

R.O.B. Wijesekera: In appreciation of an outstanding mentor and a good friend

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I first met ROB more than fifty years ago, soon after his return from the USA after a postdoc year at the University of California, Davis campus in 1969. When I applied for a research officer post in Natural Products at the Ceylon Institute of Scientific and Industrial Research in Colombo, Prof. Percy Wannigama in the chemistry department at the Peradeniya campus told me, his class-mate ROB Wijesekera was the head of the Natural Products Section (NPS). When I joined the NPS ROB was on his way to Davis, California and one year was to pass before I met him. Dru Fonseka from the University of London had joined the Fats and oils section the previous year and the two of us worked diligently to get an old Unicam-Pye gas-chromatography instrument into working order. When ROB returned he was able to garner sufficient dollars to purchase a set of the latest Varian gas-chromatography (GLC) instruments and an Infra-red Spectrometer. ROB drafted a program for the systematic study of the chemistry and technology of the local growing aromatic plants and spice varieties. We were a small group of four graduate research officers and a few laboratory technicians and a secretary-clerk. Within a few months we had the new instruments in working order and began analyzing the volatile constituents of locally produced aromatic essential oils. The field engineer from Varian company came a few months later and just had to sign the papers to formalize the warranty. During the postdoc year at Davis, ROB had used the very same GLC equipment to analyze the constituents of essential oils of the valuable spice cardamom growing in Sri Lanka, India and Guatemala. At the NPS we then began a systematic examination of the volatile constituents of our own Ceylon cinnamon bark and leaf. Another of our efforts was the commercially produced essential oil from citronella grass that had a very low market value due to the stigma of adulteration that was attached to this product. This story was legend in the essential oil markets around

the world. The sole basis of this slander was the quality test on which citronella is judged, this is the infamous Schimmels test which is a solubility test in ethyl alcohol of various strengths. The citronella oils from many other countries all passed the Schimmels test using 80% ethanol in water, whereas even freshly distilled citronella oil from plantations in the south of Sri Lanka invariably failed this test. One text book on essential oils quote instances where the oil sellers were asked if they were selling citronella oil or kerosine. ROB, Dru Fonseka and the author worked on this problem and very quickly found that Ceylon citronella oil contains a fairly large percentage of terpene hydrocarbons and much less oxygenated terpene compounds than the oils from other countries. It is well known that terpene hydrocarbons do not dissolve in aqueous ethanol consequently Ceylon citronella oil will not pass the Schimmels. We were also able to show that there was no so-called adulteration with kerosine, based on a simple test using a gas chromatograph. When these results were published in the *Phytochemistry journal* it was gratifying to note the improved market value of our local oil of Citronella. The Tropical Products Institute in London organized an international conference on spices in 1972 and ROB and the author were able to attend this meeting to present our research on local spices and essential oils to this forum. These were difficult days for a small developing country with dire shortage of foreign currency so much so that each of us was allowed only a measly five US dollars for the whole visit to the UK. The British Council and the Commonwealth Foundation gave generous funds to support us. I remember very clearly that after ROB presented our paper, a member in the audience commented that the market price of spices from Ceylon were quite high. ROB's response was "I can only quote what a merchant from China said, "Good Things Not Cheap and Cheap Things No Good," the organizing secretary was so thrilled with this repartee

that local newspapers in London mentioned this quote during reporting on summary of the proceedings of the conference.

ROB had contacts in many places high and low in the government and in scientific circles around the world. When the prevailing economic problems caused many training programs for young scientists to be curtailed, he told me that his research section was cut off from the available scholarships for foreign training. However, within a short time he was able to organize a one year training program with the help of his friend Finn Sandburg from the University of Uppsala, Sweden under the auspices of the Swedish International Development Agency (SIDA). This International Seminar in Chemistry as it was called was very successful and valuable. It facilitated the training of five other young research officers who were invited to participate in various pharmacognosy programs. Two of them were able to apply the results of this training to partially fulfill the requirements of doctoral programs jointly with local Universities in Sri Lanka. I was able to use the research results from my work on Spices and Essential oils under the mentorship of ROB, to submit a dissertation for a doctorate. ROB was also concerned about the technology of the essential oil industry which was of the early twentieth century vintage. A survey of the equipment used in rural Sri Lanka for distillation of oils of Citronella, Cinnamon bark and Cinnamon leaf oils indicated no modern stills or boilers for steam generation etc. were being used at this time. Many of the still bodies were made of timber and the steam for the distillations were generated in steel drums, fired with fire-wood and dried spent leaves or spent grass from earlier citronella distillations. He instituted a program for the development of new technologies for processing local aromatic plants and spices. Cisirill Manakoka still (ROB's name for this equipment) was specially designed for use in dry-zone rural areas where water for cooling the condensers was scarce. His team also designed a distillation unit for fine spices called SPICA which was originally heated with electric heating elements, unfortunately the prevailing economic conditions obligated that the locally manufactured heaters had to be installed and there was catastrophic failure of these poor quality elements within a very short time. As a remedy LP gas heated SPICA stills were manufactured

in small numbers. This research and development work was reported at the International Congress of Essential oils in 1974 in San Francisco. In 1975, ROB led the Sri Lankan scientific team opposite Prof. Carl Djerassi and his team during the US/Sri Lanka Workshop on Natural Products held in Colombo.

