

## Supplementary Material

# Opportunities for Ivory Nut Residue Valorization as a Source of Nanocellulose Colloidal Suspensions

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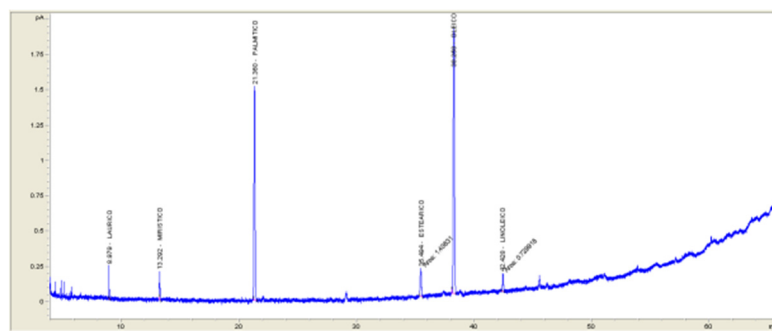
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### 1.1. Seed oil fatty acid profile

The FA profile of the seed oil was determined by gas chromatography with flame ionization detector (GC-FID) according to the AOAC 996.06 method (AOAC, 2005) by using an Agilent 7890A gas chromatograph with a flame ionization detector, with a Agilent HP-88; 60 m × 250 µm × 0.2 µm column, with helium at a flow of 1.5 mL min<sup>-1</sup>. The initial temperature was 125 °C for 2 min, with a 6 °C min<sup>-1</sup> increment up to 145 °C, keeping it for 25 min, an increment of 2 °C min<sup>-1</sup> up to 220 °C and holding it for 15 min (total time: 83 min). Detector at 260 °C. Injector at 250 °C with a 70:1 division ratio. Software: 250 °C with a 70:1 division ratio. Standard: Supelco FAME mix C4-C24.

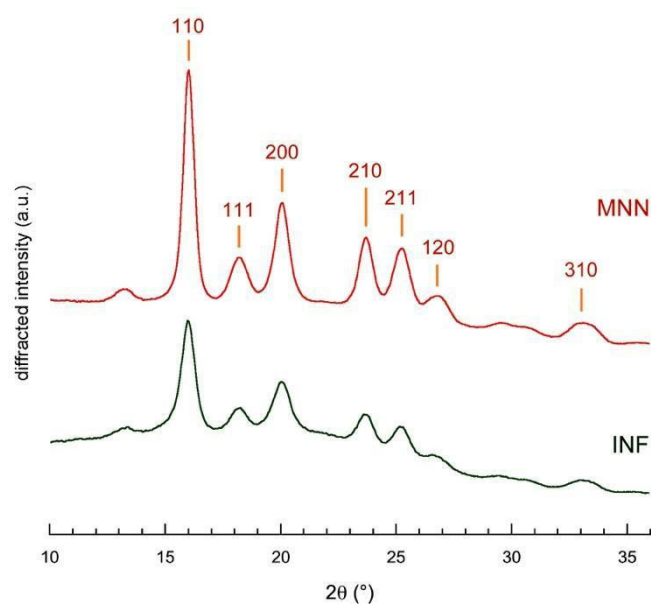
*P. aequatorialis* seeds contain a high amount of saturated and monounsaturated fatty acids accounting for 96 wt% of the total fatty acids composition (**Figure S1**). Oleic and palmitic acids represent about 86% of the content, while lauric, myristic, stearic and linoleic acids occur in smaller amounts (**Table S1**). Compared to other palm tree seeds, for example *Phoenix dactylifera*, ivory nut contains less lauric acid, while *P. aequatorialis* contains more palmitic acid (Hamza et al., 2021).



