research (IMR) projects are placed before the Scientific Advisory Board (SAB) of CCRS for approval.
- CCRS is coordinating the research projects related to Siddha under the Extra- mural Research Scheme of Department of AYUSH since 2011.
- Clinical trials are subjected to the approval and monitoring by the Institutional Ethical Committee (IEC) strictly adhering to GCP – AYUSH guidelines
- Animal Studies are subjected to the approval and monitoring by the Institutional Animal Ethics Committee (IAEC).
- The Good Agricultural and Cultivation Practices (GACP) are implemented in medicinal plant research.
- Good Manufacturing Practice (GMP) certificate has been obtained for Siddha Central Research Institute (SCRI) Pharmacy, Chennai.

## **Premier Institutions / Units of CCRS:**

The research activities of CCRS are carried out through 7 peripheral Institutes / Units in the State of Tamilnadu, Kerala and Bengaluru and the Union Territories of Puducherry and New Delhi.





Drug research, Literary and fundamental research, Clinical research and Medicinal plants research are being carried out in these units.

#### **Peripheral Institutes / Units of CCRS:**

- Siddha Central Research Institute (SCRI), Chennai.
- Siddha Regional Research Institute (SRRI), Puducherry.
- Siddha Regional Research Institute, Thiruvananthapuram.
- Siddha Clinical Research Unit, Palayamkottai.
- Siddha Medicinal Plants Garden, Mettur.
- Siddha Clinical Research Unit, New Delhi.
- Siddha Clinical Research Unit, Bengaluru.

#### **Co-located units of CCRS**

- Siddha wing at AYUSH Wellness Clinic at Rashtrapati Bhavan, New Delhi
- A Siddha OP wing - All India Institute of Ayurveda at Saritha Vihar, New Delhi
- Apart from this, Siddha Medical Services Unit, Health Centre at Pondicherry university provide Siddha treatment for the staff of the university.

#### **Broad areas involved by peripheral Institutes / Units of CCRS:**

1. Clinical Research
2. Drug Standardization
3. Literary Research & Documentation Programme
4. Medicinal plants Research and Medico-Ethno Botanical Survey
5. Miscellaneous Activities
  - a. National Pharmaco-vigilance Programme for Ayurveda, Siddha and Unani (ASU) Drugs
  - b. Health care services through Out – Patient Department (OPD) and In-Patient Departments (IPDs)
  - c. Specialty Clinics for Geriatric Health Care
  - d. Specialty Clinics for Reproductive and Child Healthcare
  - e. Specialty Clinics for Diabetes Mellitus
  - f. Specialty Clinics for Flu-like Illness
  - g. Specialty Clinics for Varmam, Thokkanam and Bone setting
  - h. Swasthya Rakshan Programme

#### **Siddha Central Research Institute, Chennai (SCRIC)**

Siddha Central Research Institute (SCRI) is identified as a potential centre of excellence for clinical research. This Institute is located in the campus of Anna Government Hospital of Indian systems of Medicine and Homoeopathy at Arumbakkam, Chennai. Central Research Institute for Siddha was established in the year 1971. It has all the facilities for preclinical and clinical studies. Pharmacognosy, phytochemistry, pharmacology, literary research, clinical research, Biochemistry, clinical pathology and pharmacy are the various departments functioning under Siddha Central Research Institute. Siddha Central Research Institute is a referral hospital for Psoriasis. It has a 50-bedded research hospital for in-patients.



### **Siddha Regional Research Institute, Puducherry (SRRIP)**

The Regional Research Institute for Siddha in Puducherry was established on 22<sup>nd</sup> August, 1979. This institute started functioning in its own premises at Kuyavarpalayam since 2003 with a well-maintained campus and picturesque herbal garden with more than 150 medicinal plants. This institute has various departments like out-patient department, in-patient department, Varmam clinic, dispensary, clinical pathology laboratory and a library.

An in-patient department with 25 beds is being utilized for various clinical research projects.

### **Siddha Regional Research Institute, Thiruvananthapuram (SRRIT)**

During the year 1986, a Clinical Research Unit (Siddha) was established by the then Central Council for Research in Ayurveda and Siddha (CCRAS) in a rented building in the Poojapura area of Thiruvananthapuram and functioned there till 2002. Subsequently the unit was merged with Regional Research Institute (Drug Research), Poojappura, Thiruvananthapuram. Geriatric cases are treated in the outpatient department. A new outpatient department for Varmam therapy has been started in SRRI, Thiruvananthapuram and patients suffering from various ailments are being treated by Varmam therapy.

### **Siddha Medicinal Plants Garden, Mettur Dam (SMPGMD)**

The Siddha Medicinal Plants Garden (SMPG), Mettur was established in the year 2004. It is engaged in the maintenance and development of herbal garden and cultivation of medicinal plants. A polygreen house, covering an area of 0.12 acres with 500 live potted plants, which include 35 RET species, is located in this garden. An arboretum is being maintained with 511 trees covering 177 species. A nursery with 130 medicinal plants serves the visitors by providing medicinal plants at a nominal rate.

Major Activities at SMPG, Mettur:

- Medico-ethno botanical survey and collection of medicinal plants.
- Botanical identification of medicinal plants.
- Market drugs authentication.
- Market survey for collection of information on major crude drugs.
- Pharmacognosy.
- Herbarium and museum keeping.
- Documentation of herbal medicine in tribal communities.
- Photography and documentation.
- Publication of research activities.
- Collection and supply of authentic plant materials for research.
- Assessment on the cultivation of medicinal plants by different agencies.

### **Siddha Clinical Research Unit, Palayamkottai (SCRUP)**

The Siddha Clinical Research Unit was established on 6<sup>th</sup> February 1980 in the premises of Government Siddha Medical College campus, Palayamkottai. The Survey of Medicinal Plants Unit



(SMPU), to its credit, has surveyed around 300 forest areas, which include both Eastern and Western Ghats of Tamil Nadu. A Herbarium hall with 9000 Herbarium sheets covering 1986 individual species and a Museum with 1000 crude drug materials are maintained. General OPD, Varmam OPD and External therapies like Fumigation, Poultice, Bandaging etc., are provided at Siddha Clinical Research Unit, Palayamkottai. An in-patient department with 10 beds is being utilized for various clinical research projects.

#### **Siddha Clinical Research Institute, New Delhi (SCRUND)**

The Siddha Clinical Research Unit started its function on 29<sup>th</sup> February 2016 in the campus of Ayurveda & Unani Tibbia College, Karol Bagh, New Delhi, in the space provided inside the by the Department of AYUSH, Govt. of NCT of Delhi. At present Out-patient Department (General and Varmam OPD) services, Geriatric OPD and Clinical research activities are being carried out at the Unit.

The Unit is also providing OPD services in the Integrated AYUSH OPD, All India Institute of Ayurveda (AIIA), Sarita Vihar, New Delhi on Fridays and Saturdays.

#### **AYUSH Wellness Clinic (AWC), New Delhi:**

Ayush Wellness Clinic was inaugurated by the president of India on 25<sup>th</sup> Jul 2016, which has a Siddha wing along with the wings of other AYUSH systems. Keeping in view the emphasis laid by the Government to holistic methods of healing and therapy by Indian systems of medicine & homeopathy, Rasthrapati Bhavan has established the AYUSH Wellness Clinic (AWC) in the President's Estate. The Clinic is catering to the medical needs of the President, officials of President's Secretariat and residents of the President's Estate. Various disease conditions like Vali (Vatha) Disorders, Diabetes, Psoriasis, Eczema, Bronchial Asthma, Haemorrhoids, Renal calculi etc. are being treated. Treatment includes both internal medicines and External therapies as mentioned in Siddha literature and as per CCRS guidance. Varmam Therapy is one of the unique therapies offered by this Siddha wing to patients suffering from all types of Vali (Vatha) Disorders. Apart from Varmam Therapy external therapies like Fumigation, Poultice, Bandaging, etc. therapies are also available for patients.

#### **Siddha Clinical Research Institute, Bengaluru (SCRUB):**

Siddha Clinical Research Unit (SCRUB) started functioning at the campus of Govt. Sri Jayachamarajendra Ayurveda Hospital, Dhanvantri Road, Bengaluru since 25<sup>th</sup> May, 2017. Speciality treatments like varmam and Thokkanam therapies for Musculo-skeletal and neurological problems, are available for patients.

#### **MoUs of CCRS with Universities / Institutions**

CCRS has signed so far 14 MoUs with various institutes for mutual benefit on Research and Developmental activities:

1. National Institute of Epidemiology (ICMR), Chennai
2. Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru, Karnataka



3. College of Pharmacy, Sri Ramachandra University, Chennai
4. Tamil Nadu Veterinary and Animal Sciences University, Chennai
5. Vellore Institute of Technology, Vellore, Tamil Nadu
6. Manipal University, Manipal, Karnataka
7. VELS Institute of Science, Technology and Advanced Studies, Chennai
8. Institute for Trans-Disciplinary Health Sciences and Technology, Bengaluru, Karnataka.
9. East West Integrative Medicine Hospital and Research Institute, Chennai
10. Pondicherry University, Puducherry
11. The Tamil Nadu Dr. M.G.R. Medical University, Chennai
12. Mother Theresa Postgraduate and Research Institute of Health Sciences, Puducherry.
13. Rajiv Gandhi Centre for Bio Technology, Thiruvananthapuram.
14. Santhigiri Health Care and Research Organization, Thiruvananthapuram.

#### **Pharmacovigilance Programme:**

All the peripheral institutes / units under the Siddha council are having Pharmacovigilance cells. National Institute of Siddha in Chennai is the Intermediary Pharmacovigilance Centre (IPvC) and Siddha Central Research Institute, Chennai, Siddha Regional Research Institutes in Puducherry and Thiruvananthapuram are Peripheral Pharmacovigilance Centres (PPvC).

#### **Science Club:**

The Science club was started at Siddha Central Research Institute (CCRS) in the year 2002 with the aim of imparting knowledge in recent advances in different disciplines related to research, for the benefit of the research officials of this institute and undergraduate / postgraduate students and research scholars of Siddha and other institutes.

**Other Activities of CCRS:** Other activities like Hindi Pakhwada, Swachh Pakhwada, Vigilance Awareness week, International Yoga day celebrations etc. are observed by CCRS and its peripheral institutes / Units



### Core Achievements of CCRS

#### Establishment of new units for CCRS

- A Siddha outpatient wing was started in AYUSH wellness clinic, President Estate, Rastrapati Bhawan, New Delhi in July, 2015.
- A Siddha Clinical Research Unit (SCRU) started functioning in Ayurveda & Unani Tibbia College Campus, Karol Bagh, New Delhi from February 2016.
- A weekly 2 day Siddha OP clinic started functioning in All India Institute of Ayurveda, Saritha Vihar, New Delhi since 2016.
- A Siddha Medical Service Unit was inaugurated at Pondicherry University, Kalapet, Puducherry on 26<sup>th</sup> April, 2017
- A new Siddha Clinical Research Unit (SCRU) started functioning at the campus of Govt. Sri Jayachamarajendra Ayurveda Hospital, Dhanvantri Road, Bengaluru since May, 2017.
- In principle approval has been given in March, 2018 to CCRS for starting a Siddha Clinical Research Unit at Tirupathi, Andhra Pradesh.

#### The First Siddha Day

Ministry of AYUSH has given approval to celebrate Siddha day every year on the occasion of Saint Agasthiyar's birthday. Accordingly the first Siddha Day celebration was organised on 4<sup>th</sup> January 2018, by Central Council for Research in Siddha at The Tamil Nadu Dr. M.G.R Medical University, Chennai. Shri. Pramoth Kumar Pathak, Joint Secretary, Ministry of AYUSH, Govt. of India presided over the inaugural ceremony and Dr. C. Vijaya Baskar, Hon'ble Minister of Health and Family Welfare, Govt. of Tamil Nadu inaugurated the Siddha day celebrations and the National Conference on "Prevention and management of Lifestyle Disorders through Siddha System of Medicine" and released the souvenir, a monograph on Siddhar Agathiyar and the Hindi version of the book Theraiyar Kudineer.

#### Upgraded infrastructure:

The following sophisticated equipments / instruments are purchased for Research and Development activities for the peripheral Institutes / Units functioning under Central Council for Research in Siddha:



S.No.	Institute/ unit	Equipment	Year of Purchase	Department
1.	SCRI, Chennai	Stereo microscope (P-84)	2013	Pharmacognosy
		ESR Vesmatic 20 Analyser	2016	Pathology
		Fully Automated Analyzer	2015	Bio-chemistry
		HPTLC	2014	Chemistry
		Visible Spectrophotometer with Diffusion Reflectance Liquid Chromatograph - Mass Spectrometer (Triple quadrupole Mass spectrometer LC-MS/MS)	2017	Chemistry
		Inductively Coupled Plasma Optical Emission Spectroscopy	2017	Chemistry
		Microwave Digester	2017	Chemistry
		Autoclave	2017	Pharmacology
		Real time PCR	2017	Bio-chemistry
		Ultra Sonogram	2017	Clinical
2.	SRRI, Puducherry	ECG	2017	Clinical
		Random access auto analyser	2015	Bio-chemistry
3.	SRRI, Trivandrum	Ultra Sonogram	2017	Clinical
		HPTLC	2015	Chemistry
4.	SCRU, Palayamkottai	Ultra Sonogram	2017	Clinical
		Ultra Sonogram	2017	Clinical

### Achievements focusing on Researches:

**Clinical Research:** The clinical research programme of the council mainly aims at validation of the therapeutic efficacy of Siddha medicines and therapies, used for more than a century. The council also concentrates on innovation of newer drugs for non-communicable diseases especially diabetes mellitus, psoriasis, vitiligo, hypertension, dyslipidemia, urolithiasis, fibroid uterus, infertility, osteoarthritis, rheumatoid arthritis, benign prostate hypertrophy (BPH) and cancer.



### **Clinical trials conducted and their outcomes are listed below:**

**Peptic Ulcer (Valikunmam):** The drug chosen for trial is Thambira chenduram (P6) mentioned as Kunma kalan -meaning destroyer of Kunmam (Peptic ulcer). Out of 1011 participants in the clinical trial, 763(75%) showed good response to the single blind open clinical trial.

The drug was chemically analyzed, pharmacologically tested for its various activities such as analgesic/antipyretic/anti-inflammatory and histopathological studies and it was confirmed as a non-toxic drug through acute, sub-acute and chronic toxicity studies.

The drug was administered at a dose of 45 mg with honey, twice daily, for 21 days. The Fractional Test Meal (FTM) was repeated after the course of treatment and barium series was repeated on the 90<sup>th</sup> day. The drug was found very effective in treating peptic ulcer. The drug P6 showed anti-acid and anti-ulcer activity.

**Cancer (Putrunoi):** A clinical trial on breast cancer with coded formulations was conducted and the study outcome showed reduction in pain, growth, and size of malignant ulcers. There was also a reduction in the foul smelling discharge and bleeding in cases of cervical cancer. There was a noticeable increase in the body weight in stage I and stage II of cancer. There was a decrease in the serum mucoid level and overall wellbeing of the patients was maintained.

**Rheumatoid arthritis (santhuvatha soolai):** A clinical trial was conducted in SCRI, Chennai, on the crippling joint disease rheumatoid arthritis with 6 groups of drugs. Among them, the particular drug group, a combination of Linga chenduram and gowri chinthamani responded well. Good response was seen among 44% of the total 199 patients recruited. 30% had a fair response.

**Infective Hepatitis (Manjal kamalai):** Under this trial conducted in SCRI, Chennai, the various herbs mentioned as liver tonics in ancient Siddha literature were evaluated for their efficacy on infective hepatitis. The conventional methods were taken as the parameters for confirmation and assessment. In cases of obstructive nature where surgical correction was required, they were referred to nearby hospitals and were dropped out from the trial. The fresh herbs under trial were given at a dose of 5 gm in the form of Karkam twice daily.

Among the 10 groups tried, encouraging results were obtained from the group treated with kovai ilai (*Coccinia grandis*) Karkam where 57% of the patients showed very good response.

**Psoriasis (Kaalanjagapadai):** The trial on psoriasis conducted at SCRI, Chennai, with 777 oil, gained much reputation for Siddha and proved a highly appreciable and effective remedy for psoriasis. Among the 3542 cases prospectively continued in the trial, 1609 patients showed a good response and 1200 patients showed a fair response. PASI (Psoriasis Assessment and Severity Index) is the measurable index. The period of remission before relapse was extended. The symptoms recorded during the recurrence were very mild when compared with those at the onset.

**Multicentric studies on anaemia with annabedhi chenduram:** A multicentric study to check the efficacy of the trial drug annabedhi chenduram in anaemia was conducted in SCRI, Chennai, SRRRI-Puducherry and SCRUI-Palayamkottai. It was found that the trial drug was better in



increasing Hb, Serum iron, Serum ferritin and TIBC. Around 359 cases were screened, among which 40 cases were recruited in SCRI, Chennai and similar number of cases were recruited in other institutes and the trial was completed. 75% of the cases showed good response and their general conditions improved.

**Fibroid Uterus (Karuppai sathai kattigal):** The effect of rasagandh mezhugu was tested in 20 cases diagnosed as fibroid uterus and the drug was given for 90 days in a split of 45 days with an intervention of drug holiday for 15 days. 16 cases among 20 showed good response in reduction of the size in fibroid uterus. As a secondary objective, the values of LFT and KFT were observed for all the cases and the results revealed that the drug was found to be very safe. This study was conducted in SRRI, Puducherry.

**Documentation of treatment guidelines in vector borne diseases:** This documentation project is highly useful in collecting various treatment claims on vector borne diseases -- used for treatment and prevention. Among the 38 claims, more than 60% reported for Chikungunya. Nilavembu kudineer and brahamanada bairavam tablet are the frequently documented claims. It is noteworthy to mention here that mass treatment with nilavembu kudineer is adopted in southern states, especially in Tamil Nadu, whenever there is a reported outbreak of either Chikungunya or Dengue. Monograph published by CCRAS - Treatment guidelines for Chikungunya.

**Multicentric open labelled clinical trial on Diabetes mellitus (Neerizhivu):** A Coded drug D5 was formulated and standardized as per AYUSH guidelines. With the approval of IAEC chooranam (IAEC No: 105/PHARMA/SCRI, 2011) animal studies were conducted for proving its safety and efficacy. With the establishment of the safety and efficacy, the clinical trial was started with approval of IEC, SCRI (IEC No: CCRS/SCRI-1/2011-12/04). It was duly registered in Clinical Trial Registry of India (CTRI Number: CTRI/2013/12/004231). The trial was an open-labelled, multicentric clinical trial for type 2 diabetes mellitus (n=90) and the subjects received coded Siddha herbal formulation D5 and its efficacy was assessed among newly/recently detected cases of Diabetes mellitus. The trial showed a significant ( $p < 0.00$ ) improvement in overall levels of HbA1c (mean reduction of 0.285%) after 90 days of treatment. Both the fasting plasma glucose levels ( $p < 0.009$ ) and postprandial plasma glucose levels showed a significant reduction ( $p < 0.001$ ). A patent was filed and published with No. 2578/CHE/2015A on 05-06-2015. A monograph on D5 chooranam has been published.

**Vitiligo (Venpulli):** A number of clinical studies have shown that Siddha medicines are effective in the treatment of Vitiligo. Clinical trial with (1) Ponnimilai chenduram (Int) and cirattai thailam (Ext) and (2) Ponnimilai chenduram (Int) and Kanda kathri pazha ennai (Ext) have shown remarkable results in the treatment of Vitiligo.

**Urolithiasis (Kalladaippu):** The clinical evaluation of sirupeelaiyathi kudineer in the management of Urolithiasis (Kalladaippu) was conducted in SRRI, Puducherry. As per the criteria of the selection, 101 subjects were screened and 36 subjects (Male - 25, Female - 11) were recruited for the trial, out of whom 6 were LAMA. Clinical, biochemical and sonological investigations were done as per the protocol. The patients were regularly assessed as per Siddha and Bio-chemical parameters. The trial drug, sirupeelaiyathi kudineer was administered for 45 days. Among the 30 patients, after the treatment period, a reduction in size/number of calculi was





observed in 43% of patients. Total absence of calculi was noticed in 16% and reduction in hydronephrosis was observed in 10% of the patients. There was a significant reduction in symptomatic pain score in 80% of the patients.

### Patents:

Total patents - 3 (1- obtained, 1- published and 1- applied)

1. A patent has been obtained for 777 Oil for Psoriasis with no.166740/ dt. 11.09.1987 and the product is in the market.
2. A Coded drug D5 chooranam was formulated and standardized as per AYUSH guidelines. A patent was filed and it got published with no 2578/CHE/2015 on 05-06-2015.
3. A patent has been applied with the title Simple and low cost process for the preparation of synergistic Bio-active compound Jacom for the management of H1N1 influenza virus infection with the patent number E-101/10871/2017 – CHE was applied on 15-5-17.

### Completed RFD Projects:

1. Clinical trial of Rasagandhi Mezhugu in Karuppai Sathai kattigal (Fibroid Uterus)
2. A Multicentric Open labelled clinical trial on D5 Choornam in Mathu Megam (Diabetes Mellitus)
3. Clinical Evaluation of Sirupeelaiyathi Kudineer in Kalladaippu (Urolithiasis)
4. External application of Siddha Medicine-Moosampara patru on mootu veekam (Swollen Knee Joint) - Short term trial.

### Completed IMR Projects:

1. Assessment of awareness and usage of Siddha medicine among the patients reporting to selected Siddha OPDs in Puducherry & Karaikkal regions.
2. Development of Siddha Treatment Guidelines for Selected Non - Communicable Diseases.
3. Database of Siddha preparations for certain diseases mentioned in the enlisted books of drugs and cosmetics act, 1940.

