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# Impact of roasting on the Amino Acid profile of pumpkin seeds (*Cucurbita moschata*)

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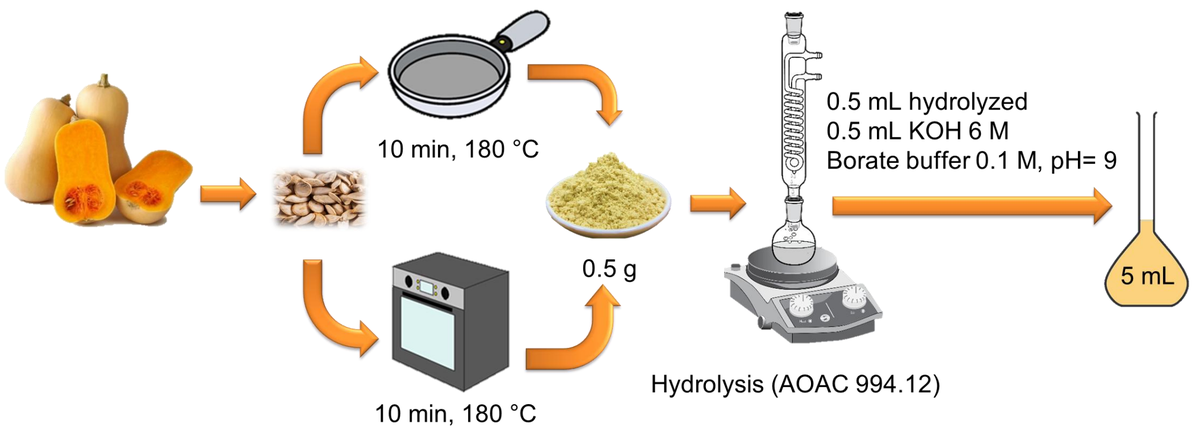
## INTRODUCTION & AIM

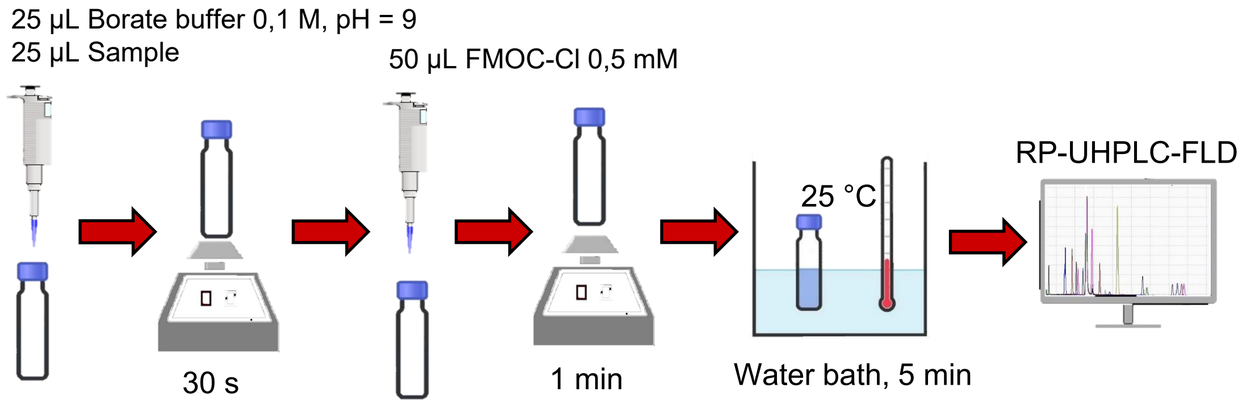
Pumpkin (*Cucurbita moschata*) is recognized as a functional food due to its rich content of nutrients and bioactive compounds with health-promoting properties. Its seeds, often discarded, are a valuable source of lipids, proteins, fiber, minerals, vitamins, carotenoids, phytosterols, tocopherols, and polyphenols.[1] Notably, their high protein content results in a significant concentration of amino acids (AAs), essential for various metabolic and physiological processes. Roasting is a traditional cooking method which can enhance sensory attributes and improve the bioaccessibility and bioavailability of nutrients and phytochemicals, including AAs.[2] This study aims to evaluate the impact of traditional roasting methods on the AAs profile of pumpkin seeds (Cucurbita moschata), from the Cuyano INTA and Cokena INTA cultivars.

