

UNIVERSITY OF IBADAN
468th Inaugural Lecture
“The Bigger is the Sadder: Cancer Burden as a Challenge to Sustainable Health”
By
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ABSTRACT

Cancer has emerged as the *most common*, severe and most dreadful medical problem globally. According to WHO reports, cancer was the second leading cause of death globally in 2018, accounting for 9.6 million deaths. By this estimate, every 1 in 6 deaths globally, is cancer-related. Thus, “*the bigger the cancer burden, the greater the financial and economic burden, and the sadder the social and global health impact.*” Cancer burden is on the increase especially in sub-Saharan African countries including Nigeria. Achievement of the Sustainable Development Goals (SDGs), specifically Goal 3-target-4, indicator-1 and target-9 are central to *reducing global burden of cancer.*

The focus of my research is identifying health risks associated with short- and long-term occupational and/or domestic exposures to diverse chemical carcinogens of ubiquitous occurrence such as aflatoxins and arsenic, associated with cancer burden in sub-Saharan Africa. In addition, I also assessed the remediation/mitigation of the cytotoxic effects of exposure to the chemicals and certain biological carcinogens by polyclonal antibodies, active components of food additives: condiments and spices, functional foods including legumes and medicinal plants commonly available and from different geographical locations. We screened for and developed molecular markers for genomic studies to produce germplasms for vegetables, grains and cash crops that could be useful in dietary intervention for management of carcinogen-induced cytotoxicities in man and animals.

Most of the environmental toxicants identified (arsenics, aflatoxins, boric acid, cadmium, lead, chemicals from in-door smoke (cigarettes and cooking methods), e-waste, emissions from cell phones and electrical appliances, are capable of causing mutations which if not corrected, leads to development of cancer. Work place environment, life-style and factors predisposing to infectious diseases results in co-exposure to most carcinogens and could also act as syn-genotoxins or co-carcinogenic agents and increasing cancer burden on the society as I have documented.

Highly specific antibodies, that would be highly useful in vaccine formulation for immunoprophylaxis against aflatoxicosis have been raised, and such modality could

be adopted against other contaminants. Diverse medicinal plants and plant products with antitoxic, anticlastogenic and/or anticarcinogenic potentials, and functional foods with protease inhibitors have been identified for use in the control of cell proliferation and metastasis. Knowledge from the nutritional genomic studies will be useful in planning dietary regimens including functional foods: honey, foods with protease inhibitors - beans, peas, chickpeas, peanuts, bananas, etc. for reduction of the severity of toxicities associated with exposure to environmental contaminants. The foods could be substituted for pills. Identified molecular markers like Simple Sequence Repeats (SSRs) and Random Amplified Polymorphic DNA (RAPD) primers could be used to identify genetic variants of vegetables, fruits, cash crops etc. and increase germplasms available to farmers. In addition, this will also assist in the identification of useful genes for construction of genetic libraries with sufficient DNA markers for use in research and diagnosis of cancer.

Avoidance of the risk factors of developing cancer as much as possible and living a healthy life style are key factors in reducing '*cancer burden for sustainable health*'.