### Ongoing IMR projects

S.No.	Name of the Project	Outcome of the Research
1.	RCT of Two Siddha Drugs in the Management of Urolithiasis (Kalladaippu) - Phase 2	Determination of 2 Siddha drugs in the management of Urolithiasis (Kalladaippu).
2.	Multi-centric Clinical Trial of a Classical Siddha Formulation Rasagandhi Mezhugu in Karuppai Nar thasai Kattigal (Fibroid Uterus)	Determination of safety and efficacy of RGM in Karuppai Nar thasai Kattigal (Fibroid Uterus)



3. A Statistical Approach to construct a classifier to distinguish patients as per their body constitution based on Siddha principles of Udaliyal
- To study the relationship between the patient's demography characteristics and their body constitution.
4. Evaluation of safety and efficacy of Kunthirikka thylam and Varmam therapy among subjects with Osteo Arthritis of knee joints
- Primary:
- Western Ontario and Mc Master Universities Osteoarthritis Index (WOMAC) pain and functional scores – On day 0, Day 14 and during each follow up visit
  - Visual Analog Scale (VAS) for pain assessment – daily done before and after therapy and during each follow up visit
- Secondary:
- Range of Motion (ROM) – daily done before and after therapy and during each follow up visit
- Time to walk 50 feet – On day 0, Day 7, Day 14 and during each follow up visit.
5. Medico Ethno Botanical Study of Palamalai- Salem District
- Documentation of floral diversity and its ethno practices of the forest tribes.
  - Enlightens the added area of hitherto unexplored/non documented floral wealth of Palamalai and the folk claims of the forest dwellers.
6. Digitization and Compilation of Herbarium and Folklore Claims at Survey of Medicinal Plants Unit- Siddha, Palayamkottai.
- Digitalization of the Herbarium for the development of Centralized Repository of Digital Medicinal Plants Herbarium for effective preservation, by using versatile techniques and thus provides easy accessibility for the student community and the public.
  - Publication of descriptive catalogue of original and digital herbarium sheets in print form will be available to public/ researchers.
7. A survey on the Ethno-Botanically important plants for common ailments in Tiruppur, district Tamil Nadu
- In the proposed project, the investigation of ethno-medicinal plants will be conducted sporadically (of 50 villages). The expected outcome of the project is: Herbarium and raw drugs of medicinally important plants will be added to the Herbaria



8. Vernacular Name Encyclopaedia of Siddha Drugs mentioned in Siddha Materia Medica (Gunapadam) (VERNAES) Publication of the Vernacular Encyclopaedia
9. Siddha Encyclopaedia & Android Application for Research Community and Health care institutions (T.V. Sambasivam Pillai Medical Dictionary)
- Primary outcome: Creation of installable CD\_ROM from TV Sambasivam Pillai dictionary.
  - Secondary outcome: Developing a copy righted Android Mobile application of “Siddha Encyclopaedia (TVS Medical Dictionary)”
10. Annotation and Translation of the Siddha Classical Book “AgathiyarAruliya Pin Enbathu”
- Annotation of the Siddha classical book “Agathiyar Aruliya Pin 80” and translating it into English and Hindi.
  - Publication of the book
  - E-book Publication.
11. Untargetted approach to the geochemical characterization of Hypothecated Muppu (Marine sediments collected from Bay of Bengal at Rameswaram and white powdery salts collected from Kovanur and Sithamalli)
- An integrative workflow to establish chemical composition of the marine sediments and white powdery salt.
  - Qualitative methodologies would be available to detect the trace elements present in the inorganic sediments and salts.
12. Qualitative and Quantitative Analysis of Chembu (copper) in ‘Chembu containing Plants’ – A Scientific validation of Siddha claim
- The content of Chembu (Cu) present in the selected drugs would be quantified.
  - The analytical technique would be extended to heavy metals and other inorganic elements.
13. Isolation of chemical markers from selected plants used in Reproductive and Child Health
- To isolate chemical markers from eighteen plants used in RCH. These markers will be quantified in Siddha formulations used in RCH treatment.
14. Metabolomic profiling and Identification of Principle Components from herbals used in Siddha System for Cognitive disorders using multivariate statistical analysis
- An integrative workflow to establish molecular fingerprinting, quantitative analysis and principle component identification of natural products through statistical analysis.
  - “Comprehensive Mass Spectral Atlas of secondary metabolites.”



15. Analysis of inorganic composition of selected plants used in Siddha system
- The outcome of this systematic scientific study – peer reviewed journals – Veracity of the Siddha system of medicine.
  - Strengthening the infrastructure of Siddha Central Research Institute (SCRI) and enlightenment of Intellectual knowledge.
  - “Technology transfer to Q.C. labs of Pharma industries.
- If the composition of the ash/inorganic matters were known, the same could be prepared using synthetic pharm products for preparing the Siddha formulations similar to other metals/minerals. Study on the exact composition of these ashes will be helpful to the entire Siddha Community. Biodiversity is conserved.
16. Qualitative and Quantitative Analysis of Lead in ‘Lead containing Plants’ – A Scientific validation of Siddha claim
- This project is expected to scientifically prove the Siddha claim for the presence of Lead in ‘Lead containing plants’ in the Classical Texts and to develop pharmacopoeial standards of these medicinal plants on scientific lines.
17. Scientific validation of *Serankottai* (*Semecarpus anacardium* Linn.) before and after purification in Siddha system of medicine
- The result of this study may be used as standard for further studies / medicine preparations.
  - This study may help to understand the chemical changes during the purifications process.
  - This study may ensure that SA is a safe drug to prepare various internal medicines after purification in Siddha system of medicine.
- This study may help us to select the *Serankottai* based Siddha formulations for further clinical trials.
18. Sarakku Vaippu of a polyherbal formulation with Abini- like properties by Siddha methodology of Konganar
- To prepare *Vaippu Abini* with standard quality and add evidence based traditional knowledge of Siddha system for the claim of substitution of Vaippu (alternate preparation) of Abini
19. A Comparative Study on Quality Control parameters of Mathirai / Tablet formulations used in Siddha System of
- This project is expected to draft the new Siddha guidelines for mathirai / tablet



- Medicine
- according to the comparative studies
20. Standardization of Sirukan *Nagam Suddhi* (Purification) and Physiochemical evaluation of *Naga parpam*, a Siddha drug - In process study. Map of physical and chemical changes undergone by Nagam in process of Suddhi (Purification) and Naga parpam preparation.
  21. A Siddha polyherbal formulation (Nilappanai Chooranam) in the management of Oligospermia (Vindhankuraipadu) Standardisation of the polyherbal formulation before initiation of the clinical trial
  22. Anti-hyperlipidemic activity of D5 Chooranam To ensure the Anti-hyperlipidemic activity of D5 Chooranam
  23. Nephroprotective Effect of *Sphaeranthus amarathoides* Burm. f. (Sivakarantai) against Gentamycin induced nephrotoxicity in Rats To evaluate the Nephroprotective effect of *Sphaeranthus amarathoides* Burm.f. against Gentamycin induced nephrotoxicity in Rats.
  24. Toxicological studies of Ayapoonaga chenduram - A Siddha polyherbal formulation. Toxicity testing of herbal medicines in the 21<sup>st</sup> century tends to begin in a reductionist manner and proceeds through holistic tests to reach clinical conclusions. The challenge however remains in the identification of unique approaches in testing and developing regulations regarding safety of herbal products. Although some drawbacks to animal testing exists; such as the large number of animals used, financial implications and poor validation which affects correlation to humans, animal testing is still relevant as it is still impossible to predict long term carcinogenicity, embryo toxicity and reproductive toxicity using alternative non-animal tests alone.
  25. Pre-clinical (Chronic Toxicity) Evaluation of Gowri-chinthamani chenduram - A Siddha drug The project is expected to scientifically validate the classical Siddha medicine Gowri chinthamani chenduram.
  26. Status of labeling, drug information and branding in marketed anti-diabetic Siddha formulations: Cross-sectional study: Chennai, Tamil Nadu, 2016 The study may generate base-line information on compliance to existing regulations on labels and existing scenario with respect to package inserts



27. Pre-clinical safety and efficacy of nuna kadugu (internal medicine) and nuna thailam (external medicine) in venpadai (Vitiligo) Determination of safety and efficacy of the Siddha formulations in Venpadai (Vitiligo)

The Clinical Research Programme under the council focuses mainly on clinical evaluation of selected therapies in clinical conditions. The activities in the following areas have been carried out and recently three new applications have been developed and implemented to aid in the health care services:

- THERAN – THE Research Application Network (Electronic Data Capturing System) (Registration to Receiving Medicine)
- SLING – Duty Scheduling App
- SiddAR – Siddha initiative for documentation of drug Adverse Reaction app – Pharmacovigilance.

#### **THE Research Application Nexus (THERAN):**

It is an Electronic Data Capturing System, a kind of software which has been developed by the Central Council for Research in Siddha with the calibre software technologies and it was launched by Shri. P. N. Ranjith Kumar, Joint Secretary, Ministry of AYUSH, Govt. of India, on the occasion inauguration of the 2-day National Seminar on “Current Trends in Siddha Varmam Therapy” held on 04<sup>th</sup> and 5<sup>th</sup> Nov. 2017 at AYUSH auditorium, Council building, Janakpuri, New Delhi.

Siddha Central Research Institute, Chennai successfully completed the trial and error execution and troubleshooting also. With the THERAN, SCRI Successfully documenting the Hospital Information. Now CCRS planning to move the THERAN to all its peripheral institutes and units.

#### **Key features of THERAN**

- We can Conduct a full range of OPD consultation with excellent Data recording
- Similarly, IPD can also be subjected to data capturing for day to day treatment & procedures
- Boon for getting the NABH and NABL accreditation
- Centralized Patient registration system to create and maintain patients’ record.
- Routing of patients to respective department for consultation through Centralized Out-patient queue management system
- Serve the patients with system generated prescriptions – no pen and paper required.
- In-built inventory system for better accountability
- We can generate dynamic reports
- Work quantification of human resources can be measured
- Enhances transparency in cash transactions and eco-friendly



## SiddAR app

SiddAR app is an adverse drug reporting Android application which is the first android app introduced by CCRS with respect to the AYUSH stream.

SiddAR app – Siddha initiative for documentation of drug Adverse Reaction. SiddAR has been developed to document the observed and reported side effects of Siddha drugs which benefit the public.

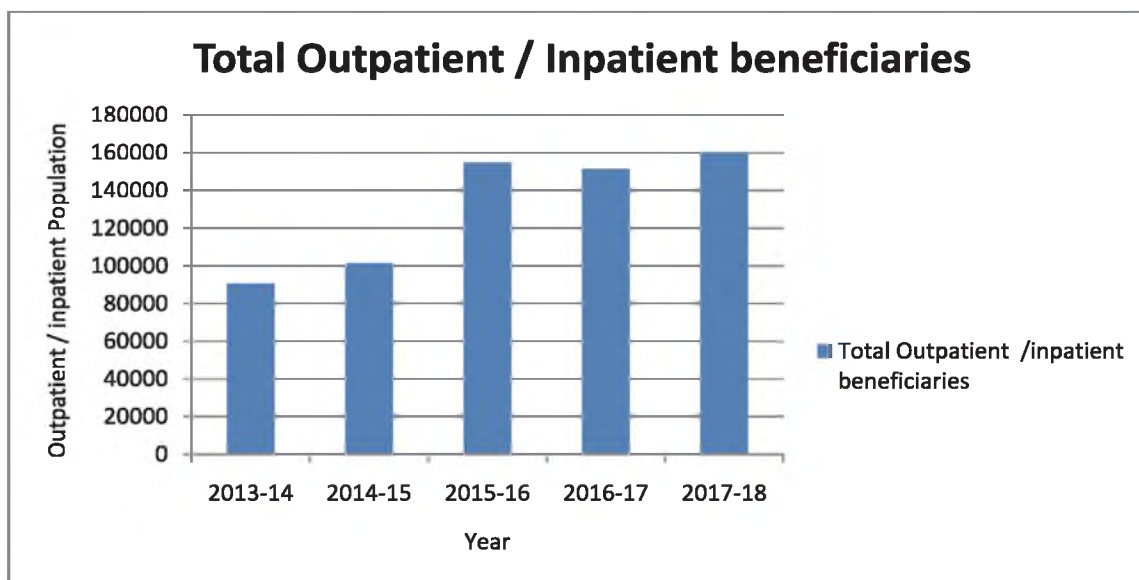
## Health Care Services through Out-Patient Department (OPD) and In-Patient Departments (IPD)

The Clinical Research Programme under the council focuses mainly on clinical evaluation of selected therapies in clinical conditions.

- Health care services through Out – patient Department (OPD) and In-patient Departments (IPDs) – Department of Pathology and Bio-chemistry
- Specialty Clinic for Geriatric Health Care
- Specialty Clinic for Flu-like Illness
- Specialty Clinic for Varmam, Thokkanam and Bone setting
- Speciality Clinics for Diabetes mellitus
- Speciality Clinics for reproductive and child health care
- National Pharmaco-vigilance Programme for Ayurveda, Siddha and Unani (ASU) Drugs.

### OPD/IPD census of CCRS :

Year	Total OPD/IPD beneficiaries of CCRS
2013-14	90435
2014-15	101514
2015-16	154785
2016-17	151373
2017-18	160229



#### International Classification of Diseases -11 Traditional Medicine:

Ministry of AYUSH, Government of India has initiated a process to develop National Morbidity Codes for Ayurveda, Siddha and Unani Systems of Medicine through wide National Consultation Process. Hence, an expert committee has been formed to develop National Morbidity Codes - Siddha by the Ministry of AYUSH, Government of India. A working group constituted by CCRS completed 1623 National Siddha Morbidity Codes with definition and reference as a part of Phase - I work.

#### Swasthya Rakshan programme (SRP):

Swasthya Rakshan Programme of Ministry of AYUSH is effectively implemented at Siddha Central Research Institute, Chennai (3 locations), Siddha Regional Research Institute, Puducherry (1 location), Siddha Regional Research Institute, Thiruvananthapuram (2 locations), Siddha Clinical Research Unit, Palayamkottai (2 locations), Siddha Clinical Research Unit, New Delhi (2 locations) and Palamalai hill (Tribal), Siddha medicinal plants garden, Mettur (1 location)

#### Drug Research:

##### Drug standardization:

Facilities for preclinical studies to comply with international standards and as per WHO guidelines are available in the Siddha Central Research Institute, Chennai and SRRI, Thiruvananthapuram.

SCRI- Chennai and SRRI-Thiruvananthapuram have analyzed and standardised 325 single drugs and 57 Siddha preparations. Pharmacognostic studies for 137 single drugs and 29 Siddha formulations have been completed. HPTLC studies of 97 Single drugs and 14 compound formulations were also carried out. 51 pharmacological activities (Toxic study and Bio-active study) have been carried out.





## Siddha Pharmacopoeia Committee

The Siddha Pharmacopoeia Committee with the mandate of establishing quality parameters for Siddha drugs and formulations is working under the auspices of the Ministry of AYUSH. It is currently functioning at CCRS Headquarters, Chennai. The Siddha Pharmacopoeia of India, Part - I, Volume – I&II were published. The Siddha Pharmacopoeia of India, Part - I, Volume - III is in progress. The Siddha formulary of India, Part - I (Tamil & English) and Part-II (Tamil) were published. Revision of the Siddha formulary of India, Part - I – Tamil, was completed and sent to PCIMH for printing. The Siddha formulary of India, Part - II - English translation is in progress. The Siddha formulary of India, Part – III (Tamil) is in progress. 150 Siddha classical formulations have been identified. PCIMH has approved 4 EOI i.e., 2 projects on “Development of Pharmacopoeial monographs on single drugs of plants / minerals / metals and animal origin under scheme for outsourcing on scientific work of PCIMH and 2 projects on “To develop Pharmacopoeial monographs on standard operational procedures of manufacturing process and quality standards of Siddha formulation (including stability studies).

## Medicinal Plants Research

National Medicinal Plants Board (NMPB) – Project: **365 Days National campaign on Medicinal plants Awareness:** Campaign on awareness on Medicinal plants was carried out by providing news in dailies and weeklies from time to time and also by providing medicinal plants to the educational institutions for establishing herbal gardens in their premises and also promoting home herbal gardens. IEC pamphlets about the home herbal garden is being issued as a promotion scheme for the visitors.

## Achievements of Siddha Medicinal Plants Garden, Mettur Dam

Brief resume of work done during 1971- 2018:

Areas surveyed	:	18 forest divisions in Tamil Nadu
Field trips undertaken	:	360 (1365 days)
Field numbers collected	:	10225
Herbarium specimens mounted	:	8375
Species recorded	:	1841
Authentic raw drugs preserved	:	1659
Authentic plant materials supplied to various research units since 1971	:	556 consignments
Authentic plant material supplied to ISM pharmacopoeial standards	:	96 consignments
Folklore information recorded	:	876
Research papers published/presented	:	130
Special medico-ethno botanical explorations	:	1. Andaman islands 1975 2. Lakshadweep islands 1977 3. Nicobar islands 1980
Photographs and slides	:	720 species
Photographs supplied to Headquarters	:	118 Nos
Formulary of Siddha Part I and Part II	:	Technical Assistance by Government of India



Herbal Garden	:	Maintained upto 1975
Market Survey for collection of Information of major crude drugs	:	6 districts
New species published	:	2 <i>Vernonia pothianus</i> from Pothigai hills <i>Chilocarpus andamanica</i> from Andaman
Monographs - contribution from this unit	:	Andaman and Nicobar islands Part I and II
Botanical identity established for unidentified Siddha drugs	:	39 drugs/plants
Herbarium sheets transferred to the Central Herbarium, CCRAS , New Delhi	:	600 Nos
Swasthaya Mela camps on awareness and conservation of medicinal plants	:	14 centres
Medicinal plants awareness camp	:	4

#### **Survey of Medicinal Plants Unit - Siddha, Palayamkottai**

- Maintaining and updating the Herbarium, Museum at Survey of Medicinal Plants Unit.
- 8275 herbarium covering 2013 species in 10025 field collections of 400 Medico ethno botanical study in 400 forest areas of Tamilnadu besides Andaman and Nicobar islands and Laccadives islands are being maintained.
- More than 800 drug materials covering plant materials, metals, minerals are stored and preserved.
- 870 folklore claims are documented.

#### **Literary Research and Documentation Department**

Literary research lays platform to any research in Siddha System as they are scientific reflections of the intuitions of Siddhars. Palm leaves and paper manuscripts still hold with them many unfolded scientific details which are to be unearthed.

The wealth of traditional medicines is available both in a coded and non-coded document. The traditional knowledge should be properly documented, digitized, preserved and published to the public domain. Both virtual and real manuscripts are made available as a ready reckoner for students, research scholars and the public. Literary Research and Documentation Department under the umbrella of Siddha Central Research Institute is carrying out the above said activities in a stipulated manner.

#### **Major Research Activities of Literary Research and Documentation Department**

- Collection of manuscripts and other old rare printed books and hand-written copies.
- Cleaning and preservation of collected materials.
- Preparing, cataloguing and classification.
- Transcription of palm leaf manuscripts.
- Annotation of poems.



- Typing of transcribed poems along with annotations.
- Correction of typed copies.
- Comparison with original.
- Submission for approval.
- Publications.
- Translation of books published in Siddha into English, Hindi and other south Indian languages.
- Publication of translated Siddha text in English, Hindi and other south Indian languages.

**Publications of books:**

S. No.	SIDDHA PUBLICATIONS	Edition	Years
<b>TAMIL</b>			
1.	Agathiyar Sowmiya Sagaram – 1200		2007
2.	Agathiyar Vaidhya Valladhi – 600	1 <sup>st</sup> ed.	1980
3.	Agathiyar Vaidya Pooranam - 205	1 <sup>st</sup> ed.	1997
4.	Bogar Karukkidai Nigandu – 500		2006
5.	Konganar Kadai Kandam – 1000		2005
6.	Konganar Mudhal Kandam – 1000		1999
7.	Konganar Nadu Kandam – 1000		2001
8.	Ramadevar – 1000		2006
9.	Siddhar Kaya Karpam	3 <sup>rd</sup> ed.	2017
10.	Siddha Maruthuva Eliya Vazhakku Muraigal	6 <sup>th</sup> ed.	2017
11.	Theraiyar Kudineer	2 <sup>nd</sup> ed.	1996
12.	Machamuni Perunool - 800		1985
13.	Theraiyar Yamaha Venba Part II		2011
14.	Theraiyar Yamaha Venba Part III		2011
15.	Theraiyar Sekarappa		2011
16.	Agathiyar Sillarai Korvai		2011
17.	உயிர்மெய்மூலிகைகள் (குமிழ்எழுத்துகளும்சித்தமருத்துவமூலிகைகளும்) Uyir mei mooligaigal		2015
18.	Glossary on Siddha External Therapies		2017
<b>ENGLISH</b>			
19.	A Hand Book of Common Remedies in Siddha System on Medicine	5 <sup>th</sup> ed.	2016
20.	Guidelines for Practice of Siddha Varmam Therapy		2017
21.	Siddha Protocols and OUTcomes (SPROUT) for Siddha External Therapies		2017
22.	A Hand Book of Glossary on Siddha External Therapies (Excerpts from T.V. Sambasivam Pillai Dictionary)		2017
23.	Agathiyar Vaidya Pooranam - 205		2008
24.	Quality Control Standards for Certain Siddha Formulations		1991



25.	Sangamuni Visha Vaidhyam – 100		
26.	Monograph of Thamira Cehnduram (Peptic Ulcer)		1992
27.	Pulippaani Vaidhyam – 500		2009
28.	Siddha Kayakarpam Mooligaigal (A Guide on rejuvenating Medicinal Plants in Siddha)		2015
29.	Siddha research Review in Cancer		2015
30.	A-Z Know your alphabets through Siddha Medicinal Plants		2015
31.	Kalnandu Soothiram (Multi kingual book – Tamil, Malayalam, Kannada, Telugu, Hindi, Malaya, Singalam and English)		2015
32.	A Monograph of Nilavembu Kudineer		2017
33.	Guidelines for Practice of Siddha Varma Therapy		2017
	<b>HINDI</b>		
34.	Sangamuni Visha Vaidhyam – 100		2005
35.	Agathiyar Vaidya Pooranam - 205		2008
36.	Theraiyar Kudineer		2018
	<b>SIDDHA PHARMACOPOEIA</b>		
37.	Siddha Pharmacopoeia of India (Part-I, Vol. I)		2008
38.	Siddha Pharmacopoeia of India (Part-I, Vol. II)		2011
39.	Siddha Formulary of India (Part-II) – Tamil Version		2011
40.	Siddha Pharmacopoeia of India (Part-I, Vol. II) CD-ROM		2015
41.	Siddha Formulary of India (Part-II) – Tamil Version CD-ROM		2015

### Paper publications and patents

Total Papers published: 280

### Audio, visual and print materials

1. Audio Jingles have been launched in FM radio in two languages (Hindi & Tamil) which explains about the preventive and treatment aspects of Siddha system.
2. Through print media in national newspapers, CCRS has explained through advertisements about the Siddha management and treatment of Dengue and Chikungunya. In addition to the above, IEC materials have been published on several disease conditions and their management through Siddha System of Medicine.
3. A video documentary film on the activities and achievements of CCRS and Siddha system of medicine have been produced in Tamil & English.  
(<https://www.youtube.com/watch?v=bL2CTzSM6Mw&t=53s>)
4. Three video spots for carrying message about and treatment for various diseases through Siddha system of medicine have been produced.
5. IEC materials for various diseases in Tamil, English, Kannada, Telugu, Malayalam have been distributed in various Arogya melas / awareness campaigns.