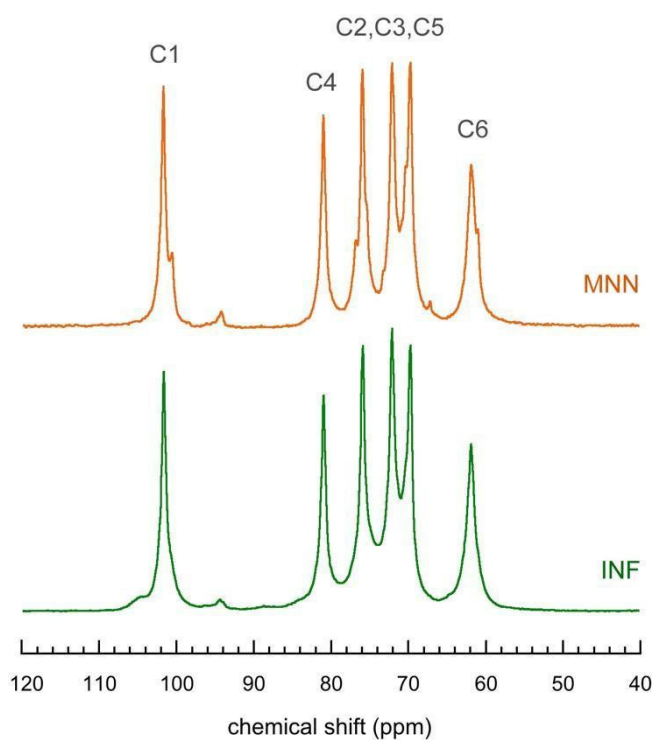
**Figure S1.** Gas chromatogram of *P. aequatorialis* fatty acid methyl esters from the oil retrieved by Soxhlet extraction.

**Table S1.** Fatty acid content in the *Phytelephas aequatorialis* species.

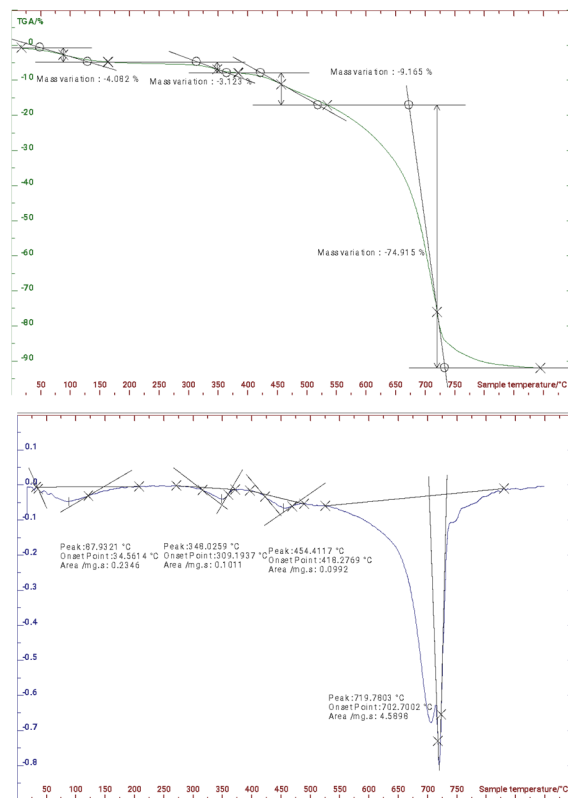
| Fatty acid | wt%   |
|------------|-------|
| Lauric     | 2.10  |
| Myristic   | 2.77  |
| Palmitic   | 36.88 |
| Stearic    | 5.45  |
| Oleic      | 49.98 |
| Linoleic   | 2.83  |



**Figure S2.** XRD profile of ivory nut flour (INF) and recrystallized mannans (MNN). The Miller indices correspond to those of mannan I (Hori et al., 2007).



**Figure S3.** CP/MAS  $^{13}\text{C}$ -NMR spectra of ivory nut flour (INF) and recrystallized mannans (MNN). The main peaks correspond to those of mannan I (Marchessault et al., 1990).



**Figure S4.** Figure S4. TG (left y-axis) and DTG (right y-axis) curves for ENC upon heating up to 900 °C. Exo up.