

# Insights into Ayurvedic biology—A conversation with Professor M.S. Valiathan

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## ABSTRACT

Professor Marthanda Varma Sankaran Valiathan, Fellow of the Royal College of Surgeons, ex President of the Indian National Science Academy, is a reputed cardiac surgeon who made original contributions to cardiology and the development of medical technology. He is widely recognized for his role in pioneering the joint culture of medicine and technology, and laying the foundations for the medical devices industry in India. He has pioneered several scientific studies in the field of Ayurveda and authored several books on the subject. In this free and frank interview he discusses three important phases in his life, and his passion for the convergence of modern biology and Ayurveda as a new discipline of science “Ayurvedic Biology”.

**Key words:** Ayurvedic Biology, Professor Valiathan, interview

## INTRODUCTION

Professor Marthanda Varma Sankaran Valiathan is currently Chairman of the Task Force in Ayurvedic Biology of the Department of Science and Technology and an Honorary Advisor, Manipal University. Earlier, he was Professor of Cardiac Surgery and Director of the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, for two decades. He has been honored with many Awards, Fellowships, and honorary doctorates in India and abroad for his contributions to medical science and technology. He was awarded with the Padma Vibhushan in 2005.

As part of a team on the project “Genome Variation Analysis and gene expression profiling of human dosha

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**Figure 1:** Professor M.S. Valiathan giving interview at Manipal

prakriti” I had a chance to interact with Professor Valiathan. His energy and passion for Ayurveda was a great source of inspiration for all. Even a short time with him would instill in us, immense positive energy to pursue intriguing work in Ayurvedic Biology. Thanks to *Journal of Ayurvedic and Integrative Medicine* (JAIM), I got the rare opportunity to interview Prof. Valiathan and get a peek into his 78-year long journey as an accomplished surgeon, biomedical scientist, and a profound scholar of Ayurveda, who is the pioneer of the idea that unique scientific opportunities can arise from viewing Ayurveda from the perspective of contemporary science.

Professor Valiathan agreed to meet me in Manipal and meeting him in his office was sheer *Sattvic* happiness. His

simple, unassuming personality and assuring words put me at ease [Figure 1].

### Phase-I: Early life in Travancore and medical education

**KJ:** It has indeed been a long 78-year fruitful journey. How was your childhood and what were the important transitions in your life?

**MSV:** I was born in an ancient family of Travancore state. My early education was in the government school at Mavelikara and then at University College, Trivandrum. My parents instilled in me a love for languages (Sanskrit, Malayalam, and English), music, and ethical conduct. There was tradition of doctors in our family and one of my maternal uncles, Dr. V.S. Valiathan, had done his medical training from Edinburgh, Scotland, in 1902. I decided to become a medical doctor like my uncle. He was my role model. I completed my MBBS from the Medical College in Trivandrum. The first phase of my professional life began with postgraduate training in surgery in the UK, leading to Fellowship at the Royal Colleges of Surgeons of Edinburgh and England in 1960 and a Master's degree in Surgery from Liverpool University. After a brief stint as a faculty member at the Post Graduate Institute of Medical Education and Research, Chandigarh, I underwent further training in cardiac surgery at the Johns Hopkins, George Washington, and Georgetown University Hospitals, USA, and became a Fellow of the Royal College of Physicians and Surgeons, Canada, in cardiac surgery. I worked with Dr. Vincent Gott and Dr. Charles Hufnagel who strongly influenced me and instilled a lifelong interest in biomedical innovation. They were both pioneers in cardiac surgery. Gott had developed the first thrombo-resistant surface by ionic bonding of heparin for cardiovascular applications; Hufnagel made history by implanting a ball valve into the descending aorta to treat aortic regurgitation in 1952, even before the advent of heart lung bypass. It was a heady experience to work with pioneers in biomaterials and cardiac devices, and follow their lead.

### Phase-II: Confluence of technology and medicine

**KJ:** You enjoyed your research and surgery in USA. How was your transition from USA to India?

**MSV:** When I returned to India in 1972, my major problem was “getting a job”. At Safdarjung Hospital in New Delhi I had an *ad hoc* appointment and could neither do cardiac surgery nor research. Then I moved to IIT, Chennai, where I spent most of my time teaching and doing no research. Several friends and colleagues, including Dr. Hufnagel, believed that I had made a foolish mistake in opting to leave the United States. Unexpectedly, I was then invited by the Government of Kerala. The Chief Minister of Kerala, Achutha Menon, asked me to set up a hospital for

specialities in the new, unoccupied building of Sree Chitra Tirunal Center, Trivandrum, and offered me the freedom and authority to develop it. Within 2 years, patients were admitted for treatment of cardiovascular and neurologic diseases at the Center, and development of cardiovascular devices followed. As Sree Chitra grew, it received support from the Prime Minister, Morarji Desai, and the institute was notified as “An Institute of National Importance” by an Act of Parliament, within 5 years of my joining its helm.

