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Fatty acid profile and proximate composition of nuts grown in the Cuyo Region, Argentina

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INTRODUCTION & AIM

Nuts can be considered natural pleiotropic nutraceuticals. Their nutritional and functional composition is strongly influenced by environmental conditions[1]. In the last decade, there has been a significant increase in the cultivation of walnuts and pistachios in the Mendoza and San Juan provinces (i.e. the Cuyo region), which have different agroclimatic conditions from the traditional growing areas. This study evaluated the impact of environmental conditions on the fatty acids profile and proximate composition of nuts from Cuyo Region.

METHOD

a) Material Sampling

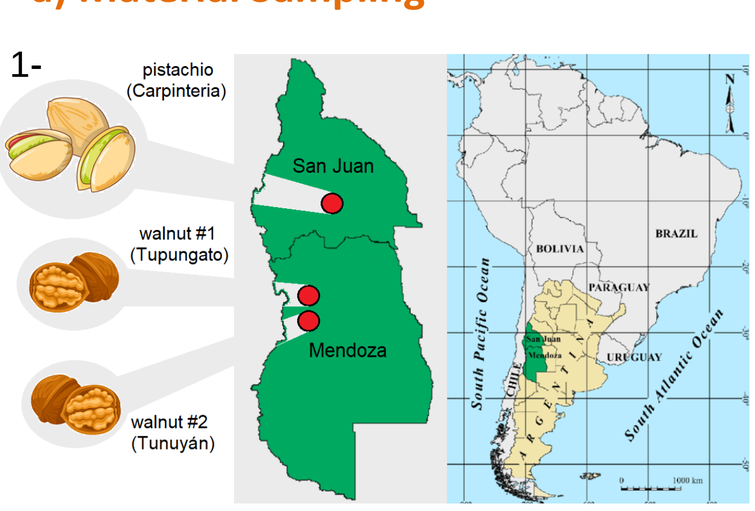
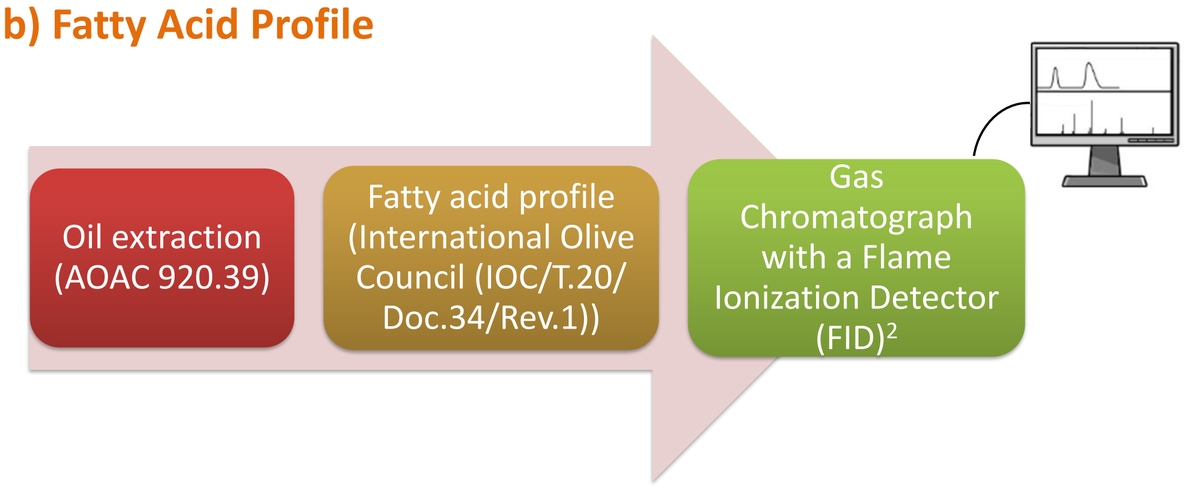


Fig. A. 1-Sampling sites in the Cuyo Region: Chandler variety walnut samples were obtained from two farms of Mendoza; Kerman variety pistachios were recollected from San Juan. **2-** Each block (B) corresponded to contrasting environmental condition (soil and altitude) within each sampling site.

b) Fatty Acid Profile



C-Proximal Composition

- Moisture (AOAC 167.03)
- Dry matter (AOAC 167.03)
- Total minerals (AOAC 942.05)
- Nitrogen (AOAC 984.13)
- Total fat (AOAC 920.39C)
- Crude fiber (AOAC 962.09
- Carbohydrates (by difference)

