Shank Skeleton Morphology, Egg Quality Characteristics and D-loop Phylogeny of Asil Chicken Breeds (Pora Kukula) in Sri Lanka

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Abstract

Chickens are considered as one of the most valuable domesticated animals originated from red jungle fowl and have extreme geo-morphological variation. The study reported here in was focused on comparing the shank skeleton characteristics, external egg quality traits and mtDNA D-loop phylogeny among indigenous Sri Lankan chicken breeds namely Asil chicken (Pora Kukula), village chicken (Gam Kukula) and Ceylon jungle fowl (*Gallus lafayettii*).The study was carried out in all agro-ecological zones in nine geographical provinces in Sri Lanka. 189 of male and female birds were used to collect the data. Seven external quality traits such as Egg weight (EW) in g, Egg Length (L) in cm, Egg width (W) in cm, Egg shape Index (ESI) in %, Egg volume (EV) in cm^3, Shell Weight (SW) in g, Shell Ratio (SR) in % and six internal quality traits such as Yolk Weight (YW) in g, Albumin Weight (AW) in g, Yolk ratio (YR) in % and Albumin ratio (AR) in percentage were examined. Mean, Standard Deviation, Analysis of Variance (ANOVA), Least Significant Differences (LSD) and co-efficient of variance were computed by using SAS (Version 9.3.01) Software. Results revealed that egg weight, yolk weight, shell weight and shape index were differed significantly ($P<0.05$) among the chicken breeds. It was also noted that Asil chicken had more pointed eggs. However, shank length and skeleton morphology were not significantly different ($P>0.05$) among breeds. Phylogenic analysis revealed that two main haplo groups of indigenous chicken in Sri Lanka. D loop sequence were deposited in Gene Bank and obtained accession numbers of fighter chicken male, fighter chicken female, village chicken male and jungle fowl male were KX954631, KX954630, KX 954632, KX 954643, KX954633, KX954635, KX 954637, KX 954629, KX954636, KX954628, KX954627 and KX 954629, respectively. This study concluded that Sri Lankan village chicken and Asil chicken breed were grouped into different clades and the possible reason might be their different genetic makeup. The selected egg quality traits of Sri Lankan Asil chicken breed and their genetic variation correlated.

Keywords: Asil bird, D-loop sequence, Egg quality traits, Shank morphology

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