



Brominated flame retardants in broiler chickens

Adeline Huneau-Salaün, Angélique Travel, Ronan Cariou, Loïc Balaine, Christophe Souchet, J. Coton, Anais Venisseau, R. Thomas, P. Marchand, G. Dervilly-Pinel, et al.

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Book of Abstracts

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Symposium on the
Quality of Eggs and
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XXIIIth European
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MEAT_II_SO_5

BIOCIDE AND ANTIBIOTIC SUSCEPTIBILITY OF *E. COLI* ISOLATES FROM BROILER HOUSES AFTER CLEANING AND DISINFECTION

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Farm disinfectants are widely used in primary production, but there is an increasing concern that the use of biocides is selecting for antibiotic resistance. To monitor antimicrobial susceptibility, *Escherichia coli* was isolated from environmental samples taken after cleaning and disinfection at 25 broiler houses. Two hundred isolates were subjected to a panel of 13 antibiotics and for each isolate the MIC (Minimum Inhibitory Concentration) was determined via broth dilution. For a selection of 57 isolates, biocide susceptibility testing was performed by determining the MBC (Minimal Bactericidal Concentration) of three frequently used disinfectants. Results showed high levels of resistance to ampicillin (77%), ciprofloxacin (60%), tetracycline (52%), sulfamethoxazole (61%), trimethoprim (56%) and nalidixic acid (46%). About 59% of the isolates were resistant to four or more antimicrobial agents, and only 14% were susceptible to all 13 antibiotics tested. The MBC of benzalkoniumchloride, formaldehyde and glutaraldehyde were 0.027 g/L (n=55), 0.093 mL/L (n=57) and 1.25 - 2.50 mL/L (n=56), respectively. No trend was observed between the susceptibility of the isolates and the respective in practice applied disinfectants.

Keywords: antibiotic resistance, biocide susceptibility, *E. coli*, broilers, disinfection

MEAT_II_SO_6

BROMINATED FLAME RETARDANTS IN BROILER CHICKENS

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Brominated Flame Retardants (BFRs) are synthetic substances primarily used as additive in insulating materials. These lipophilic compounds can bioaccumulate in animal tissues, leading to human exposure *via* food ingestion, and are suspected to act as endocrine disruptors. In 2015, an epidemiological study was carried out in 57 French broiler farms to quantify two families of BFRs (hexabromocyclododecane, HBCDD and polybrominated diphenyl ethers, PBDEs) in broiler breast muscle. One week before slaughter, five animals were euthanized; breast muscles were sampled and

pooled for further analysis. Eight PBDE congeners and 3 HBCDD stereoisomers were quantified in muscles using respectively gas chromatography coupled to high resolution mass spectrometry (GC-HRMS) and liquid chromatography coupled to tandem mass spectrometry (LC-MS/MS). Analysis revealed no PBDE congener in 16 samples (28 %) and no HBCDD stereoisomer in 31 samples (54%). The overall concentration of the 8 PBDE congeners and HBCDD stereoisomers exceeded 1 ng/g of fat in 17 samples (30%) and in 3 samples respectively. The results were similar to those obtained in the French surveillance studies since 2012, confirming that chicken meat produced in France contributes little to human dietary exposure to BFRs.

Keywords: broiler chicken, brominated flame retardant, persistent organic pollutant, chemical food safety

MEAT_II_SO_7

WEIGHT AND MEAT QUALITY AS WELL AS SENSORY ATTRIBUTES OF DUAL-PURPOSE CHICKEN AND COMMERCIAL BROILER

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In Germany, laying-hen production kills over 40 million male chicks per year. The ethical issues associated with this practice have triggered increasing research into alternatives, one of these is breeding dual-purpose chickens. This study analyses differences between commercial broilers (Ross, N=30) and dual-purpose chickens (LD, N=30). Both lines were raised under same conditions and feeding with a commercial diet for 42 d (Ross) and 77 d (LD). The results shows significant ($P<0.05$) differences between the lines in all weight parameters, whereas Ross are bigger, and in most of quality parameters. 24 h after slaughter the pH-values are higher in breast meat (*MPS*) of Ross (5.83 vs. 5.69), and electrical conductivity (EC) is lower (4.47 vs. 7.43). *MPS* of LD shows higher drip loss and shear force values, and the *MPS* are darker (L^*) and more red (a^*). Sensory analysis (trained expert panel) of cooked *MPS* on the appearance, odor, flavor, and texture depicts that LD meat is "sourer", "tougher", "juicer" and has an increased off-odor ("stall smell") compared to Ross meat. In addition, Ross meat is "sweeter". The lower pH-values of LD meat are reflected in the "sour" taste. Low pH can be problematic for meat industry when manufacturing meat products. The attribute "tougher" for LD meat correlates with the higher shear force values. For consumers, chicken meat is associated with tenderness; therefore the "tougher" LD meat maybe disfavored, but concerning of animal welfare, a higher use of this kind of chicken is desirable.

Keywords: dual-purpose chicken, weight, meat quality, sensory