### Details of Seminars, Conferences, Workshops, Training Courses

<b>2013-14</b>	National Seminar on Safety and Efficacy of Herbo-mineral Formulations of Siddha was organized by SRRI, Thiruvananthapuram during 24 <sup>th</sup> and 25 <sup>th</sup> January, 2014, at Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram.
	National Workshop on “Management of Obstetric and Gynaecological disorders in Siddha” was organized during 22 <sup>nd</sup> and 23 <sup>rd</sup> February, 2014 at SRRI, Puducherry.
	National Workshop on the role of Siddha medicine in the management of Lifestyle disorders, 22 <sup>nd</sup> and 23 <sup>rd</sup> March, 2014 was organized at SCRI, Chennai.
<b>2014-15</b>	Good Clinical Practice (GCP) training for various stakeholders in AYUSH was conducted during 30 <sup>th</sup> and 31 <sup>st</sup> March, 2015 at SCRI, Chennai.
<b>2015-16</b>	Re-orientation workshop for Pharma Industries (RoWP) was conducted from 31 <sup>st</sup> March to 2 <sup>nd</sup> April 2016 at SCRI, Chennai.
	National level seminar on Varmam (NSVARMAM) on 19 <sup>th</sup> and 20 <sup>th</sup> December, 2015 at V.O. Chidambaranar College, Thoothukudi jointly organized by Siddha Clinical Research Unit, Palayamkottai (CCRS) and Department of Geology, V.O.Chidambaranar College, Thoothukudi.
	AYUSH awareness workshop was conducted from 26 <sup>th</sup> to 30 <sup>th</sup> July, 2016 (Management of Some vatha diseases through Siddha external therapies by Dr. Janani, Demo of Siddha external therapies (Varmam etc.) by Dr. R. Manickavasagam in AYUSH Wellness Clinic - Siddha wing
<b>2016-17</b>	Management of Uro-genital diseases through Siddha System of Medicine (MUSSM-2016) held on 8 <sup>th</sup> and 9 <sup>th</sup> October, 2016 at SRRI, Thiruvananthapuram.
	A Brain Storming Session on ”Digitization of NAADI” held on 26 <sup>th</sup> and 27 <sup>th</sup> November, 2016 organised by CCRS in collaboration with VELS University.
	Seminar cum workshop on “Management of dermatological disorders and cancer – moving towards an integrated (Siddha and Modern) approach” organised jointly by CCRS and Manipal University during 11 <sup>th</sup> and 12 <sup>th</sup> February, 2017 at Manipal University.
	“In house induction programme of NABH” sensitization programme organised jointly by Siddha Central Research Institute sponsored by Central Council for Research in Siddha on 30 <sup>th</sup> March, 2017.
<b>2017-18</b>	General awareness and propagation of Extra Mural Research (EMR) scheme of Ministry of AYUSH conducted on 21 <sup>st</sup> April, 2017 at Puducherry organised by Siddha Regional Research Institute, Puducherry.
	National Seminar on “Glory of Siddhar Agathiyar and his contribution to Siddha System of Medicine” (NSGSASSM) was held on 26 <sup>th</sup> & 27 <sup>th</sup> August 2017 in Siddha Central Research Institute (SCRI), Chennai and organized by SCRI, Chennai
	National Seminar on “Current trends in Siddha Varmam Therapy” on 4 <sup>th</sup> & 5 <sup>th</sup> November, 2017 was held in AYUSH Auditorium, Jawahar Lal Nehru Bhartiya Chikitsa Avum, Homeopathy Anusandhan Bhavan, Janakpuri, New Delhi --- organized by Siddha Clinical Research Unit, Karol Bagh, New Delhi.
	National Conference on Pura Maruthuvam - External Therapies in Siddha system of Medicine (NCPM-2017) was held in Dr. APJ Abdul Kalam JIPMER Auditorium, Dhanvathiri Nagar, Puducherry on 9 <sup>th</sup> & 10 <sup>th</sup> December 2017 was organized by Siddha Regional Research Institute (SRRI), Puducherry.



	Two-day workshop on “Conservation and Cultivation of Medicinal Plants” on 16 <sup>th</sup> & 17 <sup>th</sup> December, 2017 was held at Mettur Dam, Salem District, Tamil Nadu--organized by Siddha Medicinal Plants Garden (SMPG), Mettur Dam.
	Celebration of first Siddha Day and organization of National Conference on “Prevention and management of Lifestyle Disorders through Siddha System of Medicine” on 4th January 2018, by Central Council for Research in Siddha at The Tamil Nadu Dr. M.G.R Medical University, Chennai.

#### **New initiatives on pipeline:**

- CCRS Headquarters Office Chennai- Temporarily functioning in the building of SCRI, Chennai donated by State Government free of cost. Construction of CCRS Hqrs. Office building at an approximate cost of 18 crores will be initiated in the NIS Campus, Chennai in an area of 1680 Sq. mts allotted by Govt. of Tamil Nadu
- Animal House, CCRS- Construction of animal house will commence at an approximate cost of 8.23 crores, once allotment of 2 acres of land out of 5 acres of NIS land in Chitlapakkam (Chennai) is done by Govt. of Tamil Nadu.



### Specific areas of Strength of Siddha for Intra-AYUSH Collaboration

The strength of the Siddha medical system lies in its holistic approach for a healthy living. The healing science encompasses the physical, mental, social and spiritual well being by adapting simple lifestyle practices, dietary regimens, safe and effective drugs of vegetable, mineral and from substances of animal origin. The focus has all along been on preventive, promotive and rejuvenative methods for maintaining good health, defying ageing and curative procedures including cleansing therapies and external therapies.

#### Varmam Therapy

Varmam therapy is the pressure manipulation on prescribed Varmam points with a specific force for the specified time. This therapy will normalize the course of pranic energy that is clogged due to attack on Varmam points and any other causes.

The principle is to regulate the flow of Varmam energy. The various methods of Varmam treatment are classified as follows:

1. Energy based treatment
2. Vital air based treatment
3. Nervous system based treatment
4. Bone based treatment
5. Muscle based treatment
6. Internal organ based treatment

The aforesaid therapeutic procedures have to be suitably chosen and manipulated by well-trained Varmam experts. When a person gets hurt in the Varmam point and becomes unconscious and if he is not revived within the specified time, complications may follow including fatality. So, it is vital to resuscitate (Illaku murai) the person with pressure manipulation therapy (Varmam therapy) immediately.

This unique science and art of Varmam is largely practised in Southern parts of India particularly in Tamil Nadu and South Kerala. The expert in Varmam technique is called 'Varmam' and he teaches this skill to new individual only after examining his character--whether he has noble (Cattuvam) qualities or not. So that is why Varmam is also known as Marmam that means secret.

Many classical literatures are available in the field of Varmam. The study of Varmam comprises location of Varmam points, signs and symptoms of Varmam assault, application of techniques for releasing affected Varmam (Illaku murai), manipulation over the vital Varmam points (Attankal), etc. In addition, if the patient is unconscious the study of Varmam also includes application of the external therapies such as nasal drops (Naciyam), and ear drops and internal medicines with herbs and dietary regimen pertaining to Varmam manipulation.



**Therapeutic benefits of Varmam:** Varmam therapy is useful in the treatment of neuro-musculo-skeletal disorders and joint disorders.

1. Cervical spondylosis
2. Lumbar spondylosis
3. Osteoarthritis
4. Hemiplegia
5. Paraplegia
6. Sciatica
7. Peripheral neuropathy, etc.

### **Physical Manipulation Therapy (Thokkanam)**

It is one of the distinctive external treatment procedures of Siddha system of medicine where therapeutic manipulation is performed in specified parts or all over the body with or without the use of oil. It (Thokkanam) is a procedure normally consisting of striking and pressing with fist and then pressing the affected part of body part/s.

**Types of Thokkanam:** Thokkanam is of nine types: Tapping/Punching (Thattal), Compressing / Gripping (Irukkal), Grasping/Holding (Pidithal), Twisting (Murukkal), Encompass manoeuvre (Kazhattal), Pulling (Iizhuthal), Supinating (Mallathudhal) Pressing (Azhuthal), Shaking /Mobilising (Asaithal).

**Therapeutic benefits of Thokkanam:** Thokkanam nurtures the body cells, improves sleep and sexual function; relieves body pain, tiredness and expels gas. Thokkanam tones up skin, muscles and nerves, improves blood circulation and facilitates lymphatic drainage.

Thokkanam is useful in treating diseases of neuro- muscular and musculo –skeletal systems. Thokkanam is also useful in treating Azhal and Aiyam diseases. Thokkanam, by normalising the altered Vali, helps in rejuvenation and rehabilitation. Hemiplegia, paraplegia, muscle weakness, dystrophies, sciatica, cervical and lumbar spondylosis are some of the neuromuscular and joint disorders treated by Thokkanam.

### **Bone setting (Odivu Murivu Maruthuvam)**

Bone setting (**Odivu Murivu**) is one of the specialties in Siddha medicine. In spite of the developments in modern medicine, it is practised effectively by Siddha physicians.

Bone Setting Treatment involves the following specialized procedures viz.

- Reduction (Murichal) -- Diagnosis by just touching the affected part with fingers and thereafter reduction of fracture by different methods.
- Splinting (Kompukattal) -- Immobilization by traditional bamboo splints.
- Traditional medicated cloth bandages prepared using egg white, black gram powder, pounded rice, tamarind seeds, *Shorea robusta* (Sal resin), *Cassia occidentalis* (Coffee senna), etc.
- External application of specific medicated oils (Thailam) like Kaya Thirumeni Thailam,





Kaaya Sarvanga Thailam, Vasavennai etc., to reduce pain, swelling and facilitate rapid union of fractured bones.

- Specific internal medicines like Varmaani Kuligai, Varma Nei, Kaya Thirumeni Thailam etc., are prescribed along with the above procedures.
- The powder of *Cissus quadrangularis* L. (Bone-setter plant) with milk, which has a proven efficacy in rapid union of fractures.

### **External medications and Treatment procedures - Puramaruthuvam (External Therapies)**

External medications deal with medications and treatment procedures used both as a mainstream therapy or supportive therapy. These include minor surgical procedures and are done either as curative or prophylactic. This forms an important part of Siddha system as it ensures good results with no side effects.

There are 32 external therapies mentioned in Siddha literatures. Recently External therapies are gaining importance because of their immediate therapeutic effects.

1. Trikadugu Choornam Podithimirthal – For Cerebral Palsy, Hemiplegia
2. Citrarathai pugai – For nasal Polyps, Nasal blockage
3. Kandakathiri pugai – for Dental carries
4. Ottradam - for various musculo skeletal disorders

### **Management of Vector Borne Diseases through Siddha**

Central Council for Research in Siddha (CCRS) under the aegis of Ministry of AYUSH is using the time tested and scientifically validated traditional formulation “Nilavembu Kudineer” for mosquito-borne diseases like dengue and chikungunya. AYUSH has also included Nilavembu Kudineer in Dengue guidelines. Nilavembu Kudineer has been distributed at all the peripheral institutes / units under CCRS through Outpatient Department, In-patient Department and Swasthya Rakshan programmes.

Awareness programmes are being carried out at schools, public areas towards the importance and efficacy of Nilavembu kudineer for dengue and chikungunya.

Nilavembu kudineer is distributed at various places before and during the outbreaks of dengue and chikungunya for prevention and treatment. CCRS has published chikungunya treatment guidelines [http://www.siddhacouncil.com/cg\\_treatment\\_guidelines.pdf](http://www.siddhacouncil.com/cg_treatment_guidelines.pdf) and dengue treatment guidelines [http://www.siddhacouncil.com/Dengue\\_treatment\\_guidelines.pdf](http://www.siddhacouncil.com/Dengue_treatment_guidelines.pdf)

Siddha Regional Research Institute (SRRI), Thiruvananthapuram under the aegis of Central Council for Research in Siddha (CCRS) organized a Siddha Medical Camp for the distribution of Nilavembu Kudineer and pamphlets for prevention of Dengue in Nemom block. 60 ml of Nilavembu Kudineer as well as 50 grams pack of Nilavembu Kudineer Chooranam along with directions for use and Malayalam Pamphlets regarding Dengue prevention were distributed. The Siddha Medical camps were held in five wards namely Edacode Ward, Pravachambalam Ward, Pallichal Panchayath Office Ward, Kaleswaram Ward, Thaanivila Ward of Pallichal Panchayat.



More number of camps is being organized during seasonal epidemics every year in all peripheral institutes/units of this Council at various places.

In addition, Tamil Nadu Government has issued orders to dispense Nilavembu Kudineer (Official Siddha Formulation) in the primary, secondary and territory institutes and medical colleges under Government of Tamil Nadu.

(a) “Multi-centric open labelled non-randomized hospital based two-year/two-season parallel group, Phase III/IV clinical trial to compare the efficacy of Siddha, Ayurveda and Homoeopathy formulations in alleviating the arthralgia pains in post-infective Dengue/Chikungunya in urban Delhi population” in collaboration with Maulana Azad Medical College, New Delhi.

(b) A joint proposal/protocol has been prepared for collaboration with ICMR– National Institute of Epidemiology (NIE) to establish the efficacy of Siddha formulations in the treatment of Dengue.

### **Preclinical Studies on Nilavembu Kudineer**

**In-vitro Studies:** The Central Council for Research in Siddha in collaboration with the International Centre for Genetic Engineering and Biotechnology (ICGEB) recently studied the anti-viral effects of Nilavembu Kudineer on Dengue. Nilavembu (Andrographis) showed higher toxicity than Nilavembu Kudineer (NVK) (0.03mg/ml human dose). At 0.0245% of human dose, marginal cytotoxicity was observed when Nilavembu was used as a single drug as opposed to no toxicity in NVK, a poly herbal formulation. NVK was non-toxic even at 3.1% of human dose while NV showed more of 80% death of cells at this concentration. Based on this, further studies were done only on NVK. Alcoholic extract of NVK showed antiviral effect (>50%) on macrophages during pre treatment at a concentration of 0.098% of human dose. In co-incubation, the cells were protected from DENV at a concentration of 0.078% of human dose. In case of post-treatment, the drug did not produce any protective effect on the cells. The formulation worked best in macrophages and did not show protective effect on kidney and epithelial cells, showing the specificity of drug effect. Alcoholic extract of NVK was most effective against DENV if given as a prophylaxis treatment or when co-incubated with the virus.

**Safety / Toxicity Studies:** The oral administration of Ethanolic extract of *Nilavembu kudineer chooranam* (EENKC) at the dose 2000 mg/kg did not exhibit any signs of toxicity up to 14 days and no mortality was observed. This indicates that EENKC was nontoxic in mice up to an oral dose of 2000 mg/kg of body weight. Therefore, the biological evaluation was carried out using 200 and 400 mg/kg dose levels.

**Antipyretic, Analgesic and Anti-inflammatory activities:** *Nilavembu kudineer* showed significant anti-inflammatory effects in the doses of 20 and 30 ml /Kg, orally. The drug also showed the analgesic activity for 50 and 30 ml / kg, which showed 53.36% and 37.31% effect respectively.

A separate study focused on statistical optimization of Nilavembu Kudineer using Response surface methodology (RSM) and its antibacterial activity. The combined interactive effect suggested that RSM mediated optimization can help enhance antimicrobial activity.



## **Research on Diabetes mellitus**

Siddha Central Research Institute under Central Council for Research in Siddha (CCRS) has carried out extensive research on D5 chooranam for Diabetes mellitus. After successful completion of the clinical trial on D5 chooranam for Diabetes Mellitus, a patent has been published (2578/CHE/2015A) on 05-06-2015. This product has been introduced in the OPDs of peripheral institute.

A weekly special OPD for Diabetes is held on every Mondays and patients are given 2 weeks of special medicine and are being monitored for fasting blood sugar, post prandial blood sugar as well as glycosylated haemoglobin (HbA1c) once in three months. Patients initially who are on allopathic drugs are also given D5 chooranam and the dose of allopathic medicines is gradually reduced with their blood sugar in good control.

## **Other Specific Areas of Intra-AYUSH Collaboration**

- Management of Non Communicable diseases by different protocol measures and Diet Drug based intervention
- Management of Renal insufficiency
- Management of gastro intestinal disorders
- Management of Renal calculi and urogenital disorders
- Geriatric care with Siddha Kayakarpam medicines
- Naadi Diagnosis to identify subtle and functional diseases / disorders
- Skin diseases like Psoriasis and Eczema
- Siddha Palliative care for cancer - Focused Group Discussion on Cancer was recently organized by CCRS pertaining to Palliative cancer management with Siddha system of medicine. In this regard protocol preparation to evaluate the effectiveness of Siddha medicines is in progress.
- Reproductive and Child Healthcare and Adolescent care.
- Musculo skeletal disorders
- Muppu and Higher Order Siddha Medicines



Section-V

## HOMOEOPATHY



The highest Ideal of cure is the speedy, gentle, and enduring restoration of health by the most trustworthy and least harmful way.



**CENTRAL COUNCIL FOR RESEARCH IN  
HOMOEOPATHY**





## HOMOEOPATHY

### Background

#### 13.1 Introduction

Homoeopathy, compared to other medical systems, is of recent origin, dating about 200 years back. Dr. Christian Friedrich Samuel Hahnemann, Founder of Homoeopathy (Figure 1), was a great pharmacist, linguist and a reputed German physician. He was dissatisfied with the state of medical practice at that time and took to experimentation in Chemistry and translation of scientific literature. He contributed regularly to Crell's *Annals of Chemistry* (the first journal devoted to Chemistry in Germany) from 1787 to 1794<sup>1</sup>. While translating Cullen's *Materia Medica*, from English to German in 1790, he came upon the idea of experimenting with Cinchona bark (a drug used for treatment of intermittent fevers in those times) on himself. He found that when taken in a healthy state, cinchona produced symptoms similar to those of intermittent fever. Over a span of six years, Dr. Hahnemann conducted many such experiments with known medicinal substances and deduced the principle of *similia similibus curentur* i. e., 'let likes be treated by likes'. He



Figure 1: Portrait of Father of Homoeopathy  
Dr. Christian Friedrich Samuel Hahnemann, (1755-1843)

concluded in 1796 that the therapeutic activity of any substance in a sick individual is dependent on its capability of producing a similar diseased state in a healthy individual.

Dr. Hahnemann identified this new system of therapeutic application of drugs for treatment of patients as 'Homoeopathy' derived from the Greek words 'Homoios', meaning 'similar', and 'pathos', meaning 'suffering'. He also coined the term 'Allopathy' (Greek words 'Alios', meaning 'different', and 'pathos', meaning 'suffering') for the prevailing medical system. The word Allopathy first appeared in 1816 in the preface to the first edition of the second

volume of *Materia Medica pura*, where Dr. Hahnemann described medicines "which stimulate the healthy body as illness different (allopathic) from the one that is to be cured"<sup>2</sup>.

Dr. Hahnemann contributed in reforming the medical practices of the 18<sup>th</sup> century by attributing the cause of disease to the internal environment of the host and thus originated the basic tenet that every

<sup>1</sup>Bradford TL. *Life and letters of Dr. Samuel Hahnemann*. Delhi: B. Jain publishers; 2004

Jutte Robert. *Samuel hanhneemann. The Founder of Homeopathy*. Translated by margot Saar. Stugart 2012 [cited 2012 Dec 10]. Available from: [http://www.igm-bosch.de/content/language1/downloads/samuleHahnemannThe\\_Founder\\_of\\_Homeopathy.pdf](http://www.igm-bosch.de/content/language1/downloads/samuleHahnemannThe_Founder_of_Homeopathy.pdf)



individual reacts differently in health and disease. Further, he undertook proving of drugs on healthy human beings, giving dynamised form of medicines in minimum dose and advocated restoration of health of sick individuals in a gentle manner. In the journey from large to smaller doses of drugs, the effects of a substance travel from universally lethal for all, to finer symptoms in a few sensitive individuals. Thus toxicity, side effects or drug resistance is not encountered during the course of treatment and the medicines are truly simple - both in form and application. The process of individualization builds up a doctor-patient relationship allaying natural fears and apprehensions of a sick individual.

Since its introduction to the humanity, the basic principles of Homoeopathy have not changed, as it is primarily a specialized system of rational therapy based on fixed and definite laws of nature and in this lies its inherent strength. Even after 200 years, the philosophy as laid down by Dr. Hahnemann forms the guiding force of homoeopathic practice for physicians around the world.

Homoeopathy is one of the most popular systems of medicine, sought after by suffering patients. It is playing a major role in the integrated the public healthcare delivery system of India due to its wide acceptance by people at large. This acceptance is mainly due to its simplicity, affordability, safety, holistic approach etc.

Homoeopathy came into being in the 18th century with the determination and incessant efforts of Dr. Hahnemann, during the era of experimentation, when medicine had taken a trajectory from the established norms and was largely dependent on observations and inferences. A host of scientific developments took place and a shift in the practice of medicine transpired. Throughout his life, Dr. Hahnemann along with his disciples continued experimentation to make the science of Homoeopathy more perfect. He wrote six editions of his masterpiece, *Organon of Medicine*, from 1810 to 1842, where he gradually evolved the philosophy of Homoeopathy, largely by his own observations and experimentations. Dr. Hahnemann, alone, could prove therapeutic indications of 111 drugs during his lifetime that are used successfully in homoeopathic practice even today.

The early 19th century saw the establishment of colonial powers with its consequent political, social, cultural and scientific transformations. These colonial powers brought in urbanization, modernization, industrialization, literacy, mass communication and political participation by the masses. The spread of the western school of medicine i. e. 'Allopathy' was aided by the political and economic powers of the colonial rulers and increasing nationalization of medicine gave rise to pharmaceutical companies. Where the other traditional systems remained secluded in their native countries of origin, Homoeopathy had spread rapidly to the other parts of the world in the early 19th century. Consequently, Homoeopathy flourished in the European nations (Austria, Hungary, Italy, Denmark, France, England, Spain, and Belgium). In Germany, Homoeopathic hospitals were established in Munich, Berlin and many other cities. Within Europe, Austria was the first country to be influenced by the growing popularity of Homoeopathy in Germany. By 1819, Homoeopathy had made sufficient advance in the Habsburg Empire (present-day Austria & Hungary) to the extent that its practice was forbidden by an Imperial Decree. In spite of this, Homoeopathy successfully asserted itself and in 1837, this decree was rescinded. Homoeopathy reached Italy from Austria and flourished there from 1820 to 1840.





## Homoeopathy in India

Homoeopathy is currently used in over 80 countries. It has legal recognition as an individual system of medicine in 42 countries and is recognized as a part of complementary and alternative medicine in 28 countries<sup>3</sup>. Three out of four Europeans know about Homoeopathy and of these, 29 percent use it for their own health care<sup>4</sup>. Studies have identified Homoeopathy to be the most frequently used CAM therapy for children in European countries<sup>5,6,12,13,12,13,7,8</sup>. The National Health Interview Survey 2007 (past 12 months), estimated 3.9 million adults and 910,000 children used Homoeopathy in North America<sup>9</sup>. According to a survey conducted in India, sixty two percent of current Homoeopathy users have never tried conventional medicines for day-to-day health problems and eighty two percent would not switch to conventional treatments, unless it is an emergency<sup>10</sup>.

Legislation regarding Homoeopathy and other complementary and traditional systems is different in different countries<sup>11</sup>. It is officially recognized in Central and South American countries (Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Mexico), European countries (Belgium, Bulgaria, Germany, Hungary, Lithuania, Portugal, Romania, Russia, Spain, United Kingdom) and in Asia (India, Nepal, Pakistan, Sri Lanka, Bangladesh). It is integrated into mainstream healthcare in Brazil, India, Pakistan, Sri Lanka, Mexico, Bangladesh and the United Kingdom.

India has a population of over one billion and is an emerging economic global power. The country shows a wide variation in terms of per capita income, purchasing parity; impacting income, expenditure and social stratification. The collective orientation of the society reflects itself in the National Health Policy of India and also underlines the governmental patronage to modern as well as the Indian systems of Medicines and Homoeopathy. The Government of India facilitated the spread and development of Homoeopathy by recognizing and integrating it into healthcare delivery.

The history of Homoeopathy in India can be traced to the early 19<sup>th</sup> century, to German missionaries treating people on the shores of Bengal. The first account of treatment is mentioned in the

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<sup>3</sup>2001 Legal Status of Traditional Medicine and Complementary/Alternative Medicine: A worldwide review. Geneva: World Health organization; 2001.

<sup>4</sup>Sarsina PR di, Iseppato I. Looking for a person-centered medicine: on conventional medicine in the conventional European and Italian setting. *eCAM* 20011; doi:10.1093/ecam/nep048.

<sup>5</sup>Grootenhuis MA, Last BF, de Graaf-Nijkerk JH, Wei M. van der. Use of alternative treatment in pediatric oncology. *Cancer Nursing* 1998; 21(4): 282-8.

<sup>6</sup>Steinsbekk A, Bentzen N, Brien S. Why do parents take their children to homeopaths? — an exploratory qualitative study. *Forschende Komplementarmedizin* 2006;13(2): 88-93.