## METHOD

### 1) Sample pretreatment and AAs extraction




### 2) FMOC-AAs: derivatization reaction



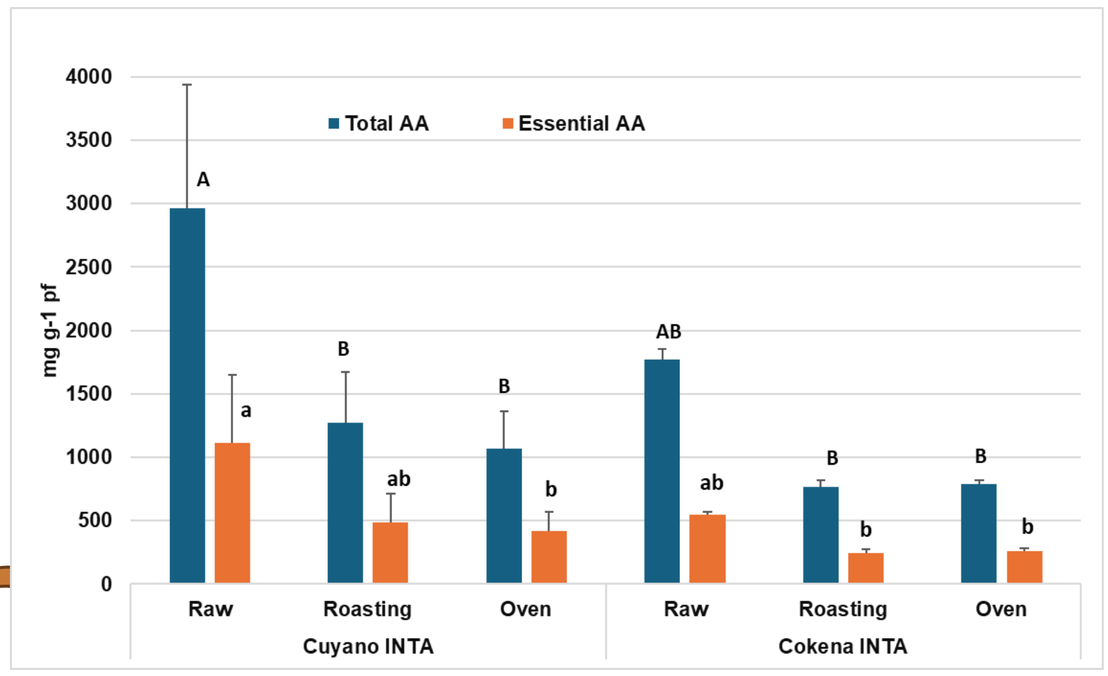

## RESULTS & DISCUSSION

**Table 1**. ANOVA table of totals AAs variation due to cultivar, cooking treatment, and their interaction.

| AAs totales | | | | |
|---|---|---|---|---|
| Source | gl | Sum of square | F value | p-valor |
| Cultivar | 1 | 1954062 (15.2%) | 9.76 | 0.0088 |
| Cooking treatment | 2 | 7782753 (60.7%) | 19.44 | 0.0002 |
| Cultivar*cooking treatment | 2 | 683545 (5.3%) | 1.71 | 0.2226 |
| Error | 12 | 2402626 (17.8%) | | |
| Total | 17 | 12822987 (100%) | | |

ANOVA showed significant differences in AAs levels among cultivars and treatments, however no significant interaction was observed. Cooking treatment explained 60.7% of the variation, while cultivar accounted for 15.2%, indicating that roasting method was the dominant factor.

**Fig. 1.** Effect of cooking treatments on total and essential AA content, differentiated by cultivar type




Seeds of Cuyano INTA exhibited the highest AAs concentrations. For essential AAs, Cuyano INTA seeds had 1.8 times more than Cokena INTA (14.77 vs. 8.39 mg $g^{-1}$). Roasting significantly affected the AAs composition, especially affecting heat-sensitive AAs. Compared to raw seeds, roasting caused AAs losses of up to 50%.

## CONCLUSION

These findings demonstrate that roasting strongly influences the nutritional quality of pumpkin seeds, with potential implications for their use in functional foods and dietary applications.

## REFERENCES

1. Dotto, J. M., & Chacha, J. S. (2020). doi:10.1016/j.sciaf.2020.e0055.
2. Rinaldi, M., Santi, S., ... & Chiavaro, E. (2021). doi:10.1002/jsfa.10880