

CHARACTERIZATION OF THE PHENOLIC PROFILE OF SACHA INCHI (*Plukenetia volubilis*) SHELL EXTRACT

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INTRODUCTION & AIM

This research focused on the sacha inchi shell, a byproduct commonly discarded after oil extraction, which could be a source of bioactive compounds with potential health benefits.

Sacha Inchi (*Plukenetia volubilis*), also known as the "Inca peanut" is a plant native to the Amazon rainforest, primarily found in Peru. Its seeds are rich in omega-3, omega-6, and omega-9 fatty acids, proteins, and antioxidants. The plant produces star-shaped fruits that contain edible seeds, which are often roasted and consumed as snacks or processed into oil.

METHOD

Ultrasound-assisted extraction of Sacha Inchi shell



Whole Sacha Inchi Stars

1. Peel, wash, crush and sieve the shells of Sacha Inchi



2. Sterilization of the samples in a PCR cabinet



3. Mixing of the crushed shell with water and ethanol

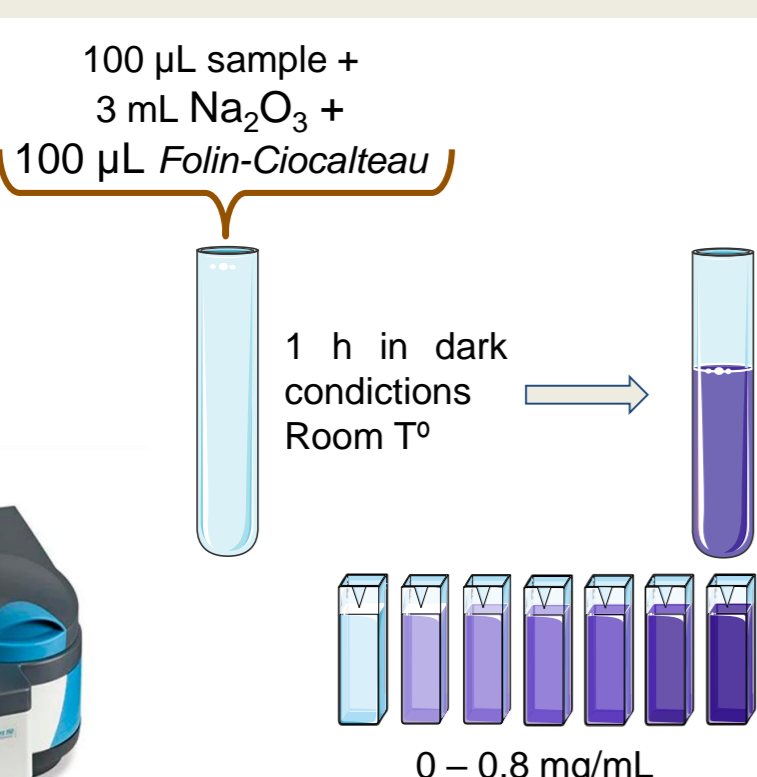


4. Placement of samples in the ultrasonic probe and the centrifuge



Determination of Total Phenolic Compounds Content

Folin Ciocalteu method

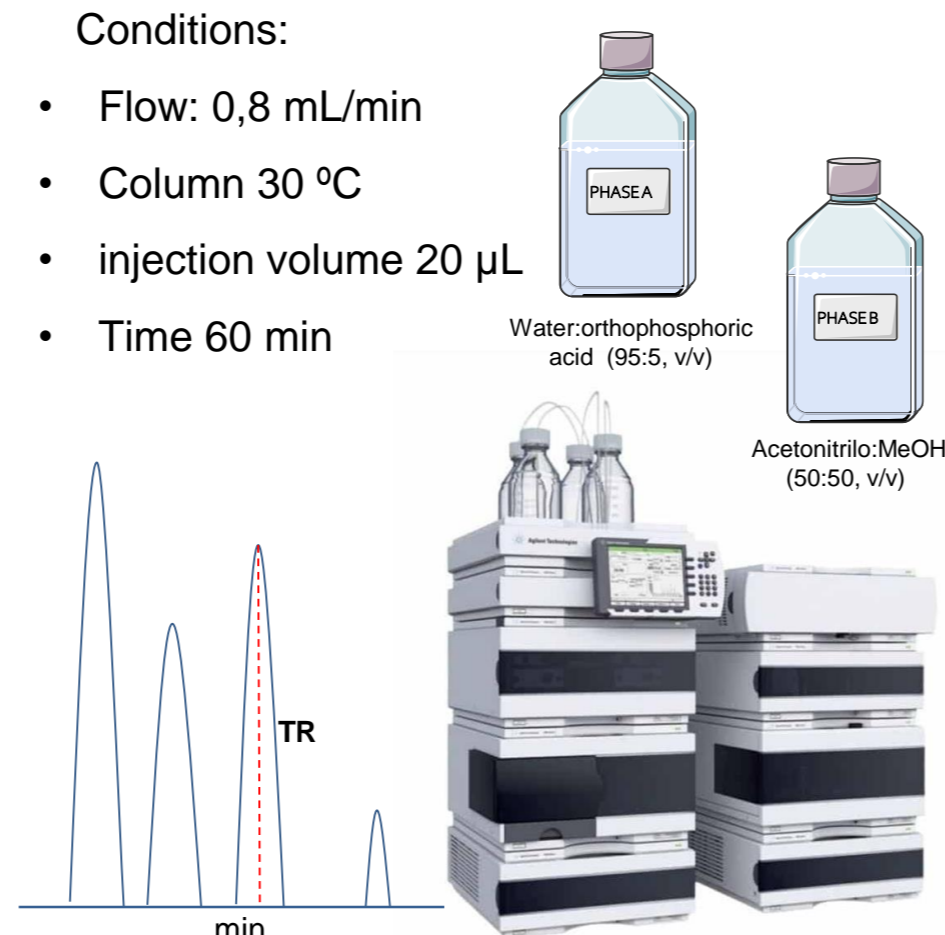


Determination of Phenolic Profile

HPLC-DAD

Conditions:

