



EVALUATION OF THE QUALITY AND SHELF-LIFE OF VACUUM PACKAGED WILD BOAR MEAT (M. LONGISSIMUS DORSI)

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Aim. The aim of this study was to evaluate the shelf-life of wild boar (*Sus scrofa scrofa*) meat obtained from selectively culled animals, vacuum-packaged, and stored under refrigerated conditions.

Methods. Samples were collected from 29 wild boars (11 F and 18 M; 45–80 kg; 1–4 years) harvested in the province of Salerno (Southern Italy) as part of selective culling programmes. Carcasses were transported to a game-handling facility within 3–5 h after shooting and processed through scalding (62 °C for 5–6 min), mechanical dehairing, washing, singeing, bleeding, evisceration, and refrigeration. After 3–4 days at 4 °C, *Longissimus dorsi* muscles of each animal were collected and portioned into 8 samples of ~ 150 g, vacuum-packaged, and stored at 4 °C and 60% relative humidity. Analyses were performed at day 0 and after 2, 4, 6, 8, 10, 13, and 20 days of refrigerated storage. The investigation included the detection of *L. monocytogenes*, *Salmonella* spp., *Y. enterocolitica*, and *Cl. perfringens*, identified by MALDI-TOF MS, as well as the enumeration of total aerobic mesophilic (TAM) and psychrotrophic bacteria, *Enterobacteriaceae* (EC), *E. coli*, coagulase-positive staphylococci, *Pseudomonas* spp., *Br. thermosphacta*, lactic acid bacteria (LAB), yeasts, and moulds, using the respective ISO standard methods. Chemical analyses included determination of pH and a_w , while colour changes were assessed using the CIELAB system (L^* , a^* , and b^* coordinates).

Results. TAM counts increased from 4.22 ± 0.64 to 6.48 ± 0.53 log CFU/g, while psychrotrophic bacteria increased from 4.44 ± 0.78 to 7.43 ± 0.61 log CFU/g during storage. LAB showed very low initial levels (0.35 log CFU/g) but increased progressively (4.56 log CFU/g at day 20). EC increased from 2.07 to 3.35 log CFU/g, whereas *E. coli* re-

mained at low levels (from 0.36 ± 0.73 to 0.57 ± 0.67 log CFU/g). *Cl. perfringens* remained below the detection limit (<1 log CFU/g) throughout the storage period. Coagulase-positive staphylococci increased from <1 to 5.74 ± 0.80 log CFU/g. Moulds presented initial values of 3.84 ± 0.73 log CFU/g and reached 5.93 ± 0.62 log CFU/g at day 20, whereas yeasts increased from 1.39 ± 1.68 log CFU/g at day 0 to 2.56 ± 2.34 log CFU/g at day 20.

Salmonella spp. was detected in one out of the 29 tested animals (1/29), whereas *L. monocytogenes* and *Y. enterocolitica* showed a high prevalence (10/29, 34.48% and 13/29, 44.83% respectively). In positive animals, the pathogens were detected across all 8 samples throughout the entire shelf-life period.

Pseudomonas spp. and *B. thermosphacta*, exceeded 6 log CFU/g between days 8 and 10, concomitantly with a marked increase in values and the onset of visible colour variation. The initial pH value was 5.57, and remained stable throughout storage. The water activity value remained at ~ 0.98 throughout the entire storage period.

Conclusions. In the present study, microbial loads commonly associated with meat spoilage remained within the critical limits reported in the literature up to day 20 of storage. Integrating chemical and sensory assessments remains essential for a comprehensive validation of shelf-life.

This study provides critical baseline data on the microbial dynamics of vacuum-packaged wild game, highlighting the urgent need for optimized hygiene protocols along the processing chain to mitigate pathogen prevalence. Further studies on physicochemical and sensory parameters are necessary and comparative evaluations of alternative packaging technologies to maximize wild boar meat quality and safety.