Effect of Levels and Different Periods of Vitamin Premix Consumption during Finisher Period on Performance and Immunocompetence of Broiler Chicks fed Wheat and Barley Based Diet

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Abstract

The purposes of this study were to estimate the effect of levels and different periods of vitamin premix consumption during finisher period (29-42 d) on performance and immunocompetence of broiler chicks fed wheat and barley based diet in floor system. A total of 504 male broiler chicks (Ross 308) were allocated to 7 treatment groups, with 4 replicates per treatment group and 18 birds per replicate pen, and all data were analyzed in a randomized complete design. The dietary treatments were: T1) the basal diet with no vitamin premix during 29-42 days; T2) the basal diet 33.33% vitamin premix during 29-42 days; T4) the basal diet 66.66% vitamin premix during 29-42 days and treatments 3, 5 and 7, similar treatments 2, 4 and 6 grespectively and fed during 24-35 day and the vitamin premix was with drawn from all these lates diets (35 and 7) during 36-42 day of age. Feed intake and weight gain were measured at 35 and 42 days of ages and feed conversion ratio was calculated. At 35 and 42 days of ages, after slaughtered and determine carcass weight and the organs bursa of fabricius and spleen were weighed and immunocompetence was evaluated at 42 day of age, based on SRBC, IgG and IgM titers by hemagglutination method. Results showed that different levels of vitamin premix did not impair performance and immunocompetence response during the final period of broilers (29-42d). In conclusion, it is possible to withdraw vitamin premix from finisher diets.

Keywords: Broiler, Vitamin premix, Wheat and barley, Performance, Immunocompetence

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Effect of Different Levels of Organic Selenium and Vitamin E on Performance and Meat Quality in Japanese Quail

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Abstract

The present study was conducted to evaluate the effect of different levels of organic selenium and vitamin E on performance and meat quality in Japanese quail. Four hundred eighty quails were carried out in a completely randomized design with two levels of organic selenium (0.2 and 0.4 mg/kg) and three levels of vitamin E (18, 90 and 180 mg/kg). Four replicates with 20 quails were allocated to each experimental treatment. The results showed that there were no significant differences in weight gain, feed intake and feed conversion ratio among experimental treatments. Water holding capacity was affected by level of vitamin E and it was significantly increased, with increasing dietary vitamin E supplementation, but the difference between 90 and 180 mg/kg vitamin E was not significant. Percentage of dry matter and acidity of meat were not affected by experimental treatments. The amount of malondialdehyde in thigh meat samples were influenced by interaction of vitamin E and selenium. Treatments which was containing 0.2 and 0.4 mg/kg organic selenium and 180 mg/kg vitamin E had the lowest malondialdehyde among experimental treatments. By increasing storage time, produced malondialdehyde was increased. Results shows that adding high levels of selenium and vitamin E (treatments which was containing 0.4 mg/kg organic selenium and 180 mg/kg vitamin E) as antioxidants in quail diet, improves oxidative stability, storage time and meat quality.

Keywords: Japanese quail, Vitamin E, Organic selenium, Meat quality

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Comparison and Estimation of Digestible Threonine Requirements of Broiler Chickens of Ross 308 and Cobb 500

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Abstract

Two experiments were conducted to determine threonine (Thr) requirements of two commercial strains, Ross 308 and Cobb 500, based on standardized ileal digestibility from 15 to 28d of age. Basal diet consisted of wheat, triticale, and corn gluten meal was formulated according to Quick Chick (2006) to be adequate in all nutrients except for Thr. Incremental levels of supplemental Thr were added to the basal diet generating six experimental treatments in a range from 0.46 to 0.81% digestible Thr. Birds were randomized across 48 floor pens (4 replicates and 12 birds in each replicate) in a completely randomized design and each pen was fed one of the six amino acid levels from 15 to 28d of age. Body weight gain, feed intake, feed conversion ratio, and digestible Thr intake were measured during the experimental period. Performance traits responded quadratically to graded levels of digestible Thr, and interaction effects between Thr and strain were significant for all performance traits except for body weight gain. Strain did not affect the feed conversion ratio and feed efficiency was the same in two strains. Digestible Thr requirements were estimated using broken-line linear and broken-line quadratic models. In Ross 308, digestible Thr requirements for body weight gain and feed conversion ratio were estimated at 0.69 and 0.76% of diet, respectively, by broken-line linear model. Digestible Thr need for body weight gain was optimized at 0.79% of diet using broken-line quadratic model. In Cobb 500, Thr requirements for body weight gain and feed conversion ratio were estimated at 0.69 and 0.71% of diet, respectively, by broken-line linear model. Digestible Thr need for body weight gain and feed conversion ratio were optimized at 0.79 and 0.81% of diet using broken-line quadratic model. Regarding response criterion and statistical model to estimate the requirements, no differences were observed in Thr requirements of two strains during the grower period.

