



21º ENQA
Encontro Nacional de Química Analítica
21st Brazilian Meeting on Analytical Chemistry

9º CIAQA
Congresso Ibero-Americano de Química Analítica
Ibero-American Congress of Analytical Chemistry

15 a 18 de Setembro de 2024 • Belém • PA • Brasil
Hangar Centro de Convenções & Feiras da Amazônia

NUTRITIONAL EVALUATION OF AMAZONIAN FRUIT OILS: A FOCUS ON BABASSU, BURITI, AND BRAZIL NUT

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The Amazon forest has an invaluable wealth of fauna and flora, however, the rapid deforestation of the last 10 years threatens several plant species, such as babassu, buriti, and Brazil nuts. Through sustainable management of these species, it is possible to strengthen the production chains of extractive reserves and contribute to reducing deforestation. These fruits have several proteins, lipids, and bioactive compounds. Thus, the chemical characterization of these fruits reinforces their nutritional and biological importance and consequently adds commercial value to products derived from sustainable extraction. Focusing on vegetable oil production obtained by cold pressing, this work aimed to characterize the lipid profile by GC-FID and GC-MS. For this, the oils obtained were previously transesterified, and after analysis, they were identified and quantified. For quantification purposes, a standard of methyl esters of 37 fatty acids (FAMES) was used. Babassu almond oil presented predominantly lauric acid (49.6%), followed by myristic acid (17.65%) and oleic acid (13.3%). Buriti oil is mainly composed of oleic acid (77.3%) and palmitic acid (19.1%) and the Brazil nut sample is mainly composed of linoleic acid (42.0%), oleic acid (31.64%), and palmitic acid (15.62%). Among the samples studied, Brazil nut presented the highest proportions of polyunsaturated fatty acids (PUFA) (42.07%), followed by buriti (1.85%) and babassu (1.37%). These acids are important because they cover the omega-3 fatty acid (FA) family, which has anti-inflammatory properties, and omega-6, which acts in the prevention of hypertension, atherosclerosis, hypercholesterolemia, arthritis, and other autoimmune and inflammatory diseases. The highest values of monounsaturated fatty acids (MUFA) were found in the buriti sample (78.46%), followed by Brazil nuts (32.01%) and babassu (13.42%). A high content of MUFA, mainly oleic acid (C18:1n-9), is an important parameter for oxidative stability, therefore, the highest values of MUFAs were found in the buriti sample. Maintaining a correct ratio of PUFA/SFA (Saturated Fatty Acids) in the human diet is essential to reduce the risk of several chronic diseases.¹ It is known that oils considered healthy are those with an PUFA/SFA ratio > 0.45.² Among the oils studied, Brazil nut oil was the only one to present values above the recommended ratio and therefore, it is considered the healthiest oil among those studied, thus reinforcing its greater commercial appeal.

1 Sadhu T, Banerjee I., Lahiri SK, Chakrabarty J. Enhancement of nutritional value of fried fish using an artificial intelligence approach, Environmental Science and Pollution Research, 2022

2 Diet and Cardiovascular Disease: Committee on Medical Aspects of Food Policy, 1985

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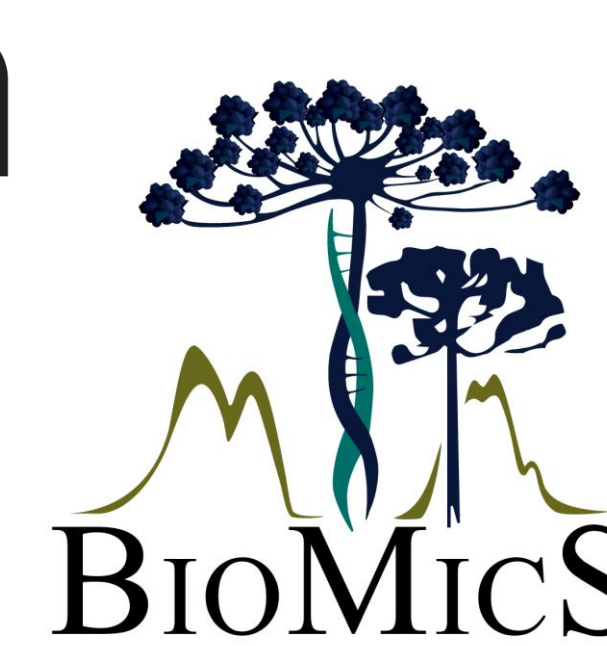
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INTRODUCTION

