ASCORBATE AND ERYTHORBATE ACID INFLUENCE UPON COLOUR PROPERTIERS OF "LONGANIZA DE PASCUA"

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SUMMARY

"Longaniza de Pascua" is a traditional valencian dry-sausage. In this work, the influence of ascorbate and erythorbate upon colour and physico-chemical parameters (CIEL*a*b*, moisture, pH, residual nitrite level) was studied. The colour parameters were not affected by ascorbate and erythorbate. The ascorbate and erythorbate usefull (for the time under study) is supported by the lower residual nitrite level left in the product.

INTRODUCTION

The Valencian region (East of Spain) does not have a great tradition in livestock production, but it has a great diversity in meat products, especially in sausages. Traditionally, the sausages and other meat products are associated to slaughter in winter months, but there is an Easter sausage called "Longaniza de Pascua" that is consumed during Lent with Alberique "Pan Quemat". The traditional method use the cold and dry winds that are usual during this season. This sausage has several differences: its consum could be dried and semi-dried, its production takes place in butchers shops, it is stuffed into small intestine sheep case "cordeta", in its composition beef or veal meat should be included. The growth of external flora must be avoid. "Longaniza de Pascua" meat composition has been changed in the last years, this was caused by the different meat prices, nowadays this sausage is absolutely made with pork meat.

The aim of this work is the processing characterization of "Longaniza de Pascua" in a pilot plant and to study the influence of ascorbic and erythorbic acid upon colour evolution.

MATERIALS AND METHODS

The "Longaniza de Pascua" was prepared under commercial conditions in a pilot plant. One hundred sausages with the following composition were elaborated: 45% back fat, 52,49% pork lean, 2% salt, 0,01% nitrate, 0,2% dextrose, 0,2% black pepper, 0,05% anise. These "longanizas" were divided in three batches: with sodium ascorbate (500 ppm), with sodium erythorbate (500 ppm) and control (without antioxidant).

Both meat and fat were ground in a mincer (Cato 114) with a 6 mm hole plate, then mixed with the other ingredients. Lamb casing with diameter of 20-23 mm were filled and each one tied with 20 cm in length. Subsequently the sausages were stored at room temperature (14-17 °C) and relative humidity (64-73 %). The analysis was made with 3 sausages for each day (0, 1, 2, 3, 4, 5 and 6) and sample (ascorbate, erythorbate and control). Moisture, Residual Nitrite Level were mesured by ISO R-1442 and ISO/DIS 2918 standard method respectively and pH (Ministerio de Sanidad y Consumo,1985). The colour parameters under study were: CIE L*a*b* notation (1976)(observer 10º, D-65 illuminant) L* (lightness), a* (redness), b* (yellowness) and the follow reflectance ratios: R560/R500 (IN), R630/R580 (ITP), R650/R570 (ID). All of these parameters were evaluated by a Minolta CM1000 R Spectrophotometer. The statistical analysis 1R, 9D and 2V was made by BMDP ver. red. 9.0 program.

RESULTS AND DISCUSSION

Significative statistical differences were not found among three assays for lightness. This parameter decreased during the whole process. This could be due to the dry process (Pagan et al., 1992). Redness evolution during processing is represented in figure 1. The time is the only factor that affected a* ($P<0,01$). This could be due to nitrosation reaction that provided the characteristic dry-cured meat colour. Yellowness evolution (figure 2) was not affected by the use of ascorbate and erythorbate ($P<0,01$). But this parameter decreased with processing time. This behaviour could be due to the microbial metablolism upon fats (Pottahast 1987, Demeyer et al. 1986), and this is in agreement with other dry-cured meat products (Pagán et al. 1992, Gago et al. 1992, Tajahuerce et al. 1994). The colour tone evolution leads to greyish/weak colours as can be observed in figure 3. This is in acordance with the results obtained in "salchichón" (Gago et al. 1992). Reflectance ratio IN was affected by the process time ($P<0,01$). This parameter decreased to 4 days. In this time, it had the lowest value, this is due to the maximun rate of pigment nitrosation. Starting from this day the nitrousmyoglobin retrogression took place. Reflectance ratio ITP only showed significant statistical differences with process time. Differences in reflectance ratio ID were not found with treatment or time ($P<0,01$). Moisture evolution during process time was significant ($P<0,01$), this is due to the dry process. The pH followed a similar behaviour but, this parameter showed a slight decrease. This is due to the fact that sugars added to meat batter were not used by microorganism, and made this product as non fermented dry-sausage. Residual nitrite until the 4th day was not detected, starting from this day significant statistical differences ($P<0,05$) with time and treatment were found. The control samples had the highest residual nitrite level, and the lowest with erythorbate. The decrease of this parameter in samples with ascorbate and erythorbate is due to their strong reaction upon nitrosating agents (Bauernfeind, 1982)

CONCLUSIONS

The colour parameters of the "Longaniza de Pascua" process was not affected by ascorbate and erythorbate. The behaviour of these parameters were similar to fermented dry-sausages.

The usefull of ascorbate and erythorbate (for the time under study) is supported by the lower residual nitrite level left in the product.

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