



## **Dharampal Centenary Webathon**

**(July 2021–June 2022)**

*Revitalizing India: Celebrating the Birth Centenary of  
Shri Dharampal (1922-2006)*

**Session 2, 21<sup>st</sup> August, 3:30 – 5:30pm**

*India's Historical Achievements in Technology and  
Their Contemporary Relevance*

**ABSTRACTS**

# THE GLOBAL REDISCOVERY OF AYURVEDA IN THE MODERN WORLD



**Vaidya P. Rammanohar,**  
**Research Director, Amrita School of Ayurveda,**  
**Amrita Vishwa Vidyapeetham, Kollam, Kerala**

In the last many decades, Ayurveda has been gaining visibility across the globe. However, there is still a long way to go before Ayurveda is recognized as a legitimate system of medicine and health care globally. Though slow, the signs of a forward movement in this journey are clearly discernible. In the last year, about 10,000 individuals from 75+ countries, 150+ locations representing 60+ organizations joined together for Ayurveda Day. It has taken a long time, but now Ayurveda is finding a place amongst the Complementary and Alternative approaches that have been prevalent in the western world since the twilight of the last millennium. There are universities in the Americas and Europe that offer courses in Ayurveda, not to speak of educational offerings by private organizations. Worldwide, Ayurveda clinics offer clinical services. Some of these clinics are attached to Integrative Medicine Centers in universities and hospitals. In a limited way, Ayurveda is also on the research agenda of apex bodies, like the National Institutes of Health, USA and leading universities like the Charité Medical University, Germany.

We can trace the beginnings of this journey to the dawn of the colonial period in India. The fascinating accounts of European encounters with Ayurveda, and the Indian medical heritage for that matter, are a witness to the global rediscovery of Ayurveda that was set in motion more than two hundred years ago. Garcia da Orta from Portugal, Hendrick Van Rheede from Netherlands, JS Holwell from London, the travellers James Findley and Thomas Cruso are some of the names that can be mentioned here in this context.

*Coloquios dos Simples e Drogas da India*, the *Hortus malabaricus*, *Medicus malabaricus* and the reporting of rhinoplasty (surgical reconstruction of a severed nose) have all evinced great interest in Ayurveda and inspired the continuous investigation and unravelling of the traditions of Ayurveda to the western world. Historians, Sanskritists, Anthropologists and Social Scientists continued to study Ayurvedic texts and practices. As a sequel, the most comprehensive history of Ayurvedic literature was compiled by G.J. Meulenbeld, a psychiatrist and medical historian from Netherlands in the 20<sup>th</sup> century. Ethnobotanists and ethno-pharmacologists were also attracted by the rich pharmacopoeia of Ayurveda and continue to research into its herbs and formulations even today. In more recent times, interdisciplinary research and integrative approaches incorporating Ayurveda have been initiated.

The remarkable continuity of the tradition of Ayurveda continues unabated in the contemporary world. And as we look back to the origins of this momentum in modern times, the contribution of the great Gandhian and historian of Indian Science, Dharampal stands out conspicuously. Drawing upon the documentation of the colonial government on Indian education, agriculture, technology, medicine and arts during the early period of colonial rule in India, Dharampal compiled the monumental work *Indian Science and Technology in the Eighteenth Century*, a book that, in the words of Claude Alvares, continues to have an “electrifying effect” on thousands of readers across the world. As he points out, Dharampal’s contributions are comparable to the scholarly work done by Dr. Joseph Needham for Chinese scientific traditions. But for the efforts of Dharampal, the extensive practice of tikah, inoculation against small pox that existed in India as a practice before the discovery of small pox vaccination in the West, would have remained in oblivion. Small pox inoculation is not documented in the classical texts and exemplifies the ability of the Indian medical tradition to innovate and progress. And this very discovery has inspired and can continue to inspire modern thought leaders to envisage what Ayurveda has been in the past and what it can be in the future.

# AYURVEDA AND THE GLOBAL FUTURE OF HEALTH SCIENCES



**Professor Darshan Shankar,**  
FNASc, Vice Chancellor,  
The University of Trans-Disciplinary Health Sciences and Technology

## **1. The past track record of global contributions**

Ayurveda has a track record of centuries of global contributions to the world of medicine. Historically it is well established that the Ayurveda knowledge system gifted surgery to the world of medicine. What is lesser known (due to poor scholarship on the history of medicine) is the enormous influence of Ayurveda both in the west and east. The western influence of Ayurveda on Europe and the Middle East is evident in the impact of its humoral theory and herbal remedies which influenced medicine in the west from the 5th BCE, vide the Persian and Greek encounters (and subsequently through trade), until the 15th CE. Ayurveda had a far deeper eastern influence, vide Buddhism, on its Asian neighbours, viz. China, Japan, Myanmar, Mongolia, Thailand, Vietnam, Sri Lanka, Nepal and Tibet. The influence in the east, unlike in the west, was fully assimilated and internalized and continues to flower even to this day in the form of TCM, KAMPO, AYURVET, and SOWA RIGPA, all of which have roots in Ayurveda.

