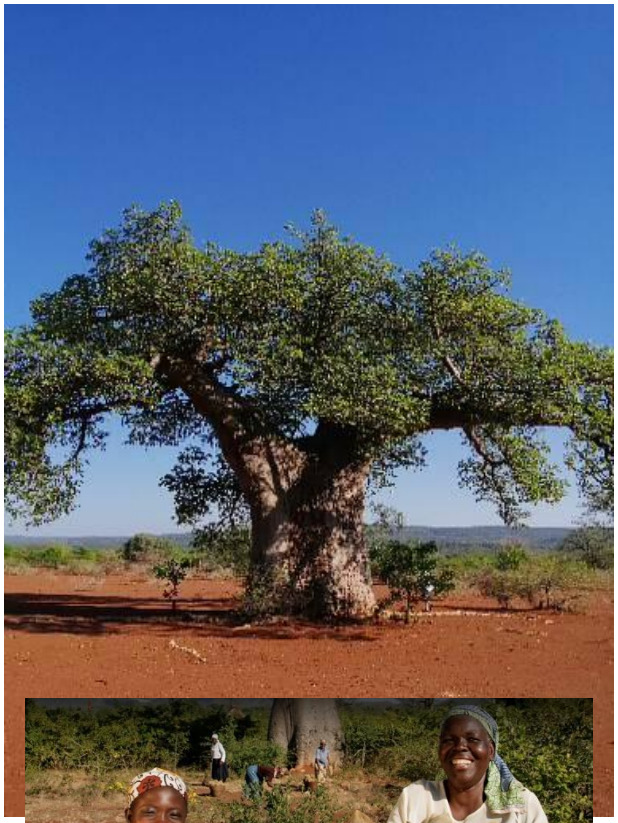
Metabolomics of baobab oil
Analysis and authentication of cyclopropenoid fatty acids using NM spectroscopy

Wilma Augustyn, Alvaro Viljoen, Jan Schripsema

INTRODUCTION



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INTRODUCTION

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- Baobab seed oil has experienced an increase in global demand.
- ^{1}H and ^{13}C NMR was used for the authentication of the baobab oils.
- Quantification of the characteristic cyclopropane and cyclopropene fatty acids.
- Adulteration of baobab oil?

MATERIALS AND METHODS

Forty baobab oil samples were obtained from markets in Africa

The NMR samples were prepared by dissolving 100 µL of baobab oil in 500 µL of deuterated chloroform (CDCl3).

Samples from fourteen different vegetable oils were obtained in Brazilian markets.

NMR Spectra were recorded using a Bruker Avance III HD system.

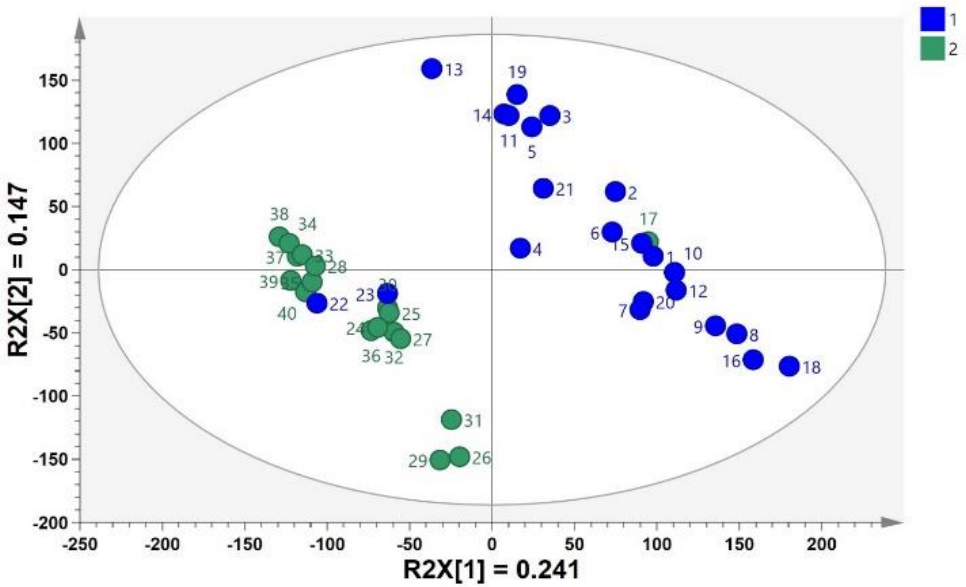
MATERIALS AND METHODS

Spectra were processed with Spinworks.

Individual spectra were reduced to the spectral region of 10.0 to - 0.9 ppm for ^{1}H and 200 to 5 ppm for ^{13}C spectra.