Keywords: Digestible threonine, Strain, Requirement, Broken-line model

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Determination of Non-Starch Polysaccharides (NSP) and Metabolizable Energy of Iran Wheat Varieties Fed to Poultry

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Abstract

Chemical composition and metabolism energy of Iranian varieties of wheat including dry matter, crude protein, crude fiber, crude fat, ash, nitrogen extract-free, sugar, starch and gross energy, were 95.95, 14.69, 2.75, 1.25, 1.66, 79.64, 5.15, 70.34 percent and 4206.8 kcal per kg, respectively. The means of MEn, TME and TMEn of 19 Iranian varieties of wheat were 3020.46, 3422.53 and 3422.46 kcal/kg DM, respectively. Starch digestibility of wheat was 96.27 percent and excreta viscosity was 1.52 cps, and was significantly different. Results of experiment showed that the mean values of carbohydrates in 19 Iranian wheat including total starch, resistant starch, nonresistant starch, amylase, amyllopectin and arabinoxylan were 65.08, 0.66, 63.18, 20.54, 79.46 and 4.84 percent, respectively. Total beta glucan, soluble and non soluble were 0.58, 0.024 and 0.56 percent. However, the average of non-starch polysaccharide, soluble and non-soluble, for 19 Iranian varieties of wheat were 18.39, 16.21 and 1.011 percent, respectively.

Keywords: Metabolizable energy, Non-starch polysaccharides (NSPs), Wheat, Arabinoxylan, Viscosity

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The Effects of Using Three Commercial Enzyme on Performance and Carcass Traits of Broiler Chickens Fed Wheat - Barley- Soy Based Diets

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Abstract

This experiment was conducted to investigate the effects of using three commercial enzymes on performance and carcass quality of broiler chickens fed with wheat-barley-soy based diets. In a completely randomized design 405 of broiler (Ross308) in nine treatments, three replicates (with 15 bird in each replicate) were used. The experimental diets included 1) diet based on corn–soybean meal (with no enzyme), 2) diet based on wheat–soybean meal (with no enzyme), 3) diet based on wheat–soybean meal (with safizim), 4) diet based on wheat–soybean meal (with kombo), 5) diet based on wheat–soybean meal (with kemin), 6) diet based on wheat–soybean meal (with safizim+kombo), 7) diet based on wheat–soybean meal (with safizim+kemin), 8) diet based on wheat–soybean meal (with kombo+kemin), 9) diet based on wheat–soybean meal (with safizim+ kombo+kemin). In starter period the highest amounts of daily feed intake and weight gain, in grower period the highest amount of feed intake, in the end of experiment the highest amounts of daily feed intake and daily weight gain have recorded in experiment group based on wheat–soybean meal (safizim+kombo). About carcass composition the highest percent of breast and the lowest percents of liver and thigh were observed in experiment group based on wheat–soybean meal (kombo+kemin), the highest percent of thigh was observed in experiment based on wheat–soybean meal (with safizim), and the lowest percent of breast and highest percent of liver were observed in experiment group based on wheat–soybean meal (with no enzyme). The lowest price for production per kilogram of body gain was resulted in experiment diet based on wheat–soybean meal (with kemin).

Keywords: Barley, Broilers, Carcass quality, Enzyme, Performance, Wheat

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Effects of Substituting Soybean Meal with Canola Meal on some Production Traits in Early Lactation Holstein Cows

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Abstract

To study the effect of using canola meal instead of soybean meal on dry matter intake, milk yield and composition and some blood metabolites twelve cows after calving were used. Design treatments were two diets containing soybean meal (SBM; n = 6) or canola meal (CM; n=6). Data were analyzed using PROC MIXED of SAS software. Results of this study showed that diets had no effect on dry mater intake, milk production and composition. Diets containing canola meal increased milk fat. Plasma glucose, cholesterol, Blood urea nitrogen and aspartate transaminase concentrations were similar among diets. In conclusion results from this experiment demonstrate that substituting CM with soybean meal in the diet of early lactating cows had no adverse effect on milk production and composition and blood metabolites, therefore using CM could be better in terms of reducing the diet expenses.

Keywords: Canola meal, Soybean meal, Holstein cows

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Effect of Replacing Corn Silage with Sweet Sorghum Silage on Digestibility and Performance of Dairy Cows

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Abstract

The objective of this experiment was to study the effects of replacing corn silage with sweet sorghum silage on digestibility, productive performance, rumen parameter and feeding behavior of dairy cows. For this purpose, corn silage was substituted by sweet sorghum silage at levels of 0 (control group), 33.3, 66.6 and 100 percent of dry matter. Treatments were randomly assigned to eight Holstein dairy cows with average of 35.5 kg/d milk production in a 4×4 Latin square design (replicated in four periods that were 21 days). In this experiment, intake of DM, CP, NDF and ADF were not significantly different among treatments, but replacing at all levels reduced digestibility of these components. However, milk yield and milk composition were not significantly different. Rumen volatile fatty acids were higher in control treatment, but pH and ammonia nitrogen contents of the rumen were not significantly different among treatments. Also, replacing corn silage significantly increased rumination time in 100 percent sweet sorghum silage treatment than control treatment. Results of this experiment showed that corn silage could be replaced by sweet sorghum silage without any detrimental effect on DM intake and milk production.