- Flow: 0,8 mL/min
- Column 30 °C
- injection volume 20 µL
- Time 60 min



RESULTS

Table I. Total phenolic compounds content in Sacha Inchi shells

Total phenolic compounds (µg GAE/g ± DE)	Shell	Husk
	8,86± 2,68	13,35± 8,04

In the Shell extract, luteolin was the predominant compound (143.21 µg/g), although low amounts of 2-hydroxycinnamic acid were observed (0.45 µg/g). In contrast, the Husk extract had syringic acid as the major compound (286.62 µg/g), with ferulic acid being the least abundant (0.93 µg/g).

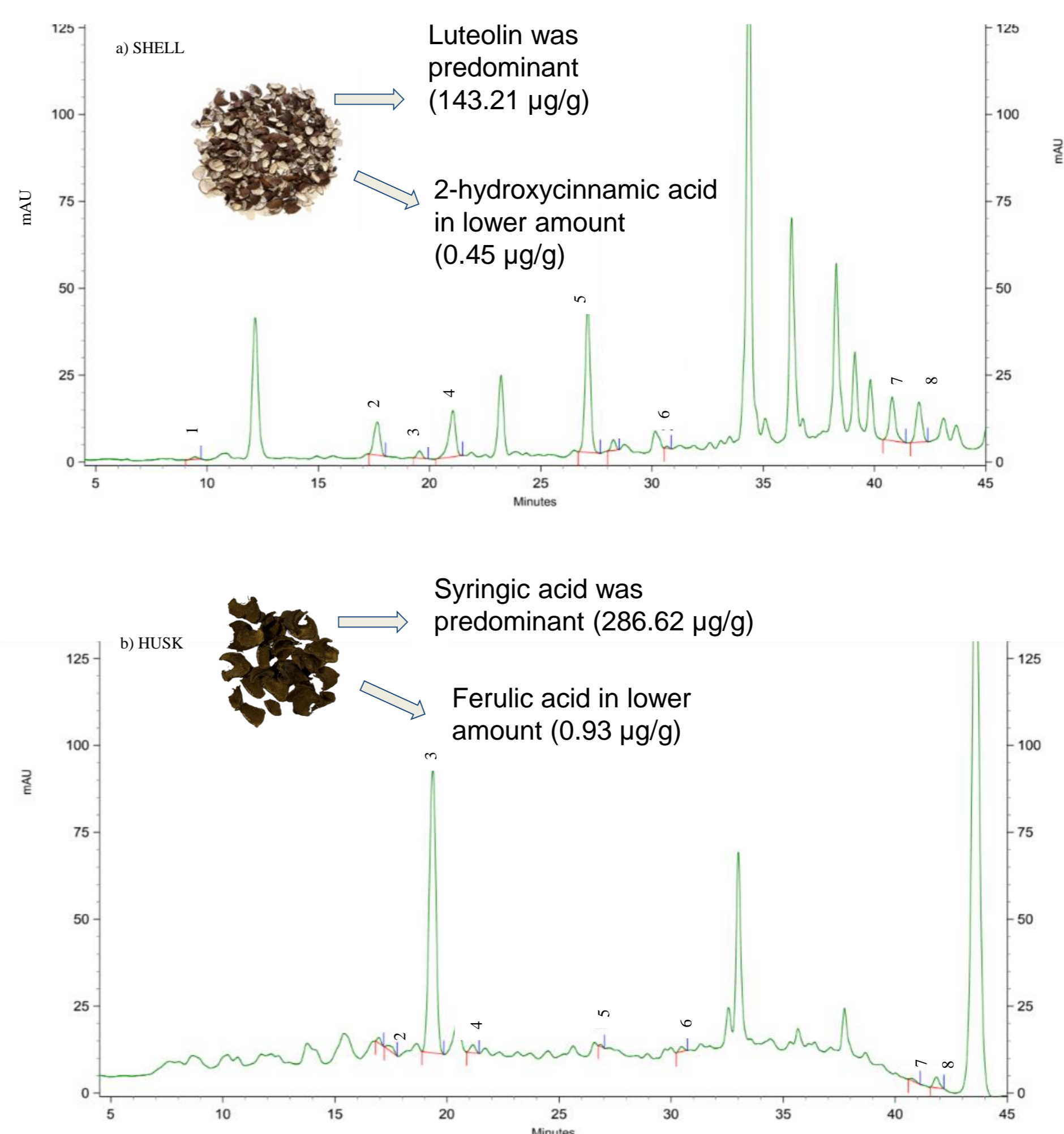


Figure 1 . HPLC-DAD chromatogram of phenolic compounds from Sacha Inchi Shell (a) and Sacha Inchi Husk (b) recorded at 280 nm. Peaks: 1- 3,4-dihydroxybenzoic acid; 2 - Chlorogenic acid; 3- Syringic acid; 4- Vanillin; 5- Ferulic acid; 6- 2-Hydroxycinnamic acid; 7- Quercetin; 8- Luteolin.

CONCLUSION

The Husk extract showed a higher concentration of total phenolic compounds compared to the Shell extract. Additionally, variations in the concentrations of each compound were detected between the Shell and Husk extracts. These findings highlight the variability in the composition of bioactive compounds between the extracts, which could significantly influence their functional properties.

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