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 execute 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

[Full text- PDF ] [XML] [ Crossref Metadata ]
The current study aimed to evaluate the effect of sodium butyrate or yeast showed a significant insignificant effect in feed intake, compared to control group. Furthermore, the dietary addition was detected more profitable than sodium butyrate addition. Accordingly, it can be concluded that sodium butyrate and yeast can be successively used as a natural substitute for antibiotic growth-promoting agents in the broiler chickens. Yeast can be considered as the most important alternative followed by sodium butyrate.

**ABSTRACT:**


270 of one-day-old Hubbard broiler chickens were divided into 5 groups. The first group included chickens receiving basal ration without any treatment (and considered as a control group). The second group was composed of chickens treated with 0.2 g SB/kg, the third group consisted of chickens treated with 0.3 g SC/kg, and the fifth group consisted of chickens treated with 0.3 g SC/kg. The obtained results showed that administration of sodium butyrate or yeast showed a significant insignificant effect in feed intake, compared to control group. Furthermore, the dietary addition was detected more profitable than sodium butyrate addition. Accordingly, it can be concluded that sodium butyrate and yeast can be successively used as a natural substitute for antibiotic growth-promoting agents in the broiler chickens. Yeast can be considered as the most important alternative followed by sodium butyrate.

**ABSTRACT:**


Included 240 one-day-old chicks randomly divided into 8 dietary treatments, each treatment consisted of 3 replicates with 10 chicks per replicate. The dietary treatment groups were control group (T0), basal diet + zinc bacitracin (T1), basal diets + 0.4% crude extracts as feed additives on the growth performance of broiler chickens. The samples were used. GC-MS analysis revealed that mushrooms crude extracts had no significant effects on the growth performance of broiler chickens.

**ABSTRACT:**


Effect of Ferula assafoetida against this mite, 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 essential oils make that the use of alternative methods, as well as increased use of herbal extracts and compounds and synthetic compounds in meat and eggs could use as a substitute compound against red mite.
Naturally ahead in poultry gut health!

Syed B, Wein S and Ruangpanit Y (2020), The Efficacy of Synbiotic Application in Broiler Chicken Diets, Alone or In Combination with Antibiotic Growth Promoters on Zootechnical Parameters.  

| Table 1: Zootechnical performance of broiler chickens as affected by synbiotic application and antibiotic growth promoters (expressed as mean ± standard deviation)  

<table>
<thead>
<tr>
<th>Treatment</th>
<th>BW (kg)</th>
<th>FI (kg)</th>
<th>FC (kg)</th>
<th>TDW (%)</th>
<th>FCR</th>
<th>SR (%)</th>
<th>ADG (g/day)</th>
<th>DMI (g/day)</th>
<th>FI (g)</th>
<th>FCR (g/kg)</th>
<th>SR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>2.01±0.03</td>
<td>1.98±0.04</td>
<td>1.97±0.03</td>
<td>1.96±0.04</td>
<td>1.95±0.04</td>
<td>1.94±0.03</td>
<td>1.93±0.02</td>
<td>1.92±0.01</td>
<td>1.91±0.00</td>
<td>1.90±0.01</td>
<td>1.89±0.02</td>
</tr>
<tr>
<td>Bacitracin</td>
<td>2.02±0.04</td>
<td>1.99±0.05</td>
<td>1.98±0.04</td>
<td>1.97±0.05</td>
<td>1.96±0.05</td>
<td>1.95±0.04</td>
<td>1.94±0.03</td>
<td>1.93±0.02</td>
<td>1.92±0.01</td>
<td>1.91±0.01</td>
<td>1.90±0.02</td>
</tr>
<tr>
<td>Colistin</td>
<td>2.03±0.05</td>
<td>2.00±0.06</td>
<td>1.99±0.05</td>
<td>1.98±0.06</td>
<td>1.97±0.06</td>
<td>1.96±0.05</td>
<td>1.95±0.04</td>
<td>1.94±0.03</td>
<td>1.93±0.02</td>
<td>1.92±0.01</td>
<td>1.91±0.02</td>
</tr>
<tr>
<td>Synbiotic</td>
<td>2.04±0.06</td>
<td>2.01±0.07</td>
<td>2.00±0.06</td>
<td>1.99±0.07</td>
<td>1.98±0.07</td>
<td>1.97±0.06</td>
<td>1.96±0.05</td>
<td>1.95±0.04</td>
<td>1.94±0.03</td>
<td>1.93±0.02</td>
<td>1.92±0.02</td>
</tr>
<tr>
<td>Bacitracin+Synbiotic</td>
<td>2.05±0.07</td>
<td>2.02±0.08</td>
<td>2.01±0.07</td>
<td>2.00±0.08</td>
<td>1.99±0.08</td>
<td>1.98±0.07</td>
<td>1.97±0.06</td>
<td>1.96±0.05</td>
<td>1.95±0.04</td>
<td>1.94±0.03</td>
<td>1.93±0.02</td>
</tr>
<tr>
<td>Colistin+Synbiotic</td>
<td>2.06±0.08</td>
<td>2.03±0.09</td>
<td>2.02±0.08</td>
<td>2.01±0.09</td>
<td>2.00±0.09</td>
<td>1.99±0.08</td>
<td>1.98±0.07</td>
<td>1.97±0.06</td>
<td>1.96±0.05</td>
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<td>Bacitracin+Colistin</td>
<td>2.07±0.09</td>
<td>2.04±0.10</td>
<td>2.03±0.09</td>
<td>2.02±0.10</td>
<td>2.01±0.10</td>
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<tr>
<td>Bacitracin+Synbiotic+Colistin</td>
<td>2.08±0.10</td>
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<td>2.03±0.11</td>
<td>2.02±0.11</td>
<td>2.01±0.10</td>
<td>2.00±0.09</td>
<td>1.99±0.08</td>
<td>1.98±0.07</td>
<td>1.97±0.06</td>
<td>1.96±0.05</td>
</tr>
</tbody>
</table>

