



**Name of the proposed centre**

**Indian Systems of Medicine- Quality Assurance Cell, SRU.**



### **About the centre**

The Herbal and Indian Medicine Research Laboratory (HIMRL), Sri Ramachandra University (SRU) was set up by Dr. A Hannah R.Vasanthi in May 2005 to scientifically validate the Indian System of Medicine (ISM) drugs with a multidisciplinary approach. It has state of art technology to scientifically evaluate the quality, safety and efficacy of both herbal and herbo-metallic ISM drugs (Preclinical evaluation). The laboratory has fostered an interdisciplinary research approach and completed five projects funded by various funding agencies . It offers consultancy services for researchers / industries to analyze and validate their products by experts in various fields of biomedical research and clinical trials.

A National Workshop was jointly organized by SRU and Banaras Hindu University (BHU) by the generous financial assistance of the Drugs and Pharmaceutical Division, DST, Government of India. The National workshop on “Standardization of Traditional Medicine for global acceptance as per WHO guidelines” was inaugurated by Dr. Lakshman Prasad, Head, Technology Transfer Division, DST, Govt. of India and Dr. S.P.Thyagarajan, Vice-chancellor, Madras University on 25<sup>th</sup> May 2005. The final day (29<sup>th</sup> May 2005) of the Workshop turned to be the Inauguration of the Research lab. Many researchers from other institution and industries approach the lab for their project works.

### Projects conducted

#### Major funded projects conducted

Ongoing and completed projects (Total fund of **Rs.3.85 Crores**) from various funding agencies of Government of India and other R&D are:

- Drugs and Pharma Division-DST (**Rs.119.90 lakhs**) in collaboration with Rumi Herbals Pvt Ltd [2005 to 2008].
- Drugs and Pharma Division-DST (**Rs.118.67 lakhs**) in collaboration with Arvind Remedies Pvt Ltd [2006 to 2009].
- SERC Division-DST (**Rs.114.25 lakhs**) in collaboration with CLRI- Chennai [Ongoing - 2008 to 2013].
- EID Parry (India) funded project (**Rs. 7.21 lakhs**) [2009].
- AYUSH - Extra Mural Research (**Rs. 25.39 lakhs**) [2008 to 2011].

### Training and students project conducted

Students from various colleges and universities were trained and given guidance to complete projects in the areas such as

- Pharmacological and Biochemical techniques
- Analytical and Biochemical techniques
- Plant extraction and Chemo profiling techniques
- Anti-cancer activity by *invitro* cell culture method
- Analytical instruments demo class for UG and PG students of Human genetics, Biotechnology, Medicinal chemistry, Pharmacy, Pharmacology, MLT and Biomedical sciences.
- Frequent lab visits by different organization, industries, colleges and schools.

### Milestones

#### Patent filed

Polyherbal Formulation for Rheumatoid Arthritis has been Developed and Transferred to Arvind Remedies Ltd, India. Phase-1 Clinical trial completed and patent filed.

#### Workshop conducted

The National workshop on analytical techniques in the standardization of siddha drugs (ATS-2010) was organized by Siddha Central Research Institute SCRI, and the Herbal and Indian Medicine Research Laboratory, Sri Ramachandra University, Chennai. The central research facility, College of Pharmacy, and Department of Medicinal Chemistry joined hands in this eventful event marking the fifth anniversary of the Herbal and Indian Medicine Research Laboratory and the 25<sup>th</sup> anniversary of Sri Ramachandra University.

### Publications made in the area

Period	Publications in Nos. only		Book Chapter	Conference presentations
	National Journals	International Journals		
2005	2	6	1	9
2006	-	3	-	4
2007	-	3	-	11
2008	-	3	1	5
2009	1	12	3	15
2010	1	10	2	11
2011	3	6	1	4
<b>Total</b>	<b>7</b>	<b>43</b>	<b>8</b>	<b>59</b>

### Objectives of the centre

**Objective 1:** Standardize and scientifically validate the Classical Siddha, Ayurveda formulations/Drugs.

**Objective 2:** Training for UG, PG and Ph.D students of Siddha and Ayurveda Medicine in Validation and Standardization of AYUSH Drugs.

**Objective 3:** Documentation and publication of Traditional medical knowledge.

**Objective 4:** To provide testing and certification of AYUSH drug formulations developed by industries.

**Objective 5:** To conduct R&D projects funded by industries and funding agencies.

### Name of collaborators/departments

➤ **Dr. Mayiswaran**, Managing Director, M/S Rumi Herbals Pvt Ltd, India.

➤ **Dr. B. Arvind Shah**, Managing Director, M/S Arvind Remedies Ltd, India.

➤ **Mr. A. Vellayan**, Chairman, EID Parry (India) Ltd, India.

➤ **Dr. B. Unni Nair**, Scientist G & Head, Department of Chemical Laboratory, CLRI-Chennai, India.

➤ **Prof. Samir Bhattacharya**, INSA Senior Scientist, Visva Bharati University, Santiniketan, India.

