

PLANT-BASED ALTERNATIVES OF FERMENTED FOODS: YOGURTS AND KOMBUCHA, NUTRITIONALLY COMPLETE AND WITH DESIRABLE ORGANOLEPTIC CHARACTERISTICS FOR CONSUMERS. FORMENTERA

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INTRODUCTION

The increasing production of oat-based beverages generates significant by-products, particularly okara, which are often discarded, leading to environmental concerns. This project focuses on developing green extraction technologies to valorize these by-products, transforming them into substrates for plant-based fermented foods. By integrating sustainable methodologies, the project aim to reduce food waste and promote a circular economy in the food industry.

OBJECTIVE AND RESULTS

1. To evaluate and implement environmentally friendly extraction techniques for recovering valuable nutrients from oat drink by-products. 2, To compare three green extraction technologies: conventional maceration, enzymatic extraction, and ultrasound-assisted extraction. 3. To assess the nutritional composition of the okara oat and extracted soluble fractions for use in plant-based fermented foods.

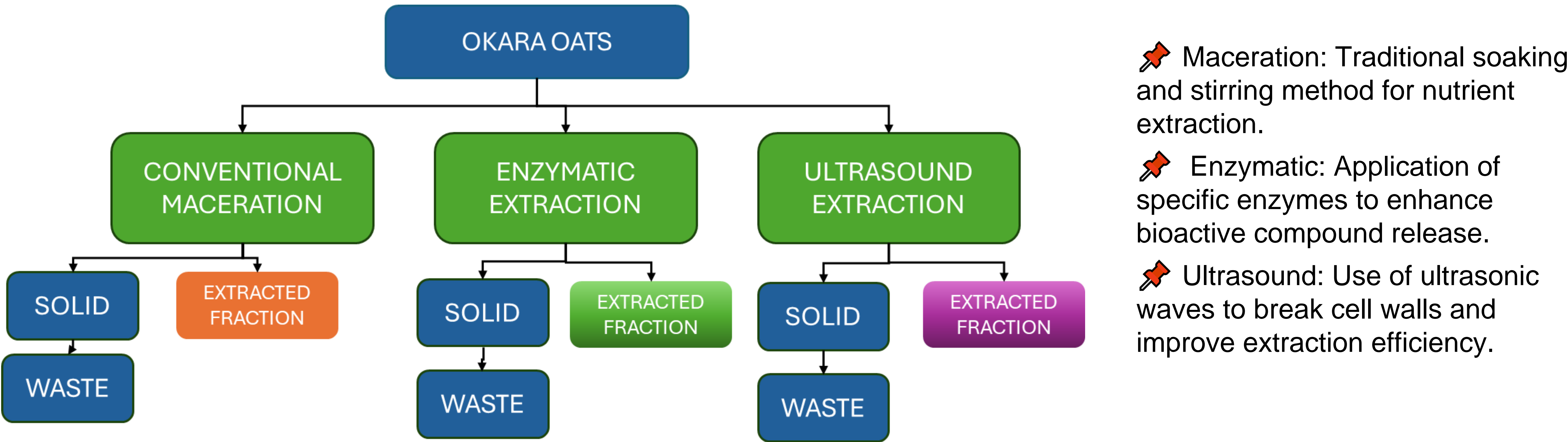


Figure 1. Methodology for nutrients solubilization from okara oat

Table 1. Characterization of okara oat and soluble extracted fraction				
Component	Okara Oat	Conventional Extracted fraction	Enzymatic Extracted fraction	Ultrasound Extracted fraction
Protein (%)	9,1	5,4	11,5	7,0
Fiber (%)	10,2	6,6	10,4	6,9
Lipids (%)	3,9	0,6	3,1	1,5
Carbohydrate (%)	0,6	1,0	10,4	4,8

CONCLUSIONS

- ✓ Enzymatic and ultrasound-assisted extraction techniques significantly enhanced nutrient recovery compared to conventional method.
- ✓ Enzymatic extraction proved to be the most efficient in releasing nutrients from okara oat.
- ✓ Extracted liquids fractions obtained demonstrated potential for application in plant-based fermented food products, enhancing their nutritional value.

REFERENCES

Immonen, M., Myllyviita, J., Sontag-Strohm, T., & Myllärinen, P. (2021). Oat protein concentrates with improved solubility produced by an enzyme-aided ultrafiltration extraction method. *Foods*, 10(12), 3050. <https://doi.org/10.3390/foods10123050>.

Korsa, V. V. (2023). Ultrasound-assisted and enzymatic-based method for isolation of β -glucans from oat bran. *Biotechnologia Acta*. <https://doi.org/10.15407/biotech16.01.051>.

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