The Amazon forest has an invaluable wealth of fauna and flora, however, the rapid deforestation of the last 10 years threatens several plant species, such as babassu, buriti, and Brazil nuts. Through sustainable management of these species, it is possible to strengthen the production chains of extractive reserves and contribute to reducing deforestation. These fruits have several proteins, lipids, and bioactive compounds which acts in the prevention of hypertension, atherosclerosis, hypercholesterolemia, arthritis, and other autoimmune and inflammatory diseases. . Thus, the chemical characterization of these fruits reinforces their nutritional and biological importance and consequently adds commercial value to products derived from sustainable extraction.



Buriti

Mauritia flexuosa



Babassu

Attalea speciosa

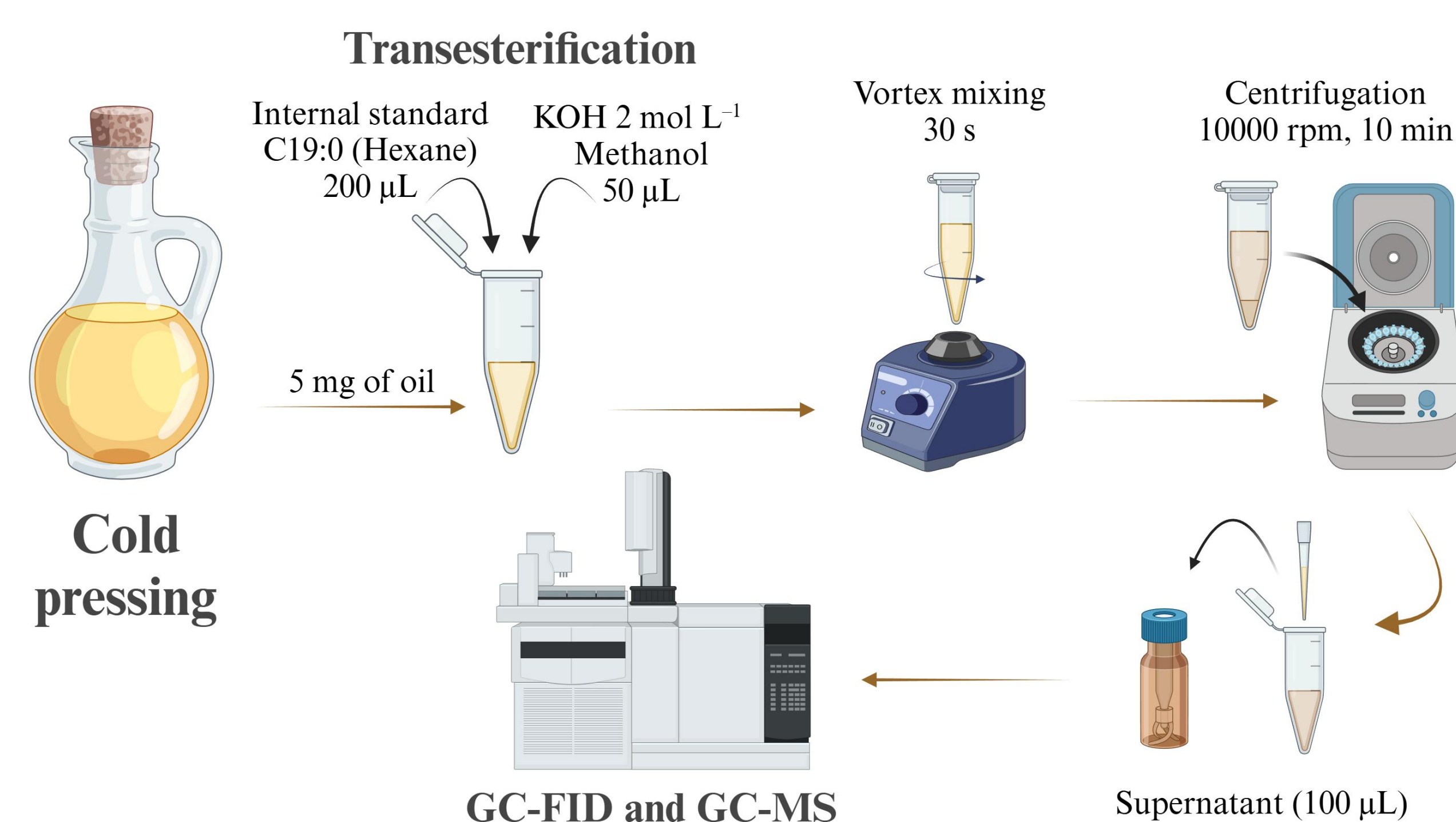


Brazil nut

Bertholletia excelsa

METHODS

