

Eating behaviour and satiety in male broiler- and layer chicks

Bokkers, E.A.M. and Koene, P.

Ethology group, Department of Animal Sciences, Wageningen University, P.O. Box 338, 6700 AH Wageningen, The Netherlands

The satiety mechanism can be expressed as the positive correlation between meal length and the length of the preceding (preprandial) interval; the hunger mechanism as the positive correlation between meal length and the length of the succeeding (postprandial) interval. It has been suggested that broilers have a disturbed hunger and satiety mechanism. This may be reflected especially in the preprandial correlations since Burkhart et al. (1983, Behav. Genet. 13, 295-300) suggested that selection for increased body weight damaged the hypothalamic satiety mechanisms leading to a failure to diminish the hunger drive and consequently to overconsumption. An experiment was conducted to measure length of eating bouts and intervals to calculate pre- and postprandial correlations of male broiler- and layer chicks.

Eight male broiler- and 8 male layer chicks were housed individually and visually isolated in pens (1 m²/ pen) on wood shavings at two weeks of age. From 4 through 7 weeks of age, eating behaviour of each bird was recorded for four hours, once a week. An interval between two eating bouts was defined as an interruption of ten seconds or more between two pecks in the feeder. Before and after each observation bird and feeder were weighed. The first ten eating bouts of each observation were used for the analysis.

Over all weeks, five out of nine significant preprandial ($r=0.38-0.56$, $n=32$, $p<0.05$) correlations and no postprandial correlations were found for broilers. For layer chicks no significant pre- or postprandial correlations were found. Broilers had longer (187.7 vs. 118.2 s; $F_{1,56}=6.19$, $p<0.05$) but less eating bouts (11.6 vs. 17.0 bouts/observation; $F_{1,48}=11.46$, $p<0.005$) and longer intervals (981.8 vs. 498.2 s; $F_{1,56}=12.25$, $p<0.001$) than layer chicks. Broilers had a higher feed consumption in total and per eating bout (0.50 vs. 0.95 g/bout; $F_{1,47}=106.48$, $p<0.001$).

The typical eating behaviour of broilers and the calculated preprandial correlations have given new indications that hunger and satiety mechanisms in broilers have changed compared with layer chicks.

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For information contact	Eddie Bokkers or email eddie.bokkers@etho.vh.wau.nl