<sup>7</sup>Hartel U, Volger E. Use and acceptance of classical natural and alternative medicine in Germany—findings of a representative population-based survey; *Forschende Komplementarmedizin und Klassische Naturheilkunde* 2004;11(6): 327-34

<sup>8</sup>Langler Alfred, Spix Claudia, Edelhauser Friedrich, Kameda Genn, Kaatsch Peter, Seifert Georg. *Pediatric Oncology in Germany*; *eCAM* 2011; doi:10.1155/2011/867151

<sup>9</sup>Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United States, 2007. *National health statistics reports*; no 12; Hyattsville, MD: National Center for Health Statistics. 2008. [cited on 2012 September 15]. Available from: <http://www.cdc.gov/nchs/data/nhsr/nhsr012.pdf>

<sup>10</sup>BS. A C Nielsen survey backs homeopathy benefits. *Business Standard* [Internet]; 2007 Aug 27 [cited 2012 Aug 16] Available from: <http://www.business-standard.com/india/news/a-c-nielsen-survey-backs-homeopathy-benefits/295891/>

<sup>11</sup>Das Eswara. *History and Status of Homoeopathy around the World*; New Delhi: B Jain Publishers; 2005



travelogue '35 Years In The East, Adventures, Discoveries etc.' of Dr. Honigberger, a physician and a student of Dr. Hahnemann. He treated the legendary Maharaja Ranjit Singh of the Punjab<sup>18</sup>.

The initial success of Homoeopathy in cholera and other epidemics in Bengal in the 19<sup>th</sup> century made it a known therapeutic system to the common man. Homoeopathic charitable dispensaries and hospitals were opened, and private practitioners, either disciple of experienced homoeopaths or from self-learning started practicing. It received a further impetus with the establishment of educational institutions and pharmacies. The system owes recognition to the concerted efforts of some eminent allopathic practitioners of the time, who opted for Homoeopathy and used it with remarkable success. The efforts of a few institutionally trained homoeopathic physicians paved the way for the then Bengal Provincial Government to establish the General Council and State Faculty of Homoeopathic Medicine in 1943.

The system had spread around the world, within a relatively short period as it had similarities in its approach with the prevailing traditional and ethnic medical systems and merged with them. Thus, homoeopathic hospitals, colleges and pharmacies were opened in many parts of the world during the 19<sup>th</sup> century. Simultaneously, the science of Homoeopathy evolved in the form of new drugs, pharmaceutical procedures, generation of clinical evidence, development of literature in the form of *Materia Medica*s, *Repertories*, *Pharmacopoeias*, philosophical essays, etc. However, a combination of various factors, especially in the first half of 20<sup>th</sup> century, such as difference of opinion amongst homoeopaths, the disparity between principles and practice,, advances in allopathic pharmaceuticals, resulted in temporary sidelining of Homoeopathy in most parts of the world. In contrast, in India, Homoeopathy flourished throughout the 20<sup>th</sup> century, particularly in the latter part of the century. Today, India has a strategic advantage over other countries, in terms of infrastructure and intellectual and clinical resources in Homoeopathy.

As per the Constitution of India, health care delivery is the primary responsibility of the government. Indian administrative set up being federal in nature, health care is allotted as a State subject. Post-independence in 1947, the legislatures of Indian States began enacting laws to regulate teaching, practice and research such as the Madras Registration of Practitioners of Integrated Medical Act of 1956 and the Mysore Homoeopathic Practitioners Act of 1961. State legislatures made them responsible for strengthening colleges, hospitals, dispensaries and pharmacies dealing with Indian systems of medicine and almost all the states established Directorates of Indian Medicine for the development of traditional systems. At the centre, indigenous systems of medicine became a part of the Ministry of Health and Family Welfare and growth and development of these systems was made legitimate by including these systems in the First and all the subsequent National Five Year Plans<sup>12</sup>.

The Homoeopathic Pharmacopoeia Committee (HPC) was constituted in 1962 by the Government of India to lay down the standards for quality control and manufacturing of homoeopathic drugs.

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<sup>12</sup>1988 Indian system of medicine and homoeopathy - National and state profiles. Department of Indian Systems of Medicine & Homoeopathy. New Delhi (IN): Department of Indian Systems of Medicine & Homoeopathy, Ministry of Health and Family Welfare; 1988



The Homoeopathic Research Committee constituted in 1963 initiated the process of organized homoeopathic research and identified priority research areas. A combined Council to conduct research in Indian Systems of Medicine and Homoeopathy was formed initially (1969), which paved the way for individual research councils and consequently, the Central Council for Research in Homoeopathy (CCRH) was formed (1978). The Council has evolved over the years to develop and identify broad areas of research in Homoeopathy in the country. Scientists in India conduct clinical research, drug research and basic research and efforts are made to enhance the quality of research.

The Homoeopathy Central Council Act, 1973 (HCC Act) enacted by the Indian Parliament established the legislative mechanism to regulate education and practice in Homoeopathy in the country. The National Institute of Homoeopathy (NIH) was established in 1975 in Calcutta (now Kolkata) as a model institute for under-graduate & post-graduate education and research. The Homoeopathic Pharmacopoeia Laboratory (HPL) was also founded in 1975 to lay down principles and standards for preparation of homoeopathic drugs.

A separate department was constituted in the Ministry of Health and Family Welfare to specifically look at the issues concerned with the Indian Systems of Medicine and Homoeopathy (ISM & H). The Department of ISM&H was established in 1995 and re-named as Department of AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy). A National Policy on Indian Systems of Medicine and Homoeopathy was enunciated in 2002 with the objective of enhancing the outreach of healthcare through these systems. The policy also outlined strategies for growth of education, research, drug development, infrastructure facilities, and integration of ISM&H in the health care delivery system and national health programmes. In 2014, The Department of AYUSH was converted to a Ministry of AYUSH.

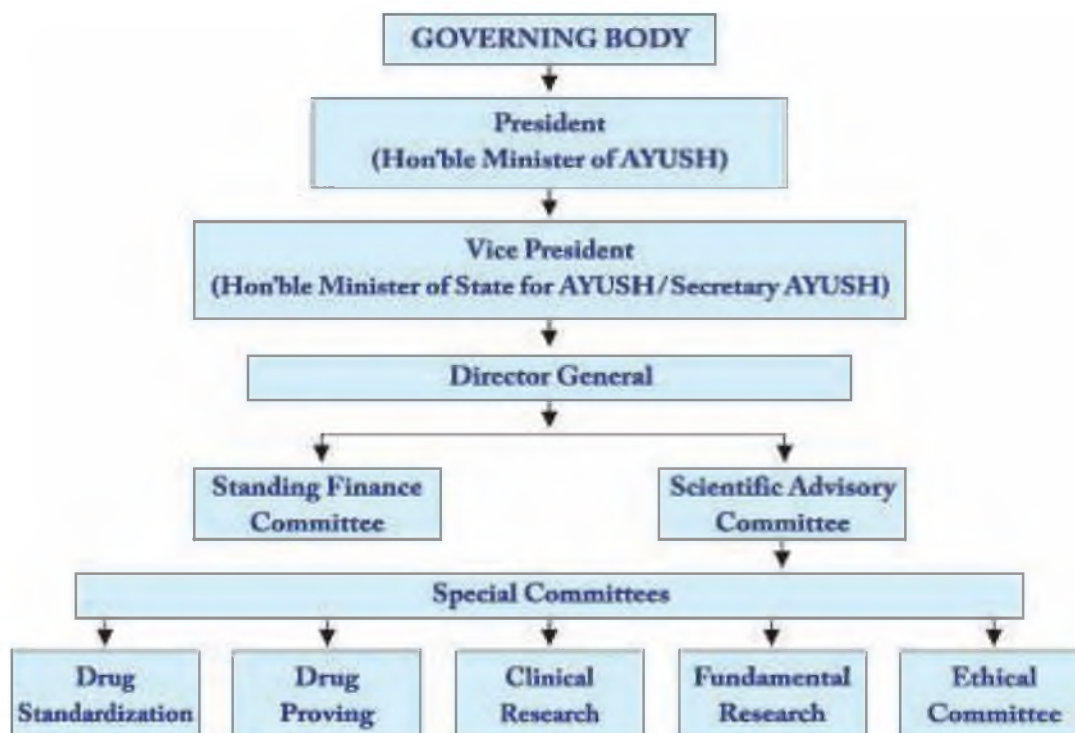
Due to the sustained efforts of the government, an institutional framework of Homoeopathy has been established at the Centre as well as in all the states. The important milestones in the development of Homoeopathy in the country are summarized on the next page.



### 13.2 Brief on CCRH

The Government of India established Central Council for Research in Indian Medicines and Homoeopathy (CCRIMH) in the year 1969 as an autonomous body under the Ministry of Health and Family Welfare to promote research and development in different Indian systems of medicine on scientific lines. However, with a view to have focussed research in each area of Indian systems of medicine and Homoeopathy, the CCRIMH was dissolved to pave way for the constitution of four separate research Councils, one each for Homoeopathy (CCRH), Ayurveda and Siddha Medicine (CCRAS), Unani Medicine (CCRUM) and Yoga & Naturopathy (CCRYN). The Central Council for Research in Homoeopathy (CCRH), formally constituted on 30th March, 1978, was set up as an autonomous organization and registered under the Societies Registration Act XXI, 1860. CCRH is fully funded/controlled by the Ministry of AYUSH. The pattern of emolument structure, i.e. pay scales and allowances, Dearness Allowance, House Rent Allowance, Transport Allowances, etc. are identical to those in case of the Central Govt. employees.

Central Council for Research in Homoeopathy (CCRH) is an apex research organization under Ministry of AYUSH, Govt. of India which undertakes, coordinates, develops, disseminates and promotes scientific research in Homoeopathy. The Headquarters of the Council are situated in New Delhi and multi-centric research is conducted through a network of 24 institutes/units all over India. These include 02 Central Research Institutes at NOIDA, Uttar Pradesh, and at Kottayam, Kerala, which have fully functional, multi-specialty OPDs and IPD facilities and pathological & radiological laboratories. There are 08 Regional Research Institutes, one Homoeopathic Drug Research Institute, 11 Clinical Research Units and Extension Units, one Drug Standardization Unit, one Clinical Verification Unit, one Medicinal Plants Unit where specific research programs are conducted.





## **AIMS**

- Formulate the homoeopathic research projects/programs
- Initiate, develop, undertake and coordinate scientific research in fundamental and applied aspects of Homoeopathy
- Exchange information with other institutions, associations and societies interested in the objectives similar to those of the Council
- Initiate collaborations of research studies with other Institutes of Excellence.
- Propagate research findings through monographs, journals, workshops and develop audiovisual aids for dissemination of information to the profession and the public.

The policies, directions and overall guidance for the activities of the Council are regulated by the Governing Body. Hon'ble Minister Incharge of AYUSH, Government of India is the president of the Governing Body and has general control on the affairs of the Council. The Council adopts the state of art tools and techniques of research management, viz. research prioritization, research programming and research management information system, making India a global leader in the field of homoeopathic research. The Scientific Advisory Committee (SAC) headed by a senior scientist of repute, provides direction to the research activities. The SAC helps the Council in formulation, appraisal, implementation, monitoring and evaluation of the research projects. The Ethical Committee of the Council formed as per the guidelines of issued by the national regulatory authorities, looks into the ethical issues involved in each of the individual research studies undertaken by the Council.

A brief about the main research areas of the Council is given below:

### **Survey, collection and cultivation of medicinal plants**

Centre of Medicinal Plants Research in Homoeopathy is located at, Ooty, Nilgiri District of Tamil Nadu,, to survey, collect and cultivate the medicinal plants used in Homoeopathy. The survey is done to identify the raw drug material for standardization and authentication of folklore claims. The Unit also maintains herbarium of various homoeopathic medicinal plants and supplies raw drug material to the Drug Standardization Units of the Council and also to the homoeopathic industry for commercial use. The students from the homoeopathic medical colleges visit the Unit to develop further understanding about the plants used for Homoeopathic Pharmacy.

### **Drug Standardization**

To ensure quality, genuineness and authenticity of raw drugs and to evaluate safety as well as efficacy of homoeopathic drugs, the Council at its Drug Standardization Units, has been conducting pharmacognostical, physico-chemical and pharmacological studies of various homoeopathic drugs. This profiling process is of high economic importance since it establishes the identity of the raw drug material and helps in laying down the standards of drugs for ensuring the quality of the product. The drug standardization data analyzed by the units is provided to the Homoeopathic Pharmacopoeia Committee for inclusion in the Homoeopathic Pharmacopoeia of India, a reference book used by the homoeopathic industry as well as the academicians.



### **Drug Proving**

Drug Proving (Homoeopathic Pathogenetic Trial or HPT) forms the basis of homoeopathic treatment. The objective is to find out the homoeopathic symptomatology of indigenous and partially proven homoeopathic drugs on healthy human volunteers. The double blind placebo controlled methodology is now being adopted in the Drug Proving Programmes and modified protocols are used to get reliable results. The Council has roped in various homoeopathic medical colleges for the Drug Proving Programme by involving students and faculty to ensure transparency and accuracy in the work. The Council also provides guidelines to the homoeopathic colleges for their Drug Proving Programme, as drug proving has been made an essential part of BHMS degree and PG curriculum in Homoeopathy.

### **Clinical Verification**

The clinical verification of homoeopathic drugs involves administration of the proven drugs on ill persons so as to reiterate the principle of similia and to verify the therapeutic action of the drugs on diseased individuals. The symptomatic data of homoeopathic medicines, including those proved by the Council and a few fragmentarily proven drugs observed to be clinically useful, is verified under this programme, thereby affirming the indications on which prescription can be based.

### **Clinical Research**

Clinical research is one of the most integral activities of any medical research body. At the same time, it is the most dynamic in nature and subjected to several modifications in light of the latest study designs. The Council, in its pursuit to conduct research on the modern scientific parameters for validation of the outcome of studies, keeps abreast with the latest developments in the field of medical research and seeks guidance from various expert committees to ensure quality research.

The highlights of the mandate behind new clinical research studies include:

- Formulating protocols in conformity with the guidelines of WHO/ICMR without conflicting the doctrines of Homoeopathy
- Ensuring ethical clearance for all protocols;
- Involving experts of modern medicine, bio-statistics and Homoeopathy for protocol making, diagnosis, follow-up, review and assessment of outcome of studies;
- Corroborating clinical evidence with laboratory tests required as per provisions of protocols
- Assessment of the studies by the internal/external reviewers and onsite visits

For better and uniform assessment of clinical symptoms, the signs and symptoms of the patients included in clinical research are quantified as per the standard assessment scores for respective disease conditions. These scores are developed by the Council. Besides the symptomatic improvement, the quality of life (QOL) of a patient is also measured through standard QOL assessment tools developed by the Council. This scale was based upon the QOL tools laid down by various organizations of repute.

### **Collaborative Research**

To seek the expertise of the scientists of various reputed institutes and avail of their resources, the Council has tied up with various national and international institutes of excellence with the state-of-the-art facilities. This liaison has not only ensured a quality work, but also provided more manpower and equipment, thus promising an unblemished output through evidence-based and inter-disciplinary research studies. The Council has collaborations with more than 30 institutes on various conditions.



### **Extra-Mural Research**

The Extra-Mural Research (EMR) Scheme is a central sector scheme of Ministry of AYUSH launched to encourage the researchers from outside the department to conduct researches in the priority areas. These priority areas include clinical trials on childhood conditions, psychosomatic conditions, respiratory diseases, skin disorders, infections such as HIV/AIDS, influenza like illnesses, Chikungunya, etc. Basic research to elicit mechanism of action of Homoeopathic medicines, to identify the nature of ultra-high dilutions in potentized form and to explore and to establish pathway of action of homoeopathic medicines are also encouraged through interdisciplinary research. The Council has been coordinating the implementation of the scheme for the projects related to Homoeopathy since 2006.

### **Documentation & Dissemination**

Documentation and its dissemination are two very important aspects in the field of science. It is believed that the real worth of a research lies in sharing its outcome with the stakeholders including clinicians, researchers, teachers, students, industry and the common man. Understanding the significance of an effective presentation in highlighting the core findings of scientific researches, the Council brings out quality publications in the form of books, monographs, handouts etc. Also, with the aim of widening the outreach of the research findings, the peer-reviewed research journal of the Council – Indian Journal of Research in Homoeopathy – was transformed into an online, open access journal. This has not only made way for a charge-free online access of the journal, but also enabled the whole peer reviewing process to be managed through the time-saving online Manuscript Management System.

Further, a publication by the Ministry of AYUSH, 'Homoeopathy – Science of Gentle Healing' is a dossier that traces the evolution of Homeopathy in India and in world, the status and strategic position of Homeopathy in India and also provides a detailed account of the homoeopathic research work of the Council so far.

### **International Collaborations**

Council is committed to enhance international cooperation for global promotion of evidence-based Homoeopathy through more international interactions, exchange of MoUs and organising international conferences. The Council liaises internationally to further its cause of scientific research and development of Homoeopathy. Plans ahead are to enter more collaborations with educational/ research institutes of countries having wide acceptability but lesser accessibility for Homoeopathy, and to establish academic chairs in countries needing technical assistance in capacity building.

### **Epidemic management**

The preventive aspect of Homoeopathy is well known, and historically, Homoeopathy has reportedly been used for prevention during the epidemics of cholera, Spanish influenza, yellow fever, scarlet fever, diphtheria, typhoid etc. Council is, therefore, taking many initiatives in the field of epidemics. The various communicable diseases on which

CCRH has conducted medical camps for conjunctivitis, dengue, japaese encephalitis, bacillary dysentery, yellow fever, jaundice, typhoid, measles, meningitis, cholera, viral fevers, kala azar, plague, malaria, chikungunya and recent past swine flu and chikungunya. Homoeopathic medicines were distributed for various disease conditions as mentioned above as per the genus epidemicus for preventive purpose. Similarly homoeopathic medicines were given for treatment purpose after a person got infected with the said disease tailored to the patient as per individualization.



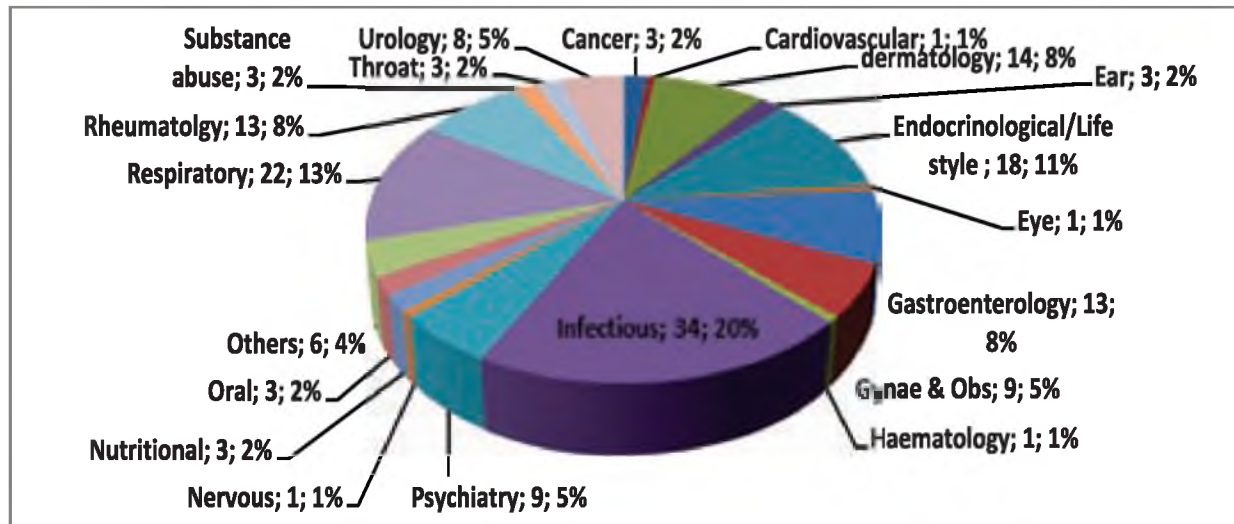
### CORE ACHIEVEMENTS OF CCRH SINCE INCEPTION

The Council is the premier and unique research organization in the world fully funded by the Government of India that undertakes studies on modern scientific parameters, using cutting edge technology. The Council conducts multi-centric research studies through its institutes and units and also in collaboration with reputed institutes of excellence. The research is undertaken with the goal that the outcome of the research translates into practice and the benefit of the research is extended to the profession and the public. The research outcomes are published in the form of books, monographs, manuscripts in national and international journals. Salient achievements in the areas of diseases of national importance, epidemic diseases, tribal health, basic research and drug development are as follows:

#### CLINICAL RESEARCH

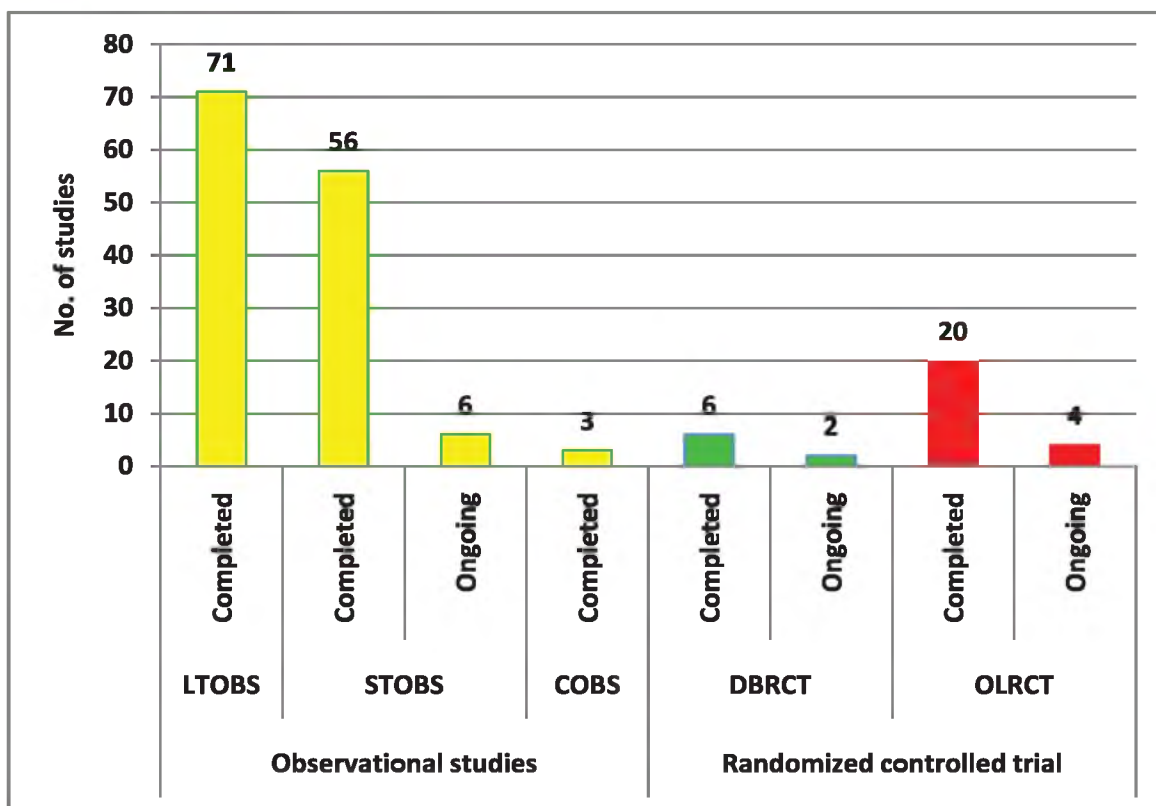
Clinical Research has been the core research area of CCRH since inception. Till date one hundred and sixty one (161) clinical studies have been carried out. 20% of these studies belong to infectious diseases, followed by lifestyle and endocrinal disorders. A few significant conditions in which research has been undertaken are: HIV/AIDS, filariasis, influenza like illness, chikungunya, Acute Encephalitis Syndrome/ Japanese encephalitis, behavioural problems in children and adults, depression, schizophrenia, attention deficit hyperactive disorder, autism, alcohol dependence, diabetes and its complications, hypertension, dyslipidaemia, polycystic ovarian syndrome, uterine fibroids, cervicitis and cervical erosion, Gastro esophageal reflux disease, gastroenteritis, haemorrhoids, osteoarthritis, cervical spondylosis, chronic bronchitis, bronchial asthma, acute tracheobronchitis, acute rhinitis, acute diarrhoea, furunculosis, psoriasis, vitiligo, warts, urolithiasis etc.





