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Nutrient Adequacy of Nfuma, the Flour from *Strychnos Madagascariensis* Fruit

Abstract

African native fruits play a significant role in reducing micronutrient deficiencies and increasing the income of poor rural communities in developing countries. In Mozambique, the fruit of *Strychnos madagascariensis* is usually processed into flour, nfuma, and is consumed by local communities during staple food shortage. However, there is practically no data on its nutritional value. Therefore, this study aimed to evaluate the nutritional composition and adequacy of nfuma. Flours were collected from four districts of Mozambique and analyzed using AOAC methods for proximate composition, HPLC for sugars, vitamin E and carotene profiles and ICP-MS and FAAS for minerals. The estimated daily intake of nutrients, as % of EFSA dietary reference values (DRVs), was calculated assuming an average daily consumption of 100 g and 50 g of nfuma for adults and children, respectively.

Nfuma presents high content of fat (~27%), fiber (> 6%), sugars (~10%), vitamin E (6.7 to 8.0 mg/100 g) and carotenes (2.2 to 2.6 mg/100 g). Oleic acid was the main fatty acid of nfuma (~16g/100 g of flour). The mineral composition reveals K (~1200 to 1700 mg/100g) and Mn (~4 mg/100g) as the main macro-mineral and trace element, respectively. Regarding current DRVs for adults, the consumption of 100 g of nfuma provides 30% of fiber, 27-48% of alpha-linolenic acid, 55-63% of vitamin A and 56-66% of vitamin E. Moreover, nfuma can contribute to the daily intake of Mg, K, and Mn (22 - 26%, 40% and > 100% of DRVs, respectively). Due to its high β -carotene content, the daily consumption of 50 g of nfuma provides 82% of vitamin A DRV for toddlers, representing a promising food-based strategy to alleviate the high prevalence of vitamin A deficiency in Mozambique.

This fruit flour stands out for its high fat content, mainly composed by MUFA, delivering vitamin E and carotenes, together with naturally occurring sugars and high fiber content. Its local use to enrich maize-based porridges or to develop healthier new food products deserve to be technologically approached for wider valorization.

Keywords

African fruits, *Strychnos madagascariensis*, fruit flour, Dietary recommendations

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References

DRV Finder. Available online: <https://multimedia.efsa.europa.eu/drvs/index.htm>

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