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ANDROSTENONE AND TESTOSTERONE CONCENTRATIONS IN DIFFERENT MATERIALS COLLECTED AT SLAUGHTER FROM ENTIRE, IMMUNOCASTRATED AND PHYSICALLY CASTRATED MALE PIGS

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Introduction

Boar taint is primarily caused by accumulation of androstenone and skatole in the adipose tissue from male pigs. Androstenone production is closely linked to gonadal steroids, mainly testosterone. The aim of the present study was to compare androstenone and testosterone levels in entire, immunocastrated and physically castrated male pigs from different samples taken at slaughter.

Material and Methods

Samples from 69 male pigs were taken at slaughter: blood, backfat and adjacent meat were collected from each pig. Material was collected from pigs of 3 groups: entire male, n=24 (EM); immunocastrated males, n=21 (IC) and physically castrated males, n=24 (PC). Backfat samples were analyzed for androstenone using stable isotope dilution analysis. Testosterone in serum was investigated via electrochemiluminescence. Furthermore, testosterone was determined in meat juice.

Results

Mean androstenone concentrations were 465ng/ml in EM, 89ng/ml in IC and 61ng/ml in PC group. Five EM pigs exceeded androstenone threshold of 500 ng/ml, with testosterone >2.1ng/ml in serum and >1.2ng/ml in meat juice, respectively. None of the IC and PC animals outran the threshold. Maximum serum testosterone was 1.9ng/ml in IC and 0.1ng/ml in PC; in meat juice 0.3ng/ml and 0.6ng/ml, respectively. Androstenone and testosterone in serum and meat juice differed significantly in EM from IC and PC concentrations ($p<0.001$), whereas no differences between IC and PC were observed (mean serum testosterone: EM 5.5ng/ml, IC 0.1ng/ml, SC 0.1ng/ml; mean meat juice testosterone: 12.2ng/ml, 0.2ng/ml and 0.2ng/ml, respectively).

Discussion and Conclusion

Besides the given androstenone threshold for backfat, more materials should be considered to detect "boar taint" feasible at slaughterhouse. Further basic research is needed to establish a simple test and threshold for testosterone: the results of this study point to a threshold approximately 2ng/ml serum testosterone. As high testosterone does not necessarily coincide with high androstenone concentration, exceeding this threshold requires further testing.