➤ **Prof. Mihir.K. Chaudhuri**, Vice-Chancellor, Tezpur University, India.

➤ **Dr. Soumitra Deb**, Chief Research Manager, M/S. East India Pharmaceutical works Ltd, Kolkata, India.

### Capacity Building

The centre has given efficient training in traditional medicine to siddha doctors, research scholars and post graduate students. They are well placed in India and abroad. To mention a few, our research associate Dr. H. Balaji Raghavendran is placed in South Korea.

### Future plan for elevating the centre for National/International recognition

- AYUSH accreditation to evolve it as the AYUSH Center for Indian System of Medicine- Quality Assurance.
- Taking part in the global network of research on complementary and alternative system of medicine.
- To encourage and develop entrepreneurship skills among the students and to help them to establish small scale enterprises.

### Name(s) of faculty to be involved

S.No	Name	Designation	Area of Specialization
1	<b>Prof. S.P. Thyagarajan</b>	Pro-Chancellor (Research)	Microbiology
2	<b>Dr. D. Chamundeeswari</b>	Lab In-Charge and Principal	Pharmacy
3	<b>Ms. R.P. Parameswari</b>	Senior Research Fellow	Biochemistry
4	<b>Mr.S.Dineshkumar</b>	Senior Research Fellow	Pharmacy
5	<b>Mr.M.G.Dinesh</b>	Senior Research Fellow	Biotechnology
6	<b>M.Janani</b>	Junior Research Fellow	Biopharmaceutical technology
7	<b>Ms.T.Srivani</b>	Junior Research Fellow	Pharmacy
8	<b>Ms. E. Gangammal</b>	Technical Assistant	Commerce

## Summary of the proposed activity of the centre

### Standardization and Validation of ISM and Herbal Drugs

In order to cater to the global market, Herbal and ISM drug have to be scientifically validated. In this process HIMRL has standardized and validated a number of ISM drugs and polyherbal preparation for various diseases such as Diabetes mellitus, Rheumatoid arthritis and Coronary Heart Disease (CHD). The laboratory has standardized various protocols for preclinical and clinical studies.

### Isolation of Bioactive Compounds from Natural Products

As part of the drug discovery program from natural products a number of Herbal extracts including some marine macro algae have been subjected to isolation of bio active compounds to conventional chromatographic techniques. The isolated compounds are characterized by sophisticated spectroscopic techniques.

### Development of HPTLC Fingerprinting for Herbal Drugs

HPTLC fingerprints of nearly 60 medicinal plants and a few Churnas have been developed at HIMRL after standardizing the procedures. The HPTLC has also been used for analyzing the plant toxins in poison cases. Based on the work many publications have been generated.

### Cell Culture Techniques

Cell culture is a fundamental component of tissue culture, as it establishes the basics of growing and maintaining cells *ex vivo* and for screening bioactivity and cytotoxic nature of traditional drugs.

### Analysis of Elements/Heavy metals in Environmental and Biological sample

Heavy metals and elements play a multiple role to all organisms. The concerns of pollution, diseased status and metal toxicity lead to analysis of the various heavy metals such as Pb, As, Hg, Ni and Cd in biological, soil, water and drug samples. Some of the micronutrients such as Fe, Cu, Mn, Zn, and Se are also analyzed using the AAS attached to a graphite furnace in food materials, raw drugs, biological fluids and effluents.

### Analysis of Biochemical markers and identification of molecular targets in various Biological Samples.

Markers are key to identify various disease status. The HIMRL basically a laboratory with multidisciplinary division caters to the analysis of biochemical markers in various pathological conditions both for preclinical studies in experimental animals and in human beings. Various biological samples such as blood, CSF, urine, saliva and tissue are analyzed using biochemical analyzers, and molecular biology techniques like blotting.



### Name and communication details of the nodal faculty

**Prof. S.P.Thyagarajan**  
Pro-Chancellor (Research)  
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## List of Major Equipment

S.No.	Equipment	Installation Report No.	Value (in Rupees)
1	HPTLC (Camag)	13.07.05	18,33,475.00
2	HPLC (Perkin Elmer) UV (Perkin Elmer)	03.10.05 02.09.05	11,45,250.00
3	Deep freezer (40°C) (Thermo)	20.03.06	3,73,074.00
4	Cooling Centrifuge(Eppendorf)	08.06.05	3,68,054.00
5	ELISA Reader (BIO RAD) ELISA Washer ( ”)	14.07.05	3,41,925.00
6	Mettler balance ( Mettler Toledo)	22.07.05	1,45,125.00
7	Semi Auto Analyzer (Cuesta Careinc)	27.01.06	1,15,500.00
8	Data acquisition unit, Lagendroff Amplifier (Experimetria)	21.09.07	5,30,817.00
9	Deep freezer (80°C) (Thermo)	20.03.06	5,26,300.00
10	Stability Chamber (I.L.E.Co) (NW)	04.11.06	1,07,229.00
11	AAS – (Perkin Elmer)	(FLAME & GRAPHITE 18.04.07)(MH s 12.7.07)	30,66,539.00
12	Analgesiometer (UGO Basile)	12.01.07	1,60,000.00
13	Plethysmometer (UGO Basile)	12.01.07	4,80,607.00
14	Freeze dyer (Martin Christ )	06.01.07	5,04,420.00
15	Gel documentation	23.03.09	12,37,959.00
16	Co <sub>2</sub> incubator	05.05.09	3,49,526.00
17	Inverted Research Microscope	16.07.09	10,45,481.00
18	Electrophoresis – Semi Dry Unit	15.04.09	1,27,500.00
19	Metabolic cages 6 Nos	25.11.08	2,09,503.00
20	Deep freezer (-86°C) (Thermo)	08.07.13	6,01,420.00
21	Ultra pure water purification system Elga (Lab Inida)	02.07.13	5,47,099.00
22	Fluorescence microplate Reader Perkin Elmer	15.07.13	11,61,000.00
23	Liquid Scintillation counter Perkin Elmer	25.09.13	21,22,200.00

