## Heat stress increases fluctuation asymmetry in broiler chickens

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Fluctuation asymmetry (FA) is a measure of developmental instability. FA is considered a potential indicator of animal welfare since it reflects the ability to cope with the challenges that may affect growth during the lifetime. This lack of buffering capacity may result in morphological differences in the two sides of bilateral traits (right and left). This study aimed to test whether FA is sensitive to heat stress in broiler chickens. A total of 560 broiler chickens (Ross 308) were randomly assigned to two treatment groups, with two pens of 140 broilers per group. The experiment will be repeated four times. One treatment consisted of the temperature as recommended by the Ross manual (control), and the other one consisted of 6 hours of heat stress for 2x5 weekdays when the birds were 29 to 43 days old. At 43 days, 20 broilers from each treatment were euthanized. The left and right sides of 11 bilateral traits were measured twice from the animal's intact carcasses by a single researcher: wattle width, eye length, first secondary feather length, beak length, radius length, tarsometatarsus length and width, and middle, outer, and back toe length. Measurements were taken with a digital caliper (precision 0.01 mm), apart from the first secondary feather length, which was measured using the software Image J. Means were compared using variance analysis followed by Tukey test, considering differences at 5%. Preliminary results of the first production round indicate differences between treatments on middle toe (*P=0.025*) and outer toe (*P=0.017*), where FA was lower in the control group. Eye length FA also tended to be lower for the control versus heat stress treatment (*P=0.083*). These results are preliminary, but the founding indicates that FA in some morphological traits may be used as an indicator of heat stress in broilers.

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