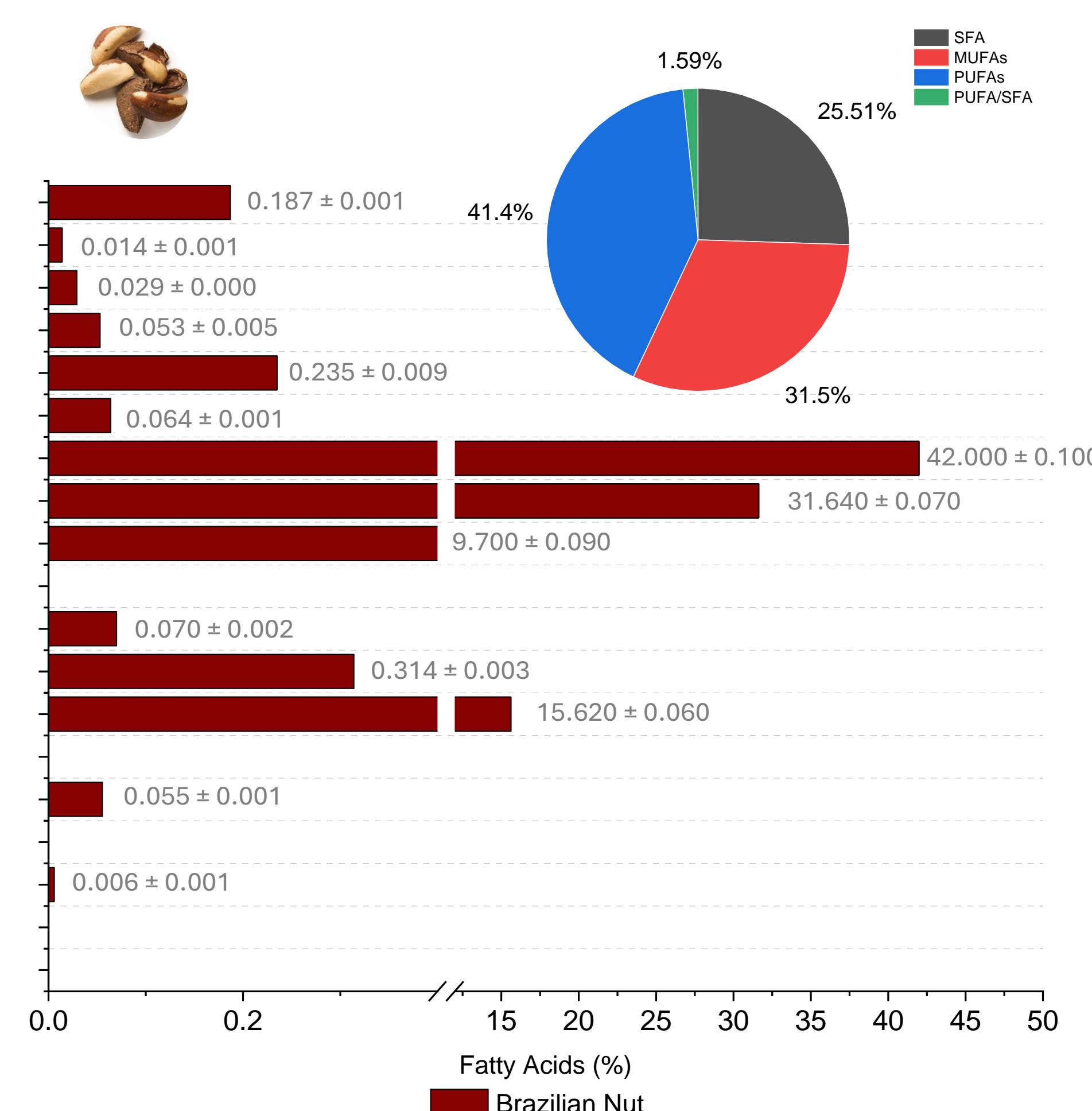
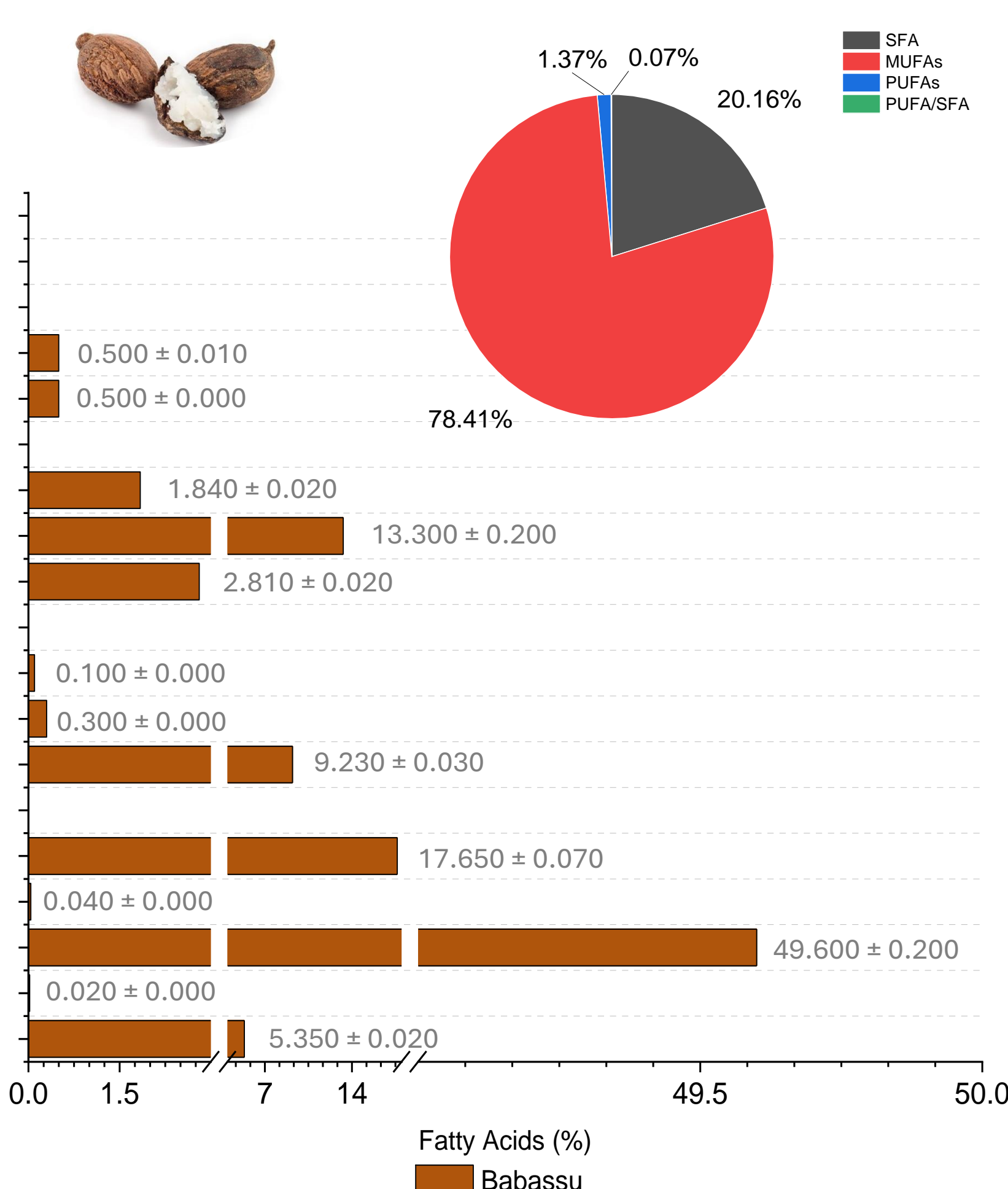
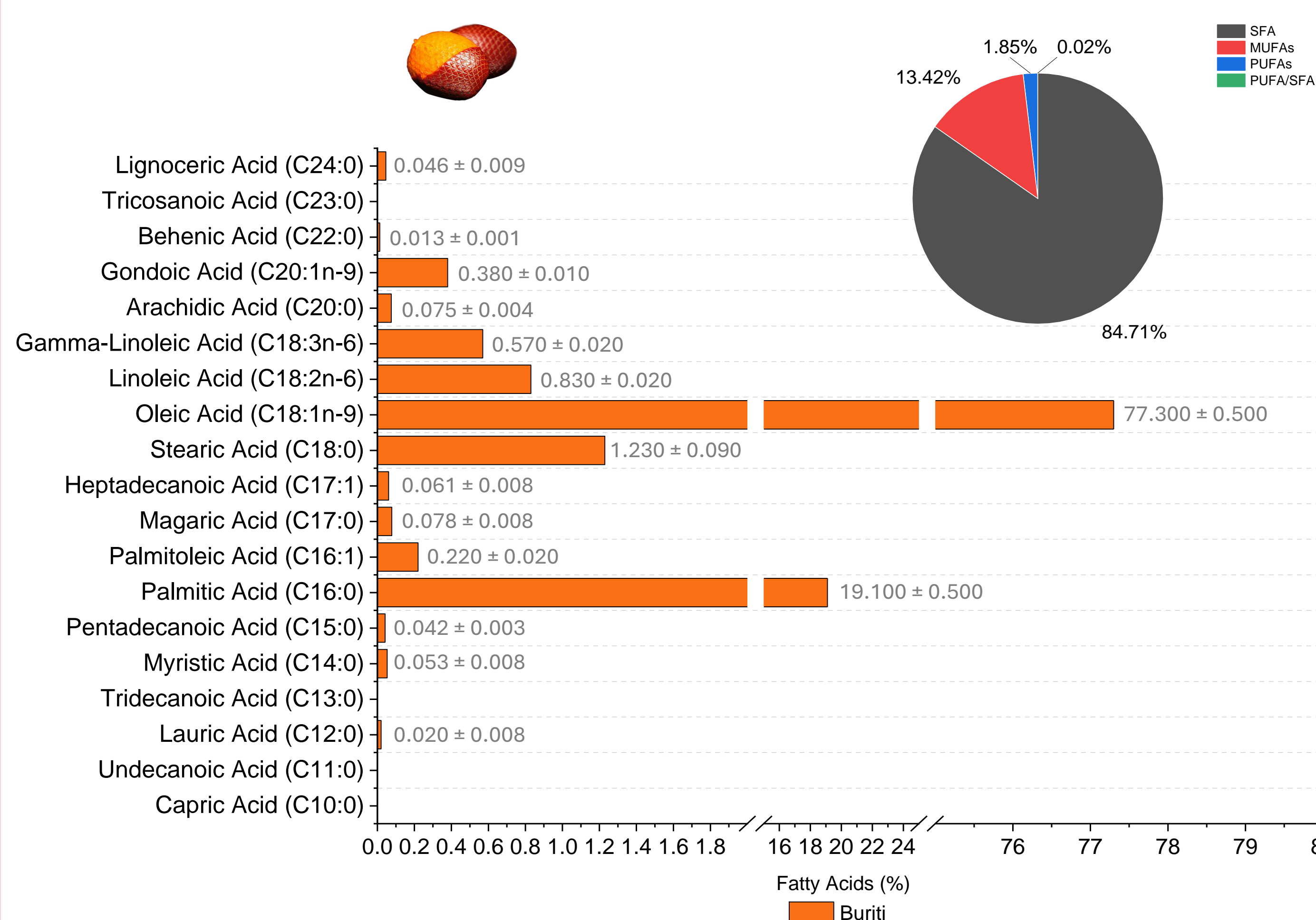
Lipid profile



RESULTS AND DISCUSSION

- A high content of MUFA, mainly oleic acid (C18:1n-9), is an important parameter for oxidative stability
- Maintaining a correct ratio of PUFA/SFA (> 0.45) in the human diet is essential to reduce the risk of several chronic diseases.^{1,2}

STA : Saturated Fatty Acids
MUFA: Monounsaturated Fatty Acids
PUFA: Polyunsaturated Fatty Acids



- Brazil nut oil was considered the healthiest oil reinforcing its greater commercial appeal.

CONCLUSION

Among the oils studied, Brazil nut oil was the only one to present values above the recommended ratio and therefore, it is considered the healthiest oil among those studied, thus reinforcing its greater commercial appeal.

ACKNOWLEDGMENTS

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