

Memoriam

Memoriam Prof. Kandiah Balasubramaniam (1932-2021)

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Among Tamil academics, there were two K. Balasubramaniam. One was internationally renowned pharmacologist Dr. Kumariah Balasubramaniam (1926-2011). Though I have heard about him, I never met him personally, because when I joined the Department of Biochemistry, Faculty of Medicine, University of Peradeniya in 1978, he had left the island to join UNCTAD, Geneva, as a senior pharmaceutical advisor. His obituary appeared in the Lancet medical journal of Aug 20, 2011.

My mentor was biochemist Prof. Kandiah Balasubramaniam (1932-2021). While Kumariah Balasubramaniam was a medical doctor, Kandiah Balasubramaniam's first calling was that of an apothecary (Pharmaceutical chemist). The chronologically elder one was known as 'Bala' or 'Dr. Bala'. As such, the younger one earned a moniker 'Coconut Bala' in academic circles, mainly because his earlier postdoctoral research was on coconut. Nevertheless, his Ph. D research, conducted at the Indiana University was on thyroid gland tissues of dogs. His 1965 thesis carried the title, 'Proteolysis in the thyroid gland and its stimulation by thyrotropin'. Sections of the thesis results appeared in the journals *Endocrinology* and *Biochemica et Biophysica Acta* in 1965 and 1966.

By Sri Lankan standards, and for his generation of scientists who stayed in Sri Lanka after the 1983 ethnic riots, Professor Bala was prolific. He was also an institution builder, having moved to the University of Jaffna by 1984, and served as the Department head of Biochemistry and subsequently as the Dean of the Faculty of Medicine. He was elected to the National Academy of Sciences of Sri Lanka in 1985.

I was his student in biochemistry for two years, 1973 and 1974, at the University of Colombo. Then, I didn't impress him at all. But, in 1975, while I served as the President of the Colombo Campus Tamil Society, Prof. Bala was the Treasurer of that society. At routine intervals, I had to visit with him, to get his approval signature for spending money for particular functions arranged by the society (such as arranging the

benefit movie show, annual Tamil cultural festival for two days, printing the *Ilam Kathir* magazine of the society), and to submit the receipts. He was so meticulous in accounting for a single cent, and I learned from him the virtues of frugality. I gather, he then spent a sabbatical leave year at the University of London, and researched on coconut kernel enzymes.

Subsequently, I moved to the University of Peradeniya and researched for my Master's degree in biochemistry, while simultaneously working as a temporary assistant lecturer. Prof. Bala was chosen as one of the two my external examiners. While the other external examiner, Prof. Mervyn Thenabadu, was somewhat lenient in his questions at the viva voce exam, now I remember Prof. Bala gave me a tough time during the thesis defense, for nearly 90 minutes. His friendship with my father notwithstanding, I realized that he was discharging his duties as an examiner impartially and didn't wish to graduate a 'half-baked biochemistry master's degree' holder from Peradeniya. I was grateful for his tough grilling then, and he made me realize the difference between undergraduate studies and graduate studies.

In my condolence email sent to Prof. Bala's daughter (Prof. Shamini Pratapan), I wrote as follows: "... Before I left for USA, in August 1981, I did visit your house (then in Nugegoda) to say my farewell to Prof. Bala...

Then, after I completed my Ph.D at the University of Illinois, I moved to University of Toyo in 1986. When I visited Jaffna in November 1986, I visited the house where your father was living, with my father once. He requested me to apply for the Lecturer position at the University of Jaffna then, so that I could join him. For obligations at the University of Tokyo and for personal reasons, I had to reject his kind offer. This was the last meeting I had with your father. 35 years had passed by..."

What I remember now about that visit with Prof. Bala 35 years ago, was the banter he and my father shared. He telling my father. "Why not find a good girl here and get him married

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Submitted June 2022 Accepted June 2022



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quickly, before he leaves?” My father couldn’t answer that question easily, but replied, “He is the one who have to decide.” I remained silent, pouting a smile. Then, Prof. Bala invited me to visit his lab the following day. I did visit, and he was earnest in hiring me as a lecturer, showing the modest lab, which had a refrigerator, where he stored his chemicals.

Then, Prof. Bala complained about the imposed electricity cuts by the municipality, which played havoc with the storage life of enzymes stored in the refrigerator. We refrained from talking Tamil politics at that time. He inquired me about my then research at the University of Tokyo. At that time, I was studying the muscle proteins in the edible marine foods, such as sea cucumber and lobster. He said, ‘You can study them, even here in Jaffna’. But, what about the research instrument facilities? I was learning transmission electron microscopic techniques and then trendy SDS gel electrophoretic techniques, which I missed during my Ph. D. research at the University of Illinois.