## RESEARCH STUDY DESIGN

The investigating team of each study tries to adopt research designs, as per the research question and objectives. Observational studies/ cohort studies are undertaken to generate hypothesis, which will further help to take up cause-effect relationship studies, i.e., Randomized controlled trials, the 'gold standard' in clinical research. Amongst them, 24 open label RCTs and 08 double blind controlled trials are undertaken, out of which 26 have been completed and 06 are on-going. The figure below elaborates this further.



LTOBS- Long term observational studies; STOBS: Short term observational studies; COBS- Controlled observational studies; DBRCT-Double blind Randomized controlled trials; OLRCT: Open label Randomized controlled trials

On the other hand, 05 validation studies are being undertaken to validate the essential drugs which will improve homoeopathic Materia Medica and Repertory, and further help the prescription standards.

### Levels of publications and gradation

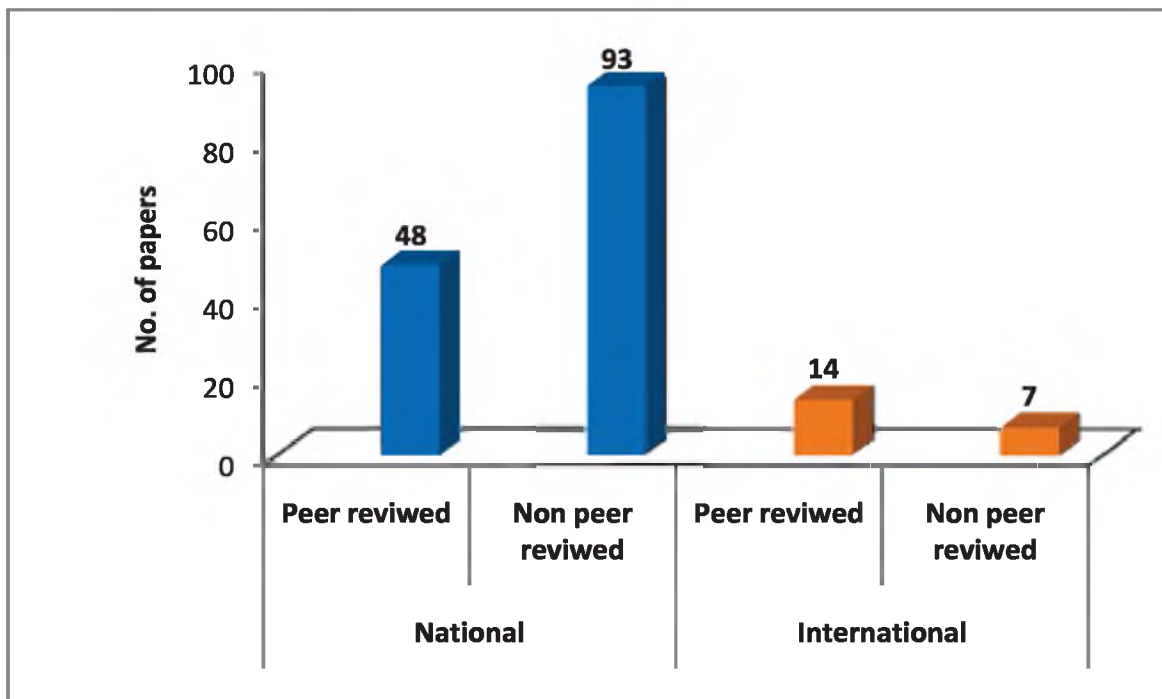
In clinical research, there are different levels of evidence. World Health Organization in its publication – General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine (2008) – has described different levels of evidence with following recommendations:

Grade	Recommendation
A (Evidence levels quality Ia, Ib)	Requires at least one randomized controlled trial as part of the body of literature of overall good and consistency addressing the specific recommendation.
B (Evidence levels IIa, IIb, III)	Requires availability of well-conducted clinical studies but no randomized clinical trials on the topic of recommendation.
C (Evidence level IV)	Requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates absence of directly applicable studies of good quality.



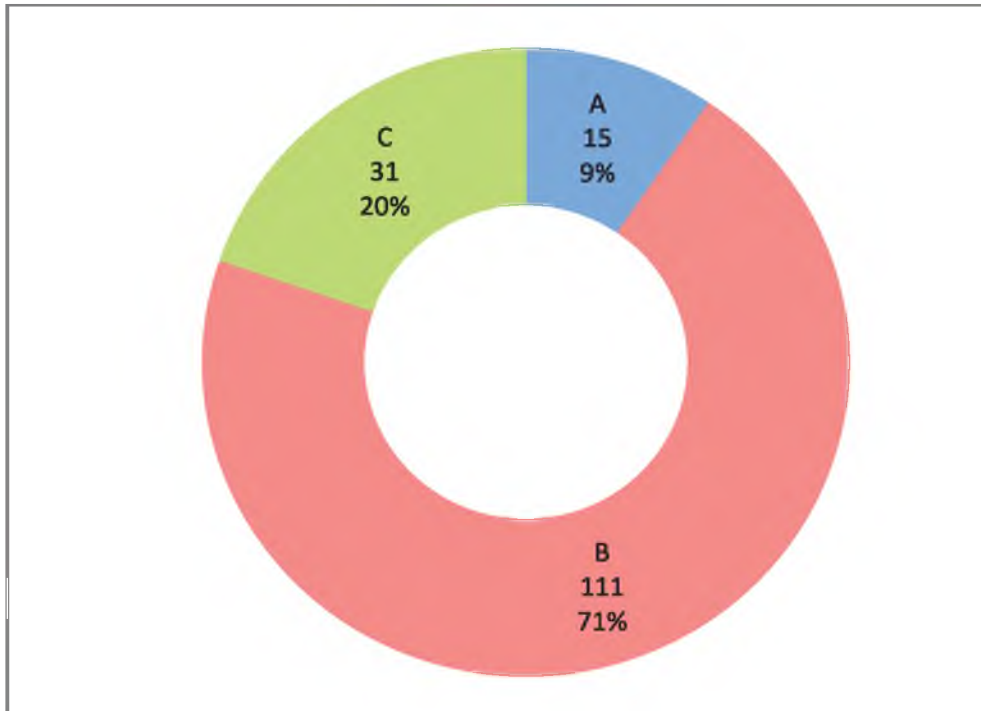
Basing on these, the publications of the Council are graded.

In the initial years, Council started publishing the results of its studies in the CCRH Quarterly Bulletin, Few studies were published in international journals also. Council is now encouraging its scientists to publish as many cases or case series as possible to generate more evidence. The results of some of these studies have been disseminated in the national, international journals, as well as in the Council's Indian Journal of Research in Homoeopathy, which is now one of the reputed peer reviewed journals of Homoeopathy. A total of one hundred and sixty two (162) publications have been done.





## PUBLICATIONS SHOWING LEVELS OF EVIDENCE



### Other publications

- 06 Monographs: Each on diabetes, menopause, urolithiasis, HIV/AIDS, Lymphatic filariasis and bronchial asthma have been published.
- Clinical research studies Series in 03 volumes have been published covering 28 disease conditions.

### Highlights of major research findings

#### Infectious diseases

##### HIV/AIDS

A double blind study on HIV was undertaken in 1990s on patients with persistent generalised lymphadenopathy. Individualized homeopathic medicine was prescribed to patients in one group, while the other group was given placebo. Statistically significant difference was observed between verum and placebo groups ( $p=0.04$ ) in CD4+ cell T lymphocyte counts in the 6 months treatment period. *Phosphorus*, *Lycopodium*, *Pulsatilla* and *Nux vomica* were some of the useful medicines in this strata.

In another observational study with single arm design, 534 patients maintained asymptomatic status in for a period varying from 3-10 years, out of 572 patients at baseline. In symptomatic cases, intercurrent illnesses such as oral candidiasis, diarrhoea, weakness and weight loss responded favourably to homœopathic medicines. *Calcarea carbonica*, *Arsenicum album*,



*Bryonia alba*, *Rhus toxicodendron*, *Pulsatilla*, *Hepar sulphuris*, *Mercurius solubilis* and *Thuja* were some of the useful medicines found in this study.

Further research on HIV patients also showed statistically significant changes in viral load, as compared to the baseline data (95% CI, 0.16, 1.24,  $p=0.012$ ), Body Mass Index (95% CI, -1.12, -0.57,  $p<0.001$ ), physical health, psychological and environmental domains of WHO-Quality of Life – Bref ( $P<0.05$ ).

### **Lymphatic Filariasis**

Council has undertaken several long term cohort studies in filariasis, prevalent in the coastal areas of India. The findings on 6268 patients showed complete absence of clinical events during the treatment and no recurrence during follow up period of 3-5 years. Grade I and Grade II lymphoedema disappeared or reduced after treatment.

Single blind follow up study of 69 months has shown effectiveness with homoeopathic treatment reducing the frequency of filarial fevers by 20% ( $P<0.05$ ) amongst amicrofilaraemic cases. *Rhus toxicodendron*, *Apis mellifica*, *Sulphur* and *Thuja* were the most useful medicines.

### **Acute encephalitis syndrome**

Another important infectious disease is acute encephalitis syndrome with 30% death rate in the prevalent areas. Adjuvant homoeopathy given in three studies, along with institutional management protocol (IMP), compared to IMP alone, enabled to reduce the death rate by 15-30 % with a statistical significant difference. Medicines found effective and useful were *Belladonna*, *Stramonium*, *Hyoscyamus*, *Opium*, *Helleborus*, *Sulphur*, *Ars. alb.* and *Calcarea carb.*

### **Acute diarrhoea in children**

A prospective, multi-centre observational study was conducted by CCRH during 2005 – 2008, with 14 pre-defined homoeopathic medicines. A total of 321 children were enrolled for the study. The difference in the mean number of stools and diarrhoea index score developed by the CCRH was found to be statistically significant ( $p=0.0001$ ). *Podophyllum*, *Chamomilla*, *Aethusa cynapium*, *Calcarea Carbonica*, and *Mercurius solubilis* were found to be most useful medicines.

### **Acute otitis media**

A randomized placebo-controlled parallel group trial to compare the effectiveness of Homoeopathy vs Conventional therapy in Acute Otitis Media (AOM) was conducted from May 2009 to April 2010, to evaluate the number of patients requiring antibiotic treatment in both groups. 81 patients were included, out of which 80 completed follow-up; 41 for conventional (analgesic, anti-inflammatory and anti-pyretics) and 40 for homeopathic treatment (in LM potency). Outcomes were assessed by the Acute Otitis Media-Severity of Symptoms (AOM-



SOS) Scale and Tympanic Membrane Examination over 21 days. 39 (97.5%) patients had to be eventually prescribed antibiotics in the conventional group, whereas no antibiotics were required in the Homeopathy group. 85% of patients were prescribed six homeopathic medicines. The medicines prescribed frequently and found effective were: *Pulsatilla nigricans*, *Mercurius solubilis*, *Silicea*, *Chamomilla*, *Lycopodium clavatum* & *Sulphur*.

### **Lifestyle disorders**

India is sitting on the time-bomb called diabetes mellitus and is unfortunately becoming the global leader in the epidemic of diabetes. A few studies on diabetes and its complications, hypertension and lipoproteinemia have shown positive results with homeopathic medicines. In these conditions, allopathic medicines could be tapered. Ulcers due to diabetes could also be well managed with individualized homeopathy along with calendula dressing.

#### Diabetic neuropathy

A prospective multi-centric clinical observational study was carried out from October 2005 to September 2009 by CCRH. Patients were evaluated by the Diabetic Distal Symmetric Polyneuropathy Symptom Score (DDSPSS) developed by the Council. The appropriate constitutional medicine was selected and prescribed in 30, 200 and 1 M potency on an individualized basis. Patients were followed up regularly for 12 months. 247 patients (123 males and 124 females) completed the follow up. A statistically significant improvement in DDSPSS total score ( $p = 0.0001$ ) was found at 12 months from baseline. *Lycopodium clavatum*, *Phosphorus* and *Sulphur* were the medicines most frequently prescribed and found useful.

#### Diabetic foot ulcer

A prospective observational study was conducted to ascertain the usefulness of a group of 15 pre-defined homeopathic medicines in treatment of patients suffering from diabetic foot ulcer. (October 2005 to September 2009). A total of 63 cases completed the follow-up and treatment was given for six months. Patients were assessed through Diabetic Foot Ulcer Assessment Scale, developed by the Council. In 57 cases (90.6%), there was complete ulcer healing. Reduction in mean Ulcer Assessment Score was found to be statistically significant ( $P=0.001$ ) after the treatment. *Silicea*, *Sulphur*, *Lycopodium*, *Arsenic album* and *Phosphorus* were found to be most useful.

### **Mental disorders**

Mental disorders bear great challenge in treatment due to the societal stigma attached with these patients. Council has explored this area through research on behavioural disorders of children and adults, schizophrenia, depression, alcohol dependence and attention deficit hyperactive disorder.



### Behavioural problems

The objectives of the study were to identify a group of useful homoeopathic medicines in the management of behavioural disorders (1984 – 2005). Out of 4179 registered patients, a total of 3424 patients had regular follow up for varying periods. The study population consisted of following clinical conditions (ICD 09) - Senile Dementia, Transient organic psychotic condition, Schizophrenia, Affective disorders, Paranoid disorders, Specific non-psychotic mental disorders following organic brain damage, Neurotic disorders, Personality disorders (Hysterical/Obsessive), Addictive disorders (Alcoholism), Disturbances of emotions specific to childhood and adolescence, Acute reaction to stress, Depressive neurosis and Psychosomatic disorders. 1595 patients improved markedly, 766 moderately, 426 mildly, and 437 did not improve. Medicines indicated frequently and found useful were: *Arsenicum album*, *Calcarea carbonica*, *Hyoscyamus niger*, *Ignatia*, *Lachesis*, *Natrum muriaticum*, *Nux vomica*, *Phosphorus*, *Pulsatilla*, *Stramonium*, *Sulphur* and *Tuberculinum*.

### **Musculoskeletal disorders**

#### Cervical spondylosis

A prospective randomized exploratory clinical study was undertaken for pain management of cervical spondylosis with two types homoeopathic potencies, millisemal (LM) potencies versus centesimal (CM) potencies. The Area Under the Curve (AUC) for pain was significantly less in the LM group [Median (IQR): 112 (86 to 299); p= 0.007]. Overall quality of life of the patients after homeopathic medication showed significant improvement in the WHO-BREF domains: Physical, Psychological, and Environmental only. Most frequently used homeopathic medicines in both the groups were: *Lycopodium*, *Sulphur*, *Bryonia*, *Phosphorus*, *Calcarea carbonica*, *Nux-vomica*, *Rhus-toxicodendron* and *Natrum muriaticum*.

#### Osteoarthritis

An observational study on 1557 patients suffering from osteoarthritis improved pain, joint tenderness, limitation of movement and stiffness. *Bryonia*, *Calcarea carbonica*, *Calcarea fluorica*, *Causticum* and *Formica rufa* were frequently indicated.

### **Dermatological disorders**

Vitiligo is a long-term skin problem that produces white patches of depigmentation on certain sections of skin. 207 patients with vitiligo were treated with individualized homoeopathic medicines. *Arsenicum sulphuratum flavum*, *Arsenic album* and *Nitric acid* were found to be useful. *Syphilinum*, when used as an intercurrent remedy, was more effective.

After the above study in 1990s, another observational multicentric study was undertaken aimed at further evaluating the usefulness of homoeopathic therapy in the management of vitiligo. 432 patients of all age groups suffering from vitiligo were enrolled in the study and 169 patients completed 2 years of follow-up. Vitiligo Symptom Score (VSS) was used to assess the change. Homoeopathic treatment was found to be useful in relieving vitiligo in varying degrees in 126



patients. Ten homoeopathic medicines were found useful in the study, of which *Sulphur*, *Arsenicum album*, *Phosphorus* and *Lycopodium clavatum* were the most commonly indicated and useful medicines.

### **Standard Treatment Guidelines**

The foremost aim of medical research is to translate research into public benefit. More the scientific rigour, more tangible are the results and better these would be adopted for users and beneficiaries.

Keeping in view the above research findings of Council, as well as experiences of other researchers and clinicians on specific topics, Council has developed Standard Treatment Guidelines (STGs) on 20 disease conditions on the basis of evidence generated from clinical studies undertaken and subsequently published by the Council. These are: Acute otitis media, Alcohol dependence, Attention deficit hyperactivity disorder, Benign prostatic hyperplasia, Bronchial asthma, Cancer, Depression, Diabetes mellitus, Diarrhoea, Hypertension, Irritable bowel syndrome, Lymphatic filariasis, Menopause, Polycystic ovarian syndrome, Psoriasis, Sinusitis, Rhinitis, Urolithiasis, Uterine fibroids and Vitiligo.

### **Conclusion**

Council is committed to strengthen evidence basis in Homoeopathy through rigorous and contemporary clinical research. Identifying priority areas and finding answers to key research questions is one of the vital goals of Council. The fortification of special clinical research committee with experiences conventional and homeopathic clinicians, and knowledgeable scientists and statisticians has brought more credibility to the ongoing clinical researches of Council.

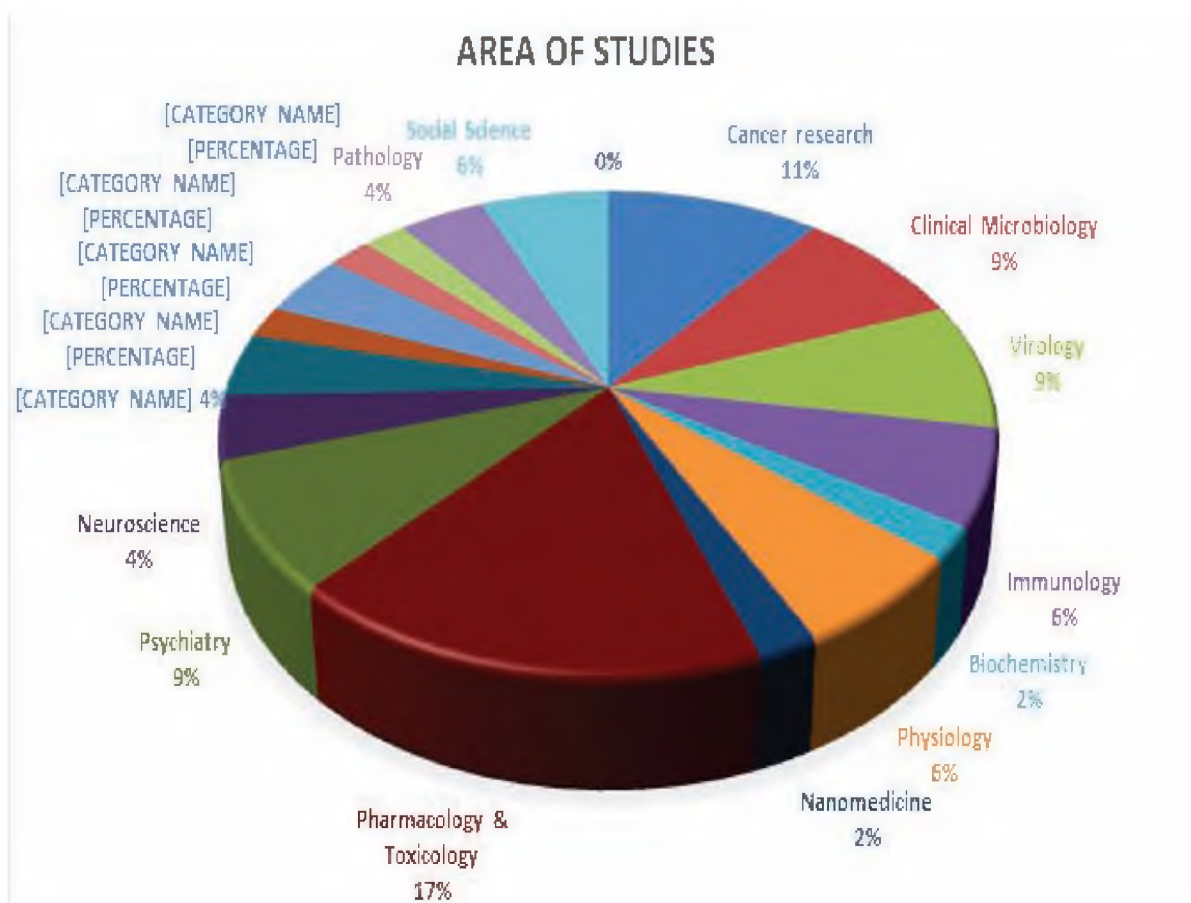
### **Basic and Fundamental Research**

The Council collaborates with various institutes of excellence to utilize the potential of the best of the brains, in order to yield the maximum results. The main objective of the collaborative studies is to conduct evidence-based, inter-disciplinary research studies and to validate the efficacy / concepts of Homoeopathy on scientific parameters. It has concluded 37 collaborative studies with national institutes and 3 other with international institutes in a span of 23 years from 1979 to 2002 with a total of 46 publications. These not only include CSIR institutes like Central Institute of Medicinal and Aromatic Plants, (CIMAP) Lucknow, CDRI, Lucknow, Institute of Minerals and Materials Technology, Bhubaneswar, ICMR institutes like National Institute of Cholera and Enteric Diseases (NICED) etc., Jawahar Lal Institute of Post-Graduate Medical Education & Research (JIPMER) Puducherry, IIT Delhi, Bhabha Atomic Research Centre (BARC), All India Institute of Medical Sciences (AIIMS), Delhi University, Panjab University etc. but also international universities like University of California, Los Angeles (UCLA). The encouraging results have not only generated wider acceptance and credibility of homeopathy among scientific communities but also have aroused interest among researchers to carry out





further research in this field. Several Ph.D students of basic sciences have undertaken research in homeopathy as a part of their doctoral thesis due to the wider scope of research in a relatively untouched field of homeopathy and publications in peer-reviewed journals. There are 13 ongoing studies and many more will add-on to the list in the years to come.



### **EXPRESSION OF INTEREST SCHEME OF THE COUNCIL**

Every research proposal received by the Council has to undergo various levels of shortlisting before it is financed and gets final approval. Council has identified certain priority areas of research and to encourage collaborative studies in these identified areas has developed a scheme of 'expression of interest'. Council invites through EoI, various research proposals from interested scientist/institute which are then shortlisted by Special committees (SCFR) formed. It is consisting of highly qualified, experienced and reputed interdisciplinary scientists with excellence in their areas. shortlisted proposals are then developed into full proposal by combined efforts of Council and collaborating institute with due approval of outside experts. After undergoing the hurdles of Standing Advisory Committee and Standing Finance Committee the final approved study starts which is supervised by the Council from time to time.



