



Ministry of Science Technology & Research

# Industrial Technology Institute Colombo Sri Lanka



COMSATS Centre of Excellence

***Driving the Nation through Technology***

*Industrial Technology Institute*

# Introduction

Industrial Technology Institute, formerly known as Ceylon Institute of Scientific & Industrial Research (CISIR) is a multidisciplinary R & D institute operating under Ministry of Science, Technology & Research.

Established in 1955 under the Parliament Act no 15 of 1955 (CISIR Act) in order to support the Industrial Development in the country.

Since 1998 the Institute is functioning under the Science & Technology Development Act No 11 of 1994.

The major objectives of the institute are multidisciplinary Scientific & Industrial research and technology transfer for rapid industrial development in the country

# THE VISION, MISSION AND OBJECTIVES

## **Vision**

To be a centre of excellence in Scientific Industrial Research for national development

## **Mission**

To conduct innovative R&D and provide internationally competitive Technical services to accelerate industrial development for the benefit of the people of Sri Lanka

## OBJECTIVES & FUNCTIONS

The objects and functions of the ITI as specified in the Science & Technology Act No. 11 of 1994 that came into effect on 01 April 1998 are as follows.

The Technology Institute shall be demand-driven.

The object of the Technology Institute shall be to elevate the level of Technology in Sri Lanka to the level required for rapid industrialization

