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Czech J. Food Sci.

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**Volatile organic
compounds as
biomarkers of the
freshness of poultry
meat packaged in a
modified atmosphere**

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The volatile organic compounds (VOCs) in the packing of chicken meat in a modified atmosphere was qualitatively and quantitatively evaluated. The total number of 72 samples of chicken hindquarters were stored under two different modified atmospheres (70% O₂, 30% CO₂, and 70% argon, 30% CO₂) for 20 days. Analyses were performed on Days 0, 4, 8, 12, 16, and 20. VOCs in the headspace samples were detected and quantified by gas chromatography/mass spectrometry (GC/MS) every fourth day of storage. Pentamethylheptane,

dimethylsulphide, dimethyl disulphide, dimethyl trisulphide, dimethyl tetrasulphide, hydrogen sulphide and ammonia were detected.

Pentamethylheptane and ammonia had similar values for both modified atmospheres (MA). The other compounds were found only in argon MA from the Day 16 of storage with a subsequent increase of values. The measured values for dimethylsulphide were 10.7 and 13.8 mg/l, for dimethyl disulphide they were 1.9 and 10.7 mg/l, dimethyl trisulphide levels were 15.7 and 19.3 mg/l and dimethyl tetrasulphide levels were 93.2 and 418.3 mg/l for Day 16 and 20. The hydrogen sulphide level was detected from 80 to 370 mg/l after the 8th day of storage. We showed that the argon MA is less suitable for packaging raw chicken parts than the oxygen MA in view of the increased amount of microflora and unpleasant odour as assessed by sensory analysis. Oxygen prolonged the shelf life by about four days in comparison with argon. Sensory evaluation was similar for both atmospheres after air exhaustion. The argon MA did not extend the shelf life as

Keywords:

VOCs; gas chromatography/mass spectrometry; argon atmosphere

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