Genomic Analysis Reveals Strong Signatures of Selection in Guangxi Three-Yellow Chicken in China.


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ABSTRACT: Much like other indigenous domesticated animals, Guangxi Three-yellow chickens (GX-TYC) in China have experienced strong selective pressure, and show specific phenotypic changes in physiology, morphology and behavior. To identify genomic footprints or selection signatures left by artificial selection during domestication of GX-TYC, the whole genomes of 12 GX-TYC hens were sequenced to executed selective sweep analyses and gene functional enrichment analysis (Gene Ontology and Kyoto Encyclopedia of Genes and Genome pathways). A total of 10.13 million single nucleotide polymorphisms and 842,236 insertion/deletion polymorphisms (Indels) were found. Forty-six windows showed a Z score of heterozygosity (ZHp) lower than -5, which potentially were considered to be positively selected regions. Gene annotation identified 55 genes in these regions. Selection signatures were found mainly on the SSC5, SSC8, SSC23 and SSCZ. GO and KEGG analyses revealed that these genes were related to growth, immune responses as well as carbohydrate, lipid and amino acid metabolisms. In addition, two genes, fructose-1,6-bisphosphatase 1 and fructose-1,6-bisphosphatase 2 were enriched into four signaling pathways, three of which are involved in carbohydrate metabolism and insulin signaling. SHC3, FANCC and PTCH1, in combination with FB1 and FBP2, were clustered together in a region of chromosome Z, and thus might have been selected together. The results have uncovered some genetic footprints of chicken domestication, providing not only an important resource for further improvements of fowl breeding, but also a useful framework for future studies on the genetics of domestic chickens as well as on the phenotypic variations and certain diseases of chickens.

Key words: Chicken; Selective sweeps; Single nucleotide polymorphism; Whole genome resequencing
ABSTRACT:

The current study aimed to evaluate the effects of alternative treatments, including sodium butyrate and Saccharomyces cerevisiae, on the performance of Hubbard broiler chickens. A total of 270 one-day-old chickens were divided into five groups: control (T0), basal diet + zinc bacitracin (T1), basal diet + 0.4% sodium butyrate (T2), basal diet + 0.8% sodium butyrate (T3), and basal diet + 1.2% sodium butyrate (T4). The results showed that the administration of sodium butyrate or yeast significantly improved feed conversion ratio and production index from the third to the fifth week of age. Moreover, all treated groups exhibited an increase in feed intake, body weight, and body weight change compared to the control group. The study concluded that sodium butyrate and yeast can be successively used as natural substitutes for antibiotic yeast as a probiotic, compared to sodium butyrate as an organic acid on the productive performance index from the third to the fifth weeks of age. Nevertheless, all treated groups showed an insignificant effect in feed intake, compared to the control group. Furthermore, the dietary addition embraced chickens treated with 0.3 g SB/kg, the fourth group included chickens treated with 0.2 g SB/kg, and the fifth group included chickens treated with 0.1 g SB/kg. The results showed that administration of sodium butyrate or yeast showed a significant improvement of final body weight (BW), body weight change, feed conversion ratio, and production index. In addition, the study aimed to evaluate the reducing sugars level, antioxidant IC50, and antimicrobial efficacy of mushroom extracts prepared using three different solvents (i.e., water, ethanol, and methanol). The findings indicated that methanolic extract contained higher reducing sugars and had better antimicrobial efficacy. The results of experimental research showed that mushrooms crude extracts had no significant effects on the growth performance of broiler chickens. Yeast can be considered as the most important alternative followed by sodium butyrate.
ABSTRACT: Production Performances of Indonesian Native Rooster (Gallus gallus domesticus) Supplemented with Germinated Mung Bean Sprouts and Acidifiers in the Diet. A total of 24 roosters aged 12 months with an average weight of 1000 gram were divided into 4 groups (6 replicates per diet treatment). The research treatments were a control diet with no supplement, the diet supplemented with 0.4%, 0.80%, and 1.20% acidifiers. The results showed that the best production performance of the treatments was found at 1.2% acidifier additive based on the FCR (1.14±0.06) with DI at 91.94±1.11 gram per head, ADG at 305.33±34.93 g/day, and final BW found after 30 days at 2,434.67±155.28 g. Keywords: Intake (DI) of feed, Feed Consumption Ratio (FCR), Average Daily Gain (ADG), and Body Weight (BW). All data were analyzed using ANOVA (analysis of variance) and then tested by Tukey's test. There was a tendency of improvement in the feed conversion ratio during the age of 1-24 days, and the number of birds was higher in the 1.8% acidifier group. However, the supplementation of germinated mung bean sprouts and acidifiers in the present study significantly increased body weight gain, and there was no significant difference between the treatments. No other dietary treatments, including bacitracin and colistin, had a significant effect on body weight gain or feed conversion ratio.