Functions shall be: - to support industry by-

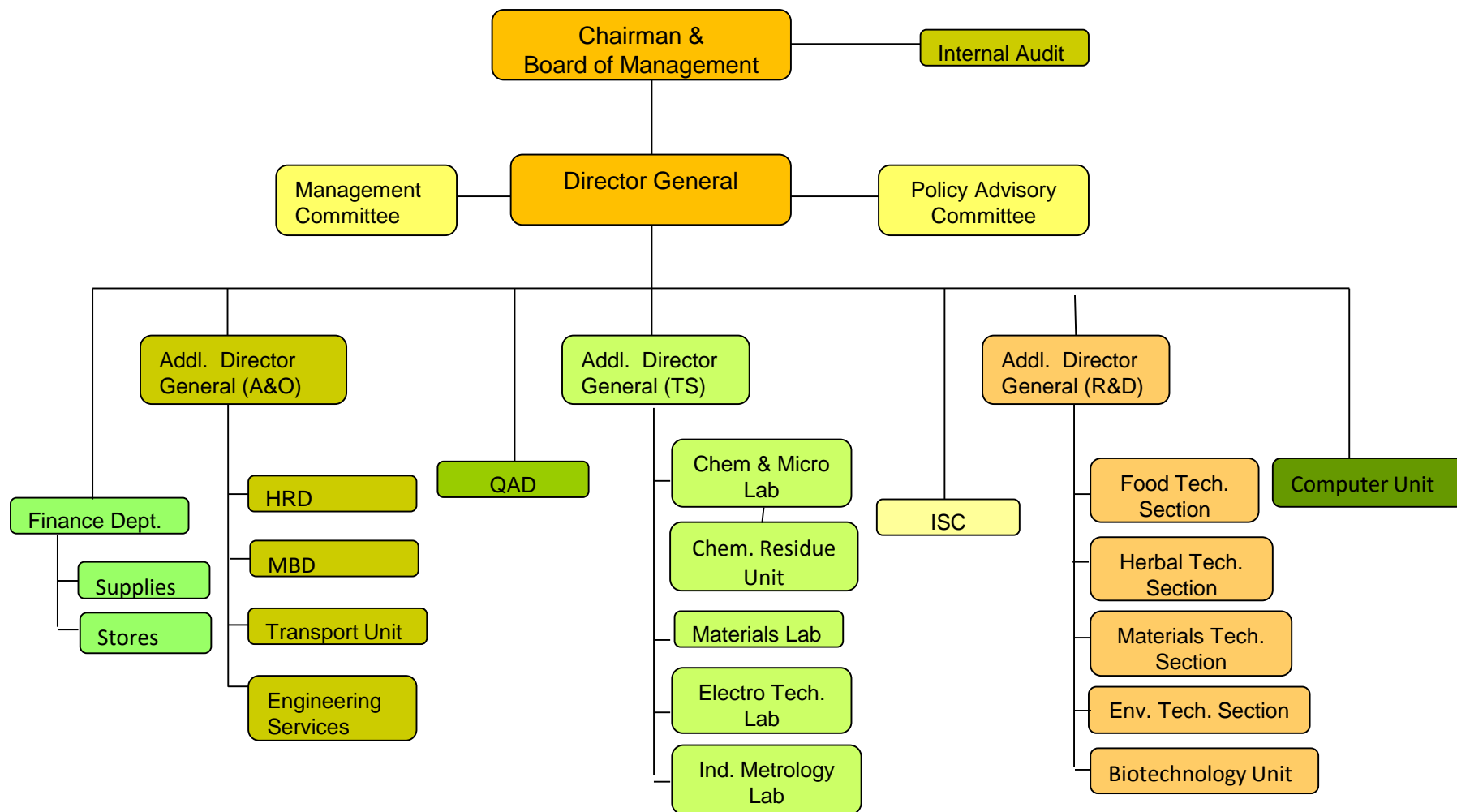
# OBJECTIVES & FUNCTIONS

1. *Undertaking on contract, testing, investigation and research, for improving product quality, technical processes and methods used in industry, and for discovering new processes and methods to be used in industry;*
2. *Providing technical services and consultancies; and engaging in activities connected with technology transfers, the adaptation of technologies and the development of new technologies*
3. *To conduct research with a view to accelerating industrial technology development;*
4. *To collect, process and disseminate useful technical information, in particular on “shelf technology” with a view to accelerating industrial development;*

# OBJECTIVES & FUNCTIONS

- 5. to undertake training of persons in areas related to the experience of the Technology Institute;*
- 6. to undertake or to collaborate in the survey and monitoring of environmental pollution and to recommend remedial measures to mitigate such pollution;*
- 7. to co-operate with government departments and institutions, universities, technical colleges and other bodies in demand driven research to promote industrial technology development*

# Organizational structure

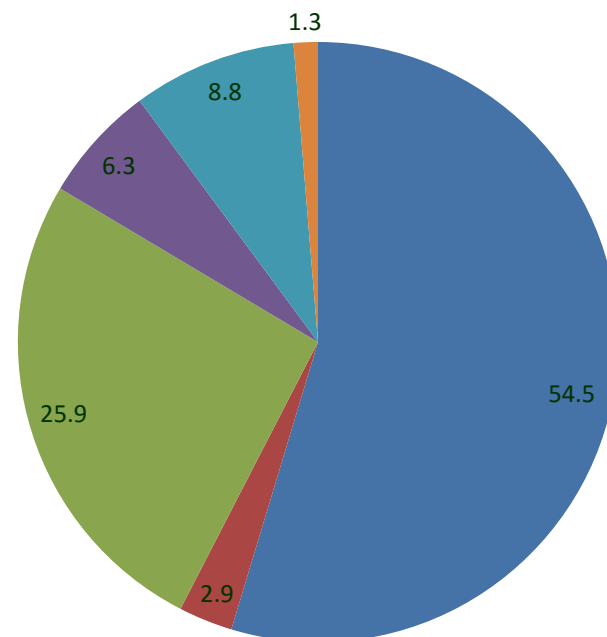


Category		Number	Educational Qualifications					
			PhD	Masters	PG Dip	BSc	Diploma	Other
Management		16	6	6	3			1
Research	Scientists	62	13	24	1	29		
	Engineers	14		3	1	9		
Technical		92				8	20	
Administrative & Clerical		64						
Craftsmen		26						
Others		53						
Total		327	19	33	5	46	20	1



# Annual Budget

Govt. Grant- Recurrent	Rs 240 M (1.6M USD)
Govt. Grant- Capital	Rs 200 M (1.3M USD)
Build Improvement	Rs 13 M (0.09M USD)
Acquisition Machinery	Rs 114 M (0.8M USD)
ICT	Rs 28 M (.06M USD)
RD Activities	Rs 39 M (0.26M USD)
HRD	Rs 6 M (0.04M USD)



Income Generated in 2016 : Rs. 248 M (1.6M USD)

## Awards/Achievements

❖ **Life time APEX Award of Professional excellence in Science & Technology** - Dr Iresha Kottegoda (Act. Head – Materials Technology Section)

❖ **National Research Council Merit Award for Research Publication**

Dr Ilmi Hewajulige – Director Food Technology Section



❖ **Presidential Awards for Scientific Publications** – Dr Wasana Rodrigo – Research Scientists – Biotechnology Unit

❖ **Sri Lanka Association for Advancement of Science (SLAAS) Postgraduate Research Merit Award** - Dr N. P. Liyanawaduge – Research Scientist – Industrial Metrology Laboratory

# WORLD ASSOCIATION OF INDUSTRIAL AND TECHNOLOGICAL RESEARCH ORGANIZATION

## INNOVATION AWARD - 2016



### INNOVATION AWARD 2016

**Dr. G. A. S. Premakumara**

Finalist Business Innovation

Industrial Technology Institute

**Sri Lanka**

Kithul Activation and Sap Production  
Enhancing Reagent (KASPER).