## **GLIMPSE OF THE STUDIES**

The studies which have a greater impact on the healthcare of the masses deserve a special mention. Cancer is one of the leading causes of deaths in the world and homeopathy offers a relatively safe, cost-effective, non-invasive and easy to administer mode of onco-therapeutics with minimal side effects and relapse rates. A preclinical study titled “*Sulphur* alters NFκB-p300 cross-talk in favour of p53-p300 to induce apoptosis in non-small cell lung carcinoma” elucidated the molecular mechanism underlying the apoptogenic effect of *sulfur* in otherwise drug-resistant NSCLC cells, providing avenues for further clinical studies<sup>13</sup>. A yet another pre-clinical study published in a peer reviewed journal, *Oncology Reports*, titled “Contribution of ROS-p53 feed-back loop in *thuja*-induced apoptosis of mammary epithelial carcinoma cells” explored the anti-tumorigenic role of *Thuja* on mammary epithelial carcinoma cells and showed that *thuja* can be a potential medicine for targeted therapy by inducing apoptosis of functional p53-expressing mammary epithelial carcinoma cells<sup>14</sup>. Another study published in *BMC Complementary and Alternative Medicine* 2013, showed the role of *Calcarea carbonica* in inducing apoptosis in cancer cells in p53-dependent manner via an immune-modulatory circuit<sup>15</sup>. All these studies have provided new insights into the mechanism of action of these medicines in our age-old practice of homeopathy. Apart from the conditions like cancer a lot work has been done on frequently found conditions like Renal stones, Diabetes etc. to create evidence for their effectiveness. In a study titled, “Homoeopathic preparation of *Berberis vulgaris* as an inhibitor of Calcium oxalate crystallization: An in vitro evidence done at Dr. ALMPGIBMS, University of Madras *B. vulgaris* has been found to be a potent drug against Calcium Oxalate crystallization which adds up to the experimental evidence to support the efficacy of the homeopathic preparation of the *B. vulgaris* in modulating the primary events of stone formation<sup>16</sup>.”

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<sup>14</sup>Saha S, Bhattacharjee P, Mukherjee S, Mazumdar M, Chakraborty S, Khurana A, Nayak D, Manchanda R, Chakrabarty R, Das T, Sa G. Contribution of the ROS-p53 feedback loop in *thuja*-induced apoptosis of mammary epithelial carcinoma cells. *Oncol Rep.* 2014 Apr;31(4):1589-98. doi: 10.3892/or.2014.2993. Epub 2014 Jan 24

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<sup>16</sup>Ganesan T, Ravi DB, Vasavan J, Khurana A, Nayak D, Periandavan K. Homoeopathic preparation of *Berberis vulgaris* as an inhibitor of Calcium oxalate crystallization: An in vitro evidence. *Indian J Res Homoeopathy* 2015;9:152-7



In one more study on Diabetes titled, “Effect of homeopathic preparations of *Syzygium jambolanum* and *Cephalandra indica* on gastrocnemius muscle of high fat and high fructose-induced type-2 diabetic rats” homeopathic preparations of *S. jambolanum* and *C. indica*, including ultramolecular dilutions found to exhibit antidiabetic effects, improving insulin action through activation of insulin signaling molecules in skeletal muscle of type-2 diabetic rats<sup>17</sup>.

A yet another important Study worth mentioning titled, “Preliminary study to evaluate analgesic and behavioural effects of *Lycopodium clavatum* in experimental animals” suggests that the homeopathic formulations (3X, 6X, 12X and 30C) of *Lycopodium clavatum* possess central nervous system (CNS) depressant activity<sup>18</sup>.

Several pharmacological and toxicity studies were undertaken to establish the safety of these drugs, a step further towards clinical trials. Toxicity studies were conducted to assess the level to which substances are toxic for humans and animals. In a study to evaluate the safety profile of Homeopathic mother tinctures viz. *Ricinus communis*, *Rauwolfia serpentina*, *Bellis perennis*, *Curcuma longa*, *Terminalia arjuna* and *Tribulus terrestris*, results demonstrated that all homeopathic mother tinctures are relatively safe when administered orally to rats<sup>19</sup>. In a yet to publish study to screen for the pharmacological and safety studies of the homeopathic drugs – *Eupatorium perfoliatum* (6CH, 12CH, 30CH, 200CH) and *Crotalus horridus* (6CH, 12CH, 30CH, 200CH) it was concluded that homeopathic mother tinctures used in the study as well as *Eupatorium perfoliatum* and *Crotalus horridus* at different dilutions are relatively safe when administered orally to rats.

A notable volume of research work in the field of virology has been conducted, especially on Japanese encephalitis. Many countries of Asia have an estimated 68,000 clinical cases every year and currently there is no cure for the disease. In such a scenario, homeopathy offers a hopeful clinical intervention and *Belladonna 200* has shown some positive results in evading virulent Nakayama strain JEV infection in suckling mice fed with the medicine providing scope for further research<sup>20</sup>.

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<sup>17</sup>Sampath S, Narasimhan A, Chinta R, Nair K R J, Khurana A, Nayak D, Kumar A, Karundevi B. Effect of homeopathic preparations of *Syzygium jambolanum* and *Cephalandra indica* on gastrocnemius muscle of high fat and high fructose-induced type-2 diabetic rats. *Homeopathy* 2013; 102(03): 160-171 DOI: 10.1016/j.homp.2013.05.002

<sup>18</sup> Sundaram EN, Singh KP, Reddy PK, Kumar S, Nair KR, Khurana A, Singh H, Nayak C. Preliminary study to evaluate analgesic and behavioural effects of *Lycopodium clavatum* in experimental animals. *Indian J Res Homoeopathy* 2013;7(4):168-74.

<sup>19</sup> Singh S, Kumar R, Karwasra R, Kalra P, Rani S, Nayak D, Gupta Y K. Evaluation of safety profile of homeopathic mother tinctures. *Indian J Res Homoeopathy* 2014;8:81-6

<sup>20</sup> Sengupta M, Bandyopadhyay B and Das S. Preventive and Curative Role of *Belladonna 200* Against Japanese Encephalitis Virus Infection in Adult Mice. *Int. J. Curr. Microbiol. App. Sci* (2014) 3(1): 160-166



Clinical research studies of the H1N1 influenza pandemic in India with homeopathic intervention were undertaken to survey the practice of homeopathic practitioners in India in disease management and preparedness<sup>21</sup> Many more studies in various disciplines of science have been conducted as shown in the table. The positive results indicate that we are not far away in unveiling the mystery underlying Homeopathy and its application to the welfare of the society.

Apart from these collaborations, Council has established India's first State of art virology laboratory at Dr. Anjali Chatterjee Regional Research Institute for Homeopathy in Kolkata in the year 2017 for conducting basic and fundamental research in Homeopathy for viral diseases like influenza, Japanese encephalitis, dengue, chikungunya and swine flu. Several studies, primarily on dengue, were undertaken such as studying the NS1 antigen expression by dengue virus infected vero cells under the influence of *Crotalus (6C)*<sup>22</sup>, direct changes in *Aedes albopictus* midgut cells by *Rhus tox 6C* in relation to dengue virus infection<sup>23</sup>, exploring the primary cell culture of *Aedes albopictus* midgut cells as a prospective model for in vitro study of arboviruses etc. and the major findings of the studies have been published. Further, well-equipped chemistry laboratory and pharmacology laboratory with zebra fish facility have been established at Dr. D.P. Rastogi Central Research Institute for Homeopathy, NOIDA for conducting experiments. Research is going on full swing at these institutes as evident from the studies undertaken and the publications. Also establishment of fundamental research laboratory in homeopathy at Indian Institute of Engineering Science and Technology (IIST), Shibpur, Howrah for materialising long standing requirement for homeopathic science is under progress and work of infrastructure development has started. Besides, the Council is optimistic in expanding its international collaborations with many more prestigious institutes in the future years.



<sup>21</sup>Mathie R T, Baitson E S, Frye J, Nayak C, Manchanda R K, Fisher P. Homeopathic treatment of patients with influenza-like illness during the 2009 A/H1N1 influenza pandemic in India. *Homeopathy*. 2013 Jul;102(3):187-92. doi: 10.1016/j.homp.2013.04.001.

<sup>22</sup>Sinha M, Roy E, Katoch S, Chakarborty U, Das S, Sarkar D, Nayak D, Khurana A, Manchanda R K. Increased NS1 antigen expression by dengue virus infected vero cells under influence of ultradiluted timber rattlesnake venom (*Crotalus 6c*). *World Journal of Pharmacy and Pharmaceutical Sciences*, Volume 6, Issue 7, 1096-1106

<sup>23</sup>Sinha M, Roy E, Das S, Sarkar DB, Nayak D, Khurana A, et al. An observation on direct changes in *Aedes albopictus* midgut cells by *Rhus tox 6C* in relation to dengue virus infection. *Indian J Res Homeopathy* 2016;10:258-65.



### **KEEPING AN EYE ON FUTURE...**

Though homoeopathy has been curing and serving the humanity since last 200 years but due to its hidden perspectives like mechanism of action, nature of medicines etc., it has been wrongly tagged as placebo effect and not given the recognition, which it really deserves. Although the practitioners are repeatedly giving the clinical evidences of its been working but it requires a sincere team effort with interdisciplinary scientists to unveil these hidden perspectives.

#### **Drug proving**

Apart from various research areas, the focus and mandate of CCRH for drug proving programme was on proving of fragmentarily proved drugs and indigenous drugs. Council is following a harmonised drug proving protocol in coherence with the guidelines also followed by the international organisations like LMHI, HPCUS, ECH etc. Initially the proving trials were done with mother tincture and potencies ranging from 3X to 1M. At present there are eight drug proving centers and provings are being conducted in association with the Homoeopathic Medical Colleges in the vicinity of these centres. The Council is also giving technical support in form of providing the Drug Proving protocol, Training manual and module for homoeopathic drug proving and also conducting orientation workshop at the homoeopathic medical colleges that aspire to carry out this research programme at their level.

Since inception, the achievements of drug proving research section is as mentioned below:

- Drugs Proved: **112** drugs and Proving data of **92** drugs has been published
- Books published: **06** containing Drug Proving data of **82** drugs + **01** book in printing containing Drug Proving data of **10** drugs
- Articles published in CCRH Quarterly Bulletin: **57**
- Articles published in IJRH: **26**
- Drug Monographs published: **21**
- Training Manual and Module for Homoeopathic Drug Proving: **01**
- Revised Drug Monographs for **03** drugs submitted for publication

Till now, the CCRH has methodically proved 112 drugs, out of which 83 drugs are of plant origin, 09 are of animal origin and 18 are prepared from chemicals, 01 Sarcocolla and 01 is nosode. There are 15 drugs of Indian origin and 02 allopathic drugs, which are proved in homoeopathic dilutions for the first time by CCRH, which are mentioned below:



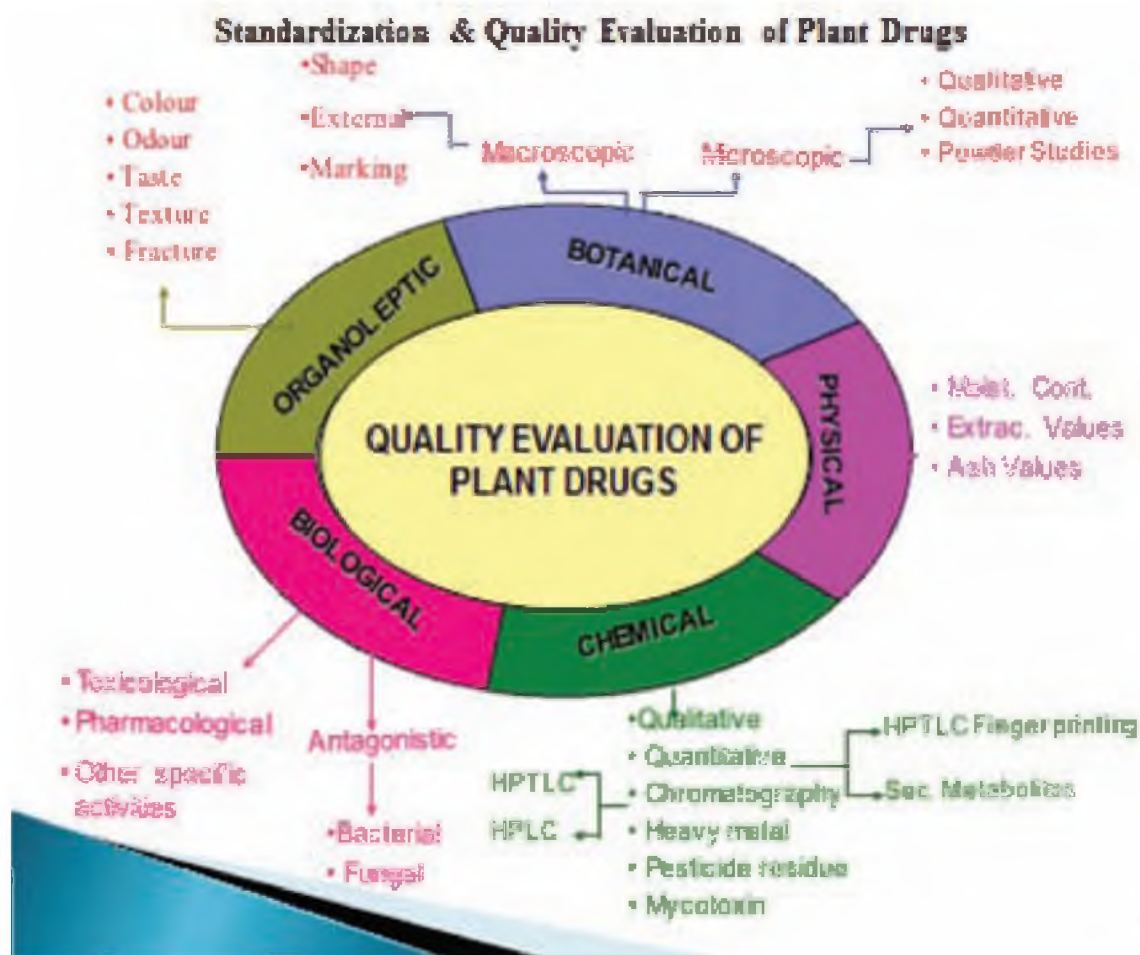
<b>S.No.</b>	<b>Name of the drug</b>	<b>Source of drug</b>	<b>Year of proving</b>
1.	Cassia sophera	Plant	1972-73 & 1974-75
2.	Curcuma longa	Plant	1973-74
3.	Cassia fistula	Plant	1980-81 & 1982- 83
4.	Glycyrrhizaglabra	Plant	1993-94
5.	Phyllanthusniruri	Plant	1994-95
6.	Asclepiascurassavica	Plant	2007-09
7.	Buxussempervirens	Plant	2007-09
8.	Cardiospermumhalicacabum	Plant	2007-09
9.	Coleus aromaticus	Plant	2005-07
10.	Cuscutareflexa	Plant	2002-03
11.	Cynarascolymus	Plant	2007-09
12.	Azathioprine	Chemical	2009-11
13.	Brassica oleracia	Plant	2012-13 & 2013-14
14.	Cyclosporin	Chemical	2008-10
15.	Foeniculumvulgare	Plant	2008-10
16.	Perseaamericana	Plant	2010-11
17.	Withania somnifera	Plant	2010-11, 2012-13



## Drug Standardisation

Drug standardisation is carried out to lay down the standards for homoeopathic drugs in terms of their pharmacognostical, physico-chemical and pharmacological profiles of plant origin, chemical, animal and microbial drugs for authenticity, purity, quality, safety and efficacy. It encompasses a comprehensive evaluation of the homoeopathic drugs in order to study various qualitative and quantitative characteristics of drugs. It consists of the following:

1. Pharmacognostical studies
2. Physico-Chemical Studies



The Council has established standards on 625 drugs since inception which consists of the following:

- Pharmacognostical studies on 304 drugs
- Physico-chemical studies on 321 drugs
- Pharmacological studies on 151 drugs
- 145 drugs have been studied on all three aspects

The standards laid down by Council through this activity have been incorporated in 10 volumes of Homoeopathic Pharmacopeia of India (HPI), Homoeopathic Pharmaceutical Codex, as well as in monographs and books published by Council.



### **Revision of Homoeopathic Pharmacopeia of India (HPI):**

Council has undertaken the revision work of HPI in the year 2014. The drugs for revision were identified from EDL as per the ABC-VED matrix on the basis of the frequency of the drug being prescribed by the homoeopathic doctors. The aim of this exercise is to revise the existing HPI monographs in the light of modern scientific knowledge and WHO guidelines on drugs safety and homoeopathic preparations, and to bring them to the standard of other foreign Pharmacopoeias. 104 drugs have so far been revised accordingly.

### **Study for laying down the Finished Product Standards (FPS)**

A study for laying down the FPS for 150 homoeopathic drugs, encompassing their comprehensive evaluation with respect to their pharmacognostic, physico-chemical and pharmacological profiles is being carried out.

**Council's unit in Emerald, Ooty, Centre of Medicinal Plants Research in Homoeopathy (CMPRH)**, has conducted 214 survey tours throughout India for collection of the raw drug material of homoeopathic medicinal plants. It has also provided 469 authentic drug material to the Drug Standardisation Centers of the Council for the drug standardization studies. Besides collection, cultivation of homoeopathic medicinal plants, both exotic (61) and indigenous (14) origin, is being maintained by this unit in the form of germ plasm under the polyhouse made up of polycarbonate sheets. This unit has also studied the techniques for cultivation and enhanced yield for further development of the area of cultivation, increased market demand and higher economical values of exotic homoeopathic medicinal plants.

### **Clinical Verification**

Central Council for Research in Homoeopathy has been conducting clinical verification studies of indigenous, rare and fragmentarily proved drugs since its inception in 1975. Some of these drugs have been first proved by CCRH. The program is multicentric, as per open clinical trial design in which patients are enrolled from O.P.D., as and when they come, and after confirmation of their inclusion criteria as per a laid out standard. The primary objective of the study is to clinically verify the symptomatology of the drug, as observed during proving or as mentioned in other literature. The secondary objective is to ascertain the clinical symptoms that did not appear during the proving but were improved in the patients after its administration, either completely or partially. The homoeopathic medicines are prescribed on the basis of symptom similarity. The individualistic symptoms of each case are evaluated as per the *Materia Medica* & *Repertorial index*, especially devised for the program from the proving data.

Clinical Verification of symptomatic data of **106** drugs have been conducted so far. It includes the following:





- a. 72 remedies of plant origin which includes 39 indigenous remedies. *Andrographispaniculata, Azadirachtaindica, Bacopa monniere, Cephalandraindica, Curcuma longa, Cynodondactylon, Embeliaribes, Ficusreligiosa, Gymnemasylvestre, Holarrhenaantidysenterica, Justiciaadathoda, Ocimumcanum& sanctum, Rauwolfia serpentine, Syzigiumjambolanum, Terminalia arjuna&chebula, Tylophoraindica* etc. are a few of the important plant remedies verified by the Council.
- b. 22 remedies of chemical origin which includes *Acid butyricum, Anthrakokali, Arsenicumbromatum, Ars sulph flavum, Baryta iod, Baryta muriaticum, Benzinumnitricum, Benzoicumacidum, Chromium kali sulph, Cuprum aceticum, Cuprum oxydatumnigrum, Ferrumpicricum, Formic acid, Gallicumacidum, Hecla lava, Ichthyolum, Kali muriaticum, Lapis albus, Magnesia sulph, Paraffin, Skookum chuck and Thymol*. Under this category drugs from allopathic drugs have also been proved and verified, like *Azothioprine and Cyclosporin*.
- c. 09 remedies of animal origin which includes 07 spider remedies. *Araneadiadema, Araneascinencia, Mygalelasiodora, Tarentulacubensis, Tarentulahispanica and Theridioncurassavicum* belong to the *Arachinidae* family. *Blattaorientalis, Lac caninum and Telaaranea* are the other interesting remedies of animal origin verified by the Council.
- d. 02 nosodes – *Bacillinum* and *Staphylococcinum* and 01 sarcode *Thyroidinum* have also been verified under this program of the Council.

## EPIDEMIC RESEARRCH

Considering the epidemic outbreaks of vector borne diseases, such as Dengue, Chikungunya, Japanese encephalitis and Influenza, Council has taken various steps for generating evidence on the efficacy of Homoeopathy intervention and development of new drugs based on literature and validating the same for the prevention and management of these diseases. A brief appraisal of pre-clinical and clinical studies undertaken by Council is as under:

### DENGUE

To validate the traditional knowledge of use of *Eupatorium perfoliatum* in prevention of Dengue Fever, 02 field studies were undertaken in 2016 and one field study is ongoing in New Delhi along with 03 preclinical studies with institute of repute. Council has conducted a cluster randomized preventive study at Vembayam and Karakulam village of Trivandrum District of Kerala in April 2017. In this study, 64,096 healthy individuals were enrolled for participation. Study has been completed and data analysis is in process.

Another cohort study completed by Council in June 2016 was undertaken at JJ Colony, Mayapuri, New Delhi for prevention of dengue using *Eupatorium perfoliatum*. This was an observational study in which the preventive medicine was distributed to 19,880 healthy population and followed up for 3 months to assess the effectiveness of medicine in prevention of



dengue. In the successive year 2017, preventive study of Dengue and Chikungunya was approved by different committees of the Council and study was initiated on 1<sup>st</sup> July 2017. This was an open cluster level study. The study participants enrolled for the study belonged to the slum areas with high mosquito population, but apparently healthy. The enrolled individuals received *Eupatorium perfoliatum* 30 once in a week for 10 weeks. A total of 70,000 participants were enrolled and are now under follow up.



Sample collection at study site

To understand the best mode of propagation of public health advisory, Council has conducted a survey to assess the effect of AYUSH public health advisory during epidemic period and it was found that awareness among the public for use of AYUSH modalities for epidemics was low and we need to use another channel of communication like Television, Social media etc. During an outbreak of Dengue in Delhi in 2015, Council conducted an exploratory study at a short notice at Hedgewar Hospital, New Delhi, to assess the

effectiveness of homoeopathic integrative care, along with allopathic institutional management, in 138 patients admitted with low platelet count, with or without fever. The study was quasi experimental, and the results were encouraging. Further, Council has developed dengue nosode from 4 prevalent serotypes of the dengue viruses, in association with National Institute of Virology, (NIV) Pune to prevent and combat dengue illness. Further, a study for testing the safety and toxicity of this nosode was conducted in collaboration with All India Institute of Medical Sciences (AIIMS), Delhi. Following this, the nosode will be studied for its immunomodulatory effect, especially against dengue infection and a field trial will be undertaken to explore its efficacy.

The safety and toxicity studies of commonly used Homoeopathic Medicine *Eupatorium perfoliatum* and *Crotalus horridus* for the prevention of Dengue have been conducted at All India Institute of Medical Sciences, New Delhi and these drugs have been found to be safe.

## CHIKUNGUNYA

During the outbreak of chikungunya in 2007, Council conducted a cluster-randomised, double-blind, placebo-controlled trial in Kerala for prevention of Chikungunya. *Bryonia alba* 30C/placebo were randomly administered to 167 clusters. The participants were observed for a period of 35 days to note the incidence of chikungunya among the participants. Infection rate in the study groups was analysed and compared by use of cluster analysis. The results of study showed significant difference between the two groups. *Bryonia alba* 30C had a significant protective effect in chikungunya in comparison to placebo.<sup>24</sup>

<sup>24</sup> Nair Janardanan KR, S Gopinadhan, TN Sreedhara Kurup, Kumar BJ, Aggarwal A, R Varanasi, et al. Homoeopathic Genus Epidemicus 'Bryonia alba' as a prophylactic during an outbreak of Chikungunya in India: A cluster -randomised, double -blind, placebo- controlled trial. Indian J Res Homoeopathy 2014; 8:160-5.



