



LONG-SHELF-LIFE VACUUM-PACKED MEATS: COMPARATIVE ANALYSIS OF FRENCH VERSUS SOUTH-AMERICAN-FARMED MUSCLE TISSUE

PICGIRARD L.

Following on from a 2007 programme designed to study the behaviour of French-farmed entrecote steaks during extended chilling at -1.5°C and of the resulting vacuum-packed sale units, this investigation assessed the behaviour of French-farmed fillet of beef and South-American-farmed fillet of beef and entrecote steaks, under these same conservation conditions.

Origin (France or South America) appears to have little effect on in-storage changes in beef muscle features or the resulting sale-units.

Muscle type had a more visible effect. Entrecote muscle is more stable in terms of taste-texture properties (colour, taste) than beef fillets, despite having higher microbial population counts. Either way, a 90 to 120-day in-storage period for vacuum-packed muscle at -1.5°C is excessively long for meat designed to ship as sale units with a shelf-life of over 8 days.

Keywords: chilled, meat, vacuum, shelf-life

COLOUR INSTABILITY OF CASE-READY BEEF: EARLY COLOUR ALTERATION IN CASE-READY BEEF UNDER MODIFIED ATMOSPHERE PACKAGING

1: FINDING INDICATORS THAT FLAG EARLY-TURNING COLOUR IN BEEF

PARAFITA E.

There is an extensive body of research on meat colour, but none to date have focused on the swift colour change of case-ready beef under modified atmosphere packaging. This swift colour-change is especially prominent when the pre-maturation stage is allowed to occur while the meat is vacuum-packed.

A study conducted by the ADIV in 2009 with funding from the Interbev and FranceAgrimer provided key insight into the root causes and conditions governing the colour-change phenomenon. This paper reports on the results from the first phase of the study, which was designed to find indicators that flag early-turning colour in beef. The early conclusion is that the cause of the early colour change in case-ready beef is not microbiological but biochemical. The early colour changes in case-ready meats studied under this project were linked to oxidation of myoglobin driven and probably even induced by lipid peroxidation.

The ADIV has led a series of complementary completing this study in order to gauge the impact of technological parameters (muscle type, animal age, length and type of maturation, oxygen content, etc.) on the onset of the colour change, and to further elucidate the conditions triggering the phenomenon.

Keywords: colour, early alteration, biochemical markers, oxidation, microbiology

CHITOSAN: A NEW ANTIMICROBIAL AGENT FOR THE MEAT SECTOR?

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Chitosan is an organic polymer that has a number of possible uses for the food industry, especially in today's increasingly 'natural foods'-oriented consumer backdrop. It has undeniable potential for use in the meat industry as an antimicrobial—antioxidant agent, as its action can be delivered directly into the meat or through an edible,

biocontrolling packaging film. In this context, marinated meat could provide the optimal physico-chemical environment for demonstrating the effects of chitosan, especially its antimicrobial action.

Keywords: chitosan, biopreservation, marinated meat, antimicrobial

BLACKENING OF FOIE GRAS: ROOT CAUSES IDENTIFIED

LUCANA.

The industrial sector of "foie gras" production is facing problems of grey coloration on the surface of products made from fatty liver. The defect concerns the area directly in contact with the head-space-based of products, packed in jars and cans and pasteurized or sterilized. The objective of this research project is to determine the origin of the phenomenon.

Analysis were performed by ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectrometry), on livers with and without defect. The results were used to highlight the presence of simple elements in higher concentration on the surface of liver with defect : iron, zinc, copper, manganese, phosphorus, calcium, potassium and magnesium.

The analysis of the upstream and downstream factors that could explain the occurrence of a concentration difference between the core and the surface of the liver was achieved through a series of experimental protocols. The results obtained showed that the factors "products" could explain the presence of these simple elements : raw materials, additives and ingredients. Factors of production process could also generate concentration differences of simple elements between the surface of the liver and the core: disruption of the product ("block" of foie gras), degassing in retort, intensity of mechanical degassing and sterilization.

To date, it is unclear whether the concentration differences observed are related to the migration of elements from the core of the product to the surface, the intensity of melting, or a drying of the surface of the liver in contact with the head-space.

In addition, the grey coloration is probably not caused directly by these involved simple elements, but rather by a series of complex chemical reactions in which they play a role (eg as a catalyst in the Maillard reaction, as lipid oxidant, ...).

Keywords: foie gras, blackening

COOKING MEAT ON INDUSTRIAL SCALE: MECHANISMS AND CONSTRAINTS

PICGIRARD L.

The variety of meat products on the market and the increasingly elaborate production procedures involved mean that industry producers need full process control over the cooking technologies used. Industrial-scale cooked-meat producers have to work to and juggle between several constraints: impeccable food hygiene, optimized nutritional and taste-texture qualities, and economic performance.

While the mechanisms involved in cooking meats at low temperature (<100°C) are relatively well understood, not enough is known about cooking products at high temperature, such as with grilled and roasted meats, to guarantee perfect process control. Similarly, the microbiological models used to evidence the bactericidal effectiveness of heat treatments are equally incomplete.

Keywords: industrial cooking, meat, food hygiene, taste-texture properties

English

Summary