The innovative and productive research work performed by Dr. R.O.B. Wijesekera was recognized internationally by the presentation of the Guinness Award for Scientific Achievement by the Commonwealth Science Council in 1976. He was the first Sri Lankan to win this award for research performed solely in the country. In the same year he was chosen as a specialist consultant expert by UNIDO-ESCAP. What did this pioneering and hard work get us from the trade and government of Ceylon? Absolutely nothing, no words of appreciation. There is a saying at the American Chemical Society to the question, 'why do chemists practice their profession so diligently'? *The answer is because they pay us to do what we love to do.* ROB and his team did not stop at this point, but continued to develop new technology and generate new knowledge about aromatic plants and spices, after ten years of selfless service it needed a foreign organization to recognize these efforts. As mentioned above ROB was awarded the coveted Guinness Award for sustained R&D efforts in developing country. ROB left Ceylon soon after, but he did not give up on the people of Sri Lanka. Many opportunities were found for young scientists to be funded to start projects or opportunities to work as consultants in other developing countries, while he worked for the different branches of the United Nations Organization. Finally, ROB wrote me a note indicating his final retirement from full time work and that he and Marina will be returning to Sri Lanka. Characteristically it was not to idle away the well-earned rest, but to work in a consultant position with over fifty years R&D experience. Link Natural Products (Pvt) Ltd, gladly took him on as a member of the board of management. On my retirement from the University of California, San Francisco Campus I too was invited to join the company. I am happy to mention that over 25 years ago the Chairman and MD of Link Natural Products asked me for help in setting up the small essential oil producing facility. It is with great pleasure that I rejoined that small venture which has now grown

to be an industry leader in spices and essential oils and scientifically formulated herbal health products which have international recognition. Link Natural Products has a well-equipped quality control and R&D laboratory and a team of qualified scientists working all the time assuring the quality of raw materials, intermediate and final products manufactured at this facility. The raw materials are the key to running a profitable and well-regarded industry and I personally know the great effort needed to maintain the high standards for which this company is recognized. The list below is the ROB's R&D team and many others who helped us in many ways. I would also like to pay a personal tribute to Prof. Tuley de Silva who was in the Department of Applied Science at the University of Sri Jayawardenapura whose vision of industry/University joint post-grad research program enabled me to register for my doctoral degree and I was the first in the chemistry program.

The ROB.Wijesekera R & D Team 1969 – 1977 consisted of late Upali Senanayake, late Drupadha Fonseka, Lakshman Jayewardene, Ph.D., Lakshmi Rajapakse-Arambewela, Ph.D., Kanthi Fonseka-Hettiarachchi, Ph.D., late Roshantha Chandraratne, Anura Senaratne, late Donald Wijekoon, V.U. Ratnayaka, Azeez M. Mubarak, late K Ratnasingham Philomena Ambrose, Lakdas Fernando, Nissanka de Silva, Kamalita Fernando, Ranjith Dayananda, late Miss C.L.M Nethsingha, Arthur Bamunuarchchi, Shiranee Samaranayake, PCM Fernando and Mr. Monis, our lab-attendant. Many of the research officers and graduate

students were able to complete doctoral programs later in laboratories in the developed world. One of ROB's last activities was taking on the task of chief editorship of the Link NP Digest, which he continued with able assistance of Dilmani Warnasuriya until the very last weeks of his long and successful career. During his Chairmanship of the ITI (former CISIR) he associated with Mr. Dayananda and Dr. Upali Senanayake to write chapters for the well renowned book published on Ceylon Cinnamon "*Cinnamon and Cassia - Genus of Cinnamomum*" edited by Prof P N Ravindran by CRC press.

Accolades from far and wide have been written about him and his part autobiography *Clouds Are Not Spheres, Nor Mountains Cones* is subtitled, a scientist's personal kaleidoscopic story of professional & family life in an international milieu. One of his later collaborators says this "What a gentleman Dr ROB was, he never ever tried to find the wrongs of others, helped all who wanted to work hard and deliver for the country, always without bias, not considering how fluent or not in English or what level of society they came from.

Farewell ROB, we will all remember the great work you did for us and the country and the qualities of leadership, and as a teacher. A man who deserves the highest respect from all who knew him.

May your soul rest in peace.

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