Eckart.Bierduempel  
WAITRO Vicepresident

Dr. Rohani Hashim  
WAITRO Secretary - General

Awarded during the 23rd WAITRO Biennial Congress  
Medellin-Colombia, September 29th, 2016.



### INNOVATION AWARD 2016

**I. P. L. Jayarathna**

Finalist Social Innovation

Industrial Technology Institute

**Sri Lanka**

Red clay based low cost domestic water filter for removal  
of fluoride, arsenic and cadmium in drinking water

Eckart.Bierduempel  
WAITRO Vicepresident

Dr. Rohani Hashim  
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# Our Scientific Intervention to a dying Industry & development it to an export oriented Industry

- Development of Kithul Activation and Sap Production Enhancing Reagent (KASPER).
- SL Patent No.13759





# WORLD ASSOCIATION OF INDUSTRIAL AND TECHNOLOGICAL RESEARCH ORGANIZATION INNOVATION AWARD - 2016



## INNOVATION AWARD 2016

**I. P. L. Jayarathna**

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# Achievements

Modern Research & Development Centre – Declared open in December 2016

Two Research sections & Administrative sections moved to Modern Research & Development Complex and started operations from January 2017





# Achievements

❖ Chemical Residue Unit was upgraded to a fully fledged Laboratory for Residual Analysis



## Technology Transfers

- ❖ Rice based instant Rotti/ Pittu mix
- ❖ *Bectrocera* spices (Fruit Fly) controlling agent (BASCA)
- ❖ Red clay based water filter
- ❖ Approx. 40 minor TT were carried out during the year





# Technologies ready for Commercialization

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- ❖ Glucose Syrup and High Protein Concentrates from Cassava
- ❖ Skin whitening and anti aging cream
- ❖ Technology for extension of storage life of mango
- ❖ Technology to identify pork and other meat
- ❖ Functional food products – yoghurts, bread, ready to serve beverage
- ❖ Fish soup cubes
- ❖ Tea based energy drink

# Publications/Communications

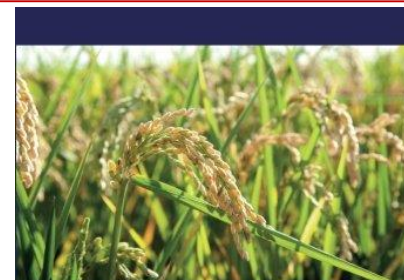
❖ Publications – 37 scientific publications in referred journals

❖ Communications - over 72 International and Local Com

❖ Books and Book Chapters

• Abeysekera, W. K. S. M. and Premakumara, G. A. S. (2016) Health Food Properties of Traditional Rice in Sri Lanka. Lambert Academic Publishing, Germany

• Premakumara, G. A. S., Abeysekera, W. K. S. M, and Ranasinghe, P., (2016) Anti-glucation and glycation reversing potential of *Salacia reticulate* L. (Kothala Himbutu) root, stem, leaf and twig extracts. Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre). pp. 9-117



W K S M Abeysekera  
G A S Premakumara

Health Food Properties of  
Traditional Rice in Sri Lanka

LAP LAMBERT  
Academic Publishing



## Books and Book Chapters

Herath H.M.T., Ranathunga R.A.A. and Samaranayake M.D.W. (2016). Important Nutrition Information of Popular Grain Legume Varieties in Sri Lanka. Department of Agriculture and Industrial Technology Institute, Agriculture Publication Unit, Gannoruwa

Hewajulige I.G.N. and Dhekney, S.A. (2016) Papayas. In: Caballero, B., Finglas, Op and Toldri A, F. (eds). Encyclopedia of Food and Health 4: 209-2012 Oxford, Academic Press.

