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DESIGN AND EVALUATION OF THE PROCESS TO OBTAIN MIXED PUREE OF PUMPKIN (*CUCURBITA MOSCHATA*) AND CARROT (*DAUCUS CAROTA*) TO BE PRESERVED BY SOUS VIDE TECHNOLOGY

Silvana C. Ruiz[1], Diego Ricardo Gutiérrez[2,3], Silvia del Carmen Rodríguez[2,3]
1- INTA EEA Santiago del Estero, Argentina, 2- ICyTA, FAyA- UNSE, Argentina, 3- CIBAAL-CONICET-UNSE, Argentina.

INTRODUCTION & AIM

In the actuality consumers demand safe foods. Changing lifestyles are leading them to seek healthier, ready-to-eat food options. In Santiago del Estero, Argentina, numerous producers grow pumpkin and carrots. However, these products are intended for the domestic market and are sold in bulk, lacking the use of preservation technologies that increase their shelf life and added value. Technologies such as sous vide could be used to preserve products made with these vegetables, such as ready-to-eat convenience foods. This would allow the market to offer an innovative, ready-to-use product with improved functional quality, reducing post harvest losses and food preparation time.

The objective of this study was to design and evaluate a process for preparing a mixed puree with pumpkin (P) and carrot (C), which would then be preserved using sous vide technology (vacuum cooking), which is not yet commercially available.

METHOD

For the preparation of the mixed puree, different cooking and times methods were evaluated for both vegetable.

- Conventional cooking with water at 100°C, 5 min for pumpkin and 10 min for carrot
- Steam cooking at 105°C, 5, 10, 15 and 20 min for each vegetable.

The development of the mix with different mixtures of vegetables was also evaluated: 100:0, 75:25, 50:50, 25:75, 0:100 w/w C:P. in addition, puree homogenization times (0.5-2 min), and ascorbic acid (AA) addition (0.0–1.0%) were evaluated.

The process and blend selection were carried out through:

- Sensory testing: with 10 trained judges, evaluating overall appearance, color, consistency and flavor.
- Color determination: with a colorimeter to determine L*, a* and b* parameters
- pH
- A general acceptability test of the designed product was conducted with 80 untrained individuals.

RESULTS

The product designed without added AA obtained an acceptability of 90% and a pH of 6.1 ± 0.2, while with addition of 0.75% AA, the pH dropped to 4.3 ± 0.1. This is important in foods treated with sous vide where the pH must be lower than 4.5 to prevent the development of anaerobic pathogens. This designed food presented a pleasant flavor and high sensory acceptance (82%).

Through the tests carried out, the procedure for elaboration the pure mixture was optimized, which is detailed below:

Pumpkin (P) and carrot (C) → Vegetable production from Santiago del Estero, Argentina.

Washing (potable water)

Desinfection (NaCLO solution 200 ppm-5 min)

Draining, peeling, cutting into 1 mm thick slices

Steaming → C for 20 min and P for 5 min

Mixing → 75:25 w/w P:C

Homogenization → 1.5 min and adding AA- 0.75%

Vaccum packing

Sous vide → 90°C for 9 min

CONCLUSION

The results obtained have been favorable, as the preparation process of the pumpkin and carrot mixed puree was optimized, with the cooking method, proportions of both vegetables sensorially acceptable and sous vide cooking. The formulation of this ready-to-eat food would be a great contribution both to the agroindustrial sector, through the added value of this local raw material, and to consumers seeking alternative practices for consuming nutritious foods.

FUTURE WORK / REFERENCES

This is the first stage of the process of optimized puree using sous vide technologies. These studies will continue to be further developed.