Chemistry & Biology Interface, 2020, 10, 2, 31-33

ARTICLE ISSN: 2249 –4820

CHEMISTRY & BIOLOGY INTERFACE

An official Journal of ISCB, Journal homepage; www.cbijournal.com

A tribute to Dr. MC Wani, the co-inventor of anticancer drugs Taxol and Camptothecin

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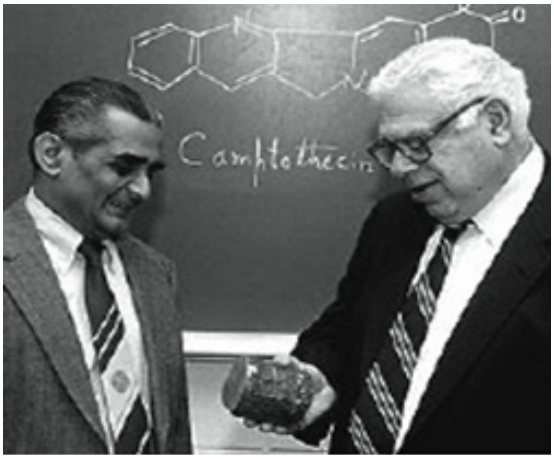

Dr. M C Wani (left) and Dr. ME Wall (right) discussing about the structure of Camptothecin

Till 1990 cancer was considered a non-curable disease in the globe. Even now, three decades later, it claims millions of lives every year. With advancements in science and technology, many types of cancer are curable. Taxol and Camptothecin have a new mechanism action on the cancerous cells. Dr. MC Wani and Dr. ME Wall discovered these two very potential drugs during 1970 to 1980 at Research Triangular Institute, North Carolina, USA. Due to the discovery of two drugs from RTI, this institute (RTI) is placed at the international map. In the memory of two scientists Dr. MC Wani and ME Wall, RTI has started fellowship for advance cancer research and still work is going on cancer research at RTI. The entire world cannot forget the contribution given by two scientists for the cancer research and both the drugs are readily available in the market. On 11th April 2020, at the age of 95 Dr Wani breathed his

last at Durham, North Carolina, USA. Both the scientists worked till the last moment of their life at RTI.

Dr. Wani was highly impressed by the ideology of Mahatma Gandhi during his former years and participated in the famous Satyagraha Movement of Nandurbar, Maharashtra. The Satyagrahi became a world renowned scientist and responsible for convention of two anticancer drugs in future.

Dr. Wani, born in Nandurbar, Maharashtra, India did his graduation and post-graduation from the Mumbai University in 1947 and 1950 respectively. After that, he served for some time in the Bhavan's College, Mumbai. In the year 1958 he joined the Ph.D. program at Indiana University. Then he joined postdoctoral work at University of Wisconsin, USA. After completion his PDF work he joined newly established Research Triangular Institute (RTI). RTI at that time was newly established. He established the laboratory at RTI which is one of the best place to carry out cancer research. This is one of the most notable contributions of Dr. Wani and Dr. Wall. Initially Dr. Wani was working on organic photochemistry in the newly funded natural product laboratory of Dr. Wall and heard about the expertise of Dr. Wani to work with a small quantity of organic compounds so Dr Wall has invited to work with him in the field of natural product. Probable this was turning of the life Dr. Wani. Dr Wall was working on several aspect of Camptothecin like determination of structure and biological activity. With induction of the Dr. Wani in his group both had jointly started to work on various aspect of Camptothecin. Wani and his group were the first to report the isolation, characterization, X-ray crystal structure and antitumour activity of Camptothecin. They have isolated it from stem wood of *Camptotheca acuminata*, *Nyssaceae* and established its anticancer activity[1].

Dr. Wall had good contact in National Cancer Research Institute and due to this his lab continuously getting sample of the Agriculture Department of USA through Dr. Arthur Barclay famous botanist collected a sample *Taxus Brivifolia* (Pacific Yew). Initially this product was screened but it showed high cytotoxic activity and therefore other contractor was interested work with this product. Therefore Dr. Wall got the chance to take the opportunity to work on this plant and this is how it came at RTI in 1964.

The sample was fractionalized and name Taxol is given to the sample. This work was given to Dr. MC Wani and his team, the group has worked for 1965 and 1966 but it was not possible for them to established the structure because it was complicated so one fine morning Dr. Wall called Dr. Wani and said that we have spend two years and we are not getting expected results so we have put off the project. Dr. Wani was firm and he politely told that it was not possible for me to left the work on Taxol. And in spite of ill will of Dr. Wall he had continued the work. Now the priority was less on the work of Taxol so he had to come in the holidays or after office hours in the late night. Suddenly Dr. Wani was excited when he read the new technique for establishing structures of complicated molecules by converted into simple component and each component was characterized. He then applied this concept to establish the structure of Taxol. He has dissolved the sample in ethanol and then adds the sodium metal and then kept into freeze for ten days. After ten days Taxol was broken into two pieces. With this new technique he was able to establish the structure of both the pieces and finally to that of Taxol. The work was published in 1971 and then Taxol was sent to NCI for further testing.

This was narrated by Dr Wani in his interview that if I had left the work on Taxol, than world would never get the magic bullet like Taxol.

For his efforts on Taxol will never forget by mankind.

On the basis of his work other scientific community had taken 3000 patents on various derivatives Texol and Camptothec in and on the drugs mechanism. This clearly revealed the quality of work he did in his life.

During his scientific career, he had published more than 300 research articles and obtained 30 patents for the discovery of novel compounds for the treatment of cancer and other diseases. He was the first Indian scientist who had discovered two anticancer drugs from natural products[3].

Besides his achievements in the drug discovery program, he received many awards and citation. They include Bruce F. Cain Memorial Award from the American Association for Cancer Research, the City of Medicine Award by the Greater Durham Chamber of Commerce, the National Cancer Institute Award of Recognition, Charles F. Kettering Prize from the General Motors Cancer Research Foundation, the Ranbaxy Research Award from the Ranbaxy Science Foundation, Distinguished Alumni Award from Indiana University, and a plaque commemorating the discovery of Taxolby the Gifford Pinchot National Forest of Washington State. In 2003, he was recognized by the American Chemical Society for the discovery of Camptothecin and Taxol at RTI. In 2005, he was awarded by the Governor of North Carolina with the North Carolina Award in Science. He received the Paul Ehrlich Magic Bullet Lifetime Achievement Award in 2008.

Dr. Wani was a soft-spoken who devoted his life to chemistry and drug discovery. This was his passion for his work on the natural products compound obtained from the natural sources. He believed that nature is biggest architect and from nature one could get solutions for all health problems.

He is survived by his wife, Mrs Ramilaji, son, Bankim, daughter-in-law, Darshana; and grandson, Nilesh.

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