CHESTNUT 'TERRA FRIA' PDO: SUITABLE INGREDIENT FOR INNOVATIVE PRODUCTS

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Introduction

Chestnuts are one of the most important nuts in Northeast Portugal. Terra Fria is the main producing region, with a Protected Designation of Origin (DOP) recognized. Chestnuts are a very versatile product, with high nutritional value (rich in carbohydrates, fibers, vitamins, and minerals), gluten-free and with a slightly sweet flavour. However, due to their perishable, chestnuts Portuguese are mainly sold as a fresh product during harvesting season, or as frozen product throughout the year. The development of new products could be a way to promote the integration of this fruit in a wide range of food products, as well as, to contribute to adopt a Mediterranean diet. The present work aimed to develop two innovative products; gluten-free cuscos, maintaining the traditional manufacturing process, and chestnut spreadable with lower sugar content.

Material

1. Developed innovative products

Chestnut Cuscos

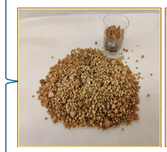

Flour mixed with water


Add water by hand


Sieve the cuscos


Steamed in a kitchen robot


Dry the cuscos


Raw


Boiled


Roasted

Chestnut Spreadable

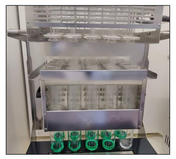

Mixed diferent ingredients

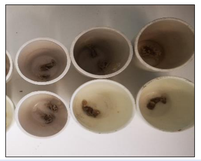

Without carob


With carob

2. Chemical characterization

- ✓ Nutritional composition (AOAC methods)
- ✓ Microbiological analyses (ISO methods)





Results

Chestnut Cuscos

Table 1- Nutritional composition of chestnut cuscos.

g/100g dry matter	Raw	Boiled	Roasted
Energy (Kcal/100g)	383.7 ± 0.5	385.1 ± 2.5	384.6 ± 2.0
Protein	8.63 ± 0.15	8.95 ± 0.16	7.13 ± 0.70
Ash	3.42 ± 0.02	3.13 ± 0.32	3.38 ± 0.16
Total Fat	2.20 ± 0.07	1.96 ± 0.27	2.62 ± 0.21
Total Carbohydrates	85.75 ± 0.21	85.96 ± 0.24	86.87 ± 0.53
of which sugars	2.58±0.48	3.63±0.23	3.40±0.13
of which fibers	6.83 ± 0.13	6.11 ± 0.10	7.49 ± 0.47
Sodium	1.76 ± 0.07	1.26±0.01	2.14 ± 0.09

It was observed that the three variations of chestnut cuscos had similar macronutrient levels.

- ❖ During 6 months of storage, **no microbial growth** was observed in any of the spreadable.

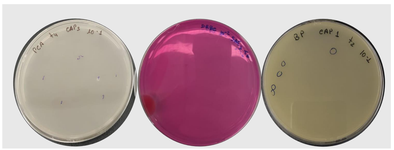


Figure 1- Microbial growth of aerobic mesophiles, molds, and yeasts in a specific cultured media.

Chestnut Spreadable

Table 2- Nutritional composition of chestnut spreadable.

g/100g dry matter	With carob Sterilized	Without carob Sterilized
Energy (Kcal/100g)	401.7 ± 0.3	398.4 ± 0.1
Protein	2.89 ± 0.18	3.22 ± 0.11
Ash	0.7 ± 0.04	0.83 ± 0.02
Total Fat	0.9 ± 0.05	0.34 ± 0.02
Total Carbohydrates	95.52 ± 0.14	95.62 ± 0.11
of which sugars	2.96±0.80	4.81±0.73
of which fibers	0 ± 0	0 ± 0
Sodium	0.66±0.08	0.54±0.06

The formulation with carob had a lower sugar and protein content, while the formulation without carob had a lower fat content.

Conclusion

- ❖ In conclusion, the Portuguese chestnuts reveal to be a suitable ingredient to produce gluten free and healthy products.

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