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BOOK OF ABSTRACTS

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and

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CONTENT

ORGANISING COMMITTEE..... iii

INTERNATIONAL SCIENTIFIC COMMITTEE..... iv

PREFACE vii

PLENARY LECTURES 1

64: BAYESIAN MODELLING IN QMRA: SEPARATED BUT TOGETHER, THE GAINS AND THE PAINS 1

124: ESTIMATING PARAMETERS FROM DYNAMIC DATA: ADVANTAGES AND CHALLENGES 2

42: BIG DATA IN FOOD SAFETY: OPPORTUNITIES AND CONSTRAINTS 3

132: INTEGRATING NEXT GENERATION SEQUENCING INTO MICROBIAL RISK ASSESSMENTS..... 4

119: CHALLENGES AND OPPORTUNITIES IN QUANTITATIVE MICROBIAL RISK ASSESSMENTS FOR VIRUSES..... 4

ORAL PRESENTATIONS 6

Oral Session 1: Advances in Predictive Microbiology Modelling 6

10: ONE-STEP DYNAMIC INVERSE ANALYSIS AND PREDICTIVE MODELLING FOR MICROBIAL FOOD SAFETY: THE BAYESIAN WAY 6

25: DESCRIBING UNCERTAINTY IN PREDICTED THERMAL INACTIVATION OF *SALMONELLA* USING BAYESIAN STATISTICAL MODELLING 7

55: GUIDELINES FOR (OPTIMAL) EXPERIMENTAL DESIGN OF MICROBIAL INACTIVATION EXPERIMENTS..... 8

51: MODELLING THE EFFECTS OF pH ON GROWTH OF BACTERIA, YEASTS AND MOULDS: TOWARDS A UNIFIED APPROACH 9

8: CARDINAL PARAMETER MODEL CONTAINING A NEW NISIN TERM TO PREDICT GROWTH OF *LISTERIA MONOCYTOGENES* IN PROCESSED CHEESE..... 10

Oral Session 2: Predictive Modelling in Innovative Food Processing and Preservation Technologies 11

29: A SYSTEMATIC MULTISCALE COMPARATIVE STUDY OF THE COMBINED ANTIMICROBIAL EFFECTS OF COLD-ATMOSPHERIC PLASMA (CAP) AND NISIN AGAINST *ESCHERICHIA COLI* PLANKTONIC CELLS AND BIOFILMS..... 11

75: EFFECT OF YOGHURT STARTER CULTURE AND NICKEL OXIDE NANOPARTICLES ON THE ACTIVITY OF ENTEROTOXIGENIC <i>STAPHYLOCOCCUS AUREUS</i> IN DOMIATI CHEESE	93
83: EXTENSION OF THE MICROBIOLOGICAL SHELF-LIFE OF REFRIGERATED VACUUM-PACKED TUSCAN SAUSAGE TREATED WITH ANTIMICROBIAL OREGANO (<i>ORIGANUM VULGARE</i>) AND ROSEMARY (<i>ROSMARINUS OFFICINALIS</i>) ESSENTIAL OILS.....	94
122: EFFECT OF PHYSICOCHEMICAL CHARACTERISTICS OF LAMB MEAT ON ITS MICROBIOLOGICAL DETERIORATION.....	95
123: MICROBIAL CONTAMINATION OF LAMB CARCASSES AND MEAT FROM AUTOCHTHONOUS PORTUGUESE BREEDS.....	96
126: CHARACTERISING THE FATE OF <i>LISTERIA MONOCYTOGENES</i> IN ARTISANAL MINAS SEMI-HARD CHEESE DURING RIPENING.....	97
130: PARTIAL SUBSTITUTION OF WHEAT FLOUR WITH MESQUITE FLOUR FOR TEXTURAL QUALITY AND SHELF LIFE IMPROVEMENT OF THE TRADITIONAL BRAGANÇA BREAD	98
131: EVOLUTION OF LAMB MEAT QUALITY TRAITS UNDER PROLONGED VACUUM STORAGE.....	99
145: INVESTIGATION OF LAMB AS A SOURCE OF SHIGATOXIN-PRODUCING <i>ESCHERICHIA COLI</i> IN PORTUGAL	100
147: PREVALENCE AND GENOTYPE IDENTIFICATION OF <i>SALMONELLA</i> spp. ISOLATED FROM A MEAT PRODUCT ARTISANALLY PRODUCED IN BRAGANÇA	101
148: OPTIMISATION OF CMC, XANTHAN AND GUAR GUMS AS GLUTEN REPLACERS FOR THE ELABORATION OF QUINOA-BASED BREAD	102
Poster Session 3: Advances in Software and Databases Tools; and Advances in Risk Assessment Methods and Integration of Omics Techniques.....	103
23: FSK2R: A NEW R LIBRARY TO SUPPORT FOOD SAFETY KNOWLEDGE MARKUP LANGUAGE (FSK-ML)	103
43: THE ONE HEALTH SURVEILLANCE CODEX – A HIGH-LEVEL FRAMEWORK TO FACILITATE EFFICIENT INFORMATION EXCHANGE ACROSS ONE HEALTH SECTORS.....	104
65: DEVELOPMENT AND IMPLEMENTATION OF POLYNOMIAL AND GAMMA MODELS FOR <i>LISTERIA</i> GROWTH IN ROAST BEEF IN THE NEW LISTWARE TOOL	105
67: ENABLING EFFICIENT FOOD SAFETY KNOWLEDGE EXCHANGE WITH THE OPEN SOURCE SOFTWARE FSK-LAB	106
68: RISK ASSESSMENT MODELLING AND KNOWLEDGE INTEGRATION PLATFORM (RAKIP)	107

