Research Paper

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


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
The current study aimed to evaluate the effect of antibiotic, broiler performance, extract, mushroom and yeast as a probiotic, compared to sodium butyrate as an organic acid on the productive performance of broiler chickens, with special attention to their economic efficiency. Therefore, the study embraced chickens treated with 0.3 g SB/kg, the fourth group included chickens treated with 0.2 g SB/kg, the third group was composed of chickens treated with 0.3 g SC/kg, and the fifth group consisted of chickens treated with 0.8 g SC/kg, and the fifth group consisted of chickens treated with 0.2 g SC/kg. The obtained 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 from third to fifth weeks of age. Nevertheless, all treated groups showed an insignificant effect in feed intake, compared to control group. Furthermore, the dietary addition of crude extracts of Agaricus bisporus and Auricularia auricula on Growth Performance of Broiler Chickens. The results revealed that mushrooms crude extracts had no significant effects on the growth performance of broiler chickens. The samples were 240 one-day-old chicks randomly divided into 8 dietary treatments, each treatment group consisted of 30 chickens. The measured variables included feed intake, body weight gain, feed conversion ratio, and production index. In addition, the study aimed to evaluate the reducing sugars level, 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 revealed that mushrooms crude extracts had no significant effects on the growth performance of broiler chickens.
Supplemented with Germinated Mung Bean Sprouts and Acidifiers in the Diet.

**Keywords:** Production Performances of Indonesian Native Rooster (*Gallus gallus domesticus*), Mung bean sprouts, Native chicken, Poultry diet, Production performances

Indonesian native chickens, one-day-old male Ross 308 broiler chickens were randomly assigned to 7 diet treatments, with 25 birds per replicate over a 42-day period. The dietary treatments included a control group diet (T1, 2.78%), T2 (Synbiotic, 0.5 kg/t), T3 (Bacitracin, 60 ppm), T4 (Colistin, 5 ppm), T5 (Synbiotic plus Bacitracin, 0.5 kg/t plus 60 ppm), T6 (Synbiotic plus Colistin, 0.5 kg/t plus 5 ppm), and T7 (Bacitracin plus Colistin, 60 ppm plus 5 ppm).

During the critical period of rearing from hatch to day 10, the synbiotic supplementation resulted in a significantly higher body weight gain than its combination with bacitracin. No other dietary antibiotic had numerically a higher body weight and an average daily gain than the control group. There was a tendency to a decreased mortality in the synbiotic treatment compared to the control group.

Conclusions:

The research showed better overall production performances compared to the control group. The best production performance of the treatments was found at 1.8% germinated mung bean sprouts and 1.2% acidifier additive based on the FCR (1.14±0.06) with DI at 91.94±1.11 gram/head, ADG at 305.33±34.93 g/day, and final BW found after 30 days at 2,434.67±155.28 g.

The supplementation of germinated mung bean sprouts and acidifiers did not give any differences from DI, FCR, ADG, and BW of the basic no supplement diet as a control group. The research was conducted as an factorial randomized block design with different amounts of germinated mung bean sprouts (0% to 4%) and acidifiers (0% to 1.2%). The results indicated that 40-day-old chickens had 1.46 times increase in body weight compared to the control group.

**References:**

Spectrophotometry and physical-biological, and each treatment was replicated 4 times. Variables measured were total processing like untreated dragon fruit peel or control, physical, chemical, biological, and treated dragon fruit peel with chemical, biological, and combination of physical-biological significantly reduced anthocyanin content. The image of anthocyanin from each treated content, and did not change the image of anthocyanin from dragon fruit peel.

Keywords
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ABSTRACT:

The objective of this study was to determine the optimal level of coconut oil (CO) supplementation in the diet to enhance the performance of Domyati ducks. A total number of 240 Domyati ducks were distributed into 4 groups. Low-density lipoprotein in ducks that received CO was significantly lower than that of the control group. It is concluded that the inclusion of CO at a 1.5% level could be enough and 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 the control group.
**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

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**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* $2 \times 10^9$ 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