Kottegoda, I. R. M., Nayanajith, L. D. C., Gao, X., Wang, J., Wang, J. Z., Liu, H. K. and Gofer, Y. (2016). Synthesis and characterization of few-layer graphene from high purity Sri Lankan vein graphite. In Transferring nanotechnology concept towards business perspectives, S. Shimazu and S. Tursiloadi (Eds.), Daya Publishing House, New Delhi.

# Patents

Patent No	Title
16753	Development of Clay filter body with high fluoride binding ability for the remediation of fluoride contaminated water
16731	Low Cost Continuous Flow Solar Reactor for Purification of Bacterial/Organic Contaminated Water
17486	Method of immobilization of TIO <sub>2</sub> on a Substrate using Polymer/Binder/Adhesive for Photocatalytic Air/Water purification
17609	A Calibration System for Measuring Tapes by Mechanical Comparison

❖ Patents Applications lodge : 4 patents

## ❖ Postgraduate Studies

Programme	Completed	On-going
PhD	01	13
MPhil	03	04
MSc	-	10
PG Diploma	01	05

## ❖ Training

2 day out bound training for all staff members

	No. of Programs	No. Trained
Foreign	16	15
Local	14	23

# New Programmes

- ❖ Establishment of the Human Cell Culture Facility at ITI /MRDC – In progress
- ❖ Joint China – Sri Lanka Biotechnology Laboratory – In Progress
- ❖ Joint China – South Asia Technology Transfer Centre – Agreement signed



- ❖ Pharmaceutical Testing Laboratory – 150 M allocated – In progress
- ❖ Petrochemical Testing Laboratory – In progress
- ❖ School of Science & Technology – In progress

# New Programmes

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- ❖ Method to determine the feasibility of a nano material to anchor the developed dengue virus antibodies
- ❖ Room Acoustic Modeling
- ❖ Evaluation of bioactive properties and determination of *in vitro* cholesterol assimilation effect of potential probiotics isolated from Sri Lankan Finger millet
- ❖ Development of an anti-glycation and glycation reversing assay kit addressing all stages of glycation process
- ❖ Development of shelf stable high energy instant food products from locally available raw materials using gamma irradiation
- ❖ Reductions of vehicle exhaust emission by nano particle supported adsorption media
- ❖ Investigation of mode of contamination and the extent of contamination by pesticide residues in selected food items



# International Collaborations

## Collaborations with other COMSATS Centers of Excellence

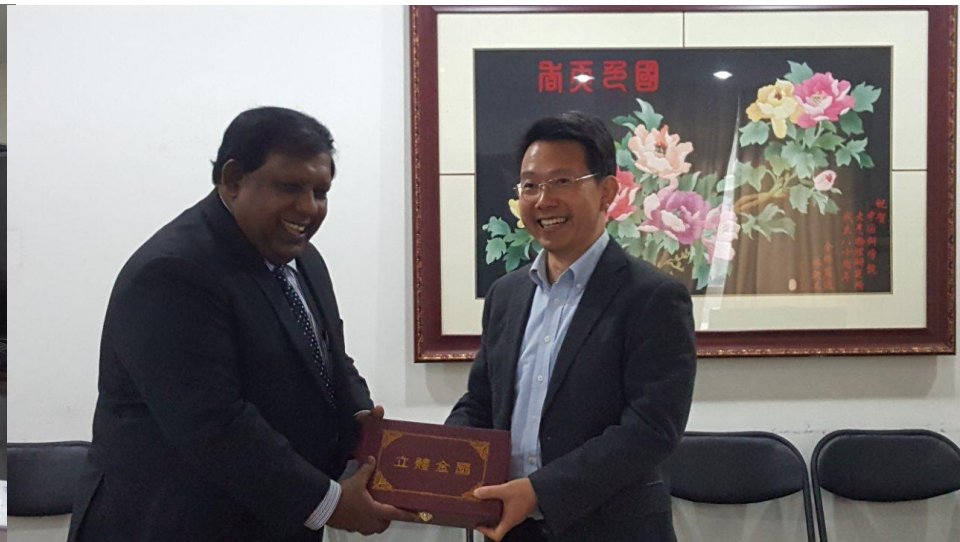
Establishment of a Climate Change Research Centre at ITI in collaboration with ICCES, China

As part of the MoU between ITI and International Center for Climate and Environment Sciences (ICCES)

- One of the ITI staff members is doing his PhD at ICCES, China.

