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Nutritious cracker fillings developed with lyophilized sheep-milk cheese and xanthan gum

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INTRODUCTION & AIM

- Filled crackers are classified as ready-to-eat snack products.
- They have extended shelf life, and functional versatility.
- These products enclose a savory cream between two cracker shells
- Consumers show strong demand for crackers with pronounced cheese flavor.
- Frequent cracker and cookie intake is viewed as unhealthy
- The objective of this study was to reformulate cheese cracker fillings in order to improve its nutritional quality while maintaining their sensory appeal.

METHOD

- Cottage cheese was produced using pasteurized sheep milk and *Streptococcus thermophilus* ST-MS as starter culture (Battaiotto & Dello Staffolo, 2020).
- The fresh cheese was freeze-dried using an FIC-L1-CRT equipment (Rificor, Argentina).
- Reformulation inputs:

Freeze-dried sheep milk cheese

Sunflower oil

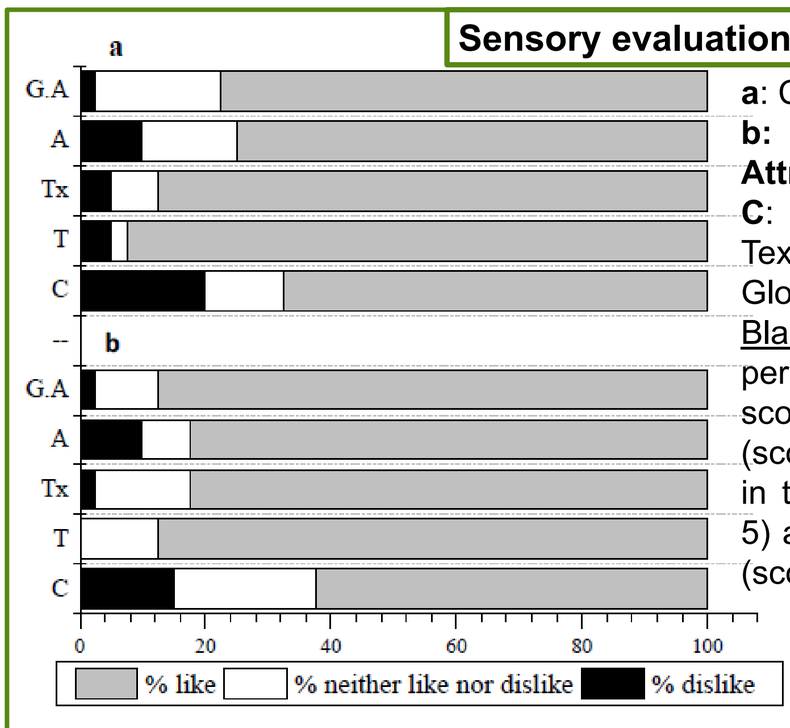
Xanthan gum

- Two formulations were developed with or without xanthan gum.
- Moisture content [AOAC 24.002] and water activity (a_w) [Aqualab, USA] were measured.
- Sensory analysis was performed using a 9-point structured hedonic scale (1 for “dislike extremely”, and 9 for “like extremely”).
  - The fillings were evaluated in sandwich conformations to simulate the usual consumption conditions.
  - Participants assessed color, texture, taste, overall acceptability, and purchase intent.
  - An untrained panel of 40 people aged between 24 to 67 years (men and women) were employed. They were regular consumers of filled crackers and were recruited in a survey before this test.

RESULTS & DISCUSSION

- These fillings formulations are nutritionally better to regular consumed because traditional fat is replaced with sheep-milk fat and high oleic sunflower oil.
- Besides, adding xanthan gum can help increase the daily intake of dietary fiber
- No significantly differences between the two formulations were detected in a_w (0.46 ± 0.03.) and moisture content (15.75 ± 0.27 kg water/100 kg d.m.) measurements.
- The a_w remained below 0.6, indicating suitable conditions for product preservation.

Sensory evaluation



a: Control filling
b: Filling with xanthan gum
Attributes evaluated:
C: Color; **T**: Taste; **Tx**: Texture; A: Appearance; **G.A**: Global Acceptance.
Black represents the percentage of responses with scores in the disliking zone (scores lower than 5), white in the neutral zone (score of 5) and grey in the liking zone (score higher than 5).

- No significant differences were found between both samples for any of the attributes that were evaluated (P>0.05) in the sensory acceptability test.
- This suggests that xanthan gum could be used in cheese fillings as a source of fiber, without modifying the sensory characteristics

CONCLUSION

The reformulation resulted in an improved nutritional composition of cheese cracker fillings, while maintaining desirable sensory attributes as perceived by consumers

FUTURE WORK / REFERENCES

Battaiotto, L. L., & Dello Staffolo, M. (2020). Drying kinetics, microstructure and texture of cheese cracker fillings. Food and Bioproducts Processing, 123, 199–208. https://doi.org/10.1016/j.fbp.2020.06.014