For multivariate data analysis, the ^{1}H NMR spectra were binned with a fixed bin width of 0.04 ppm, the resultant data table was exported to SIMCA-P+ (14.0).

RESULTS AND DISCUSSION



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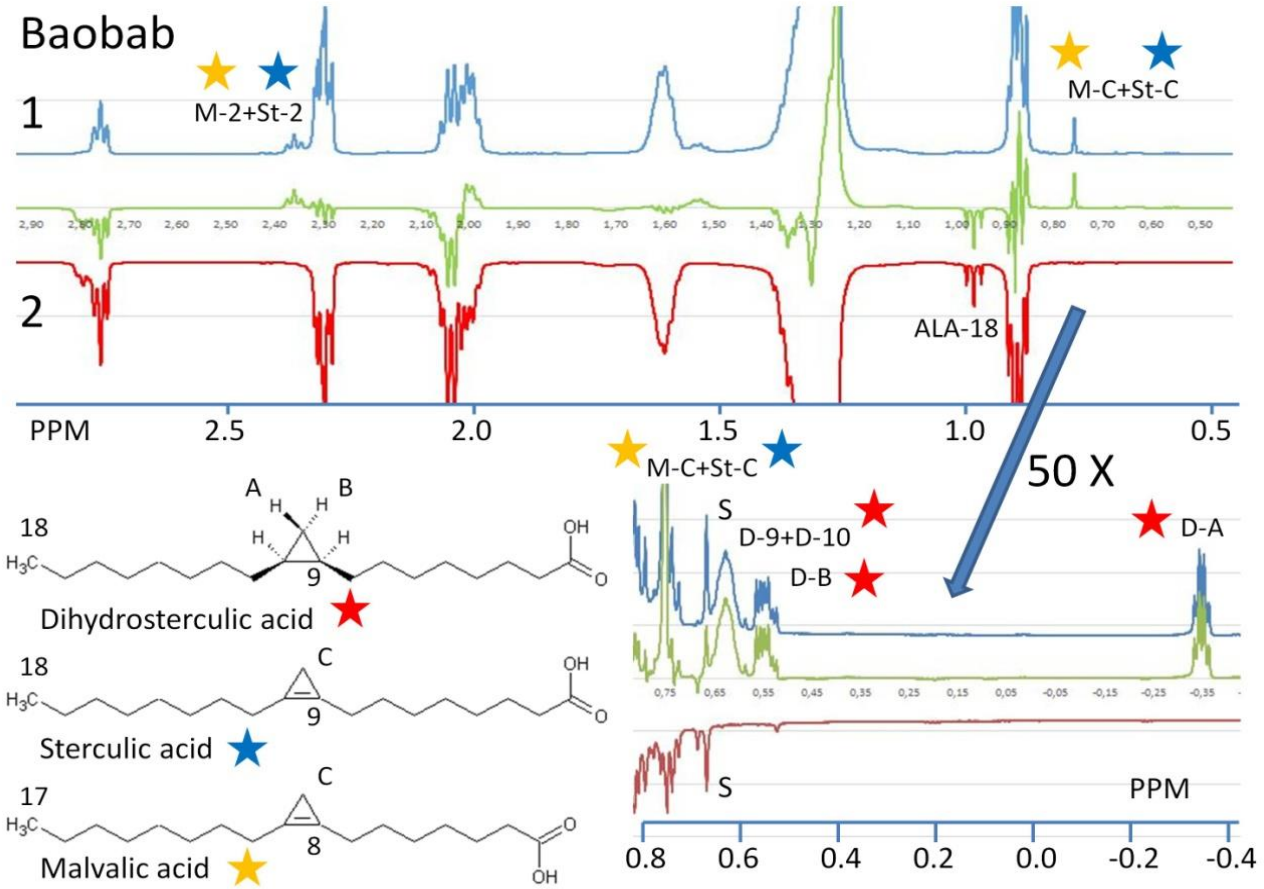