**KJ:** How did you get into developing the Chitra-TTK valve?

**MSV:** In 1975, the demand for prosthetic valves was high in the hospital but import was expensive. The state of Kerala had but one licensed unit, which slaughtered less than 200 pigs per month, which made porcine valve development unviable. As autopsies were much fewer, homograft valve development was even less viable. My team then decided to develop a mechanical valve with a tilting-disc design. A mechanical valve has three parts: a metallic cage, a ball or disc as an occluder, and a sewing ring of plastic fabric. Our first model failed because the metallic cage fractured; the second failed because of cage-disc mismatch in hardness and excessive wear of the cage; the third was on the verge of success, but failed because the disc fractured in the animal model and set us back seriously. But persistence won and the fourth model succeeded brilliantly. The Chitra-TTK valve has been in the market for over 10 years. More than 75,000 valves have been implanted in patients (till 2012) and over 1200 are being produced monthly by TTK Industries. The valves are also being exported to other countries. Our multidisciplinary team developed a series of disposable devices such as blood bags, oxygenator, cardiomy reservoir, and a vascular graft, which are in commercial production in several industrial units in Kerala and Tamil Nadu. During this period, my other team of surgical and scientific colleagues in the hospital built a large surgical series for treatment of a serious heart muscle disease in the tropics—endomyocardial fibrosis—and did in-depth studies, which suggested its causation to be geochemical. The Chitra chapter fulfilled my dream of combining cardiac surgery, scientific research, and technology development in a seamless manner. After two decades at Chitra, I moved to Manipal as the first Vice Chancellor of Manipal University, which was a refreshing change.

### Phase-III: Being an Ayurveda disciple and a pioneer of Ayurvedic Biology interface

**KJ:** After a long and successful career as a cardiac surgeon, assuming the high post of Vice Chancellor in the field of education and several honors as a biomedical scientist, why did you study Ayurveda?

**MSV:** The “predisposing” factor was my upbringing in an

Ayurveda-friendly environment. For any ailment, except obviously surgical, such as a fracture or a tumor, our family consulted a reputed Ayurvedic physician—a scholar who was our neighbor. Once I joined the Medical College and throughout my surgical career of three decades, Ayurveda vanished from my view. It reappeared in the 1990s, when I began to feel that nothing in my cardiac surgical practice, or indeed in the modern medicine, had been contributed by an Indian. That was the “precipitating factor”. It disturbed me that since the advent of modern medicine in India over 200 years ago, there had been no contribution by an Indian—in the causation of a disease, a drug, a surgical technique, a technology, a prophylactic regime in medicine—which had been adopted globally. I refused to accept Shockley’s view that originality in science was exclusive to White people! India is much older than 200 years. Was there a time in India’s history when we were creative and innovative? That search landed me in the company of Charaka, Susruta, and Vagbhata.

**KJ:** How did you study Ayurveda?

**MSV:** I started my study of the Charaka Samhita with a saintly Ayurvedic physician and profound scholar, Sri Raghavan Thirumulpad in Kerala. He was in his 80s but was gracious to me and generous with his time. I would inform him in advance that I would be coming with notes on my understanding of three to five chapters of the Samhita—sometimes only one—so that he too would have looked at the text. I would discuss what I had understood; he would point out my mistakes, the need for greater clarity, for abridgment, or expansion, etc. He would also share with me related ideas and his own experience, which was invaluable. They were highly enlightening discussions.

I used to go to him once in two months and the studies went on for 2½ years. I was honored when he told me that I would not need similar help in the study of Susruta and Vagbhata!

**KJ:** Please share with us your views on Charaka, Susruta, and Vagbhata.

**MSV:** Volumes have been written on the Great Trinity. What could I possibly add to what has been said? For me, Charaka represented the synthesis of all that is great in Ayurveda. While excelling as a general physician with an encyclopedic mind, he formulated the Mula Sankhya doctrine—with 24 tathwas—before Iswarakrishna, and modified the gunas of Vaiseshika to suit Ayurveda. He had thoughtful views on destiny and destruction of habitat; and so on. His claim that “what is found here, you may find elsewhere; but what you don’t find here, you will find nowhere” was justified. Susruta’s text was revised by

Nagarjuna a few centuries after Charaka and was better structured, more compact, and conspicuous by emphasis on surgery. He was the surgeon extraordinary. But I felt that several important sections on cadaveric dissection, plastic reconstruction of nose, lips, etc., which won global recognition had perhaps been unduly shortened during the revision of the text! Unlike Charaka and Susruta who cared little for literary style, Vagbhata was a master poet and physician who composed Ashtanga Hridaya in memorable verse for students and practitioners. He drew his inspiration from Charaka and Susruta, and made them more accessible to ordinary people like us.

