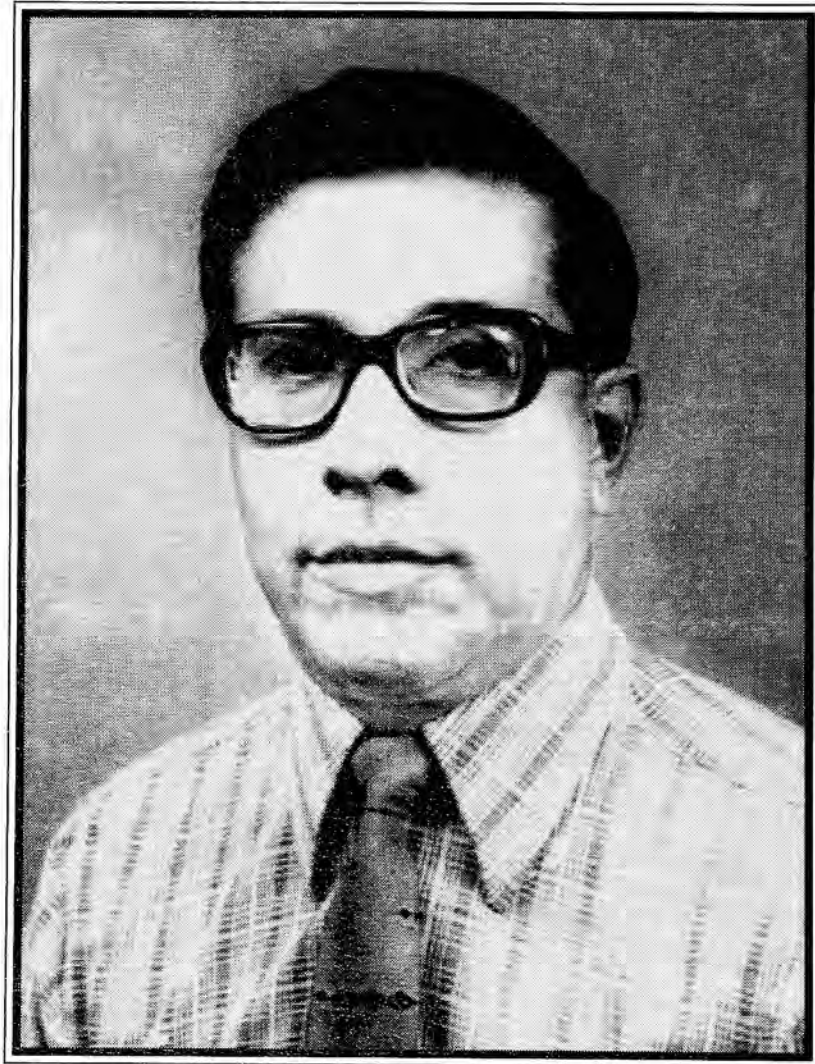


# **ASOKE GOPAL DATTA**

**(20 January 1928– 09 December 2005)**

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*Asokan & Sathya*



# ASOKE GOPAL DATTA

(1928 - 2005)

Elected Fellow 1981

## INTRODUCTION

**A**SOKE GOPAL DATTA, a scientist of international repute in the field of Enzymology and biomedical endocrinology passed away at his home in Kolkata on December 09, 2005. I had the proud privilege of being associated with Dr Datta since my childhood days. Dr Datta and his wife Dr (Mrs) Anima Datta were our family friends. Both of them were my teachers in my college and university days. Later on, I started my research career under the supervision of Dr Datta at the Indian Institute of Chemical Biology (IICB), Kolkata - and then known as the Indian Institute of Experimental Medicine (IIEM). I received guidance and inspiration from him during the formative period to develop interest in basic biological science, which was of great help to me at different phases of my research career.

## FAMILY BACKGROUND AND EARLY EDUCATION

Asoke Gopal Datta was born in a family highly renowned in the field of media. His great grandfather, Maharshi Sisir Kumar Ghosh was the founder of *Amrita Bazar Patrika*, a leading newspaper in India at that time. Their residence in the Baghbazar area of Kolkata was famous by the name of "Patrika Bari", where he was born on January 20, 1928 to Sri Satya Gopal Datta and Smt Kamala Bala Datta.

It was a great surprise to his family when Dr Datta declined the job offered to him by Sri Tushar Kanti Ghosh, the then editor of *Amrita Bazar Patrika*. Dr Datta's strong liking for the world of science prompted him to be the first person to move out from the family business and choose a career in science.

Dr Datta got his BSc (Hons) and MSc degrees in Physiology from Calcutta University. After completing post graduation in 1950, he started his research career in Biochemistry in 1951 with the "study of the biochemistry of malarial parasites and the mode of action of anti malarial drugs" under the guidance of Dr UP Basu, the then Director of Bengal Immunity Research Institute, Kolkata. Dr Datta obtained D Phil in Science from Calcutta University in 1954. While abroad, Dr Datta worked with eminent scientists like Dr Efraim Racker at the Public Health Research Institute, New York, during 1957-1960 and Dr BL Horecker at the Roche Institute of Molecular Biology, Nutley, NJ, during 1973-1974.