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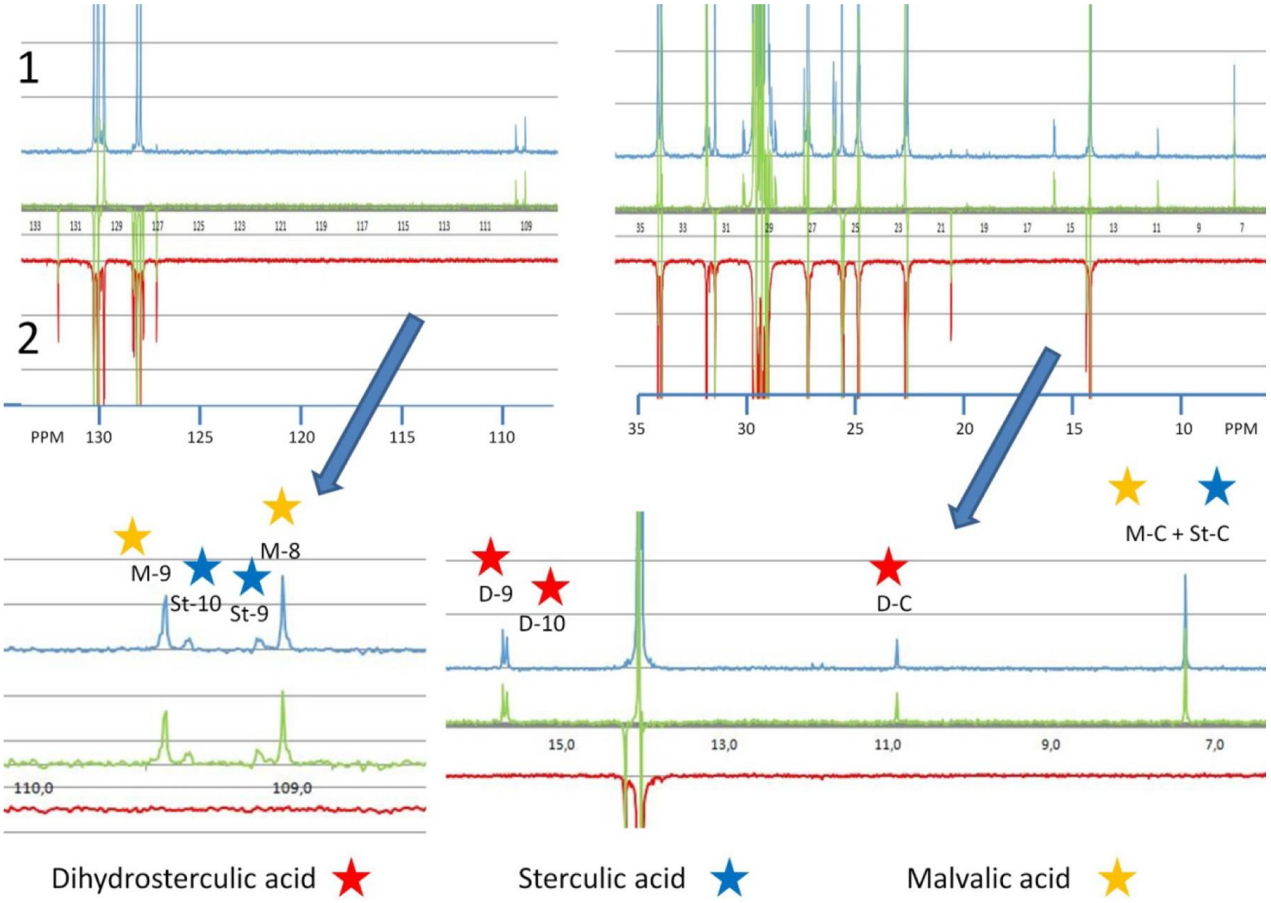

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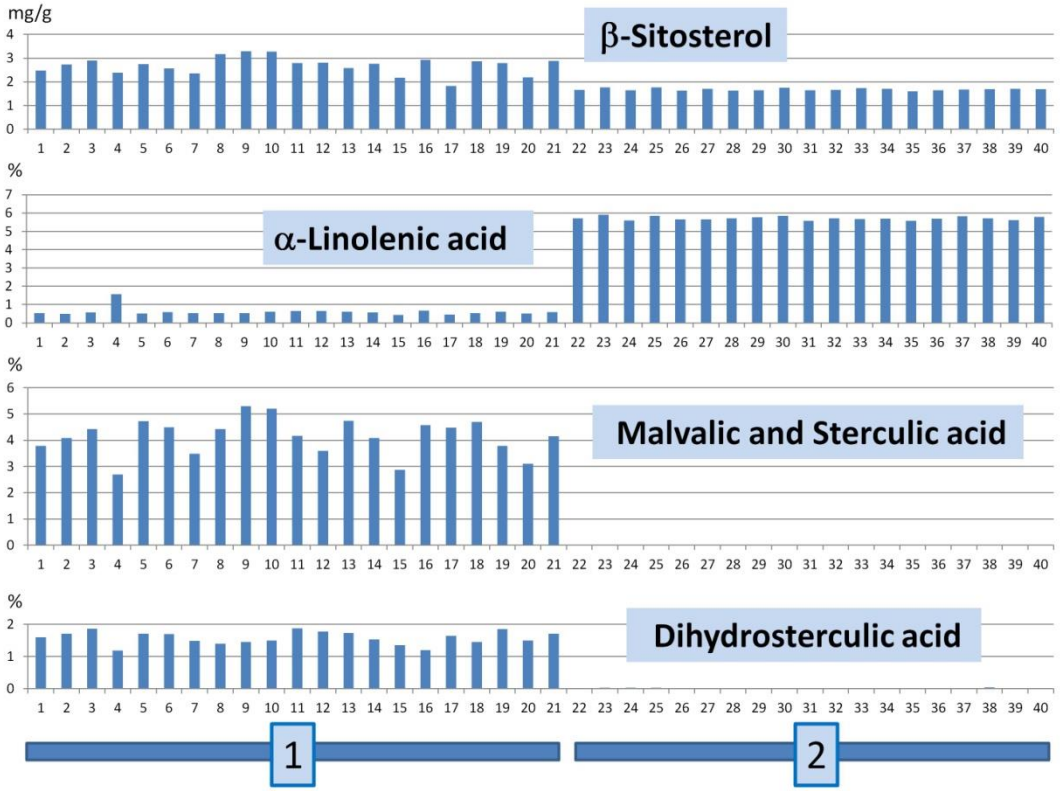