**KJ:** How was the process of understanding Ayurveda? Was the language a barrier?

**MSV:** Learning of Ayurveda was not easy because the basic concepts, the role of causation, pathogenesis, diagnosis, the rationale for doing procedures, the basis for prognosis, and most of all, the preparation of medicinal formulations, were vastly different from what I had learnt and practiced in a lifetime. Language was a barrier, but not insurmountable. Without an inspiring teacher like Sri Thirumulpad, I would have found the learning process too hard if not impossible.

**KJ:** What is the future of Ayurveda practice?

**MSV:** Only Ayurvedic physicians can answer this question.

**KJ:** How can we use newer information (generated through reductionist approach) for understanding Ayurveda (holistic science)?

**MSV:** New Science (reductionist) cannot help in understanding all aspects of Ayurveda. By definition, “holistic” cannot be fully analyzed by reductionism. Even after the ultimate reduction, there will be a part that would defy understanding. But what is revealed by the reductionist approach even at this early stage—in studies on Prakritis, Rasayana, etc—is important and exciting. That opens a new frontier in knowledge.

**KJ:** Should Ayurveda be included in medical or basic science courses?

**MSV:** Yes, it would be desirable to introduce a short, familiarization course of 2 or 3 weeks in Ayurveda for medical students. This is already standard practice in the US, UK, etc. Of course, the course should be prepared carefully and imaginatively.

**KJ:** What are the important outcomes of the “A Science Initiative in Ayurveda” projects? How are these projects progressing?

**MSV:** The projects in the first round were concerned with studies on *dosha prakritis*, *panchakarma*, *rasayna*, *dosha-neutralizing plants*, and *rasa-sindur*. The investigators were Ayurvedic physicians and scientists from reputed institutions all across India. The studies have been completed and two important papers have been published, with several more on the way. Equally importantly, they have built a bridge between Ayurvedic physicians and basic scientists for joint research, and led to the establishment of a Task Force in Ayurvedic Biology at the Department of Science and Technology. This is a highly significant development.

**KJ:** You have introduced innovative ideas like “textual epidemiology” in your book *Legacy of Charaka*. Similar several ideas are reflected in other publications too! Please share your perspectives on these new ideas!

**MSV:** It would seem that my novel exercise in archeo-epidemiology based on a digitized text of the *Charaka Samhita* had escaped the serious notice of reviewers except an American scholar! As a matter of fact, textual studies can be as exciting as biological studies. For example, digitized texts could enable one to make probable estimates of common and uncommon diseases, commonly and uncommonly used procedures, evolution of the treatment of a disease from Charaka to Vagbhata, etc., during the period of Brihatrayee; computational linguistics could dissect the different layers of composition and revision of the *Charaka* and *Susruta Samhitas*, and so on. Some work on these lines on the *Charaka Samhita* is being done in Vienna, but none in India.

**KJ:** What is your future plan?

**MSV:** I am at a stage when future comes to me in the disguise of today! “Every morning brings a noble chance”

and something of interest to do. Future will then take care of itself!

Research in Ayurveda has so far been mainly focused on the utilitarian aspect of drug development. However, Ayurveda offers much more for a student of science. Apart from its central claim to be a holistic system, which prizes wellness, Professor Valiathan believes that unique scientific opportunities would arise from investigating Ayurveda through the perspective of contemporary science. When I asked him how Ayurvedic Biology would help Ayurveda or Biology, his answer was, “I cannot claim that Ayurvedic Biology helps, or will help Ayurveda or Biology. Neither needs help. However, when new science, new techniques are applied to old science, new sprouts of knowledge would appear. Chemistry emerged from new experiments in ancient *rasasastra*, as P.C. Ray had shown”.

The conversation with Professor Valiathan awakened the scientist as well as philosopher in me. Here I wish to quote Charaka’s words from his book: *The Legacy of Charaka*.

“Ayurveda owes its call not to selfish goals or worldly pleasure, but to compassion for fellow beings. In seeking to know my legacy, you have but seen the leaves of a universal tree, too vast for your eyes. May your sight grow and your quest never end”.

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