RESULTS & DISCUSSION

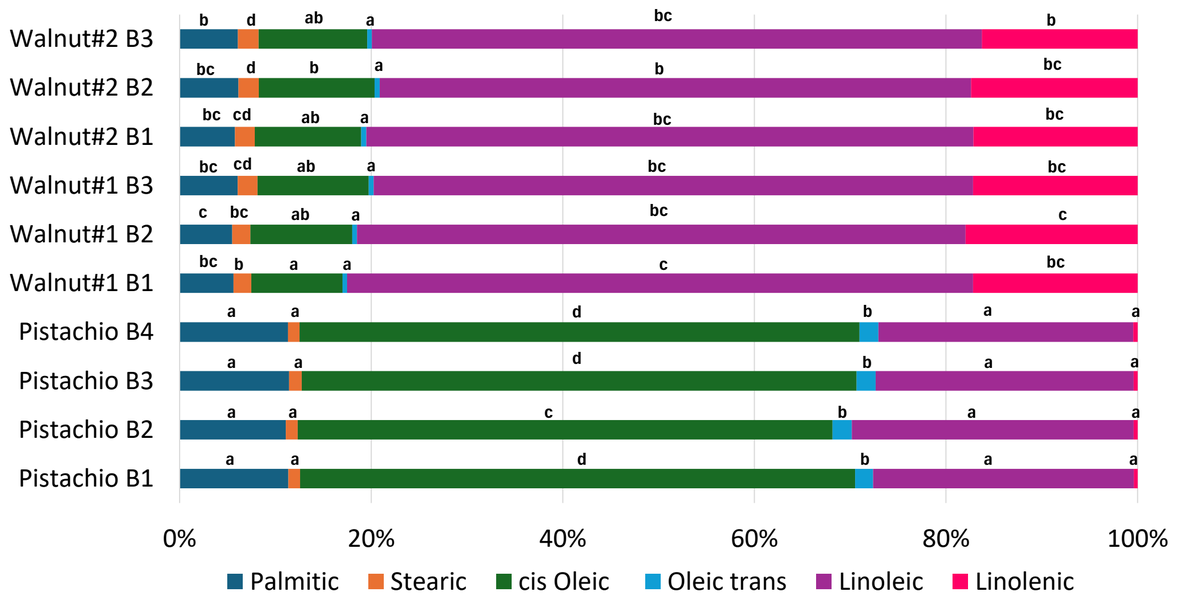


Fig. B. A distribution pattern bar diagram illustrating the levels of fatty acids in nuts samples from different blocks (B). Mean values with a common letter are not significantly different at p‹0.05 (Duncan test).

Table 1. Proximate composition per 100g of three different nuts (%, wet basis).

Proximal composition	Value expressed on dry mass		
	Pistachio	Walnut#1	Walnut#2
Energy, Kcal	451 ± 0.15	631 ± 0.18	630 ± 0.20
Water, g	5.20 ± 0.02	2.80 ± 0.01	3.03 ± 0.03
Total Minerals, g	2.80 ± 0.01	2.21 ± 0.01	1.72 ± 0.02
Nitrogen, g	2.78 ± 0.03	2.48 ± 0.03	2.78 ± 0.01
Total Protein, g	17.40 ± 0.05	15.47 ± 0.06	17.38 ± 0.05
Lipids, g	39.69 ± 0.08	62.17 ± 0.15	61.18 ± 0.09
Crude Fiber, g	10.93 ± 0.04	7.42 ± 0.05	6.73 ± 0.01
Carbohydrates, g	23.97 ± 0.05	9.93 ± 0.01	9.96 ± 0.02

CONCLUSION

- The most abundant fatty acids in walnut were linoleic acid (63.36 %), linolenic acid (17.18 %) and cis oleic acid (11.04 %) (Fig. B).
- Cis oleic acid (56.70 %), linolenic acid (27.15 %) and palmitoleic acid (11.13 %) were the dominant fatty acids in pistachio (Fig. B).
- The ANOVA analysis showed significant differences between pistachio and walnut samples for all fatty acids evaluated ($p < 0.05$) (Fig. B).
- The ANOVA analysis showed no significant differences between the blocks of Tunuyán walnut samples (walnut#2).
- Lipids were the main component of nuts, being their value much higher for walnuts than for pistachios (Table 1).
- In the total protein, nitrogen and mineral content no significant differences ($p > 0.05$) were found between the nuts analyzed.

REFERENCES

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