- State Minister for Science, Technology & Research of Sri Lanka

*Hon.Laxman Senevirathne visited ICCES on a facts finding mission in April 2017*



# International Collaborations

Collaborations with other COMSATS Centers of Excellence

International Centre for Chemical & Biological Sciences (ICCBS) – Karachi, Pakistan

Three Research Scientists of ITI underwent training at HEJ Research Institute of Chemistry & Dr.Pajwani Centre for Molecular Medicine & Drug Research





# International Collaborations

Started a COMSATS Desk at Information Services Centre of ITI



# International Collaborations

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## Enhance preservation of fruits in South Asia

The second phase of the CIFSRF-IDRC, Canada aided project, aiming commercialization of the products and services developed by the phase one, “Hexanal Smart Delivery System”, “Enhanced Freshness Formula” and technology on banana fibre paper was initiated during last year and Technology Transfer of a wax formulation to private sector Agro-Industry is in progress.

## Novel cereal and fruit based probotics

The Indo-Sri Lanka joint research programme with ICRISAT, India on Ensuring human health, food and nutrition a technology transfer is in progress on banana flour as a replacement to wheat flour.

## Investigation of Sri Lankan Food

A project on “Investigation of biologically active natural products from Sri Lanka fruits started with the Korean Institute of Food Technology and an MOU was signed between Sichuan Institute of Atomic Energy of China to strengthen the technical cooperation in the field of food irradiation

# Future Plans

Participation in COMSATS programmes

S & T cooperation offers to other network members and COMSATS member countries

Joint research work

Herbal Technology : Value addition to Natural Products

Food Technology : Health food, Nutraceuticals, Natural Food additives, Post harvest technologies

Material Technology : Value addition to minerals ; Natural Fibers

Training facilities : Metrology; ISO 17025; Herbal cosmetics

Technology transfers: A range of Herbal, Food & Material based technologies for MSMEs

