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Quality of Baobab Products Across their Value Chain in Malawi

Kathrin Meinhold^{1*}, Chimuleke R. Y. Munthali², Dietrich Darr¹

¹Rhine-Waal University of Applied Sciences, Faculty of Life Sciences, Kleve, Germany ²Mzuzu University, Faculty of Environmental Sciences, Malawi * kathrin.meinhold@hochschule-rhein-waal.de



1. Introduction

• Commercialisation of food products derived from the fruit of the baobab tree (Adansonia digitata L.) has substantially intensified in Malawi with a wide range of products available in informal and formal markets (Darr et al. 2020);

3. Results, cont.

- Fruit dryness and colour of fruit pulp considered most important quality indicators
- Intact baobab shells and pulp cleanliness of significantly higher importance for formal value chain members
- Little information available on quality of such products, e.g. regarding:
 - Influence of supply chain setup on quality characteristics
 - Effect of fruit handling on Vitamin C levels baobab is renowned for
 - Occurrence of microbiological contamination

The study aimed at characterising the baobab value chain in Malawi and determine important quality characteristics of baobab products at different stages of the supply chain



Figure 1: Selection of baobab products commonly available in Malawi. A: Baobab fruits; **B:** Baobab fruit pulp; **C:** Baobab ice lollies commonly sold in informal markets; **D:** Baobab juice products sold in supermarkets.

2. Material and methods

• Mixed methods approach

	Cracks in fruit	Fruit shape	Fruit colour	Fruit clean	Fruit dryness	Pulp colour	Pulp clean
Percentage [%] of VC members considering factor important	48.9*	59.6	57.8	28.9	93.6	88.2	29.4*
Formal VC members	88.9	33.3	50.0	55.6	100.0	66.7	66.7
Informal VC members	39.5	65.8	59.5	22.2	92.9	21.4	21.4

^{*} p<0.05, Pearson Chi Square

Table 1: Importance of different quality indicators for formal/informal value chain members

Significant differences (p<0.05) in Vitamin C levels between powder \bullet and fruit as well as pulp samples; no significant difference between fruit and pulp samples (one way ANOVA)



- Semi-structured interviews with informal and formal baobab value chain members: Collectors (n=23); rural, (semi-) urban traders (n=19); processors (n=16); retailers (n=5); members of broader institutional environment (n=5)
- Concurrent collection of baobab sample collection (fruit, pulp-on-seed, powder, 79 samples in total) and analysis of Vitamin C and mycotoxin levels.
- Data analysis: content analysis for qualitative data, descriptive and comparative statistical analysis for quantitative data

3. Results

Fruit samples Pulp samples Powder samples Figure 3: Boxplots for Vitamin C content of baobab samples harvested and processed in one harvesting season

- Aflatoxin B1 was detected in one fruit and one pulpon-seed sample (3.2 and 5.3 μ g/kg, respectively)
 - \rightarrow EU threshold of 2 µg/kg for dried fruits exceeded



Figure 4: Mould on baobab pulp samples

Figure 2: Baobab value chain in Malawi and its main actors (collectors, rural, semi-urban and urban traders, informal processors producing baobab ice Iollies and juice, formal juice processors, as well as retailers)

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4. Conclusion

The results indicate that it is advisable to process baobab into powder as late as possible to make best use of the high Vitamin C content of the fruit. Consumption of improperly handled baobab food products may pose risks since mycotoxins can be present- in particular since children are the dominant consumer group in Malawi. More awareness with regard to handling and processing of baobab is required.

References

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