Training of health workers for study

During the outbreak of chikungunya in 2007, Council conducted a cluster-randomised, double-blind, placebo-controlled trial in Kerala for prevention of Chikungunya. Bryonia alba 30C/placebo were randomly administered to 167 clusters. The participants were observed for a period of 35 days to note the incidence of chikungunya among the participants. Infection rate in the study groups was analysed and compared by use of cluster analysis. The results of study showed significant difference between the two groups. Bryonia alba 30C had a significant protective effect in chikungunya in comparison to placebo.

Council has completed data collection in the month of September 2016 for chikungunya cases in collaboration with Govt. of NCT, Delhi. This project involved 10 Delhi Homoeopathic Dispensaries and 02 Homoeopathic Medical Colleges of Government of NCT, Delhi along with Council's centres in Delhi NCR region. From this project, practical therapeutics was evolved with the help of data collected, which will help in formulating treatment guidelines for practitioners.

## MALARIA

Council has undertaken preclinical study with the Department of Zoology, Panjab University, Chandigarh to evaluate the effect of homoeopathic medicines on *in vitro* and *in vivo* models. As a part of the study, Council is developing new medicine (malaria nosode) for prevention and treatment of malaria. The nosode will further subject to safety and effectiveness on cell lines and animal model. Further, in collaboration with Indian Institute of Public Health Bhubaneswar, Council has undertaken study to assess the effectiveness of identified homoeopathy medicine in prevention of malaria. Approximately 18,000 healthy population was enrolled in the study. The study is ongoing.

<sup>25</sup> Nair Janardanan KR, S Gopinadhan, TN Sreedhara Kurup, Kumar BJ, Aggarwal A, R Varanasi, et al. Homoeopathic Genus Epidemicus 'Bryonia alba' as a prophylactic during an outbreak of Chikungunya in India: A cluster -randomised, double -blind, placebo- controlled trial. Indian J Res Homoeopathy 2014; 8:160-5.



## JAPANESE ENCEPHALITIS (JE)/ ACUTE ENCEPHALITIS SYNDROME (AES)



Training of health workers for JE study

Council had completed one preclinical study (2007-10) to assess the effectiveness of Belladonna as preventive for in vitro and in vivo model in collaboration with School of Tropical Medicine, Kolkata. It was found that

Belladonna significantly protected the mice from JE infection.' Further, Council has undertaken another preclinical study in collaboration with Center for Cellular and molecular Biology, Hyderabad to understand the action of Belladonna-Calcareia carb. - Tuberculinum as combined regimen on JE for prevention and treatment of JE during its epidemic in eastern parts of U.P. in 1989, 1991 and 1993. Belladonna 200, single dose was distributed as a preventive to 3,22,812 persons in 96 villages in three districts of U.P. In the follow up of 39,250 persons, none of them reported any signs and symptoms of Japanese encephalitis. This was a preliminary study.

Further, to validate the results of previous field studies and preclinical studies, a study for prevention of JE/AES using homoeopathic medicine Belladonna was initiated in July 2017 in Chargawan block of Gorakhpur. A total of 50,000 children have been enrolled and are being followed up. Study shall be completed in June 2018. To substantiate the role of homoeopathic medicine Belladonna, which could inhibit JE virus infection in both the models significantly, another exploratory observational study was undertaken by the Council in IPD

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<sup>26</sup>Bhaswati Bandyopadhyay, Satadal Das, Milan Sengupta, Chandan Saha, Kartick Chandra Das, Debabrata Sarkar et al. Decreased Intensity of Japanese Encephalitis Virus Infection in Chick Chorioallantoic Membrane Under Influence of Ultradiluted Belladonna Extract. *American Journal of Infectious Diseases* 6 (2): 24-28, 2010.

<sup>27</sup>Bhaswati Bandyopadhyay, Satadal Das, Milan Sengupta, Chandan Saha, Nemaï Bhattacharya, Chinta Raveendar. Suckling Mice of "Belladonna 200" Fed Mothers Evade Virulent Nakayama Strain Japanese Encephalitis Virus Infection. *International Journal of Microbiological Research* 2 (3): 252-257, 2011.

<sup>28</sup> Rastogi D.P. Sharma V D. Study of homoeopathy medicines in encephalitis epidemic in Uttar Pradesh. *CCRH quarterly Bulletin*, 14 (3 & 4) 1992.



setting (epidemic ward) of Baba Rhaghav Das (BRD) Medical College and Nehru Hospital, Uttar Pradesh (July to November 2012) on 151 patients, with successful reduction in mortality and morbidity rate. Further, to validate these results, another randomised, placebo-controlled trial was conducted on 612 patients during 2013-15 at BRD medical college. The results of this study also validated the earlier findings that add-on homoeopathic treatment can reduce mortality and morbidity significantly, compared to the standard treatment alone.

### INFLUENZA-LIKE ILLNESSES (ILI)

Homoeopathy became famous by means of successfully treating the horrible epidemic of the Spanish flu in the nineteenth century. Because we are now threatened by the rise of epidemic of influenza and waning effectiveness of antibiotics, other options are urgently needed. Homoeopathy can often provide an effective alternative.



Health worker giving medicine in area

A prospective, multi-centre, data collection survey of homoeopathic practice in the treatment of influenza-like illness was done in India during the 2009 pandemic of A/H1N1 influenza ('Swine Flu', SF). The authors surveyed the practice of homoeopathic practitioners in India in the management of SF. A total of 44 different remedies (or combinations of remedies) were used at first appointments, the most frequently prescribed drug being *Arsenicum album* (n = 265; 23.5%). The prominent symptoms of this pandemic in India were: temperature  $>38^{\circ}\text{C}$  + cough + runny nose, which likened the indications of *Arsenicum album*. Council was a part of this significant study.

Further, Council conducted a multicenter, single blind, randomized, placebo-controlled study to evaluate the effect of homoeopathic medicines in the treatment of Influenza like illness and to compare the efficacy of LM (50 millesimal) potency vis-à-vis centesimal (C) potency. There was a significant difference in temperature from 2<sup>nd</sup> day onwards in LM and Centesimal groups. The study revealed the significant effect of individualized homoeopathic treatment in the patients suffering from ILI with no marked difference between LM and Centesimal groups. The complication/sequel rate was also significantly less in the intervention groups. The medicines which were commonly prescribed were: *Arsenic album*,

<sup>29</sup> Manchanda RK, Oberai P, Roja V, Singh S, Singh N, Khan T, Prasad R, Singh J R. Evaluation of homoeopathic medicines as add-on to institutional management protocol in Acute Encephalitis Syndrome: An exploratory observational comparative study. *Indian J Res Homoeopathy* 2015; 9:34-41.

<sup>30</sup> Mathie RT, Baitson ES, Frye J, Nayak C, Manchanda RK, Fisher P. Homoeopathic treatment of patients with influenza-like illness during the 2009 A/H1N1 influenza pandemic in India. *Homoeopathy* 2013; Jul;102(3):187-92. doi: 10.1016/j.homp.2013.04.001.



*Bryonia alba, Rhus tox., Belladonna, Nux vomica, Sepia, Phosphorus, Gelsemium, Sulphur, Natrum mur., and Aconitum napellus.*<sup>31</sup>

To generate the scientific evidence for using Homoeopathy in prevention of Influenza Like Illnesses, Council is conducting a preventive cohort study in New Delhi. The study participants have been enrolled from the communities of Mayapuri, Peeragadi and Zakhira. The enrolled individuals receive *Influenzinum 30* for 10 weeks and are kept under observation till the epidemic period is over. Sample size of 40,000 healthy individuals have been reached in this study.

Another study, a randomised, double-blind, placebo-controlled trial is conducted by Council in collaboration with Homoeopathy University of Jaipur. The study participants will be screened from a homoeopathic medical college in New Delhi. For seroprevalence study, all the enrolled participants will give their blood sample for testing immune parameters before consuming medicine, and then again after 5 weeks of intervention and on completion of study. If participants happen to suffer from fever during the study period, he/she are instructed to contact the study doctor for arrangement of laboratory test for diagnosis of influenza. After fulfillment of inclusion criteria and written informed consent, the participants are enrolled and randomised to receive the assigned group of intervention.

### **National Campaign on Homoeopathy for Mother and Child Care**

Keeping in view the strength of Homoeopathy in the disease conditions of pregnancy, puerperium and lactation and in childhood disorders, the Department of AYUSH launched a National Campaign on Homoeopathy for Mother and Child Care in 2007. The Council operationalized and coordinated the campaign, which was conducted till 2012. A national workshop on Homoeopathy for Healthy Mother and Happy Child was organized to sensitize all stake holders i.e. policy makers, program evaluators, opinion makers, homoeopathic and allopathic practitioners, NGOs, etc. Thirty four state level workshops were organized in all the states followed by 93 district level orientation workshops. More than 1600 community awareness camps and clinics were organized by the Council through its institutes, units and through homoeopathic medical colleges, where in more than 4 lakh patients were benefited. The campaign also focused on capacity building and training of homoeopathic physicians in dealing with women and children disease conditions. The Council prepared three training manuals (obstetrics, pediatrics and general management) with WHO country office in India (Figure 17). Forty three state level training of trainers and 55 district level training programmes were organized for training homoeopathic practitioners on these modules.

<sup>31</sup> Chakraborty PS, Lamba CD, Nayak D, John MD, Sarkar DB, Poddar A, et al. Effect of individualized homoeopathic treatment in influenza like illness: A multicenter, single blind, randomized, placebo-controlled study. *Indian J Res Homoeopathy* 2013; 7:22-30.



## Documentation & IEC:

Being the mirror of the Council's activities and achievements, the Documentation and Publication section aims to produce all the publications in a presentable, reader friendly language without distorting the actual image of the research work. Dissemination of research work of the Council to the stakeholders such as clinicians, researchers, teachers, students, industry and common man is one of the mandate of the Council and the section is the medium of such propagation. The work done by the Council in the areas of Drug Standardisation, Drug Proving, Clinical Verification and Clinical Research etc. is documented and brought out in the form of various publications for the scientific community and the general public.

## PUBLICATIONS OF THE CURRENT TIMES

The Council publishes periodical research journal and newsletter for dissemination of its research activities and achievements. **The publications of the Council include periodicals and non periodicals:**

### PERIODICAL PUBLICATIONS

#### 1. CCRH Newsletter:



Oct-Dec 2017

CCRH Newsletter a quarterly publication providing up-to-date information about the conducted activities of Council undertaken in various areas of research, about the meetings and conferences, participation in Arogya Melas, seminars, medical conferences, workshops, new research publications of the Council and national and international recognition of the scientists.

#### 2. Indian Journal of Research in Homoeopathy (IJRH):

Indian Journal for Research in Homoeopathy, an official publication of CCRH, is the peer-reviewed Open Access online journal



an official publication of CCRH. It focuses on original research and is an important platform for publishing the research outcomes of various studies conducted by the Council and outside. The online manuscript management system of IJRH is just a click away at [www.journalonweb.com/ijrh](http://www.journalonweb.com/ijrh) wherein the manuscripts can be uploaded and a stringent double blind peer review process is carried out online to make them worthy of publication in IJRH. All the previous and present issues of the journal are accessible and available online at [www.ijrh.org](http://www.ijrh.org). For a higher readability, the abstracts are published in Hindi, Spanish, French, German and Chinese. A 'Quick Response Code' has been provided on the first page of each article by which one can reach to the full text of that



particular article on the journal's website from the mobile. IJRH is registered with the following abstracting partners : Baidu scholar, (NK) (China National Knowledge Infrastructure), EBSCO publishing's Electronic Database, Exlibris-Primo Central, Google Scholar, Hinari, Infotrieve, National Science Library, Pro Quest, TdNet. Application for indexing with ESCI (Clarivate Analytics' Emerging Sources Citation Index) has been filed. At present, the journal is indexed with DOAJ (Directorate of Open Access Journal), Index Copernicus. However indexing of IJRH in PubMed is being processed.

### Our Journey so far

CCRH Quarterly Bulletin developed in 1979, wherein the scientific activities and achievements of the Council were highlighted . In July 1979, Governing Body of the CCRH decided that the Quarterly Bulletin should develop as a journal for better dissemination of the research findings.



It metamorphosed into **Indian Journal of Research in Homoeopathy** in 2007 and became an open access online peer reviewed journal in 2013 and got enrolled with 'Directory of Open Access Journal ' in the same year with a good readership and fair visibility. Since it's inception in 2007, 11 volumes comprising over 40 issues and more than 200 research articles on Homoeopathy have been published in it. In the year 2009, the Council started publishing the papers of other researcher's also, besides its own.

### Journal on web (<http://www.journalonweb.com/ijrh/>): Manuscript Management System of IJRH



Website of IJRH with previous and current issues : <http://www.ijrh.org/>





3. **ANNUAL REPORT-** An yearly publication of the Council detailing the administrative and technical updates. The status of the national and international collaborations made by Council, the updates on the prevailing research programs, a view on the accounts and the CAG report all are put forth under this umbrella of Annual Report.

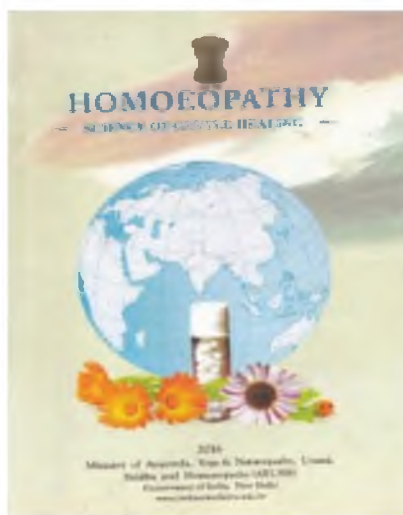
#### NON PERIODICALS:



1. **Priced Publications:** Council brings out quality publications in the form of books, monographs etc. Till date about 70 publications have been brought out and the online purchase of these books is facilitated by the integration of payment gateway. There are 50 priced publications of the Council for sale through speed post and online purchase@ [www.ccrhindia.org](http://www.ccrhindia.org) and 28 publications in the form of e-books @ [www.ccrhpubonline.com](http://www.ccrhpubonline.com). Council's other publications include two volumes of keynotes of homoeopathic Materia Medica, Homoeopathic Materia Medica of Indian drugs, Handbook on Homoeopathy: Case taking to prescribing, Homoeopathy for common diseases: Before

consulting a doctor.

**Non-priced publication:** Council publishes many non-priced publications, to name a few are as follows:-



a) **Dossier -“Homoeopathy -Science of Gentle Healing”:** It is one of the most valuable publication of Ministry of AYUSH comprising within itself a bird's eye view of Homoeopathy starting from a brief introduction to the science, to its network , infrastructure and status in various parts of the world, with special emphasis to India. Its the compendium of all the research work taken up in India, particularly of CCRH with its outcomes and evidence levels. Realising the strategic and international significance of this publication, the book is translated in various foreign languages like Spanish and Japanese.

b) **Activities and Achievements (An Overview & Pocket book):** This publication gives a detailed overview about the activities and achievements of the council in the different research areas and an insight into the public health programs initiated by the Council. To get the highlights of the overview of all such activities and achievements of the Council, a pocket book was developed which is easy to carry and reader friendly



**2. IEC material:** Handouts and various other publications on Homoeopathic research are produced and released by the section from time to time. For creating awareness, IEC material is being developed and disseminated among the masses free of cost in Arogyas, Exhibitions etc.

#### **AUDIO VISUAL ADVANCEMENTS**

- **Documentaries:** The audio-visual source to bring awareness among the public is in the form of Documentary films. The Council has developed three Documentary films one on “Homoeopathy: ‘The Science of Gentle Healing’ which was released in 2015 targeting general masses; other on ‘Drug Development in Homoeopathy’ which was released in 2016 targeting homoeopathic pharmaceutical industry and another on ‘Research in Homoeopathy’ which was released in 2017 targeting researchers and academicians.
- **Translites & Posters :** For creating awareness among the public.

#### **ON THE ANVIL**

##### **Audio- Visual Spots on**

- Healthy Mother
- Infant care
- Homoeopathy, safe, effective and natural
- Homoeopathy, viral fever

##### **Documentary on**

- “Homoeopathy for Healthy Child”

##### **Radio Programmes and Jingles**

#### **C. PUBLIC HEALTH INITIATIVES BY THE COUNCIL**

##### **Homoeopathy in Integration of AYUSH (Homeopathy along with Yoga) in the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS): A pilot project**

Keeping in view, the increasing burden of NCDs in India, Ministry of Health and Family Welfare, Government of India launched National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS) in July 2010 and by 2012, 21 states across the country were covered under the programme. Promotion of healthy lifestyles, early diagnosis and management of diabetes, hypertension, cardiovascular diseases and common cancers, e.g. cervix cancer, breast cancer and oral cancer are among the aims of this programme. Integration with AYUSH is one of the mandates of the NPCDCS programme. After several meetings between stakeholders of Ministry of Health and Family Welfare, Ministry of AYUSH and Research Councils under AYUSH, it was decided to integrate Homoeopathy in NPCDCS program and utilize the services of the homoeopathic doctors and yoga experts in Krishna (Andhra Pradesh) and Darjeeling (West Bengal) districts. The programme, initiated in May 2017, has further expanded to two tribal districts – Sambalpur (Odisha) and Nasik (Maharashtra) and. Twenty one(21) Lifestyle Disorder Clinics have been set up at above mentioned districts.



### **Objectives of Integration of Homoeopathy/Yoga in NPCDCS Program**

- Health promotion of masses through behavior change
- Disease prevention through early diagnosis of NCDs
- Reduction in NCD burden and their risk factors
- Early management of NCDs through homoeopathic treatment alone or as add on to standard care

The programme shall cover prevention and control of Diabetes, Cardiovascular Diseases, Cancer, chronic obstructive pulmonary diseases and Stroke during the first phase.

### **Strategies of Integrated NPCDCS Programme**

- Outreach activities: Screening for timely detection of various NCDs at the level of PHC and CHCs/CHNCs/BPHC on regular basis.
- Yoga classes for the general masses at the level of PHC and CHCs on regular basis.
- Advise on diet and lifestyle management
- Treatment-cum-follow up of population under homoeopathic treatment alone, or as add on to standard care along with therapeutic lifestyle changes.
- A team of homoeopathic doctors, yoga instructors, yoga volunteers along with multitask workers shall provide health care services to the masses at the ground level and thus help in optimizing the use of scarce resources.

### **Expected outcomes**

Integration of homoeopathy along with Yoga would enable prevention and control of NCDs through health education, promotion, behavioral change, early detection and also reduce complications from withdrawal/reduction in Conventional Medicines, on which patients become dependent.

### **Consolidated achievements**

- No. of cases reported in the OPD – 2,54,447
- No. of patients screened through LSD clinics and 796 out-reach camps – 93,462
- Provisional/known diagnosis of NCDs – 45,273
  - Pre-Hypertension -6109;
  - Hypertension-19174;
  - Pre-diabetes-1327;
  - Diabetes Mellitus-6,772;
  - Dyslipidemia-236;
  - COPD-869;
  - CAD/CVD/Stroke-177;
  - Cancer-39;
  - Multi-Morbidity-10,610
- No. of patients enrolled for management (New cases) – 35,554
- Number of Yoga Classes conducted – 11,129
- Number of participants in yoga classes – 1,78,395



## Swasthya Rakshan Programme: A step forward to Swachh Bharat

Sanitation and hygiene are critical to health, survival, and development. A large number of disease could be prevented through better access to adequate sanitation facilities and better hygiene practices. In this context, as per directions of Ministry of AYUSH and linking with Swachh Bharat Abhiyan, Council has initiated Swasthya Rakshan Programme to promote health by identifying and treating the diseases related to poor hygiene and sanitation. Swasthya Rakshan Program was initiated in 55 villages/ colonies through its 11 research Institutes in April 2015.

### OBJECTIVES :

1. Swasthya Rakshan OPDs for providing homoeopathic treatment.
2. Swasthya Parikshan Camps for screening, identification of risk factors and early diagnosis of diseases.
3. Health promotion through health education to local population.
4. Development and distribution of IEC material among the masses in English/Hindi and local/ regional languages.
5. Documentation of demographic information, food habits, hygienic conditions, lifestyle, incidence/prevalence of disease.
6. Assessment of health status and awareness about Homoeopathy system of the medicine.
7. Publication of the research outcomes from time to time.

### ACTIVITIES UNDERTAKEN :

#### A. Medicare services:

Swasthya Rakshan OPDs and camps were conducted on weekly basis in 55 identified villages. The team is visiting each village per week regularly.



Regional Research Institute(H), Shimla Homoeopathic Drug Research Institute,



## Lucknow

### B. Health Promotion:

Health education of practices like hand washing, disposal of waste, maintenance of personal hygiene and awareness about homoeopathy is given during mobile OPDs and camps.

### C. Health Survey:

Household and Individual health Survey was initiated from April 2016 to identify risk factors and diseases prevalent in a population over a specific period of time along with documentation of demographic information, food habits, hygiene conditions, seasons, lifestyle etc.



### D. SRP Awareness Campaigns/ Rallies

Mass campaigning through rallies for promotion of healthy lifestyles and hygiene were organized in school of identified villages. Nukkad Nataks and lectures were also organised focussing on personal, environmental & social hygiene in the villages involving school children.



Regional Research Institute (H), Imphal

Regional Research Institute (H), Puri

### . IEC Material

Banners/handouts/posters are developed in Hindi, English and 7 regional languages i.e. Assamese, Oriya, Bengali, Malyalam, Telugu, Manipuri and Marathi for creating awareness.



### ACHEIVEMENTS (April 2015- February 2018):

- No. of camps conducted : 6474
- No. of beneficiaries : 360601
- IEC material :Banners/02 handouts/posters are developed in 09 languages including Hindi, English and 7 regional languages (Assamese, Oriya, Bengali, Malyalam, Telugu, Manipuri and Marathi ) for creating awareness.
- No. of families surveyed in Family health survey(FHS) : 24782
- No. of individuals screened under Individual health survey (IHS) : 24647
- The common prevalent diseases are upper respiratory tract infections, cough, asthma, dermatitis, myalgia, functional dyspepsia, headache, cervical and lumbar spondylosis, gastritis, diabetes mellitus and osteoarthritis.

### Outcome:

- A substantial impact has been noted in all 5 adopted villages. Higher number of population were benefitted in the prevention of common ailments arising due to unhygienic living conditions.
- No incidence of recent epidemic reported in the adopted villages after initiation of programme.
- Increased awareness is noticed among the population coming in the screening camps by adoption of healthy lifestyle and hygienic measures owing to massive health promotion campaigns done before and during conducting camps and OPDs.
- Concept of using homeopathic medicines has been popularized in a massive way and a significant number of people are opting to homoeopathy and were benefitted.

### HOMOEOPATHY FOR HEALTHY CHILD

Central Council for Research in Homoeopathy under directions from Ministry of AYUSH developed a pilot program on “Homoeopathy for Healthy Child “with a targeted approach to promote healthy dentition in children, treating the associated ailments like diarrhoea, fever/URTI etc. with other identified conditions and to sensitize audience about the benefits of homoeopathic medicines. The program enhances the availability and accessibility of homoeopathic treatment to the identified population group.



## BACKGROUND

In a meeting held in July 2014, Hon'ble Prime Minister of India, inter-alia suggested that Homeopathy needs to be given adequate attention. In particular, specific medical conditions like teething in children, need to be identified where homoeopathic medicines can give relief without any side effects. The target audience has to be adequately sensitized about the benefits of homoeopathy medicines.

