Sensory quality of beef patties inoculated with strains of *Carnobacterium maltaromaticum* with potential as biopreservatives

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INTRODUCTION

Biopreservation is a natural tool used to extend the shelf life and to enhance the safety of foods by applying naturally occurring microorganisms and/or their inherent antimicrobial compounds.

*Carnobacterium maltaromaticum* is a lactic acid bacteria (LAB), and many LAB associated with meat are known for their bacteriostatic activity against other strains, species or genera of bacteria.

Nevertheless, undesired effects of *Carnobacterium* on food quality have been reported.

**AIM**

To perform a sensory evaluation of beef patties inoculated with potential biopreservative strains of *C. maltaromaticum* isolated from vacuum packaged beef with long shelf life.

MATERIALS AND METHODS

1. Isolation of three *C. maltaromaticum* strains

   - CM_824
   - CM_827
   - CM_829

2. Inoculation of commercial beef patties (1 % v/w) at two levels

   - 10<sup>4</sup> or 10<sup>6</sup>

   - CFU C. maltaromaticum/g meat

3. Storage of raw samples

   - predecessor: 5 days at 4 °C
   - successor: 5 days at 8 °C

4. Sensory analysis

   - Untrained panel (7 to 12 members)
   - Raw samples and cooked samples (after storage)
   - Five attributes (appearance, odor, color, tenderness, flavor and juiciness)
   - Scoring from 1 (= dislike) to 5 (= like)

RESULTS AND DISCUSSION

- Non-inoculated beef patties (blank) received lower scores than inoculated patties, but no statistical difference was observed with samples inoculated with *C. maltaromaticum* at 10<sup>6</sup> CFU/g.

- Samples inoculated with the strain CM_829 at 10<sup>6</sup> CFU/g received the worst scores for appearance, odor and flavor (P < 0.05).

- Samples inoculated with the strain CM_827 at 10<sup>6</sup> CFU/g received the highest scores for all attributes, but did not differ statistically from blank.

- Only appearance, color and odor were evaluated since samples were three days beyond commercial shelf life.

- A decrease in the sensory quality was observed during the last three days of storage.

CONCLUSIONS

This preliminary study permitted to evaluate the effect of three *C. maltaromaticum* strains on the sensory quality of beef patties. Strain CM_827 did practically not change the sensory attributes of beef patties.

Therefore, further research on the biopreservative capacity of *C. maltaromaticum* should be conducted with the strain CM_827.