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Survey on pre-slaughter handling and skin damages on pig carcasses

Agnese Arduini[1], Vincenzo Pace[3], Veronica Redaelli[1], Fabio Luzi[2], Leonardo Nanni Costa[1]

[1]*Dipartimento di Scienze e Tecnologie Agro-alimentari, Alma Mater Studiorum-Università di Bologna, Italy*
[2]*Dipartimento di Scienze Veterinarie per la Salute, la Produzione Animale e la Sicurezza Alimentare, Università degli Studi di Milano, Italy*
[3]*Organizzazione di produttori allevatori di suini Mantova, Italy*
Corresponding author: leonardo.nannicosta@unibo.it

Various stages during pre-slaughter handling, such transportation, lairage, and stress immediately before slaughter can negatively affect animals welfare and quality of carcasses. Rough practices at loading and unloading and inappropriate driving style of trucks and pigs may lead to serious skin damages. They represent a relevant economic losses, especially if are located on the most valuable cuts such as hams, loins and shoulders. In order to study the relationship between pre-slaughter handling and skin damages, a survey was carried out from January to June 2014 at one abattoir located in the Lombardia region. Data were collected from 1680 heavy pigs delivered from one farm to the slaughterhouse in 12 batches, each containing 140 subjects. Double trailer lorries with three hydraulic deck were used. At unloading of each deck, vocalizations, slips, falls, overlapping, balking and reversal were recorded. Resting duration and time requested to drive pigs to the stunning cage were measured. During this latter procedure, the same behavioural occurrences considered at the unloading were also recorded. Before evisceration, skin damages on regions of ham, loin, shoulder and head of each carcass were assessed by one trained inspector assigning for each region a score from 1 (absent) to 5 (serious). Score's averages were found higher on carcasses of pigs transported into the trailer with respect to those transported into the lorry. Scores were affected by deck of the lorry, the upper showing the higher score. Behavioural occurrences, resting time and driving showed weak relationships with the damage scores. Probably, the handling carried out by the staff of slaughterhouse could be responsible of this result. This research highlights that some stages before and during transport could be more involved in skin damages than handling at the slaughterhouse. However, additional research is necessary to understand the role of pre-slaughter handling on the presence of skin damages on pig carcasses.

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An investigation of the shelf-life of PDO *Vastedda della Valle del Belice* cheese subjected to different packaging systems alternative to vacuum

Marisa Palmeri[1], Cinzia Cardamone[2], Massimo Todaro[1], Luca Settanni[1], Raimondo Gaglio[1], Isabella Mancuso[2], Maria Luisa Scatassa[2], Onofrio Corona[1]

[1]*Dipartimento di Scienze Agrarie e Forestali, Università degli Studi di Palermo, Italy*
[2]*Istituto Zooprofilattico Sperimentale della Sicilia "A. Mirri"*
Corresponding author: marisa.palmeri@unipa.it

The aim of this study was to evaluate the effect of different packaging systems alternatives to vacuum that is commonly applied for PDO *Vastedda della Valle del Belice* (VdB) cheese, a tipical pasta filata cheese, made with raw ewes' milk. After production following the traditional cheesemaking protocol, VdB cheeses were packaged as follows: vacuum, paraffin wax and two different Modified Atmosphere Packaging (MAP) consisting of a gas mixture of 70% CO2-30% N2 (MAP1) and 100% N2 (MAP2). Cheeses were stored at 4°C and analyzed (25 g) at time 0 and after 15, 30, 60, 90, 120 and 180 days. All the samples were subjected to microbiological analyses for the evaluation of total mesophilic aerobic bacteria, Enterobacteriaceae, total coliform, *Escherichia coli*, enterococci, lactic acid bacteria, positive coagulase staphylococci, sulphite reducing anaerobes, *Pseudomonas* spp., *Listeria monocytogenes* and *Salmonella* spp. Moreover, the physicochemical parameters such as pH, water activity, dry matter, fat, protein, salt, total solids, total and soluble nitrogen and ash content were also determined. Chemical, physical and microbiological data were analyzed by a two factors ANOVA model (GLM procedure of SAS) which included the effect of packaging and time of storage. The results did not show significant differences among chemical and physical parameters of the cheeses subjected to the different packaging during storage. No pathogens and spoilage microbial species/group were detected in any of the samples examined. Lactic acid bacteria reached the highest levels for all samples. Total microbial counts detected for paraffin packaged cheeses were higher than those of the other cheeses, regardless the storage time. This observation was probably due to the higher percentage of oxygen allowed by paraffin respect to the other packaging strategies. For this reason, paraffin was excluded as a possible tool for long term storage of VdB cheese. It was also observed an increase of the total microbial load in all packaging systems after 60 days of storage. Sensory analyses are still ongoing.

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