Considering this, Ministry of AYUSH decided to undertake a program on 'Homoeopathy for Healthy Child' as additionality to the existing health care programs for the children being undertaken by Health & Family Welfare Departments. CCRH developed and implemented this public health program on pilot basis on research mode to develop a model which can be replicated all over the country.

## OBJECTIVES

- Reduce morbidity and promote faster recovery due to conditions such as diarrhea, respiratory infections, dental conditions, skin conditions, developmental delays, etc. in children
- Promote health through homoeopathy for identified conditions
- Sensitize target audience including health workers, patients and care givers about benefits of homoeopathy for common diseases.

## AREA COVERAGE:

The program is being implemented through 8 centres of CCRH in 12 pre-identified blocks.

**Table 1: Program coverage**

S.No.	State	Districts	Identified Blocks
1	Assam	Kamrup	Dhirenpara, Central Zone block
2	Delhi	New Delhi	Delhi Cantonment & Nangal Raya zone
3	Maharashtra	Palghar	Vikramgad
4	Odisha	Cuttack	Niali, Kantapada
5	Uttar Pradesh	Gautam Budh Nagar	Bisrakh, Dadri
		Gorakhpur	Bhatahat, Chargawan
6.	Rajasthan	Jaipur	Amber
7.	Jharkhand	Ranchi	Kanke

As per directions of the Ministry of AYUSH, the program was extended to 5 gram panchayats under Jadigenahalli PHC (Bangalore, Karnataka) since November 2015 in coordination with Dr Mathai's Rural Holistic Health Centre under public private partnership mode. The program was extended to tribal villages of Amber and Kanke blocks under the tribal health component.

## ACTIVITIES UNDERTAKEN:

### Development of training manual & homoeopathy medicine kit

A training manual was developed which details the dentition pattern in children, the requirement



and importance of oral hygiene and home-based care of common dentition related problems. The manual was also translated into Hindi, Odiya, Assamese, Marathi and Kannada.



A medicine kit was designed and developed with 6 medicines namely, Calcarea phosphoricum 6X, Ferrum phosphoricum 3X, Magnesium phosphoricum 6X, Belladonna 30, Chamomilla 30 and Podophyllum 30 to provide care to children for teething related complaints.

### Training Programs & Sensitization meets

ANM/ASHA have been trained to identify dentition related problems in teething children and are providing home based care for common diseases like diarrhoea and URTI to these children in coordination with homoeopathic physicians who have been sensitized about the program.

**Table 2: Training programs held till date**

Name of Training Programs	Since inception of Program till February 2018
Training programs	36
No. of ASHA/ANM trained	1709
No. of review programs	452
Sensitization meets with AWW	13
No of AWW sensitized	1540
Sensitization meets with doctors	07
No. of doctors sensitized	44





The Anganwadi workers were sensitized of the teething related problems in children and were requested to refer the children to the local PHC or to the ANM/ASHA in case of children developing teething related complaints. The homoeopathy doctors (in public sector) in the identified blocks were sensitized about the program being conducted and how ANM & ASHA have been trained on the use of medicine kits. They were requested to coordinate with the ANM & ASHAs in the respective PHCs so that children suffering from dentition related complaints or for other complaints can be referred to the homoeopathy doctors as and when required. Monthly review meetings and open interactions are held with the ANMs/ASHAs and with the parents of children who may have any concerns about their child. A feedback survey of ASHAs and parents has also been undertaken.

### **BENEFICIARIES:**

The children have shown a favourable response to the home-based care being provided by the ANM and ASHAs.

No. of children	No. of Beneficiaries since inception of Program till February 2018
Children Enrolled	68484
No. of children reporting with Diarrhoea	8746
No. of children of Diarrhoea responding to homoeopathic treatment	8110
Percentage of children responding in diarrhoea	92.7%
No. of children reporting with Fever/URTI	13244
No. of children of Fever/URTI responding to homoeopathic treatment	12386
Percentage of children responding in diarrhoea	93.5%

Data of children enrolled is maintained through proper documentation and regular follow ups.

### **Child Friendly clinics:**

Child Friendly Clinics have been developed at the DDPRCRI(H) Noida, RRI(H) Guwahati, DPRU, Bhubaneswar and RRI(H) Mumbai. In these Child Friendly Clinics, all children & adolescents upto the age of 18 years suffering from diseases other than which require surgical intervention are provided homoeopathic treatment and their data is recorded on predesigned formats. The response to treatment will be assessed and the overall impact of the program on morbidity profile will be evaluated. A training program of the doctors of 6 centers of CCRH has



been held on Rashtriya Bal SwasthyaKaryakram (RBSK) to undertake coordination activities for treatment of common ailments identified in children up to the age of 18 years. Linkages with local RBSK teams in the blocks have been established. A training manual for homoeopathic practitioners has also been prepared.

## **EXTRA MURAL RESEARCH**

The Extra Mural Research Scheme of Ministry of AYUSH is designed to encourage R&D in priority areas based on disease burden in alignment to National Health Programme. It also aims to utilize the vast research infrastructure available within the country for standardization and validation of classical drugs.

Under this scheme, grant-in-aid is provided to institutions or independent scientists to conduct specific time-bound research projects. Research is encouraged on pre-defined priority areas, including fundamental concepts, basic principles and theories of AYUSH systems, validation of AYUSH drugs, pharmaceutical research (New Drug Development), clinical trials, scientific exploration, operational research of metallic compounds, drug interaction, bioavailability and dose determination studies. Grants are also offered for AYUSH intervention studies in public health care like epidemics diseases, identification of Genus Epidemicus, geriatric health care, mental health and cognitive disorders, anaemia and nutritional disorders, maternal and child health etc. Further, the scheme also covers grants for systemic reviews and meta-analysis, literary research, scientific documentation and development of data base, Health Economics related to AYUSH, role of ASU&H intervention in veterinary health, development of software and bio-instrumentation related to AYUSH.

The details of the scheme are available on the website of Ministry of AYUSH ([www.ayush.gov.in](http://www.ayush.gov.in)) and on the website of the Council ([ccrhindia.nic.in](http://ccrhindia.nic.in)).

### **EMR Scheme Proposals related to Homoeopathy:**

CCRH has been providing technical support to the Ministry for homoeopathy-related projects. Till date, a total of 313 proposals have been received under this scheme. Out of which 55 proposals were sanctioned the grant. 38 studies have been concluded successfully. As per provision of the scheme, the outcomes of the study have to be published in national or international peer-reviewed journals. A total of 42 publications have been made so far in national or international peer-reviewed journals.

Following are a few studies with significant outcomes published in peer reviewed journals:

**Study Title & Institute:** Search for potential anti-cancer agent: Evaluation of anticancer activity of potentised and dynamized Carcinisin 200, Thuja 200 & Apis mel. 200 against Ehrlich Ascites Carcinoma (EAC) cells in Swiss Albino Mice. *Jadavpur University, West Bengal*



**Published in:**

- i. Search for Potential Anti-Cancer Agent: Evaluation of anticancer activity of Carcinocin, Apis and Thuja. Indian Journal of Research in Homoeopathy, Vol. 2 (1) Jan-Mar 2008, Pg 38-41
- ii. Search for Potential Anticancer Agents: Characterization of some anticancer homoeopathic medicines. The Homoeopathic Heritage, March 2004, Pg 23-25.
- iii. Search for Potential Anticancer Agents: Evaluation of anticancer activity of homoeopathic Carcinocin, Apis & Thuja. The Homoeopathic Heritage, July 2004, Pg 42-45.

**Study Outcome:**

Evaluation of anticancer activity of potentised and dynamized Carcinocin 200, Thuja 200 & Apis mellifica 200 against Ehrlich Ascites Carcinoma (EAC) cells in Swiss Albino mice showed that the survival time after administration of Carcinocin 1M was significant in comparison to placebo group. The study puts forth that the anti-cancer activity of Carcinocin in different strength increases with the increasing potency. And Carcinocin 200 and Carcinocin 1M showed good anti-cancer activity in the animal model.

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**Study Title& Institute:** A Study on the effectiveness of homoeopathic bowel nosodes in the treatment of cervical spondylosis on the basis of stool culture. Dr. A. C. Homoeopathic Medical College & Hospital, Bhubaneswar.

**Published in:** A Study on the effectiveness of homoeopathic bowel nosodes in the treatment of Cervical Spondylosis on the basis of stool culture report. Indian Journal of Research in Homoeopathy, Volume 2 (1) Jan-Mar 2008, Pg. 42-48.

**Study Outcome:** The stool culture of 82 enrolled cases was done for isolation of non-lactose fermenting bowel organisms. On the basis of the presence of the predominant bacteria in the stool of patient suffering from cervical Spondylosis, the corresponding bowel nosodes was administered. Out of 82 patients enrolled in the study, 31 patients were given bowel nosodes only; 69 patients (84.14%) were given bowel nosodes alone or along the homoeopathic/biochemic medicines. The study showed that the bowel nosodes could possibly be used effectively on the basis of the stool culture in the treatment of patients suffering from cervical spondylosis.

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**Study Title& Institute:** To Study the Efficacy of Homoeopathic Medicines in the Treatment and Management of NIDDM of Recent and in Chronic Long-standing Disease. Dr M L Dhawale Trust, Mumbai

**Published in:** Diabetes mellitus – Defining scope and clinical approach for homoeopathic management. Indian Journal of Research in Homoeopathy, Volume 2, No. 3, July - September 2008, Pg 28-36.



**Study Outcome:** 90 patients were studied by randomized single blind clinical trial by dividing them into three groups – constitutional, organ remedy and placebo. Results showed that, at the end of the first 6 months of the trial, 67% patients improved from the constitutional group as compared to 10% from the organ remedy group and 7% from the placebo group. The study confirmed the efficacy of homoeopathic treatment in Diabetes type 2 and also established the indications for adopting the constitutional and organ remedy approach.

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**Study Title& Institute:** **Studies of Homoeopathic Medicines on Healthy Neuronal Cell Line. Jamia Hamdard University, Delhi**

**Published in:** ‘Neuroprotective effects of *Bellis perennis* and *Hypericum perforatum* on PC12 cells’. Indian Journal of Research in Homoeopathy, Vol. 5, No. 3, July-September 2011, Pg 27-35

**Study Outcome:** The medicines (*Bellis perennis* and *Hypericum perforatum* in 6C and 30C potencies) in three different concentrations in PC12 cells differentiated with nerve growth factor. Activities of various enzymes studied were significantly restored in drug treated groups as compared to positive controls, which indicate that these medicines have preventive role on differentiated PC12 cells.

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**Study Title& Institute :** **An Investigation for testing efficacy and mechanism of action of certain potentised homoeopathic drugs in combating artificially-induced hepatocarcinoma in mice and rats. University of Kalyani, West Bengal**

**Published in:**

- i. Efficacy of Potentized Homeopathic Drugs, Carcinocin 200, Fed Alone and in Combination with Another Drug, Chelidonium 200, in Amelioration of p-Dimethylaminoazobenzene-Induced Hepatocarcinogenesis in Mice. Journal of Alternative and Complementary Medicine, Vol 11, Issue 5, Nov 2005, Pg 839-854.
- ii. Protective potentials of a potentized homeopathic drug, Lycopodium -30, in ameliorating azo dye induced hepatocarcinogenesis in mice.’ Molecular and cellular Biochemistry 2006; 285 (1-2): 121 -31
- iii. Amelioration of Carcinogen-Induced Toxicity in Mice by Administration of a Potentized Homeopathic Drug, Natrum Sulphuricum 200. Evidence-Based Complementary and Alternative Medicine, 2009; 6 (1): 65-75.
- iv. Homoeopathic drugs natrum sulphuricum and Carcinocin prevent. Indian journal of biochemistry & Biophysics vol. 46, August 2009, pp. 307-318.

**Study Outcomes:**

Liver tumors were induced in mice through chronic feeding of p-DAB (initiator) and phenobarbital (promoter). The assessments were made on the parameters such as reduction in chromosomal aberrations, micronuclei induction, inhibition of raised mitotic index, suppression



of sperm head anomaly, decrease in enzymatic activity of Acid phosphatase(Acp), Alkaline phosphatase, Aspartate aminotransferase, Alanine transferase, lipid peroxidation and increase in GSH index. This study showed efficacy of *Lycopodium*, *Carcinosin*, *Chelidonium* and *Natrum sulph* in liver tumours. Carcinosin 200 showed some amount of anti-tumouric, anti-clastogenic, anti-cytotoxic effects. In case of mice fed with Natrum sulph. 200, less number of liver tumours were observed. Significant reduction of biomarkers was observed in the drug fed series.

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**Study Title& Institute:** Studies on Homoeopathic Medicines for the Treatment of Parkinson's Disease. Jamia Hamdard University, Delhi

**Published in:** Protective effect of Zincum metallicum on rat model of Parkinson's disease. Indian Journal of Research in Homoeopathy Vol. 9 (2) Apr-Jun 2015

**Study Outcome:** Animals were sacrificed, and biochemical assays were estimated. The locomotor activity and the distance travelled were protected significantly with 6C, whereas rest time was protected significantly with 30C and 200C of homoeopathic medicine Zincum metallicum. The rest time was also increased significantly in S+6C and S+30C group animals as compared to the S group. The depleted level of GSH and activity of antioxidant enzymes (GPx, GR, and GST) and DA and its metabolites DOPAC and HVA were protected significantly with Zincum metallicum (6C, 30C, and 200C). The study indicates that Zincum metallicum may be helpful in slowing down injury in parkinsonism and could be a beneficial drug for the prevention of Parkinson's Disease.

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**Study Title& Institute:** Exploring effectiveness of Homoeopathic therapeutics in the Management of Childhood Autism Disorder. SPANDAN Holistic Institute of Applied Homoeopathy, Mumbai

**Published in:**

- i. Autism Spectrum Disorder: Holistic Homeopathy. Homoeopathic Links, Spring 2011, Vol. 24, Pg 31-38
- ii. Effectiveness of homoeopathic therapeutics in the management of childhood autism disorder. Indian Journal of Research in Homoeopathy Vol. 8 (3) Jul-Sept 2014

**Study Outcome:** Sixty autistic children of both sexes,  $\leq 12$  years were selected for this study. The study demonstrated significant improvement of autistic features with mean change in ATEC score. Statistically significant changes in ATEC scores were observed in all the quarters analyzed through repeated measures ANOVA. An impact was observed on all core autistic features, which included communication, socialization, sensory awareness, health and behavior. The study has demonstrated usefulness of homoeopathic treatment in management of neuropsychological dysfunction in childhood autism disorder, which is reflected in significant reduction of hyperactivity, behavioural dysfunction, sensory impairment as well as



communication difficulty. Medicines found effective were *Carcinosin*, *Opium*, *Causticum*, *Stramonium*, *Hyoscyamus*, *Nux vomica*, *Medorrhinum*, *Lycopodium* and *Lachesis*.

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**Study Title& Institute:** Role of homoeopathic medicines in up-regulation of host immunity using leprosy disease model. Society for Welfare of the Handicapped Persons, Durgapur, West Bengal

**Published in:**

- i. Therapeutic effect of *Mercurius solubilis* on immune status of a borderline leprosy case. *Indian Journal of Research in Homoeopathy* Vol. 8 Issue 2 Apr-June-2014.
- ii. A comparative study of homoeopathic medicine – Sulphur with multi drug therapy in the treatment of paucibacillary leprosy. *Indian Journal of Research in Homoeopathy* Vol. 9; Issue 3 July - Sept 2015: 158-66

**Study Outcome:**

All the patients were allotted a pre-coded number, randomly and equally divided in two groups. One group was treated with Sulphur in 200 potency in liquid orally once in week for two years and the other group received Paucibacillary (PB) regimen as recommended by WHO. The study showed that MDT therapy (PB regimen) and the homoeopathic medicine were found equally effective as histopathology of skin showed no granulomatous lesion. The most significant clinical sign observed in all cases treated with Sulphur was reappearance of normal skin colour and regain of loss of sensation of the skin lesion. Regain of sensation to touch, pain and pressure were noted and their test responses were normal.

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**Study Title& Institute:**To ascertain the role of Homoeopathic therapy in the management of Learning Disabilities. Dr M L Dhawale Trust, Mumbai

**Published in:**Use of homoeopathic remedies in the management of learning disabilities. *Indian Journal of Research in Homoeopathy*; Vol. 8 (2) Apr-Jun 2014, 87-94

**Study Outcome:**67 children between ages 8-12 years fulfilling the criteria of LD (ICD-10) for dyslexia and dysgraphia were studied for a minimal observation period of one year. 32 children constituted Group I and were administered the indicated homoeopathic medicine in the 200th potency in infrequent repetition while 35 children from Group II were given placebo. The children under homoeopathic treatment with remedial education showed an early response to remedial inputs and a statistically significant change in the indicators of dyslexia and dysgraphia. Homoeopathic intervention when combined with standard remedial education has a definite role in bringing about an early change in all parameters of LD. Medicines found effective were *Calcarea salts*, *Medorrhinum*, *Argentum nitricum*, *Calc-flour*. and *Natrum salts*.

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**Study Title& Institute:** Randomised Double blind Clinical Trial of some Homoeopathic Medicines in the Treatment of Trophic Ulcer & Neuropathy in Diabetes-Leprosy and combination of the two with additive factors like HIV infection. Society for Welfare of the Handicapped Persons, Durgapur, West Bengal

**Published in:** Randomized double blind clinical trial of a homoeopathic medicine in the treatment of trophic ulcer and neuropathy in leprosy'. Indian Journal of Research in Homoeopathy, Vol. 3, No. 4, Oct-Dec 2009, Pg 54-65

**Study Outcome:** All the patients in the study group were given Mercurius solubilis orally for a period of two years, while control group received placebo. The study showed statistically significant improvement in the healing of ulcers and regaining of nerve sensation. The biopsy from the treated cases showed almost normal dermis containing new nerve twigs and sweat glands and blood vessels with no evidence of perivascular or perineural inflammatory reaction. Radiographs of the patients with ulcer showed absence of osteomyelitic changes of phalanges with bony remodelling of metatarsal bone.

#### **AYUSH RESEARCH PORTAL**

A web portal (Figure 20) to showcase important research publications of AYUSH systems has been developed. It aims at providing information about these systems for wider acceptance as well as to encourage inter-disciplinary research. The information provided is categorized into individual AYUSH medical systems against a standard set of medical conditions, based on WHO disease classification ICD-10 (International Classification of Diseases -10), and navigation is according to ICPC's (International Classification of Primary Care) 17 categories. It permits search of research articles with title, authors, scholars, guide, co-guide, designation, department, institution, address, journal, university, abstract, keywords, body system and disease.

#### **Literary Research**

The Council, under the literary research activity, brings out quality publications in the form of books, monographs, handouts etc. Prior to the era when computers and software repertories became widespread, Council updated different chapters of Kent's repertory from the Boericke's repertory to form a comprehensive document. Chapters on 'Mouth', 'Eye & Vision', 'Ear and Hearing', 'Larynx & Trachea, Respiration, Cough, Expectoration and Chest', etc. were completed in this period. Updating homoeopathic literature on the basis of present day findings, however, is an ongoing literary research activity of the Council.

#### **Linking research with education**

To inculcate research aptitude in students, Council is working in coordination with the academicians and has initiated a scheme of financial grant to students to conduct research as a part of their PG program. Some publications of the Council cater to the academicians and students and have been prepared keeping in view the syllabus prescribed at undergraduate and post graduate levels. Under this initiative, Council launched the Short Term Studentship in Homoeopathy Scheme (STSH) for undergraduate students (<http://ccrhscholarship.in/STSH2016/>)



in June 2014 and CCRH Scholarship Scheme for M.D./ Ph.D.students (<http://ccrhindia.org/pdf/MDScheme.PDF>) as a step towards capacity building and encouraging research aptitude among undergraduate, post graduate and Ph.D. students. The schemes were initiated for providing scholarship to selected medical undergraduates/graduates and postgraduates pursuing MD/PhD programmes in Homoeopathy through recognized medical institutes/ Universities, with the aim to orient them towards research methodology and techniques. This scheme allows them to either be associated for a short duration with their seniors on ongoing research program, or undertake independent projects. This is also expected to serve as an incentive to take up research as a career in the future and, at the same time, promote good quality research in homoeopathic medical colleges. Council also acts as the medium for the students to take their research work to a larger research audience. The program thus has multifaceted advantages ranging from mastering basic laboratory skills to understanding the basics of research methodology.

### **SHORT TERM STUDENTSHIP SCHEME**

STSH is a fully online program managed through the website: <https://ccrhscholarship.in/>.

Council aims to encourage more students to register in this program and is trying to maximize its efforts to popularize this program in the best interest of the students. To motivate the students, Hon'ble Minister Shri Shripad Naik, Minister of State (Independent charge), Ministry of AYUSH himself awarded certificates to the 12 awardees of STSH 2015 during World Homoeopathy Day 2017. As a step further, students will be presenting their work through poster presentations during this ongoing 'Scientific Convention on World Homoeopathy Day' 2018. Although the abstracts published may appear naïve as they are just the verbatim of students, the efforts of the students are worthy of appreciation. The scheme endeavors to link education with research and to discover the hidden researcher among these young students so that they can further strengthen research in homoeopathy.

### **FUTURE VISION: DEVELOPMENT OF RESEARCH INFRASTRUCTURE IN HOMOEOPATHIC COLLEGES**

In a step forward, the Council now proposes to support development of research infrastructure in all interested PG homoeopathic colleges by signing Memorandum of Understanding (MoU) with CCRH. The vision behind the agreement would be to provide impetus to research infrastructure and to inculcate research aptitude amongst students and faculties. As a part of this agreement, CCRH shall be:

- Guiding development of research infrastructure in the colleges through strengthening of Library, strengthening/development of pharmacy and research laboratory etc.
- Guiding development of research committees, comprising of college faculty, practitioners and research experts, which can identify strategic direction for research in the colleges
- Providing training in research to students/faculties of homoeopathic colleges through training workshops and webinars;
- Establishing joint/ collaborative research OPDs in the premises of homeopathic colleges/ institutes;
- Tapping the clinical potential of the personnel to capture data in research mode in a methodical manner and further taking up specific projects as feasible.





### Specific areas of strength for Intra-AYUSH collaboration

The Council determines priority areas of research from time to time and looks forward to intra-AYUSH collaboration in the fields, which are known to be strength areas of respective fields. The following areas of research can be explored for collaborations accordingly:

1. In-vitro or in-vivo researches with AYUSH research centres having well-equipped laboratories
2. Animal studies with AYUSH centres having facility of animal house.
3. Agro-researches with AYUSH centres having cultivation units with diverse species.
4. Drug development researches with AYUSH facilities exploring pharmacognostic, pharmacokinetic and pharmacodynamic action of common drugs in Homoeopathy and other AYUSH systems.
5. Fundamental and drug research studies exploring neutralizing and/or therapeutic enhancement effect of homoeopathic drugs on AYUS drugs known to have a toxic effect otherwise.
6. Effect of Yoga as adjuvant to homoeopathic treatment in various diseases known to be effectively treated with Yoga, especially those involving mental and cognitive faculties, lack of muscular strength and respiratory difficulty.
7. To study the effect on Post-surgical recovery from Ayurvedic surgeries with homoeopathic medicines.







## **CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES**

**Ministry of AYUSH (Government of India)**

Jawahar Lai Nehru Bhartiya Chikitsa Evam Homeopathy Anusandhan Bhawan,  
No. 61-65, Institutional Area, Opp. "D" Block, Janakpuri, New Delhi-110058

Tele.: 91-11-28524457, Fax: 91-11-28520748

Email : dg-ccras@nic.in, Website : www.ccras.nic.in