Dr Datta married Dr Anima Datta at Kolkata on May 22, 1954. They knew each other closely since their university days. Dr (Mrs) Datta received her postgraduate qualification in Physiology from Calcutta University. Later on, she obtained PhD degree in science from Calcutta University and went to Canada and USA for post doctoral work. Dr (Mrs) Datta joined the Department of Physiology at the Presidency College, Kolkata, as a Lecturer. Later on, she became reader in the same department. Dr (Mrs) Datta played a big role in the life of Dr Datta. Both of them supported each other throughout their journey in life together. Dr (Mrs) Datta suffered from cardiac disorder and passed away on April 01, 1991 at Kolkata. Dr Datta and Dr (Mrs) Datta were blessed with one son. Their son Rajarshi pursued his studies in commerce discipline and runs his own company, "Online Imaging", engaged with computer graphics and printing. Rajarshi's wife Suparna is in "Central Bank of India" and their only son Anirban is studying in "Delhi Public School" at Kolkata.

### PROFESSIONAL CAREER

Dr Datta started his research career as a Research Assistant in a CSIR scheme at the Bengal Immunity Research Institute, Kolkata, in 1951. After obtaining D Phil (Sc) degree from Calcutta University in 1954, he proceeded to Ottawa with a post doctoral fellowship from the National Research Council of Canada in 1955. He was there till 1957, after which he moved to New York and joined the Public Health Research Institute as a post doctoral research fellow. He continued there from 1957 to 1960.

After coming back to India, Dr Datta became associated with Bose Institute and Indian Institute of Experimental Medicine (IEM) at Kolkata as scientist Pool Officer of CSIR during the period 1961-1964. In 1965, he joined IEM as Scientist C and was in this position till 1968, when he was promoted to the post of Assistant Director. In 1981, Dr Datta was elevated to the position of Deputy Director and served in this capacity till he became Scientist in Director's grade in 1986. He continued in this position till his retirement in 1988. During these years, he was invited as Visiting Scientist by several universities and research institutes abroad. Some of the countries he visited for this purpose are USA, Germany, England, Israel and Bangladesh.

Even after his superannuation, Dr Datta was engaged in active research at IICB as an Emeritus Scientist of CSIR and INSA. After this, he joined Jadavpur University as the Advisor at its Department of Life Science and Biotechnology in 1998 where he remained associated till he became very ill in 2003.

### SCIENTIFIC CONTRIBUTIONS

Dr Datta was a distinguished person in the world of biological science, specializing in the field of enzymology and molecular endocrinology. His work spanned a wide



spectrum of scientific disciplines like enzymology, carbohydrate chemistry, endocrinology and parasitology. Many of his research contributions were of admirable credit that brought him an international repute.

## Metabolic Pathways of Carbohydrates in Micro Organisms

Dr Datta started his career with the study of microorganism. His work revealed the presence of tri carboxylic acid cycle in malarial parasites and the mode of action of anti malarial drugs of quinoline group. Working in this direction, he showed that the drugs exert their anti malarial activity by inhibiting oxidative decarboxylation of  $\alpha$ -keto glutarate more efficiently in parasites than in the host tissues. He was awarded the D Phil (Sc) degree of Calcutta University on his work in this area.

During his post doctoral work at Ottawa, Canada, Dr Datta isolated three enzymes from *Acetobacter melanogenum* and showed that glucose is catabolized via a non phosphorylated pathway to  $\alpha$ -keto glutarate which is finally oxidized to  $\text{CO}_2$  and  $\text{H}_2\text{O}$  via TCA cycle in this organism.

Dr Datta did some fundamental work in the field of parasitology. He established the presence of a functional pentose phosphate pathway besides the Embden Myerhof pathway and TCA cycle in *Leishmania donovani*, the causative organism of kala azar. Further, he has also shown the presence and function of aldolase, malate and succinate in this organism.

Soon after Dr Datta joined IIEM, he made an interesting observation that erythrose, a four carbon sugar, inhibits the growth of *Vibrio cholera* in culture medium. Erythrose does this by preventing the transport of glucose across the cell membrane, while glyceraldehydes, the lower homologue of erythrose, accomplishes it by interfering with the synthesis of protein and nucleic acid.

## Enzyme Action

In 1957, Dr Datta joined the famous enzymologist Dr Efraim Racker, at the Public Health Research Institute, New York. There he studied various aspects of the mechanism of enzyme action. Working on trans aldolase and trans ketolase catalyzed reactions, he isolated enzyme-substrate complex and illustrated the contribution of structure-function relationship in the regulation of enzyme activity. This was a great achievement of his time.

