Exposure to Chronic Dietary Aflatoxin Poisoning Is Potentially a Compromising Condition in COVID-19 Patients in Africa

Dear Editor,

In this time of COVID-19 pandemic, we draw attention to a potential aggravating risk factor in Kenya, one that is amenable to mitigation. Advanced age, male sex and underlying medical conditions [1, 2] are the main risk factors to fatality among COVID-19 patients. Kenya has reported fatalities in relatively young people with no diagnosed underlying medical conditions. While no evidence exists on the association between aflatoxicosis and COVID 19, effects of potential risk factors such as aflatoxicosis on pathogenesis and epidemiology of COVID-19 needs to be elucidated. Our manuscript titled "Mycotoxin hazards in the Kenyan food and feed market-a retrospective study" submitted in AJFAND, suggest widespread exposure to chronic aflatoxicosis in Kenya. This corroborates observations made at the regional regulatory platform and could have serious implications on COVID-19 pandemic in Kenya and entire Africa where aflatoxicosis is common and largely uncontrolled. Attempting to elucidate this observation, we reviewed literature and associated the fatality scenario in Kenya to chronic dietary aflatoxicosis. While this communication may sound rather speculative, its purpose is to stimulate research. Aflatoxins are potent immunosuppressive agents known to aggravate pathogenesis of diseases. Of special interest is exacerbation of mucosa-associated diseases in the gastrointestinal and respiratory tracts by aflatoxins such as SARS-CoV-2 which enters through nasal and larynx mucosa [1]. Underlying medical conditions [1] and malnutrition are risk factors for COVID-19 fatality. Indeed, patients with immune dysfunction cannot mount an effective immune response against the SARS-CoV-2 to handle viremia and pneumonia phases of COVID-19 and degenerate to severe acute respiratory syndrome characterized by autoimmunity and coagulopathy. Aflatoxicosis induces immunosuppression, coagulopathy, nutritional deficiency [3], aggravates pathogenesis of experimental diseases including pulmonary viruses [4] and has a strong synergy with human viruses [3,5]. Chronic aflatoxicosis is therefore a potential underlying condition likely to increase incidence, severity and undesired outcomes of diseases such as acute respiratory disease syndrome, a deadly immunopathological event and coagulopathy in some late-stage COVID-19 patients. Further, a positive correlation has been observed between transmission of viruses and consumption of mycotoxin-prone food in Africa. Chronic mycotoxicoses are silent diseases, difficult to diagnose and escape notice of medical personnel. The male sex, a risk factor to both COVID-19 fatality [1,2] and aflatoxicosis, should be given special attention during management of the pandemic. Again, we are aware the link between aflatoxicosis and COVID-19 is speculative, that other causes of immune-suppression are common, and the actual mortality in different patient groups is difficult to evaluate precisely in Kenya. Nonetheless, effects of aflatoxicosis on pathogenesis and epidemiology of COVID-19 needs to be elucidated. We thank our funders: CGIAR Research Program, Agriculture for Nutrition and Health and KALRO.

Sincerely,

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