Aflatoxin Contamination of Village Grains in Central Tanzania: Dietary and Agricultural Practices in Relation to Contamination and Exposure Risk †

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Abstract: A study was conducted in the semi-arid Manyoni District of Central Tanzania, involving eight village communities to: (1) assess aflatoxin contamination of village grains; and (2) gain knowledge on grain food practices and habits associated with aflatoxin risk. To address the respective objectives, random immediate post-harvest (n = 134) and following 6 month or more after storage grain samples (n = 157) were screened (AFLACHECK™-VICAM), followed by quantitative HPLC determination of samples containing ≥10 µg/kg total aflatoxins. Responses were sought from 76 randomly selected adults by a questionnaire covering pre-harvest, harvest and post-harvest practices, food preparation and knowledge on food toxins. Aflatoxin contamination was particularly more significant in maize and groundnut samples ranging up to 198 µg/kg (mean = 25.46 µg/kg) in post-harvest grains and up to 351 µg/kg (mean = 50.83 µg/kg) in stored grains, well above the maximum limit of 10 µg/kg tolerated in foods for human consumption in Tanzania. Respondent questionnaires revealed farmers: had no knowledge of food toxins; received limited extension services; did not generally use irrigation, fertilisers or pesticides; relied on inadequate harvesting, drying and storage technologies; and frequently consumed unpolished grains. Village grains in Central Tanzania may contain high concentration of aflatoxins of potential significance to community health. Existing practices and lack of aflatoxin knowledge may facilitate contamination and exposure. Therefore, village farmers in Central Tanzania may benefit from better extension services, using livestock manure as fertilizer, access to drought tolerant seeds and better grain drying and storage technologies to reduce aflatoxin risk.

Keywords: aflatoxin; contamination; village grains; Central Tanzania

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