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THE XXV WORLD'S POULTRY CONGRESS

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The Proceedings of XXV World's Poultry Congress 2016 — Abstracts



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S10-0028 Effect of age on the occurrence of muscle fibre degeneration associated with myopathies in broiler chickens submitted to feed restriction

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To evaluate how the age affected the occurrence of muscle fibre degeneration (MFD) associated with white striping and wooden breast, Pectoralis major muscles of 192 broiler chickens differing for genotype (standard vs. high breast yield), gender, and feeding regime (ad libitum vs. restricted rate, 80% from 13 to 21 d of age) were sampled at different ages (14, 21, 28, 35 and 46 d) for histological analyses and using H&E staining to evaluate tissue general morphology, Masson's Trichrome to identify collagen presence, Oil red and Nile blue for lipid presence. The effect of age, genotype, gender and feeding regime on the frequency of chickens showing MFD was evaluated by PROC CATMOD of SAS. Thereafter, significant differences according to the feeding system within age were assessed by χ^2 test. On average (data of all slaughters), nor genotype (69.8% vs. 67.7% in standard vs. high breast yield) or gender (68.8% in males and females) affected the frequency of chickens with MFD. Differently, this latter frequency was higher with ad libitum feeding than early restriction (75.0% vs. 62.5%; $P=0.01$) and increased with age (18.8%, 28.1%, 75.1%, 96.9%, and 96.9% at 14, 21, 28, 35, and 46 d). In details, at 14 d a similar frequency was found (18.8%) in all broilers; at 21 d, at the end of the restriction, MFD occurred more in broilers fed ad libitum than in those under restriction (50.0% vs. 6.3%; $P<0.01$); at 28 d a similar trend was observed but differences between the two groups were reduced (87.5% vs. 62.5%; $P=0.10$) to disappear by the 35th (100% and 93.8%) and 46th d (96.9% and 96.9%). In conclusion, MFD soon occurred in broilers after two weeks of growth and increased dramatically within 28 d of age. Feed restriction was effective in controlling and reducing MFD occurrence only as long as animals were under restriction, but no residual positive effect was recorded after their re-alimentation.

Keywords: genotype, gender, histology

S10- 0030 Inhibition of Salmonella by cecal bacteria in media supplemented with lactate and succinate

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Experiments were conducted to examine the ability of cecal cultures from broilers to inhibit growth of *Salmonella Typhimurium* in vitro. Cecal contents from commercial broilers were combined, and 0.1 ml of the cecal slurry was added to media containing (g/l), tryptose, 10; yeast extract, 5; sodium chloride, 5; beef extract, 2; and glucose, ² Inoculated media was incubated aerobically at 37°C for 48 h. Supplemented media was prepared by adding 0, 50, 100, or 150 mM of sodium lactate and sodium succinate to fresh media. Supplemented media was inoculated with 105 cfu/ml of cecal culture, only; 104 cfu/ml of a nalidixic acid resistant *Salmonella*, only; or the cecal culture and *Salmonella*. Inoculated media were incubated aerobically at 37°C for 14 days. After incubation, *Salmonella* and cecal bacteria (aerobes and anaerobes) were enumerated in each media. Cecal bacteria were also isolated and then identified with the Biolog Microbial Identification System. Results indicated that there was no significant difference in the number of cecal bacteria recovered from any media inoculated with cecal cultures only or with cecal cultures and *Salmonella*. However, significantly ($P<0.05$) fewer *Salmonella* were recovered from media inoculated with cecal cultures and *Salmonella* than from media inoculated with *Salmonella* only in media supplemented with 50, 100, or 150 mM lactate and succinate. There was no significant difference in the number of *Salmonella* recovered from media that was not supplemented with lactate and succinate. Aerobic cecal isolates included *Enterococcus faecalis*, *Escherichia coli*, and *Corynebacterium amycolatum*, while anaerobic isolates included *Lactobacillus* spp., *Lactococcus* spp., and *Streptococcus* spp. Findings indicated that cecal cultures from broilers possess anti-*Salmonella* activity related to the ability of the cultures to metabolize lactate and succinate. This information may be beneficial in formulating effective, defined probiotic cultures.

Keywords: cecal cultures, competitive exclusion, *Salmonella*