Volatile organic compounds and Photobacterium phosphoreum associated with spoilage of modified-atmosphere-packaged raw pork - DTU Orbit (09/01/2019)

Accumulation of volatile organic compounds was monitored in association with sensory quality, bacterial concentrations and culture-independent microbial community analyses in raw pork loin and pork collar during storage under high-oxygen modified atmosphere at +4°C. Of the 48 volatile compounds detected in the pork samples, the levels of acetoin, diacetyl and 3-methyl-1-butanol had the highest correlations with the sensory scores and bacterial concentrations. These compounds accumulated in all of the four monitored lots of non-sterile pork but not in the sterilized pork during chilled storage. According to the culture-dependent and culture-independent characterization of bacterial communities, Brochothrix thermosphacta, lactic acid bacteria (Carnobacterium, Lactobacillus, Lactococcus, Leuconostoc, Weissella) and Photobacterium spp. predominated in pork samples. Photobacterium spp., typically not associated with spoilage of meat, were detected also in 8 of the 11 retail packages of pork investigated subsequently. Eleven isolates from the pork samples were shown to belong to Photobacterium phosphoreum by phenotypic tests and sequencing of the 16S rRNA and gyrB gene fragments. Off-odors in pork samples with high proportion of Photobacterium spp. were associated with accumulation of acetoin, diacetyl and 3-methyl-1-butanol in meat, but these compounds did not explain all the off-odors reported in sensory analyses.

General information
State: Published
Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, University of Helsinki
Contributors: Nieminen, T. T., Dalgaard, P., Björkroth, J.
Number of pages: 10
Pages: 86-95
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: International Journal of Food Microbiology
Volume: 218
ISSN (Print): 0168-1605
Ratings:
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.76 SJR 1.366 SNIP 1.436
Web of Science (2017): Impact factor 3.451
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.97 SJR 1.481 SNIP 1.553
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 4.02 SJR 1.614 SNIP 1.683
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 3.62 SJR 1.493 SNIP 1.695
Web of Science (2014): Impact factor 3.082
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.8 SJR 1.612 SNIP 1.841
Web of Science (2013): Impact factor 3.155
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.7 SJR 1.603 SNIP 1.705
Web of Science (2012): Impact factor 3.425
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 3.63 SJR 1.607 SNIP 1.713
Web of Science (2011): Impact factor 3.327
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.61 SNIP 1.666
Web of Science (2010): Impact factor 3.143
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.475 SNIP 1.539
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.442 SNIP 1.509
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.349 SNIP 1.692
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.541 SNIP 1.788
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.511 SNIP 1.834
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.502 SNIP 1.638
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.233 SNIP 1.612
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.226 SNIP 1.289
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.031 SNIP 1.506
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.043 SNIP 1.306
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 1.071 SNIP 1.2
Original language: English
Keywords: GC–MS, Lactic acid bacteria, MAP, Meat, Shelf-life
DOIs:
10.1016/j.ijfoodmicro.2015.11.003
Source: FindIt
Source-ID: 2287931490
Research output: Research - peer-review ; Journal article – Annual report year: 2016