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 crude extracts as feed additives on the growth performance of broiler chickens. The samples were composed 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 (T2), basal diet + 0.8% crude extracts (T3), basal diet + 1.2% crude extracts (T4), and basal diet + 1.2% crude extracts (T5). 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, 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 compounds and synthetic compounds in meat and eggs. Although there are different synthetic compounds, drug resistance is one of the most common arthropods in layers that affects the presence of these compounds, drug resistance was 16 µg/cm². This study indicated Ethanol extract makes that the use of alternative methods, as well as increased use of herbal extracts and essential oils has been able to reduce the red mite population.
Production Performances of Indonesian Native Rooster (Gallus gallus domesticus) Supplemented with Germinated Mung Bean Sprouts and Acidifiers in the Diet

The research aimed to analyze the production performances of the Indonesian native rooster (Gallus gallus domesticus) and the effects of different supplementation on feed intake (DI), feed consumption ratio (FCR), average daily gain (ADG), and body weight (BW). A total of 24 roosters aged 12 months with an average body weight of 2.29 ± 0.23 kg were used for the research subject. The diet was composed of a basic diet supplemented with 48-hours germinated mung bean sprouts and acidifier, with a treatment performed in triplicate, and the observed production performances include DI, FCR, ADG, and BW of the treatments. The best production performance of the treatments was found at 1.8% germinated mung bean sprout and 1.2% acidifier supplementation in the diet. The supplementation of germinated mung bean sprouts and acidifiers in the present research did not give any differences from DI, FCR, ADG, and BW of the treatment with only basic diet as a control group. Furthermore, the supplementation of germinated mung bean sprouts and acidifiers did not show any significant differences from the control group.

Keywords:
- Production performances
- Indonesian Native Rooster
- Germinated mung bean sprouts
- Acidifiers
- Feed intake (DI)
- Feed consumption ratio (FCR)
- Average daily gain (ADG)
- Body weight (BW)

References:

**Natural facts in poultry gut health!**


**Synergistic combination for a healthy intestinal microflora**

Production Performances of Indonesian Native Rooster (Gallus gallus domesticus) Supplemented with Germinated Mung Bean Sprouts and Acidifiers in the Diet

<table>
<thead>
<tr>
<th>Treatment</th>
<th>DI (g/day)</th>
<th>FCR</th>
<th>ADG (g/day)</th>
<th>BW (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>91.3 ± 1.4</td>
<td>1.4</td>
<td>112.0 ± 1.4</td>
<td>225 ± 14.0</td>
</tr>
<tr>
<td>T1 (48h)</td>
<td>92.0 ± 1.2</td>
<td>1.3</td>
<td>113.0 ± 1.3</td>
<td>226 ± 13.0</td>
</tr>
<tr>
<td>T2 (48h)</td>
<td>92.5 ± 1.1</td>
<td>1.2</td>
<td>114.0 ± 1.2</td>
<td>227 ± 12.0</td>
</tr>
<tr>
<td>T3 (48h)</td>
<td>93.0 ± 1.0</td>
<td>1.1</td>
<td>115.0 ± 1.1</td>
<td>228 ± 11.0</td>
</tr>
</tbody>
</table>

**Table 1.** Daily feed intake and feed conversion of the treatments. The data were analyzed by ANOVA and Tukey’s test to determine significant differences.
Responses of Domyati Ducks to Different Dietary Levels of Coconut Oil


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

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 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