## **2) Ayurveda knowledge systems and a vision of their role in transforming global health sciences in the 21st century**

Ayurveda, in order to enhance the benefit of its health services for the modern world, firstly needs to urgently recover and rebuild its historic talent, capacity and strength in surgery and emergency medicine. This can be achieved by designing a bold strategy to learn from the incredible innovations in surgery made by its past students, who in the last two centuries have advanced surgery to new heights in Europe, and a substantial part of these innovations have also been absorbed by mainstream medicine within India. Re-establishing proficiency in surgery is a moral right of Ayurveda and will be an apt repayment of a historical debt. It will help Ayurveda stand properly on two legs instead of one as at present, on both the national as well as the global stage.

In parallel, the second area of focus for Ayurveda is to demonstrate the brilliance of its insights in physiology by collaborating as an equal partner with advanced biology. The strategy should be to use trans-disciplinary (Ayurveda- biology) approaches, for making original contributions in several strategic areas that will shape health sciences and practice in the 21st century. Examples of some of these strategic areas are: personalised food and medicine, refined classification of diseases, regenerative biology, multi-targeted drug discovery and bio-regulation. Research and educational investment in these areas to create a network of new institutional platforms (centres of excellence) can attract the best researchers and students from across the globe and make such trans-disciplinary institutions, global destinations for the advancement of health sciences.

### 3. TRADITIONAL INDIAN IRON AND STEEL-MAKING: RETROSPECT AND PROSPECTS



**A. V. BALASUBRAMANIAN**  
*DIRECTOR,*  
*CENTRE FOR INDIAN KNOWLEDGE SYSTEMS [CIKS], CHENNAI*

Indian iron and steel have been famous at least since Roman times and have been exported to several parts of the world until the 18<sup>th</sup> century. Even as late as the 18<sup>th</sup> century, iron was being smelted in cottage-scale smelting furnaces in thousands of locations in different parts of India. Steel was made both by the carburization of wrought iron and the decarburization of cast iron. Steel was manufactured in large quantities and it was being exported to Europe and the Middle East. The traditional process of iron and steel-making suffered a decline after the 18<sup>th</sup> century due to various reasons, including extensive deforestation, levy of repressive taxes under colonial rule and loss of control of local communities over forest resources. Various attempts to reproduce the superior Indian steel and discover its ‘secret’ had been made in England, France and Russia since the 18<sup>th</sup> century, and these efforts continued in Russia until the beginning of this century. Traditional iron and steel-making and studies on it receded into the background towards the end of the 19<sup>th</sup> century. There exist even today a large number of artifacts comprising high quality products of Indian metallurgy, such as the Iron Pillar at Delhi, as well as similar iron pillars at Dhar in Madhya Pradesh, and the Kodachadri Hills in Karnataka, etc., including the existence of a variety of canons. In the area of non-ferrous metallurgy, there has been a long tradition of work with Copper, Silver, Gold, Tin, Brass, Zinc and Bronze. Zinc in a pure form was produced in Zawar in Rajasthan, perhaps as early as 150 B.C. There exists an important living tradition of metal-working, such as the casting of icons in brass, bronze and *panchaloha*, the making of steel wire, and the casting of metallic mirrors, etc. There is a large body of literature on *Rasa Shastra* in Sanskrit and other languages, some of which elaborates on the technical details of metal work.

Inspired and guided by the works of Shri Dharampal, efforts were made, starting from the mid-1980s, initially by PPST Foundation and later by CIKS to not only document some traditional practices but also to reconstruct and characterize the traditional iron-making process. Simultaneously there is a world-wide revival of interest in reconstructing and characterizing traditional iron-making, in particular, as practised in India. The study of traditional metallurgy opens up the following possibilities:

1. The setting up of decentralized cottage-scale iron smelting industries;
2. Production of alloys that have certain special properties, such as corrosion resistance and super-plasticity;
3. The possibility of evolving a technology starting from the traditional process that makes optimum use of our own resources, not only of the ores and fuels, but also of the knowledge of our artisans;
4. The use of the traditional skills of our artisans in the modern as well as the traditional sectors to suit today's needs, and
5. Evolving a technology that is significantly more eco-friendly than the modern process.