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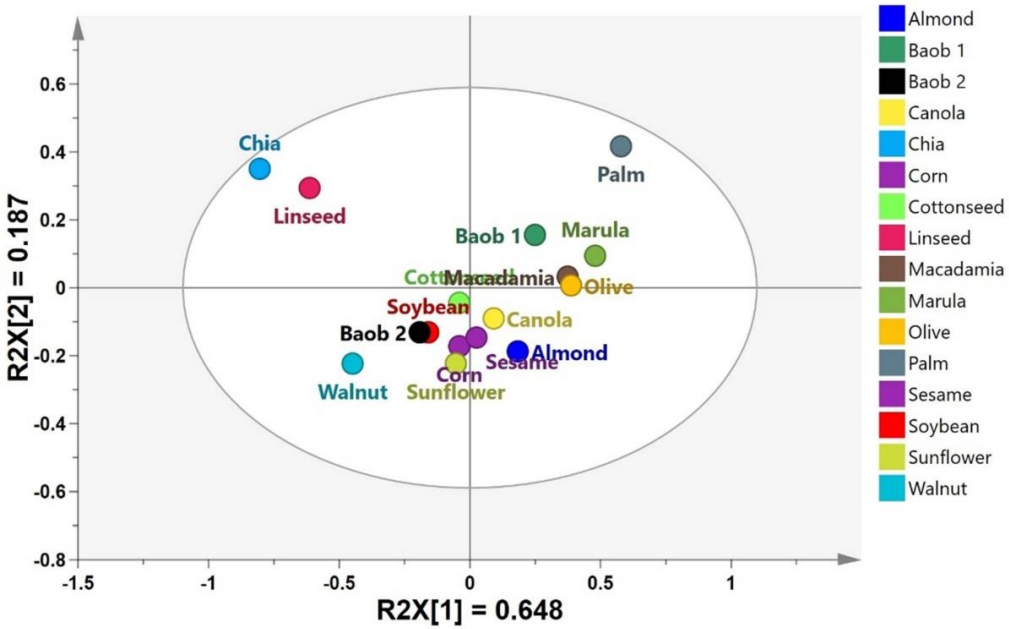

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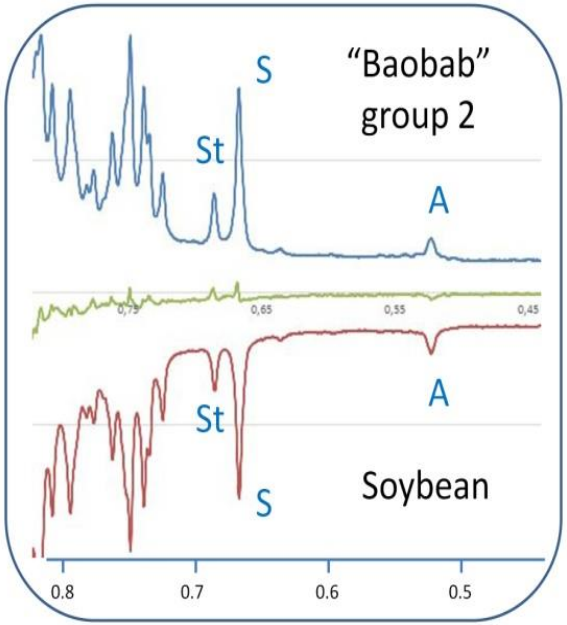

CONCLUSIONS

NMR permits the characterization of baobab seed oils.

The characteristic marker compounds, cyclopropane and cyclopropene fatty acids, can readily be observed and quantified in the oil, using NMR signals.

Adulteration or falsification of baobab oils can rapidly be detected by PCA.

Differential NMR can readily identify the adulterant oil by comparing the specific marker compounds, mainly phytosterols, with other commercial oils.

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THANK YOU

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