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 polar and non-polar extracts of edible mushroom species of Agaricus bisporus and Auricularia auricula on the growth performance of broiler chickens. Yeast can be considered as the most important growth-promoting agents in the broiler chickens. Yeast can be successively used as a natural substitute for antibiotic against this mite, making that the use of alternative methods, as well as increased use of herbal extracts and essential oils of Ferula assafoetida against this mite, could use as a substitute compound against red mite.

**ABSTRACT:**


Dermanyssus gallinae is one of the most common arthropods in layers that affects the quality and quantity of egg production. Although there are different synthetic compounds and herbicides that can be used, new effective treatments are always required. In this field study, ethanolic extract of Ferula assafoetida was used. GC-MS analysis makes that the use of alternative methods, as well as increased use of herbal extracts and essential oils of Ferula assafoetida against this mite, could use as a substitute compound against red mite.

**ABSTRACT:**


Resistance mite is one of the most important issues in poultry. In the present study, the N-Hexane and Ethanol extracts of Ferula assafoetida were used. GC-MS analysis makes that the use of alternative methods, as well as increased use of herbal extracts and essential oils of Ferula assafoetida against this mite, could use as a substitute compound against red mite.
It has been concluded that the germinated mung bean sprout and acidifiers supplementation increases the production performance of Indonesian native rooster (Gallus gallus domesticus). However, the supplementation of germinated mung bean sprouts and acidifiers in the present research showed better overall production performances compared to the control group. The body weight of 2.29 ± 0.23 kg were used for the research subject. The diet was composed of a feed, with longer and higher supplement levels being suggested. The best production performance of the treatments was found at 1.8% germinated mung bean sprout and 1.2% acidifier additive based on the FCR (1.14±0.06) with DI at 91.94±1.11 gram throughout the experimental period.

The Efficacy of Synbiotic Application in Broiler Chicken Diets, Alone or in Combination with Antibiotic Growth Promoters (AGPs), compared to the untreated group. In the first experiment, a total of 1500 one-day-old male Ross 308 broiler chickens were divided into 4 groups (T1, T2, T3, T4). Birds fed antibiotic or synbiotic alone or in a combination of synbiotic (0.5 kg/t) and bacitracin (60 ppm, T5) showed the lowest feed conversion ratio (1.11%). In the second experiment, a total of 1500 one-day-old male Ross 308 broiler chickens were divided into 4 groups (T1, T2, T3, T4). Birds fed antibiotic or synbiotic alone or in a combination of synbiotic (0.5 kg/t) and bacitracin (60 ppm, T5) showed the lowest feed conversion ratio (1.11%).

The present study aimed to examine the effects of fermented soy isoflavones on laying hens. A total of 100 Isa Brown chickens aged 32 weeks were divided into 4 groups and 5 replicates, including T0 (control feed without the provision of fermented soy isoflavones), T1 (feed with 6% of fermented soy isoflavones), T2 (feed with 8% of fermented soy isoflavones), and T3 (feed with 12% of fermented soy isoflavones). The observed chemical qualities of eggs included HDL, LDL, isoflavones in egg yolks, physical quality (e.g., their weight and eggshell thickness). All the treatments were given for 10 weeks. The observed chemical qualities of eggs included HDL, LDL, isoflavones in egg yolks, physical quality (e.g., their weight and eggshell thickness). All the treatment diets with bacitracin (BMD 1000 ppm T4), a combination of synbiotic (0.5 kg/t) and bacitracin (60 ppm, T5), synbiotic (0.5 kg/t) in the treatment diet, resulted in a tendency of improvement in the feed conversion ratio during the age of 1-24 days, and the statistical analysis showed that the difference was significant (p<0.05). The results indicated that 40-day-old chickens had 1.46 times increase in the cortex index, compared to 20-day-old birds and 1.82 times compared to 8-day-old birds. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured. The thymus mass increased proportionally with age. The CD8+ ratio reached 1.26±0.09, 1.52±0.25, and 1.56±0.23 in 40, 90, and 110-day-old chickens, respectively. The histological and cell parameters of the thymus in clinically healthy chickens were measured.


The Processing Effects of Anthocyanins Extracted from Dragon Fruit (Hylocereus polyrhizus) Peel on Total Amount of Anthocyanins and SEM Image in Poultry Nutrition.

**ABSTRACT:**

Physical, biological, and each treatment was replicated 4 times. Variables measured were total physical treatment significantly increased anthocyanin content of dragon fruit peel. Furthermore, treated dragon fruit peel with chemical, biological, and combination of physical-biological significantly reduced anthocyanin content. The image of anthocyanin from each treated amount of anthocyanin and anthocyanin image of dragon fruit peel. The results indicated that treatment was the best method to increase anthocyanin processing revealed that control image was similar to physical treatment, and it was different from other treatments.

**Keywords:**

anthocyanin content and scan electron microscope image of anthocyanin from dragon fruit peel.
Isolation of Newcastle Disease Virus from Wild Migratory Birds in Egypt.
Mohammed MH, Kandeil A, Alkhazindar M, AbdElSalam ET and Ali MA.

**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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Effects of *Bacillus subtilis* DSM 32315 on Immunity, Nutrient Transporters and Functional Diversity of Cecal Microbiome of Broiler Chickens in Necrotic Enteritis Challenge.

**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 x10⁹ 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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