

## Evaluation of sensory characteristics of cooked ham stored in active packaging with antioxidant compounds

Sol Zamuz, Roberto Bermudez, Paulo E.S. Munekata, Noemi Echegaray, Márcio Vargas-Ramella, Ruben Dominguez, Daniel Franco, Mirian Pateiro, Jose M. Lorenzo

Meat Technology Centre of Galicia, Ourense, Spain

**Introduction:** Oxidative process during food storage lead to deterioration of flavor, texture and color due to degradation of pigments, lipids and proteins (Zamuz et al., 2019). One of the main concerns of the meat industry is to preserve food to extend its shelf life whilst ensuring its safety and quality. The use of antioxidant is one of the major strategies to prevent the detrimental effects of oxidation (Lorenzo et al., 2017). Over the last years, there has been an increasing interest in natural antioxidant as the use of synthetic antioxidant is being restricted in different countries and, moreover, consumers prefer natural ingredients. In this regard, the incorporation of terpene natural antioxidants in polyethylene-based films has had the ability to reduce the meat oxidation (Gómez et al., 2018). The aim of this study was to evaluate the color, surface discoloration and odour attributes during the shelf life of cooked ham stored in trays with eugenol, thymol and carvacrol incorporated previously absorbed by an inorganic compound.

**Materials and methods:** Cooked ham was manufactured in the plant pilot of the Meat Technology Centre of Galicia (Spain) and finally they were stored in different active packaging: normal tray (batch 1; control), tray with 0.9% of eugenol absorbed by hydrotalcite (batch 2); 0.9% of thymol absorbed by hydrotalcite (batch 3); 0.9% of carvacrol absorbed by hydrotalcite (batch 4); 0.5% eugenol/thymol/carvacrol absorbed by 1% zinc oxide (batch 5); 1% eugenol/thymol/carvacrol absorbed by 1.5% hydrotalcite (batch 6); 1% eugenol/thymol/carvacrol absorbed by 2% zinc oxide (batch 7). These natural substances were applied on the surface of the tray. The samples were analyzed by ten trained panelist according to ISO regulations (ISO 8586:2012). An acceptance test using a 5-point hedonic scale structured (1 = excellent and 5 = not acceptable) was realized in order to determine how the panelist liked or disliked the cooked ham stored in the different active trays during their shelf life. Panelist were asked to evaluate color, surface discoloration and odour and sensory sessions were carried out at 0, 7, 14 and 23 days of storage. XLSTAT for Windows version 2018 (Addinsoft, Paris, France) was used to analyze data.

**Results:** The average acceptance value score for sensorial attributes given by the panelists showed that cooked ham stored in 1% eugenol/thymol/carvacrol absorbed by 1.5% hydrotalcite (batch 6) was the best acceptance obtained during the shelf life of the three sensorial attributes studied, with values of 2.5, 1.9 and 2.6 on the hedonic scale used for color, surface discoloration and odour, respectively. On day 14, cooked ham stored in 0.9% of carvacrol absorbed by hydrotalcite (batch 4) reached the limit of acceptance for the three attributes studied, while the control obtained the worst acceptance score with values of 4 ("hardly acceptable") at day 23. On the last day of the shelf-life study, the ANOVA results showed significant differences between the batches studied.

**Conclusions:** The modified trays in the study showed the ability to improve the color, surface discoloration and odour acceptance of the cooked ham samples.

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### Literature:

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