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## Studies Towards Molecular Treatment of Diabetes, and Rise and Fall of Higher Education in Pakistan

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As developing world faces food security issues, it also confronts with the drug insecurity challenges. Nation states must prioritize the agenda for developing safe and effective drugs, against local diseases. The current drug development paradigm is cost, time and labor intensive, which developing countries can not afford to invest. There is therefore a need of an appropriate, efficient and cost effective strategies for drug development, which must based on indigenous knowledge resource base, S&T capacity and people-friendly approval process.

Diabetes is an old disease which poses a new challenge to the human well being. It is characterized by hyperglycemia and associated complications. Among different therapeutic interventions, the discovery of effective  $\alpha$ -glucosidase inhibitors and antiglycating agents are considered to be the most important one, based on modern knowledge about the disease at the molecular level. Primary focus of these studies has been to discover lead bioactive molecules by using appropriate conventional-and mechanism-based biological screening techniques. As a result, a large number of potent antiglycation agents of natural origin were discovered and structure-activity relationship studies were conducted. Many of these compounds represent new examples of inhibitors of  $\alpha$ -glucosidase and glycation process.

In the second part this presentation, my (Prof. Atta-ur-Rahman) contributions initially as the Minister for Science and Technology, Information Technology and later Higher Education Commission (2000-2008), for the promotion of science and technology and higher education in Pakistan will be presented. Despite economic and cultural constraints, my humble efforts have changed the landscape of universities and R&D institutions. Pakistan has witnessed a major transformation in the higher education sector where major emphasis was given to science education and promotion of genuine scientific research. Pakistan's recent experience in the field of higher education was now globally recognized, both for innovation and strategic interventions. Massive faculty development, access to scientific literature, strengthening of infrastructure, generous research funding, and rewards to productive scientists are among hundreds of new initiatives which HEC has vigorously initiated and pursued during my tenure. Most importantly, thousands of young men and women, selected purely on merit, were sent to get Ph. D. level training from top institutions of the world. Although the impact of the struggle of our decade of struggle will appear in times to come, however, we are already witnessing over 600% increase in scientific publications in international journals, along with inclusion of three universities of Pakistan in the list of top 400 and 500 universities of the world. The world's top scientific journals such as *Nature*, as well as the World Bank and USAID has paid glowing tribute to Pakistan's successes in higher education sector, and declared them as models for other nations to follow. Alas times have changed after 2008, and the national priorities also changed. Higher education is not only been neglected but the slaughter on the Higher Education Commission is beginning to destroy the momentum gained. History will judge why nations often choose the path of self-destruction.

This lecture is dedicated to Prof. Dr. Jack Richard Cannon for his life long struggle for the promotion of natural product sciences in developing world.

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