***Thymus citriodorus* and *Salvia elegans* as natural nitrite source for cured meat sausage**

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RESUMEN

Nitrate and nitrite have important technological properties for meat processing. They are known as potential precursors of carcinogenic nitrosamines. Consequently, consumers are demanding meat products without synthetic additives. However, fulfilling all the desirable sensory characteristics of meat products could be difficult without this additive. This work aims to evaluate Thymus citriodorus and Salvia elegans as natural replacers of nitrate in cured meat sausage (CMS), combined with the addition of a S. equorum starter, through its impact on the product quality. Three batches of six CMS formulations were produced: C1- Control without nitrate nor starter; C2- Control with starter without nitrate; F1- 150 mg KNO3/kg; F2- 150 mg KNO3/kg with starter; F3- Sage10.6% infusion(w/w); F4- Sage10.6% infusion with starter; F5- Thyme10.6% infusion; F6- Thyme10.6% infusion with the starter. Lactic Acid Bacteria (LAB), Coagulase Negative Staphylococci (CNS), and Enterobacteriaceae were counted on the mixture, after the fermentation, at the middle of the curing process, on the final product, and after 60 days of storage at 5ºC. The products were also evaluated for Aw and pH. The color was measured using L\*a\*b\* color space with a Konica Minolta CR-400/410, illuminant D65. Chlorides, TBARS, residual nitrate, and nitrite were determined. Aw ranged from 0.94 to 0.93 on the final product and after storage. CMS presented pH values ranging from 5.7 to 5.8 on the final product and after storage. Regarding CMS color, no significant differences in L\* value were observed on the final product. After 60 days of storage, the F2 (51.16) and F6 (46.86) sausages differed significantly from the other formulations. All final sausages inoculated with S. equorum presented significantly higher a\* values, in particular, F2 (a\*=13.16) and F6 (a\*=13.19) sausages (p<0.05). The effects described were maintained until the 60th day of storage. Over time, F1 CMS formulated with nitrate decreased from 83.6 to 6.2 mg NaNO3/kg and F2 from 82.1 to 3.9 mg NaNO3/kg. All the other formulations presented residual nitrate contents below 9 mg NaNO3/kg. The residual nitrite was inferior to 1 mg NaNO2/kg in all products. Only the formulations with nitrate presented significantly (p<0.05) higher values of nitrite at the middle of curing (F2=1.6 mg NaNO2/kg) and final F1 and F2 products (1.7 mg NaNO2/kg). Staphylococci counts in CMS with the starter were above 7 log cfu/g at all analysis points. LAB counts presented an increase in the course of time, being higher than 7.4 log cfu/g at the end of shelf-life. Enterobacteriaceae counts were inferior to 4 log cfu/g on final products and less or equal to 2 log cfu/g at the end of shelf-life, indicating that the product was satisfactory. CMS produced with thyme and starter presented a reddish cured color and had lower residual nitrite. Results from this study show that formulation withThymus citriodorus infusion might be a good solution to reduce synthetic additives.

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Palabras Clave: meat products, alternatives, clean label, plant extracts, starter.