122: EFFECT OF PHYSICOCHEMICAL CHARACTERISTICS OF LAMB MEAT ON ITS MICROBIOLOGICAL DETERIORATION

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Introduction: A common strategy to improve the tenderness of lamb meat of autochthonous Portuguese breeds is to mature vacuum-packed (VP) meat for ~7 days. Nonetheless, the extent to which microbial spoilage is delayed by VP depends upon the meat intrinsic properties. The objective of this study was to appraise how the growth rate of deteriorating bacteria in VP lamb meat is affected by the initial microbial load and physicochemical characteristics.

Methodology: Fifteen four-month old animals from Bordaleira-de-Entre-Douro-e-Minho (BEDM) and 15 from Churra-Galega-Bragançana (CGB) breeds were slaughtered at the same abattoir (day zero), and after 24-hour chilling, *L. dorsi* sections were vacuum-packed for microbiological analysis of mesophiles [MES], psychrotrophic [PSY], lactic acid bacteria [LAB] and *Pseudomonas* spp. [PSE] on days 3, 9 and 15. Proximate composition (db), pH and water activity of meat were determined on day 1. For each bacterium, mixed models were adjusted to assess the effects of breed and maturation in separate interaction with every intrinsic property.

Results: A high meat pH (F value=0.72 for MES, F=0.97 for LAB, F=1.17 for PSE and F=0.13 for PSY) was not as determinant of higher initial microbial counts as it was of faster microbial growth (F=84.2 for MES, F=28.6 for LAB, F=20.3 for PSE and F=65.2 for PSY). Fat content (F=13.6 for MES, F=4.43 for LAB, F=2.95 for PSE and F=10.3 for PSY) also affected microbial growth rates, yet not as much as A_w (F=82.3 for MES, F=28.1 for LAB, F=20.4 for PSE and F=63.6 for PSY) and protein content (F=80.6 for MES, F=29.4 for LAB, F=20.8 for PSE and F=63.3 for PSY). Although BEDM lamb meat presented higher initial counts ($p<0.05$) than CGB meat in all bacterial groups, the effect of breed on spoilage indicator counts (F=8.3 for MES, F=14.8 for LAB, F=6.34 for PSE and F=9.90 for PSY) was not as strong as the effect of meat intrinsic properties.

Conclusion and Relevance: To extend current shelf-life of VP Portuguese lamb meat, it is key to implement practices that ensure a fast drop of carcass pH at slaughter, and to investigate the factors causing the higher spoilage bacteria counts associated with the BEDM breed.

Keywords: Lactic acid bacteria; psychrotrophic; *Pseudomonas*; spoilage; pH