As my first degree was in zoology, I wished to study many animals, because my research for Masters and doctoral degrees was in winged bean (*Psophocarpus tetragonolobus*) due to research funding and interests of my academic advisors. Thus, with much regret, I had to politely decline Prof. Bala’s offer. But, I did respect his conviction of serving the University of Jaffna, and training younger generation of biochemists, as evinced in the papers they had published with Prof. Bala as a senior author. Prof. Vasanthi Arasaratnam (later to be the Vice Chancellor of the University of Jaffna) was one of them.

Occasionally, I wonder, if I accepted the offer Prof. Bala made to me in November 1986, what could have happened to my life. This is a big ‘If’, God only knows the answer. I can guess, that I could have been a co-author in few of Prof. Bala’s publications. This merit, I miss now. I do envy his longevity in scientific productivity, for almost half a century, from 1965 to 2014, especially under the turbulent conditions in civil war days of Jaffna. Lastly, I admire his ‘guts’ to move to Jaffna in the post-1983 period, stay there and continue his career as a published scientist.

Due to space limitations, I provide below, a select publications of Prof. Bala’s early publications, between 1965 and 1989.

1. Balasubramaniam K, Deiss WP: Characteristics of thyroid lysosomal cathepsin. *Biochimica et Biophysica Acta*, 1965; 100: 564-575.
2. Balasubramaniam K, Deiss WP, Tan WC, Powell RC: Effect of thyrotropin on iodoprotein of thyroid cell fractions. *Endocrinology*, 1965; 77(1): 54-60.
3. Deiss WP, Balasubramaniam K, Peake RL, Starrett JA, Powell RC: Stimulation of proteolysis in thyroid particles by thyrotropin. *Endocrinology*, 1966; 79(1): 19-27.
4. Arseculeratne SN, De Silva LM, Bandunatha C, Tennekoon GE, Wijesundera S, Balasubramaniam K. The use of tadpoles of *Bufo melanostictus* (Schneider), *Rhacophorus leucomystax maculatus* (Gray) and *Uperodon* sp. in the bioassay of aflatoxins. *British Journal of Experimental Pathology*, 1969; 50(3): 285-294.
5. Balasubramaniam K, Wijesundera S, Arseculeratne SN, Tennekoon GE. Effect of aflatoxins on rat liver lysosomes. *Toxicon*, 1969; 7(2): 159-161.
6. Balasubramaniam K, Wijesundera S: Multiple forms of acid phosphatases in the lysosomes of rat liver. *Ceylon Journal of Medical Science*, 1971; 20(2): 52-59.
7. Balasubramaniam K, Atukorala TMS, Wijesundera S, Hoover AA, De Silva MAT: Biochemical changes during germination of the coconut (*Cocos nucifera*). *Annals of Botany*, 1973; 37(3): 439-445.
8. Balasubramaniam K, Sothary RD, de Silva MAT: Nutritional studies on initial flowering of coconut (var. *typica*). Free amino acids in leaves of bearing and non-bearing palms. *Ceylon Coconut Quarterly*, 1974; 25: 149-152.
9. Balasubramaniam K: Polysaccharides of the kernel of maturing and matured coconuts. *Journal of Food Science*, 1976; 41(6): 1370-1373.
10. Balasubramaniam K, Dey PM, Pridham JB: α -Galactosidase from coconut kernel. *Phytochemistry*, 1976; 15(10): 1445-1446.
11. Balasubramaniam K, Sihotang K. Studies on coconut protein and its enzyme activities. *Journal of Food Science*, 1979; 44(1): 62-65.
12. Balasubramaniam K, Eaker D, Karlson E: An attempt to identify amino groups of *Naja naja siamensis* neurotoxin that interact with acetylcholine receptor by a comparison of their reactivities in free and receptor-bound neurotoxin. *Toxicon*, 1983; 21(2): 219-229.
13. Balasubramaniam K, Mathew CD: Purification of

- α -galactosidase from coconut endosperm by affinity chromatography. Journal of National Science Council of Sri Lanka, 1984; 12(1): 113-127.
14. Balasubramaniam K, Mathew CD: Purification of α -galactosidase from coconut. Phytochemistry, 1986; 25(8): 1819-1821.
 15. Mathew CD, Balasubramaniam K: Chemical modification of α -galactosidase from coconut. Phytochemistry, 1986; 25(11): 2439-2443.
 16. Mathew CD, Balasubramaniam K: Mechanism of α -galactosidase. Phytochemistry, 1987; 26(5): 1299-1300.
 17. Arasaratnam V, Balasubramaniam K: Immobilization of alpha-amylase and glucoamylase to sepharose-4B. Journal of National Science Council of Sri Lanka, 1987; 15(2): 217-226.
 18. Balasubramaniam K, Arasaratnam V, Seevaratnam S, Thirumagal K, Ageswaran A: Hypoglycaemic effect of *Gymnema sylvestre* on diabetic patients. Jaffna Medical Journal, 1988; 23 (1-2): 49-53.
 19. Balasubramaniam K, Alles NH: A preliminary study of the invertase activity in coconut. Annals of Botany, 1989; 64(3): 253-255.