



Red Palm Oils (RPOs) are
always of nutritional interest:
have you ever tasted it?

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Producing conditions

Consumer choice criteria

Chemical quality
of artisanal RPOs

Specific culinary
applications of RPOs

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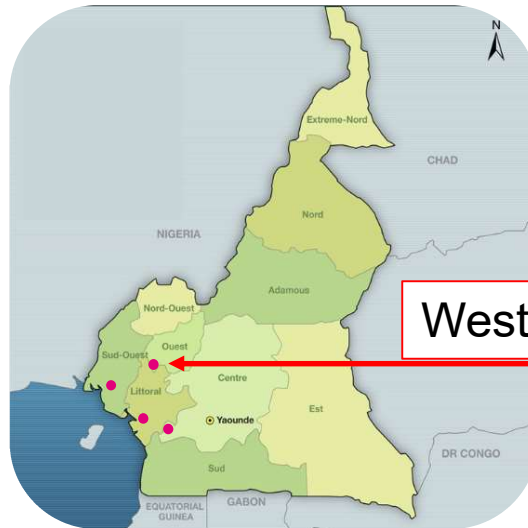


Producing conditions in artisanal mills:

Planting material and type of extracting tools impact artisanal RPO quality



Selected *tenera*
(thick pulp layer)



Artisanal RPOs sampled at 32
artisanal mills after a survey



Unselected *dura*
(thin pulp layer)



Manual screw press



Motorised screw press



Hydraulic press

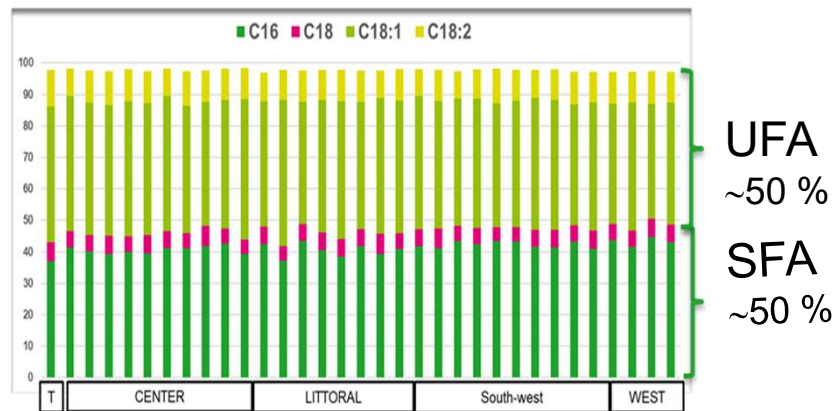


Motorised water
extractor

Composition diversity of artisanal RPOs

Content of the artisanal palm oils in selected nutrients and micronutrients

Fatty acid composition (% Total FA)



T = industrial RPO, as a control

No effect of artisanal RPO origin **on FA** composition

Unsaturated FA

Oleic acid (C18:1 n-9) : 38-47 %
Linoleic acid (18:2 n-6) : ~ 10 %
Mainly in TAG internal position

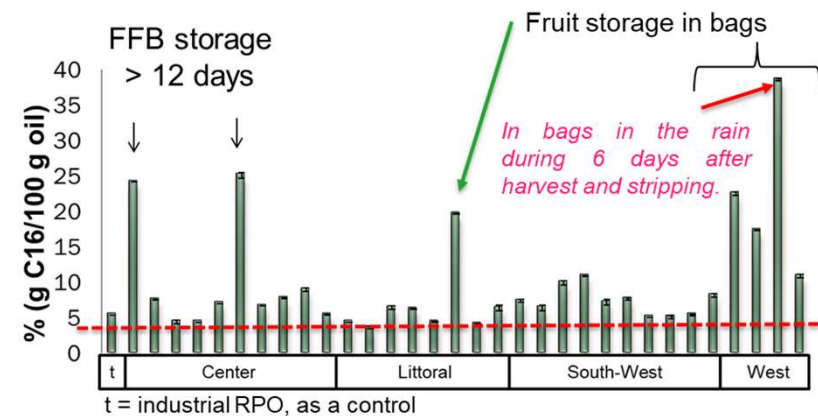
→ fully bioavailable

Saturated FA : ~50 %

Palmitic + stearic acids
Mainly in external positions of TAGs (1,2)

→ Energy providers
→ weakly atherogenic

Free fatty acids (g/100 g oil)



FFA > 5 % for most artisanal RPOs

Variability linked to **time between harvest and processing and storage conditions** (lipolysis by endogenous and microbial lipases)

FFA :

- favor formation of stable emulsions
- may participate to typical taste of local dishes

RPOs are partly cristallised (Solid fat fraction at 20°C: 16 to 39 %) and **semi-fluid at ambient temperature**.