## List of Minor Equipment

S.No.	Equipment	Installation Report No.	Value (in Rupees)
1.	Computer PIV 30G+ four in one printer With Accessories (Rox Trading & Sys.)	26.10.06	53500.00
	Computer Printer (Dot-matrix)		9,850.00
2.	Vertical Midi – Gel – (Genel)	12.09.06	10,483.00
3.	Exhaust Fume Hood System-AAS - (Modern Lab)	08.11.06	28,150.00
4.	Heating Mantle 4 Nos (Guna Enterprises)	02.01.07	38,270.00
5.	Electro Magnetic Stirrer (Remi)	24.06.05	3,762.00
6.	Magnetic Stirrer (Remi)	24.06.05	4,245.00
7.	Computer (4 Pentium)	04.04.07	49,400.00
8.	Circulation Water bath (Sigma)	07.09.07	20,812.50
9.	Computer (Sri Prashanth Enterprises ) <b>[Monitor alone]</b>	15.06.07	7,900.00
10.	Rotator Flash Evaporator (Superfit)	17.08.05	36,398.00
11.	Oven (Technico)	25.05.05	17,247.00
12.	Incubator(Technico)	25.05.05	17,347.00
13.	Water bath(Technico)	02.01.07	4,547.00
14.	PH Meter (Systronics)	11.07.05	13,249.00
15.	Laboratory blender (I.L.E.& Co) (hand homogenizer – 3nos)	12.09.07	2,777.00
16.	Cyclomixer (Remi) - 1	24.06.05	2,648.00
17.	Tissue Homogenizer (I.L.E.& Co)	24.06.05	6,447.00
18.	Remi centrifuge (Remi)	24.06.05	11,942.00
19.	HPLC (Guard Column) (Spincotech)	05.11.05	9,299.00
20.	Submarine Gel Sys (Bio-Source) (Bangalore GeneI)	29.08.06	60,973.00
21.	Hot Plate	25.05.05	2,547.00
22.	Stabilizer	04.11.06	4,689.00
23.	Sonicator-(Spincotech)	27.09.06	41,448.00
24.	Digesdahl Apparatus (HACH Company)	13.11.06	89,153.00
25.	Luminescence Spectrometer (Perkin Elmer)	20.03.07	29,868.00
26.	Air compressor (ELGI)	09.04.07	27,270.00
27.	Flame Photometer (Systronics)	17.08.06	46,474.00
28.	Autoclave (TECHNICO)	15.06.06	23,646.00
29.	Computer ( Samson - Devraj)	09.10.06	37,200.00
30.	15 KVA UPS; 10 KVA UPS	-	-
31.	Fume Hood (Cleanair)	28.03.07	86,702.00
32.	Microscope (MAGNUS)	-	12,000.00

33.	Furniture for holding the equipments	-	-
34.	Refrigerator	-	-
35.	Water Bath for Rotary Evaporator (Replaced )	5.10.09	6,240.00
36.	Electrode for PH Meter (Replaced )	24.05.10	1,482.00
37	Laminar Airflow	04.04.09	54,141.00
38	Cryocanes 47L-Mod.Ix47-01.No. & 3.9 L.Mod. IRx3.9- 01 No.	25.05.09	65,200.00
39	Computer & Printer with Accessories	24.03.09	31,000.00
40	Centrifuge with swingout (Clinical)	5.10.09	3,979.00
41	Water bath	15.10.09	5,408.00
42	HPLC Column C-18 - 250 x 4.6mm 5, 250 x 4. 6mm 5uc.	26.08.09	37,440.00
43	Water Distillation Still -5 liter capacity ( <b>NW – Quotation raised for repair</b> )	23.01.09	15,600.00
44	Computer Pentium & with Accessories	1507.09	24,000.00
45	DUAL ROCKER	19.05.10	18,168.75
46	HP Printer	02.08.10	Rs. 15, 400.00
47	Analytical Balance (0.001 g) Sartorius	-	Rs. 51,000/- Transferred to Central Research Facility
48	PH Meter	-	Rs. 12,000/-