Keywords: Intake (DI) of feed, Feed Consumption Ratio (FCR), Average Daily Gain (ADG), and Body Weight (BW). All data were analyzed using ANOVA (analysis of variance) and then tested by Tukey's test. There was a tendency of improvement in the feed conversion ratio during the age of 1-24 days, and the number of birds was higher in the 1.8% acidifier group. However, the supplementation of germinated mung bean sprouts and acidifiers in the present study significantly increased body weight gain, and there was no significant difference between the treatments. No other dietary treatments, including bacitracin and colistin, had a significant effect on body weight gain or feed conversion ratio.
Responses of Domyati Ducks to Different Dietary Levels of Coconut Oil

**ABSTRACT:** The purpose of the present study was to determine the optimal level of coconut oil (CO) for Domyati ducks. The groups received CO at 0, 1.0, 1.5, and 2.0% during the experimental period. The results indicated that egg weight, egg number, and egg mass significantly increased in treated groups, compared to the control group. Furthermore, fertility and hatchability percentages were superior in 1.0, and 1.5% CO groups, compared to other experimental groups. Low-density lipoprotein in ducks that received CO was significantly lower than that of control ducks. Coconut oil (CO) can be used as a source of medium-chain fatty acids during the laying period. It is useful for improving the reproductive and physiological performance of Domyati ducks.
Mohammed MH, Kandeil A, Alkhazindar M, AbdElSalam ET and Ali MA. Isolation of Newcastle Disease Virus from Wild Migratory Birds in Egypt. DOI: https://dx.doi.org/10.36380/jwpr.2020.60

ABSTRACT:
Surveillance studies for Newcastle disease virus (NDV) are critical to monitor the potential spreading of these viruses among wild birds as well as domestic poultry. This study was conducted to determine the incidence of NDV in wild birds in Egypt in 2016. Out of 159 collected samples from eight different species of wild birds, six (3.77%) samples were positive for paramyxoviruses by semi-nested RT-PCR assay based on the RNA-dependent RNA polymerase gene. Of six positive samples, four NDVs were successfully isolated in 11-day-old specific-pathogen-free embryonated hens’ eggs. Partial sequences of the fusion gene of the four isolates were amplified using RT-PCR. Phylogenetic analysis of partial sequences of RNA-dependent RNA polymerase gene and fusion genes indicated that the detected NDV viruses in wild birds in Egypt are related to class I NDVs strains. Four Egyptian NDV isolates from wild birds exhibited sequence motif of 111GERQER↓LVG119 at the cleavage site as lentogenic virus in wild birds. Continuous active surveillance may help better monitoring of NDVs circulating in wild birds before newly emerging viruses in domestic poultry.

Keywords: Egypt, Fusion protein, Newcastle disease virus, Wild birds


ABSTRACT:
This study was conducted to determine the effects of Bacillus subtilis DSM 32315 probiotic and antibiotic enramycin in broiler chickens with Clostridium perfringens induced-Necrotic enteritis on cecal microbial populations, functional diversity, nutrients transporters and cytokines mRNA expression. Day-old broilers (n= 360), Arbor Acre were randomly assigned to three dietary treatments such as control, basal diet fed-group only; antibiotic, basal diet plus enramycin 5 mg/kg; and probiotic group, basal diet plus Bacillus subtilis 2 x10^9 CFU/g. Antibiotic and probiotic fed groups was challenged with Clostridium perfringens at day1, and from day 14 to day 21. The results of present study showed that broiler chickens supplemented with antibiotic and probiotic significantly exhibited higher abundance of gut beneficial bacteria at the 21 and 35 days of age, while upregulated the expression of anti-inflammatory cytokine enterleukin-10 and secretory immunoglobulin-A. Expression of proinflammatory cytokines interleukin-6 tumor necrosis factor alpha, and interferon gamma were downregulated. Nutrient transporters of Peptide transporter-1, L amino transporter-2 and Cationic amino acid transporter-2 were upregulated in supplemented groups. More so, glucose transporter-2 Sodium glucose transporter-1, Solute carrier family 3, member 1, carbohydrates and vitamin metabolism cofactor enriched in probiotic fed-group, while control group exhibited up-regulation in interleukin-6, tumor necrosis factor alpha, and interferon gamma. Overall, supplementation of Bacillus subtilis DSM 32315 reduced the negative impact of necrotic enteritis in broiler chickens, and enhanced the gut-microbial community.

Keywords: Antibiotic growth promoter, Bacillus subtilis, Clostridium perfringens, Immune response, probiotic

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