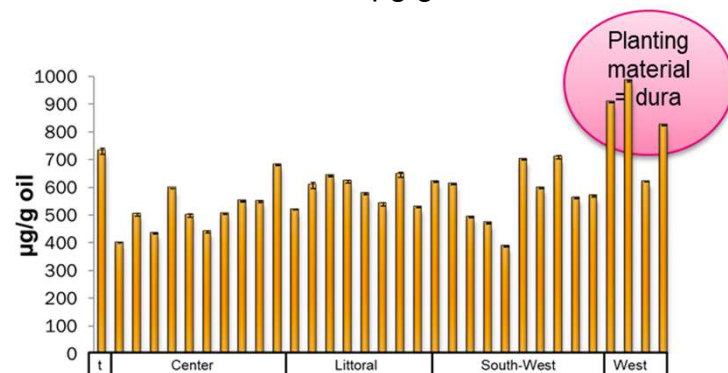
- 1: Hayes and Khosla 2007 EJLST 109:453
- 2: May and Nesaretnam 2014 EJST 116:1301

Composition diversity of artisanal RPOs

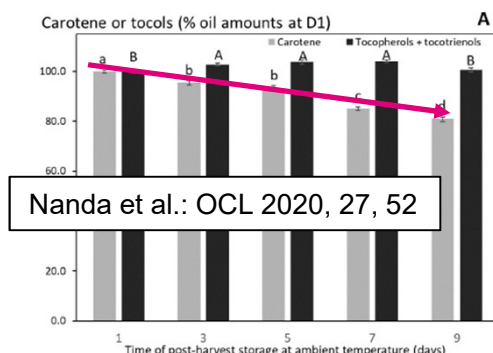
Content of the artisanal palm oils in selected nutrients and micronutrients

Pro-vitamin A : carotenes

Artisanal RPOs : 390-980 µg/g oil



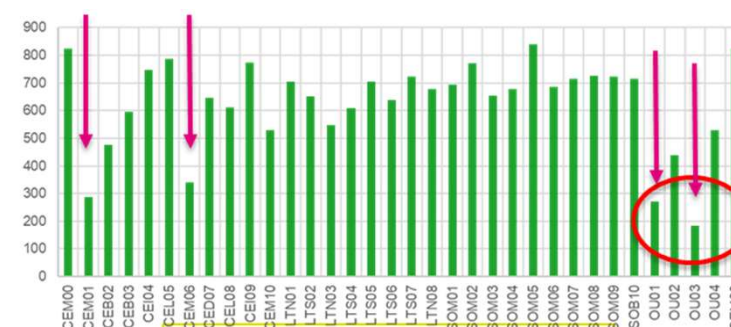
RPOs extracted at lab-scale



Decrease of carotenoid content with duration of fruit storage

Vitamin E 290-720 µg/g oil

γ-tocotrienols = major compound + tocopherol isomers



↓ :Long storage of FFB or fruits and/or in adverse conditions

Carotene and vit E contents depend on the planting material, the extraction process (region) and post-harvest storage time.

Carotenes → **red colour of RPOs and local dishes**
Carotenes + tocopherols + tocotrienols : **protect oils from oxidation** during processing, storage and cooking

Vitamin A and E activities ; protection against free radical in vivo
Tocotrienols : anticancer and cardioprotective (3, 4).

Consumption of 0,5 L RPO/month supplies the pro-vit A and vitamin E amounts recommended by international food security agencies.

Consumer supply practices, consumption, perception and use of RPOs

Main results

- **Survey: 18 retailers of RPOs** in Yaoundé markets

Retailers are used to

- => Sell **artisanal and industrial RPOs (pure or mixed)**
- => **segregate** RPOs with local names (like toponymical names)
- => home-fraction RPOs into: 1) **more stearic RPO** sold at a lowed price & 2) **more oleic RPO** sold at a higher price

- **Study of culinary practices** of 124 householders and 29 small restaurants in Yaoundé

=> Consumers base their perception of quality on taste and physical aspect of oil: more stearic and more oleic RPOs

=> Western originated population living in Yaoundé is mainly using RPO, Center and South ones are using less, while Northern almost not at all

- **Monitoring of recipes** using RPOs :

=> Consumers are buying more stearic RPOs for **specific dishes** (like *sauce jaune*) and more oleic RPOs for general dishes made of RPO. Home-fractioning is done too.

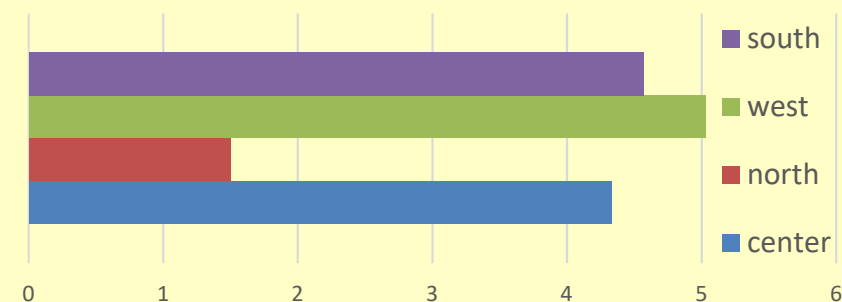


Figure : Mean number of meals with crude palm oil per householder

Conclusion

Whatever they were produced, retailed and bought **RPOs are always** of:

- **Nutritional** interest : **pro-vitamin A and vitamin E contents.**
- **Culinary** interest for **traditional African dishes:**
=> irreplaceable: **colour, taste, flavour, texture...**

Average RPO consumption of **0,48 L / month / capita**

=> Corresponding to recommended vitamins consumption / needs

RPO consumption very **heterogeneous: from 0 to 3,0 L / month / capita**
depending on regional food habits,

=> Low RPO consumption for **north originated population**

Recommendations :

- ⇒ to **all population** : RPO consumption **benefits regarding vitamin A deficiency.**
- ⇒ To **artisanal millers** : limit post-harvest storage to 5 days to **avoid vitamin A and E losses** and control FFAs in the oils.