Dr Datta's ardent interest in enzyme chemistry made him pursue his study on enzyme action, even after he returned to India. He joined IIEM at Kolkata in 1964 and with his research team started working on two important enzymes - peroxidase and iodinase - involved with thyroxine biosynthesis. Their observation indicated that a single enzyme, closely associated with iodide peroxidase, is responsible for both peroxidation of iodide into an active form and organification of active iodide



into tyrosine. This was an important step in solving a long time controversy on biological iodination.

In line with the upcoming theory at that time on extra thyroidal iodination reaction, Dr Datta with his group successfully purified two peroxidases to homogeneity, one from submaxillary gland and the other from thyroid gland. They further established these two enzymes to be isoenzymes. Working from a different angle they showed that, regulation of peroxidase activity of submaxillary gland in cold is under the control of thyroid gland.

In 1973, Dr Datta was invited by Dr BL Horecker and Dr S Udenfriend to Roche Institute of Molecular Biology as a visiting scientist to work on a collaborative project on the participation of fructose biphosphatase in the regulation of gluconeogenesis. In connection with this work, Dr Datta purified and crystallized fructose biphosphatase from rabbit muscle. This was considered to be a significant contribution towards the structural study of this enzyme.

### **Studies on Erythropoietin**

Dr Datta and his associates were able to isolate bulk quantities of erythropoietin (Ep), a glycoprotein hormone, from the urine of anemic patients. Since there was only one firm worldwide who marketed Ep at that time and it was exorbitantly costly, this aspect of his work had good possibility of commercial exploitation.

Dr Datta and his colleagues have shown that the site of Ep synthesis is medullary and not cortical or juxtaglomerular tissue of the kidney.

Working on the functional aspects of Ep, Dr Datta with his team established a protective role of this hormone against peroxidative attack on red cell membrane. This is one of the initial observations, exhibiting the antioxidant potential of Ep in addition to its portrayal as an erythrocyte growth factor.

### **Toxemia of Pregnancy**

Besides the above projects, Dr Datta became associated with a collaborative project with the physicians of Calcutta Medical College and Hospital. In this project he studied the biochemical etiology of 'toxemia of pregnancy', the occurrence of which in India is very high. He demonstrated that serum as well as placental monoamine oxidase were significantly decreased, whereas plasma fibrinogen value was significantly increased, in eclampsia. This finding formed the basis for further studies on this problem at the molecular level.



## MEMBERSHIP, AWARDS AND HONOURS

The following were some of the several honours received by Dr Datta:

- Elected Fellow of the Indian National Science Academy in 1981
- Elected Vice President of the Society of Biological Chemists (India) during 1968-1970
- Elected as a national delegate for the International Biochemical Congress at Stockholm
- Elected Member in the Board of Higher Studies in Biochemistry and Physiology, Calcutta University
- Elected Member of the National Committee for the International Union of Biochemistry
- Invited as Visiting Scientist at different Universities, Institutes from abroad like, USA, Germany, England, Israel and Bangladesh
- Guest Faculty in the Departments of Biochemistry and Physiology, Calcutta University
- Received BN Chopra Award from INSA in 1981

He was the Member of a number of learned societies like the

- Indian National Science Academy
- Indian Academy of Science
- Society of Biological Chemists (India)
- Indian Science Congress Association
- Society of Nuclear Medicine, India
- Indian Chemical Society
- Physiological Society of India
- West Bengal Academy of Science and Technology

## EXTRA-CURRICULAR ACTIVITIES

Apart from being an accomplished academician, Dr Datta had keen interest in a host of extracurricular activities, encompassing sports, music, photography and social activities. In sports he particularly excelled. During his college days he even played for the famous 'Aryan Club' in the First Division Football League of Kolkata. Later on, Dr Datta concentrated on badminton. He was a dedicated player and represented the State in the National Tournament as the Captain of the State Team. Calcutta



University won the prestigious All India Inter University Badminton. Tournament for the first time under his able leadership. He was elected the 'Life-time Vice President' of the West Bengal Badminton Association. Dr Datta also enjoyed rifle shooting and was a proficient swimmer. He was fond of music and learned 'Rabindra Sangeet' from the renowned Rabindra Sangeet maestro Debabrata Biswas. In the post independence days, Dr Datta sang with the 'Indian Peoples Theater Association' (IPTA) group, a highly reputed and popular patriotic forum for making arts an expression of people's yearning for freedom, economic and social justice, and cultural democracy. His ardent inclination towards social service drew him as a volunteer at the age of only 14 years for going to Noakhali in the undivided Bengal with the St. John's Ambulance for serving the riot-affected people, even at the risk of his own life.

### GENERAL QUALITIES AND LAST DAYS

Dr Datta was a person of exemplary qualities which represented a blend of distinguished scientist, teacher par excellence and an able administrator. He was admired as an accomplished orator and his lectures were always a source of knowledge and pleasure for his listeners.

During the last few years of his life, Dr Datta suffered from Parkinson's disease. But this could not restrict his active involvement with research till 2003. By this time the severity of the disease aggravated and he also developed cardiac problems. Although he became confined at home during the last two years of his life, he was fully alert mentally till he breathed his last on December 09, 2005.

### ACKNOWLEDGEMNT

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