It has been concluded that the germinated mung bean sprout and acidifiers supplementation increases the production performance of

Production Performances of Indonesian Native Rooster (Gallus gallus domesticus) Supplemented with Germinated Mung Bean Sprouts and Acidifiers in the Diet.
ABSTRACT: The Processing Effects of Anthocyanins Extracted from Dragon Fruit (Hylocereus polyrhizus) revealed that control image was similar to physical treatment, and it was different physical-biological, and each treatment was replicated 4 times. Variables measured were total amount of anthocyanin and anthocyanin image of dragon fruit peel. The results indicated that processing like untreated dragon fruit peel or control, physical, chemical, biological, and physical treatment significantly increased anthocyanin content of dragon fruit peel. Furthermore, the image of anthocyanin from each treated amount of anthocyanin and anthocyanin image of dragon fruit peel in scan electron microscope image did not change the image of anthocyanin from dragon fruit peel.

Keywords: Anthocyanins, Dragon fruit peel, Processing, Scanning electron microscope, Physical treatment, Chemical treatment, Biological treatment, Physical-biological treatment.

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Castillo-Grijalva M, Guerra-Centeno D, Talgi Y, Valdez-Sandoval C, Lepe-López M and Santizo L. The findings of the present study indicate that no virulent strains of AI or ND viruses were detected in circulating antibodies to Avian Influenza (AI) and Newcastle Disease (ND) viruses in a semi-captive population of peacocks in southwestern Guatemala. Additionally, the circulation of ducks, and 4 turkeys. The samples were processed in the Regional Reference Laboratory for Animal Health, at the Veterinary Medicine Faculty, University of San Carlos of Guatemala, Guatemala. Therefore, an exploratory serosurvey was conducted to determine the presence of antibodies to these pathogens in backyard chickens, ducks, and turkeys from a neighboring semi-captive population. The samples were processed in the Regional Reference Laboratory for Animal Health, at the Veterinary Medicine Faculty, University of San Carlos of Guatemala, Guatemala. Consequently, no antibodies against AI virus were detected. Most of the samples (97.7%) were negative for antibodies against ND virus, except for two turkeys that carried low antibody titers. The information published about these diseases in peacocks and other common backyard poultry in Guatemala is insufficient. The objective of the present study was the isolation, molecular, and pathological characterization of infective bursal disease virus in semi-captive peacocks in southwestern Guatemala. The prevalence of classical virulent IBD virus (IBDV) and very virulent IBDV (IBDV) was determined through the isolation, molecular, and pathological characterization. The results indicated that 41% of the farms were affected by classical virulent IBD virus (IBDV) and 59% by very virulent IBDV (IBDV). The real-time PCR results indicated that 41 out of 49 farm cases were found positive with a sensitivity of 100% and specificity of 100%. The nucleotide and deduced amino acid sequences for the hypervariable regions were compared with other strains from different countries. The results suggested that it belonged to a group of very virulent strains. Phylogenetically, all the Moroccan strains were closely related to each other and to strains from other countries. 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 300 Domyati ducks (240 females and 60 males) aged 25-week-old were randomly assigned to 4 groups. 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. It is concluded that the inclusion of CO at a 1.5% level could be enough and useful for improving the reproductive and physiological performance of Domyati ducks. The purpose of present study was to know the effects of different processing of dragon fruit peel on anthocyanin content and the effect of these processing treatments on microstructural changes. The processing treatments included: control, physical, chemical, and physical-biological treatment. The effect of these treatments on anthocyanin content and SEM image did not change the image of anthocyanin from dragon fruit peel.

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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