Identification of staphylococci and dominant lactic acid bacteria in spontaneously fermented Swiss meat products using PCR–RFLP: a simple, fast, and accurate identification tool for meat population.

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Highlights

► The curing agents nitrate and nitrite affect the characteristics of fermented meat. ► Microorganisms are crucial for formation of reactive intermediate compounds (RNI). ► Starter cultures with nitrate reductase activity control the fermentation process. ► They also reduce microbiological risks and those of N-nitroso compounds formation. ► Evidence increases that dietary nitrate exerts beneficial effects on human health.

Identification of staphylococci and dominant lactic acid bacteria in spontaneously fermented Swiss meat products using PCR–RFLP: a simple, fast, and accurate identification tool for meat population.

Discrimination of staphylococci on pcoB and insight in LAB ecosystem on 16S rRNA. ► Major role of S. equorum throughout the production process and in end products. ► High pathogenic and spoilage bacteria in spontaneously fermented sausages.
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<td>Species diversity and metabolic impact of the microbiota are low in spontaneously acidified Belgian sausages with an added starter culture of <em>Staphylococcus carnosus</em></td>
<td>M. Janssens, N. Myter, L. De Vuyst, F. Leroy</td>
<td>167-177</td>
<td>► Lactobacillus sakei spontaneously dominates microbiota of Belgian fermented meats without added lactic acid bacteria. ► The raw materials display a large bacterial species diversity. ► Staphylococcal species diversity is annihilated during fermentation by the added <em>Staphylococcus carnosus</em> culture. ► Spontaneous acidification is no guarantee for bacterial contribution to aroma when <em>S. carnosus</em> is added as starter culture.</td>
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<td>Catalase-positive cocci in fermented sausage: Variability due to different pork breeds, breeding systems and sausage production technology</td>
<td>Lucilla Iacumin, Marisa Manzano, Giuseppe Comi</td>
<td>178-186</td>
<td>► Influence of breed of pork meat used for fermented sausages on CNCPC was evaluated. ► An industrial plant vs. artisanal plant was tested. ► PCR-DGGE from the colony collected in bulk from count plates was performed. ► Statistical analysis was done using Pearson and Cosine analysis with UPGMA. ► A plant-specific CNCPC ecology was found.</td>
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<td>Fingerprint of lactic acid bacteria population in beef carpaccio is influenced by storage process and seasonal changes</td>
<td>Isabelle Lucquin, Monique Zagorec, Marie Champomier-Vergès, Stéphane Chaillou</td>
<td>187-196</td>
<td>► We examined the lactic acid bacteria population of beef carpaccio. ► A large sampling strategy was used to compare different processes and producers. ► We report a storage-dependent differential growth of <em>Leuconostoc</em> and <em>Lactobacillus</em>. ► The nature of lactic acid bacteria population is influenced by seasonal sampling.</td>
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<td>Intraspecies diversity of <em>Lactobacillus sakei</em> response to oxidative stress and variability of strain performance in mixed strains challenges</td>
<td>Morgan Guilbaud, Monique Zagorec, Stéphane Chaillou, Marie-Christine Champomier-Vergès</td>
<td>197-204</td>
<td>► Intraspecies diversity of <em>Lactobacillus sakei</em> response to oxidative stress. ► Resistance to various oxidative stresses is extremely variable between strains. ► Resistance of strains partially correlates with their genomic cluster. ► In co-cultures, strains may act as helper or burden depending on oxidative conditions.</td>
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<td>Comparison of different IlvE aminotransferases in <em>Lactobacillus sakei</em> and investigation of their contribution to aroma formation from branched chain amino acids</td>
<td>Simone Freiding, Matthias A. Ehrmann, Rudi F. Vogel</td>
<td>205-214</td>
<td>► <em>Lactobacillus sakei</em> is a key bacterium in sausage fermentation. ► Branched chain amino acid transferases (IlvE/BcaT) initiate volatile formation. ► IlvE of <em>S. carnosus</em>, <em>L. paracasei</em> and <em>E. faecalis</em> were expressed in <em>L. sakei</em>. ► IlvE increased amino acid conversion but not volatile formation. ► ArcT and AspD purified enzymes did not exhibit transaminase activities.</td>
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<td>Metabolism of amino acids, dipeptides and tetrapeptides by <em>Lactobacillus sakei</em></td>
<td>Quirin Sinz, Wiltfried Schwab</td>
<td>215-223</td>
<td>► <em>Lactobacillus sakei</em> is a key bacterium in sausage fermentation. ► Branched chain amino acid transferases (IlvE/BcaT) initiate volatile formation. ► IlvE of <em>S. carnosus</em>, <em>L. paracasei</em> and <em>E. faecalis</em> were expressed in <em>L. sakei</em>. ► IlvE increased amino acid conversion but not volatile formation. ► ArcT and AspD purified enzymes did not exhibit transaminase activities.</td>
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11 Production of volatile compounds by Lactobacillus sakei from branched chain α-keto acids

