



Tropentag, September 9-11, 2020, virtual conference

“Food and nutrition security and its resilience
to global crises”

Developing and Testing Guava- and Jackfruit-Nut-Bars to Bridge Seasonal Food Gaps in East Africa

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Abstract

Guava (*Psidium guajava*) and jackfruit (*Artocarpus heterophyllus*) are two naturalized fruits in East Africa. Both have high contents of nutrients that are essential for human bodies. However, through improper post-harvest treatments many nutrients or even whole surplus fruits are lost while at the same time fruit consumption in East Africa is far below the recommended amounts. Besides, especially guava is not available all year round. In the framework of a joint project on “Fruits and vegetables for all seasons” with partners in East Africa and Germany, this study aimed to explore the development of nutritional fruit-nut-bars with a long shelf-life. The effects of common processing methods (cooking and oven drying) and varying ingredients (mango, lemon juice, desiccated coconut, peanut and cashew nut) on nutrient composition in fruit-nut-bars were measured.

Results showed that bars with guava and lemon juice contained the highest content of ascorbic acid (81.19 ± 0.37 mg/100 g FM). For phenolic content, most samples of jackfruit (range from 437.95 ± 37.9 mg GAE/100 g FM to 931.90 ± 106.63 mg GAE/100 g FM) contained more than guava products (range from 508 ± 2.8 mg GAE/100 g FM to 563 ± 2.0 mg GAE/100 g FM), while lemon juice made not much difference. Fruit bars with lemon juice had higher acidity, yet, samples of guava and jackfruit showed quite different tendency for before- and after cooking, as well as after drying. For mineral content, potassium showed the highest value (11.5 mg g⁻¹ DM and 14.1 mg g⁻¹ DM for guava- and jackfruit- based samples, respectively) among macro minerals, followed by phosphorous, sulphur and magnesium. Copper contents were relative higher (0.08 mg g⁻¹ DM) among micro minerals, iron and zinc showed similar values (0.06 mg g⁻¹ DM) while the manganese content was the lowest one (0.02 mg g⁻¹ DM). Water content of final products was <10%, which indicated a longer shelf-life.

In conclusion, cooking and drying procedures decrease, as expected, nutrient contents, yet, to varying extent. While the consumption of fresh fruits is always the better choice, the fruit-nut-bars still provide a good option to process surplus fruits and bridge seasonal gaps.

Keywords: East Africa, fruit-nut-bars, guava, jackfruit, nutrient content