Tropentag, September 15-17, 2021, hybrid conference

"Towards shifting paradigms in agriculture
for a healthy and sustainable future"

Microbial Contamination and Occurrence of Aflatoxins in Processed Baobab Products in Kenya

Margaret James, Willis Owino, Samuel Imathiu

Jomo Kenyatta University of Agriculture and Technology, Food Science Department, Kenya

Abstract

Ready to eat snacks derived from baobab pulp are common products in a number of Sub-Saharan Countries. This study was conducted to investigate the microbial and aflatoxin contamination levels in ready-to-eat baobab products from selected formal and informal processors in specific counties of Kenya. Processed baobab products (pulp and candies) samples were randomly collected from formal and informal processors and analysed for the total aerobic count, Enterobacteriaceae, yeast and molds, ergosterol, aflatoxins, moisture, and water activity. The moisture and water activity of baobab pulp and candies from formal processors ranged between 7.73 % - 15.06 % and 0.532–0.740 compared to those from informal processors which ranged from 10.50 % - 23.47 % and 0.532–0.751 respectively. Baobab pulp from informal processors had significantly higher ($p < 0.0001$, $p < 0.0001$) Enterobacteriaceae, yeast and molds counts (3.1±0.70 log10CFU g^{-1} and 5.3±0.11 log10CFU g^{-1}) than those from formal processors (0.7±0.29 log10CFU g^{-1} and 3.1±0.38 log10CFU g^{-1}) respectively. Similarly, a significant difference ($p = 0.015$) was observed in terms of Enterobacteriaceae counts between candies from formal (0.0±0.00 log10CFU g^{-1}) and informal processors (1.8±0.56 log10CFU g^{-1}). The ergosterol content in these baobab product samples ranged between 0.46 to 1.92 mg/100 g while the aflatoxin content ranged between 3.93 to 11.09 × 10^3 $\mu g\,kg^{-1}$ respectively. Fungal and aflatoxin contamination was detected in 25 %, 5 %, and 5 % of the pulp from formal processors, informal processors, and candies from informal processors respectively. Fungal and aflatoxin contamination in baobab products may indicate poor storage and processing conditions. The food safety risks could be effectively mitigated by initiating training along the baobab value chain on; good hygiene practices, good manufacturing practices, hazard analysis critical control point as well as appropriate postharvest handling of baobab fruit and its pulp.

Keywords: Aflatoxin, baobab, ergosterol, microbial quality, microbiological limits

Contact Address: Kathrin Meinhold, Rhine-Waal University of Applied Sciences, Fac. of Life Sciences, Marie-Curie-Str. 1, 47533 Kleve, Germany, e-mail: kathrin.meinhold@hochschule-rhein-waal.de