K. Amelie Gutsche, Thi Bich Thao Tran, Rudi F. Vogel

Highlights
► Conversion of branched chain amino acids was investigated in Lactobacillus sakei. ► L. sakei preferentially produced oxidized compounds over aldehydes and alcohols. ► Addition of α-keto acids increased formation of carboxylic acids up to 20 fold.

12 Prevention of Aspergillus ochraceus growth on and Ochratoxin a contamination of sausages using ozonated air

Lucilla Iacumin, Marisa Manzano, Giuseppe Comi

Highlights
► Gaseous ozone as a treatment to prevent A. ochraceus growth on sausage casings. ► Ozone at ~1 ppm for 8 h/day from day 0 to day 30 of ripening was effective. ► Treatment was performed at night for safety reasons. ► No A. ochraceus and Ochratoxin A were found in the treated sausages.

13 The biosynthesis of ochratoxin A by Penicillium as one mechanism for adaptation to NaCl rich foods

Markus Schmidt-Heydt, Eva Graf, Dominic Stoll, Rolf Geisen

Highlights
► Ochratoxin A producing Penicillia are adapted to high NaCl containing environments. ► Ochratoxin A biosynthesis by Penicillium is dependent on the concentration of NaCl. ► Growth rate of ochratoxin A producing strains is nearly not affected by NaCl. ► Ochratoxin A biosynthesis leads to partial chloride homeostasis.

14 Traditional ‘air-dried’ fermented sausages from Central Germany

Friedrich-Karl Lücke, Ingo Vogeley

Highlights
► Traditional dry sausages can be made from warm, pre-rigor pork with low input. ► These sausages are generally neither smoked nor ripened by moulds. ► A prolonged ageing time at low temperature is essential for safety. ► A flexible interpretation of hygienic principles in current EU legislation is important.

15 Effect of brine thawing/salting on endogenous enzyme activity and sensory quality of Iberian dry-cured ham

M. Flores, M.C. Aristoy, T. Antequera, J.M. Barat, F. Toldrà

Highlights
► Accelerated salting process for frozen dry-cured hams. ► Combined brine thawing and salting of hams in just one stage. ► Sensory quality of hams unaffected by brine thawing and salting.

16 The effects of different levels of orange fiber and fat on microbiological, physical, chemical and sensorial properties of sucuk

Barış Yalınkılıç, Güzin Kaban, Mükresem Kaya

Highlights
► Lactobacillus sakei were fermented with amino acids, di- and tetrapeptides. ► Dipptides disappeared quickly whereas tetrapeptides were only partially degraded. ► Amino acids were hardly metabolized by the resting cells. ► However, free amino acids produced the highest amounts of volatiles. ► The metabolic impact of the L. sakei strains on the formation of volatiles was low.
The use of orange fiber in dry-fermented sausage may affect bacterial growth. Addition of orange fiber reduces pH value and residual nitrite level. Use of orange fiber at 2% level has no negative impact on sensory properties.