# A big thank for your patience.....



# KASPER Technology for Kithul tapping



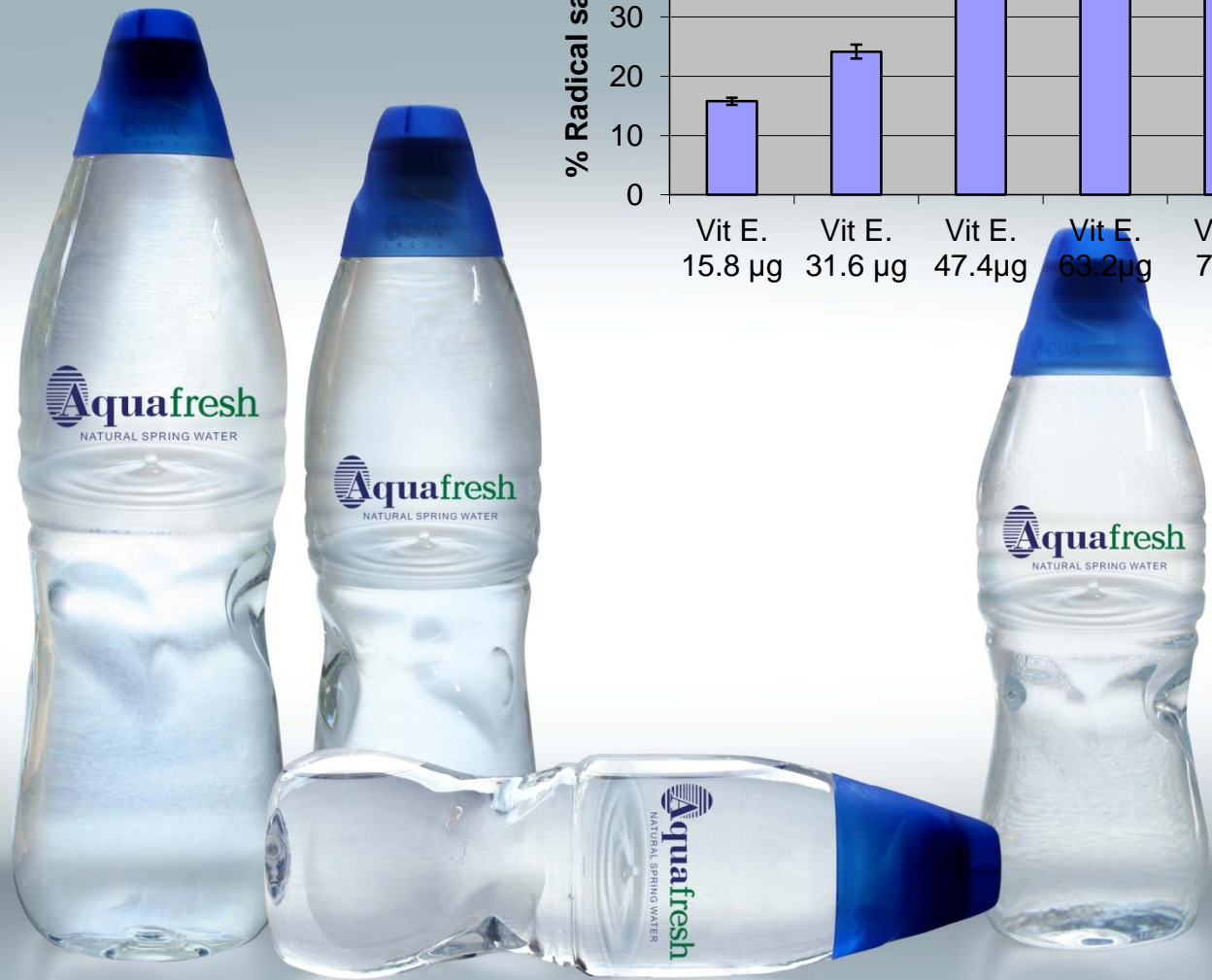
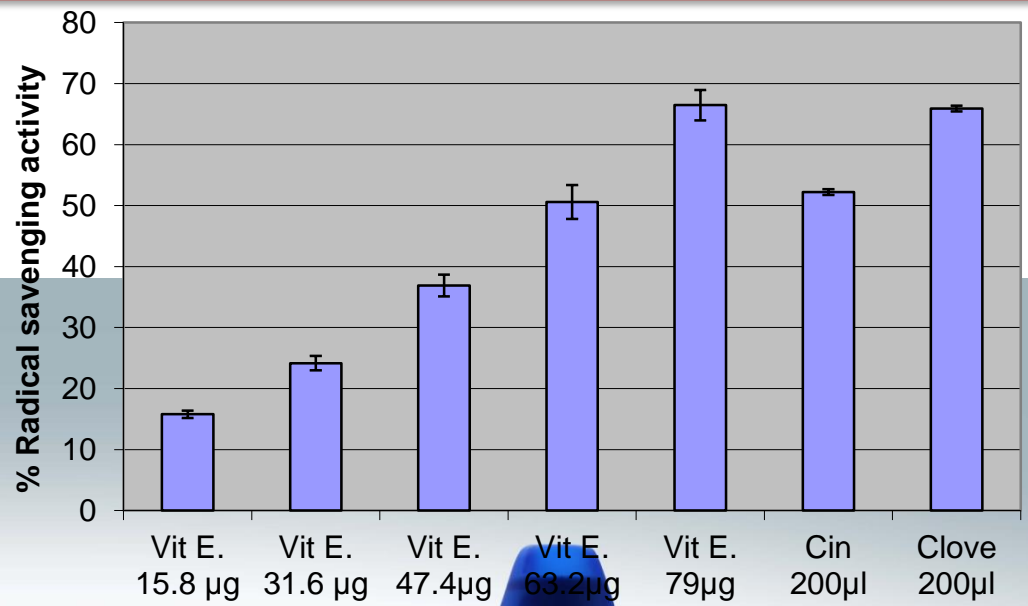
YASMEEN KITUL PRODUCTS	
Price List	
750ml Bottle	Rs. 500/=
350ml Bottle	Rs. 250/=
250ml Bottle	Rs. 230/=
220ml Jar	Rs. 190/=





Anti-diabetic biscuit from  
*Salacia reticulata*

# Functional water from spices





# Herbal cosmetics , cosmaceuticals, air fresheners



# *Bacillus thuringiensis israelensis*



- Indigenous strain of bacterium, *Bacillus thuringiensis israelensis*.
- Proven technology and a viable option for mosquito control in Sri Lanka especially dengue control, filarisis, malaria, JE.
- Green technology – environmentally benign, a viable alternative for synthetics.
- Successfully commercialized to use in Sri Lanka.
- Novel venture in biotechnology-based industries in Sri Lanka
- Value addition to local R&D out puts by local Scientists



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# Electro Technology Unit

Audio signal based street lamp controller



Timer based street lamp controller



Automated weather station