

The forest fruit "safou", rich in lipids, proteins, fibre and micronutrients: a nutritional asset in the diet of Cameroonians



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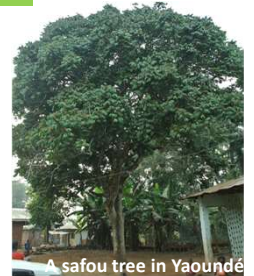
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Safou trees in urban and rural areas, in a malnutrition context

The safou (*Dacryodes edulis*) is an oleaginous fruit native to the Congo Basin forests, used in agroforestry systems in cocoa plantation. Fruits are seasonal (June to September) highly perishable, consumed cooked. In cities, safou trees are threatened due to the massive rural and land pressure.

Cameroon is facing the double burden of malnutrition:

- Stunting prevalence was 32% in 2014, 2.6 million people in food insecurity.
- AND nutrition transition (mainly in urban area) → adults overweighting is 29.5% and obesity 9.6%.

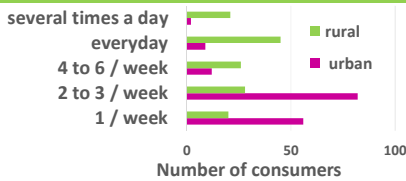


➔ This study aims to better understand the place of safou in the diet of Cameroonians as well as its nutritional contribution.

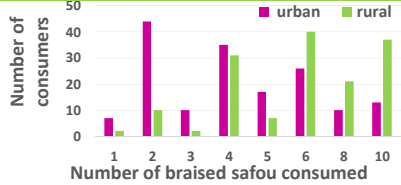
A regular and high consumption in season



Frequency of consumption of braised safou



Last food intake of braised safou



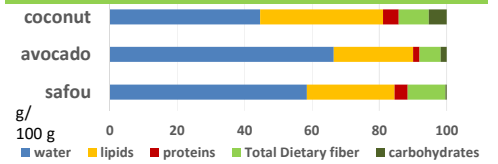
10 focus groups and a consumption survey (622 women, 21-65 years) were conducted in urban (Yaoundé) and rural (Loum) areas



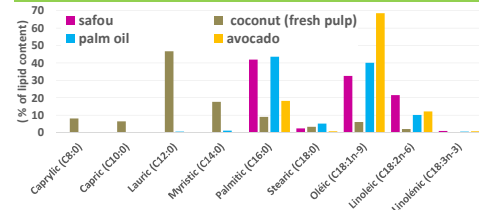
- 99.8% of women usually consume safou in season.
- Safou is traditionally consumed in 5 forms (braised, boiled, ash, steamed and pan-fried)
- The number of safous consumed can be very large during a food intake, and several food intakes of safou per day are frequent.

A dense nutritional intake per serving

A fatty, protein-rich fruit eaten cooked...



...with an atypical fatty acid composition



Nutritional composition of safou

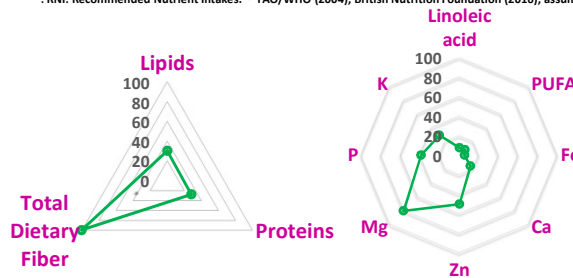
	Lipids	Linoleic A	PUFA	Proteins	TDF	SDF	Fe	Zn	Mg	Ca	P	K
for 100 g	g	g	g	g	g	g	mg	mg	mg	mg	mg	mg
mean content	26	5,5	5,7	3,9	11,2	2	1,2	0,6	59	66	113	374
min	23,4	4,7	4,9	3,1	8,5	1,1	0,5	0,5	45	30	67	240
max	28,2	6,1	6,4	4,6	17,3	3,1	3,1	0,9	77	117	163	653
RNI ^{3,4}	35% E	2.5 % E	6 % E	38 g	30 g	/	58.8 mg	3.25 mg	220 mg	1000 mg	775 mg	3500 mg

* : RNI: Recommended Nutrient Intakes. ^{3,4} FAO/WHO (2004), British Nutrition Foundation (2016); assuming an estimated energy requirement of 2100 kcal (E), 55 kg body weight

Braised safou is the most common form of consumption



- Safou are rich in lipids, proteins, minerals and dietary fibers, nearly 20% of which are soluble;
- Safou is rich in zinc
- The major fatty acids are palmitic (42%), oleic (32%) and linoleic (21%) acids, in proportions close to those of palm oil.



Contribution to RNI (%) of an average portion of 6 safous

The whole safous used in the study had an average mass of 61 g. The edible quantities calculated after weighing the pulp and the stone of 20 safous are 271g for 6 fruits.



The cooking of the safou is very fast, which is also an advantage (3 to 5 min)

Safou: a food/ fruit/ dish suitable for under- and over- malnutrition

- Safous are nutritionally dense "fruits". A medium 6-fruit serving covers 30% of a woman's average nutritional fat and protein needs, but almost 50% of some essential minerals like zinc, which plays a major role in the fight against stunting;
- Safou is satiating, rich in soluble fibers, has high levels of PUFAs and antioxidants (*bibliographic data*) and can also help fight against excess malnutrition and associated cardiovascular diseases.
- The place of "feeder" trees in the city in a context of double nutritional burden and rapid urbanization is therefore to be considered with interest in a country like Cameroon.

1. Awono, A., O. Ndoye, et al (2002). *Forests, Trees and Livelihoods*. 12(1-2): 125-147.
 2. Icard-Vernière et al (2018). « L'arbre en ville »: quand le safou, un Produit Forestier Non Ligneux, régale les consommateurs des villes et des champs, au Cameroun. Poster, JFN 2018, Nice
 3. FAO/WHO (2004). Vitamin and mineral requirements in Human Nutrition
 4. Hooper B, Spiro A, Stanner S (2016). *Nutrition Bulletin*, 40 : 118-129.
 5. Souci et al(2000). La composition des aliments. Medpharm Ed, CRC Press, Stuttgart, Germany.