

# BOOK OF ABSTRACTS



INTERNATIONAL YEAR OF  
**MILLETS**  
2023



सीएसआईआर  
**CSIR**  
भारत का नवाचार इंजन  
The Innovation Engine of India

## 30<sup>th</sup> Swadeshi Science Congress

25-27 May 2023

National Conference on Holistic Approach for a Sustainable Lifestyle  
Perspectives from Indian Knowledge System at NIT - Calicut



Organized by:  
**Swadeshi Science Movement-Kerala**  
in association with  
National Institute of Technology (NIT), Calicut

Supported by:  
Council of Scientific and Industrial Research (CSIR),  
Govt. of India  
Ministry of Earth Sciences (MoES), Govt. of India

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### *Focal Theme*

Holistic Approach for a Sustainable Life Style-  
Perspectives from Indian Knowledge System

### *Organized by*



Swadeshi Science Movement- Kerala  
(Kerala Chapter of Vijnana Bharati, New Delhi)

&

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# **30<sup>th</sup> Swadeshi Science Congress**

## **BOOK OF ABSTRACTS**

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**May 2023**

14.00	At SOM Lecture Hall: <b>SATYENDRA NATH BOSE HALL</b> <b>Special session on 'Co-Creating Sustainable Technological Solutions for Small-Scale Fisheries: An Interdisciplinary Approach'</b>
18.15	At <b>SWAMI VIVEKANANDA AUDITORIUM</b> Swatantrata ka Amrit Mahotsav (SWAM) – Special Session on celebration of 75 <sup>th</sup> years of Indian Independence by Vijnana Bharati
19.00	At <b>SWAMI VIVEKANANDA AUDITORIUM</b> Heartfulness Meditation – Special Session
20.00	<b>Millet-Dinner to commemorate International Year of Millets</b>
<b>26 May 2023</b>	
9.00	At SOM Lecture Hall: <b>JANAKI AMMAL HALL</b> <b>Session 2: Engineering and Technology</b> Invited Lecture: Dr. K.P. Sudheer, Head, Department of Agricultural Engineering, College of Agriculture, KAU, Thrissur Oral Presentations: 14 Nos.
09.00	At SOM Lecture Hall: <b>SATYENDRA NATH BOSE HALL</b> <b>Session 3: Agriculture and Botany</b> Invited Lecture: Dr. T.P. Sethumadhavan, The University of Trans-Disciplinary Health Science & Technology, Bengaluru Oral Presentations: 33 Nos.
9.00	At SOM Lecture Hall: <b>SALIM ALI HALL</b> <b>Session 4: Veterinary and Animal Sciences</b> Invited Lecture: Dr. N.H. Mohan, Principal Scientist, ICAR-NRC on Pig, Guwahati Oral Presentations: 35 Nos.
9.00	At SOM Lecture Hall: <b>Dr. PALPU HALL</b> <b>Session 5: Health Sciences</b> Invited Lecture: Dr. Balagopal Unni, Director, Academic & Research, GEMS Arts & Science College, Ramapuram, Malappuram Dr. Remya Krishnan, Associate Professor & Head, Department of Dravyaguna, Rajiv Gandhi Ayurveda Medical College, Mahe Dr. P.V. Mohanan, Head, Department of Applied Biology, SCTIMST, Thiruvananthapuram Oral Presentations: 15 Nos.

HSS/PL/01

## Effect of Environmental Pollutants on Human Health: Case Studies

**Balagopalan Unni**

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Occupational and environmental exposures to persistent environmental contaminants, particularly heavy metal emissions are increasingly associated with health risks. Exposure occurs mainly through respiratory and gastrointestinal systems and thus gets ingested and absorbed in the body resulting in serious health problems. About 3500-4000 individuals were covered through survey and consequent filling up of health questionnaires in three industrial study sites viz. oil drilling site, paper and pulp mill site and open-cast coal mine site. Air, water and vegetable samples were collected during the survey from these three sites and control area. Among all the three sites, the coal mine site was found to be most polluted with the highest amount of suspended particulate matter,  $\text{NO}_2$  and  $\text{SO}_2$  levels. The analysis of vegetables/food samples from these sites showed the presence of toxic contaminants and very low levels of nutritional parameters. The mineral analysis of water samples from these sites have shown high amounts of manganese, lead, arsenic, cadmium and lead. During the survey, interactions with each individual were done through a health questionnaire and all the disease symptoms were recorded and finally blood samples were collected through health camps and studied for biochemical parameters, kidney, liver profiles and hemoglobin content. For lung function, spirometry was done and tested for forced expiratory volume in one second ( $\text{FEV}_1$ ), forced vital capacity (FVC) and  $\text{FEV}_1/\text{FVC}$ . Arsenic contamination was detected in most of the water samples near the paper mill. The major predominant diseases observed were respiratory disorders at the site of the coal mine, neurological disorders at the site of the paper mill, and liver abnormalities at the oil drilling sites. High levels of mercury were found in the blood and food samples collected near the paper mill. Experiments were also conducted to evaluate the coal dust "exposure-response" relationship amongst the people residing very near to the open cast coal mine area and trace out the genetic susceptibility to Chronic Obstructive Pulmonary Disease (COPD) with respect to GSTM1 and GSTT1 genes in the population. The impact of potentially injurious environment and other factors on human health are discussed.