

Nitrate reducing starter culture and natural nitrate sources as a “clean label” alternative in meat products

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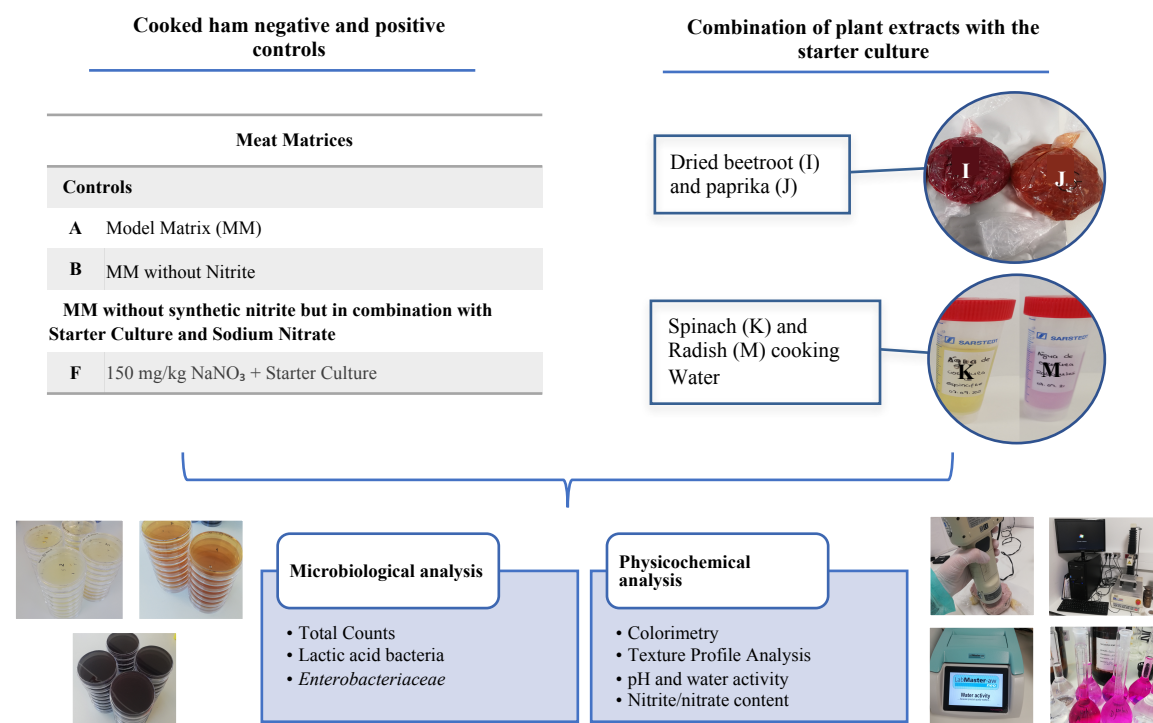


Introduction and Objectives

Clean label products have been introduced in the market with the goal of ensuring product safety having in sight the protection of the environment and public health. This study aimed to assess a clean label alternative to nitrite addition in cooked ham manufacturing by exploiting natural plant sources of nitrate as the substrate for a nitrate reductase-producing starter culture.

Methods

Cooked hams were prepared at a laboratory scale using minced pork leg and water, salt, sodium tripolyphosphate and carrageenan.



Results

All the produced hams had a characteristic odor. The main difference observed was the color:

- A typical reddish-pink color formation was observed in hams with the starter culture combined with fresh spinach (K) or radish (M) cooking water,
- When combined with beetroot (I) and paprika (J), the starter culture was unable to produce the desirable color

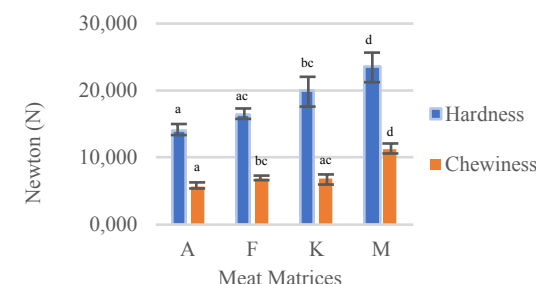
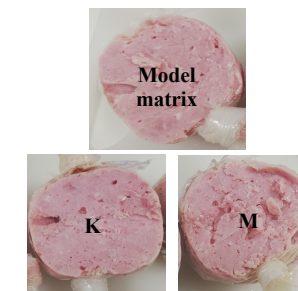


Figure 1. TPA parameters hardness and chewiness of cooked hams.

- Regarding texture, hams produced with spinach cooking water in combination with the starter culture (K) and the model matrix (A) were only similar for the chewiness parameters analyzed ($p=0.242$), being both products microbiologically stable during at least 10 days of storage at 4 °C.

Conclusion and Relevance

Although preliminary, these results highlight the feasibility of combining spinach cooking water and a nitrate reductase-producing starter culture as a promising clean label solution to the addition of chemical nitrite in cooked ham production.

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