Keywords: Sweet sorghum silage, Corn silage, Performance, Digestibility, Dairy cows

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Effect of Polyethylene Glycol and Urea Treated Pistachio by-products Silage on Phenolic Compounds, in vitro Gas Production and Holstein Dairy Cow’s Performance

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Abstract

Two experiments were conducted to evaluate the effect of ensiling and addition of polyethylene glycol (PEG) and urea on chemical composition, phenolic compounds and cumulative in vitro gas production of fresh pistachio by-products (PB) and effect of this treating on Holstein dairy cows performance. In the first experiment, PB was supplemented with 1 and 0.5% of DM, PEG and urea, respectively and ensiled in 12 plastic bags with the capacity of 3 kg each for 60 days. Ensiling PB treated with PEG and urea decreased total phenolics, total tannins and condensed tannins (P<0.05). Addition of PEG and urea to PB silages increased the gas production after 96h incubation, ME and OM digestibility (P<0.05). In the second experiment, eight multiparous Holstein dairy cows were used in a 4×4 replicated Latin square design. Treatments were as follows: 1) corn silage (15% of diet DM), substitution of corn silage with: 2) PB silage, 3) PB silage supplemented with 0.5% of DM, urea, 4) Pistachio-by-products silage supplemented with 1% of DM, PEG. Milk yield and composition were not affected by treatments. The pH was unchanged among treatments, but N-ammonia concentration was higher for urea treated PB silage (P<0.05). It was concluded that negative effects of tannins on OMD decreased, ME increased and consequently nutritional value of PB improved by PEG and urea treatment.

Keywords: Pistachio by-products, Urea, Polyethylene glycol, Tannin

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Investigation of Breeding Value Correlation between Milk Production and Lactation Persistency Traits in Iranian Holstein Cattle Using Random Regression Model

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Abstract

In this investigation 13699 data related to milk production from 2716 Holstein first calving and daughter from 167 sire cows were analyzed based on random regression model (RR/CF) and REML Method incomplete lactating (5-90 days) and (5-120 days) in correlations to complete lactating were 0.67 and 0.72, respectively with progress in complete 5-240 day was 0.91 the correlation value for lactating persistency trait for incomplete lactating period (5-150 days) were 0.68 and as increase in milk production period this value reaches to 0.91 for incomplete period (5-240 days). Also this correlation for two months milk production and lactating persistency were 0.88 and 0.59, respectively, and for one month milk production and lactating persistency reached higher than 0.90.

Keywords: Breeding value correlation, Milk production and persistency, Random Regression Model

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Genetic Evaluation of Productive and Reproductive Traits of Holstein Dairy Cows in the North of Iran

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Abstract

In the present study, to estimate genetic parameters and genetic and phenotypic trends in Holstein dairy cows in the north of Iran, the records from first lactation of 11398 collected from 1989 to 2006 were used. Records were collected from 290 herds. Productive traits were 305 day-2x adjusted milk and fat yield and reproductive traits were age at first calving, calving interval and dry days. Genetic parameters were estimated by univariate and bivariate animal model using ASREML software. Estimated heritabilities for 305 day-2x milk, fat, age at first calving, calving interval and dry days gathered from univariate analysis were 0.27 (±0.02), 0.19 (±0.02), 0.1 (± 0.02), 0.03 (±0.01) and 0.1 (±0.02) respectively. Genetic correlation between milk and fat yield was 0.82. Genetic correlations of milk and fat production with age at first calving were -0.2 and -0.23 and with calving interval were 0.31 and 0.40, respectively. Genetic trends for milk and fat yield were 2.8 (±0.4) and 0.05 (±0.01) kg/year and for age at calving, calving interval and dry days were -0.28 (±0.01), 0.02 (±0.002) and -0.03 (±0.004) days/year, respectively. Phenotypic trends for these traits were 113.24 (kg/year), 2.3 (kg/year), -2.66 (days/year), 0.37 (days/year) and -0.36 (days/year). Based on unfavorable genetic correlations between productive and reproductive traits, using a selection index including both of these traits is necessary for Holstein dairy cows.

Keywords: Genetic parameters, Genetic trend, Productive traits, Reproductive traits, Holstein

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Study of Growth Pattern in Parental Lines of Arian Commercial Broiler Chicken

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Abstract

In order to investigate the growth curve of broiler chickens at line level, respectively 154 and 144 birds from two paternal lines A and B of a commercial broiler line were used. Line A were selected several generations for low feed conversion rate and line B were selected several generation for high body weight. Body weight was measured at 1, 4, 7, 10, 14, 17, 21, 28, 35, 42, 49 and 54 days of age and the growth curve were fitted by Gompertz model. Moreover, feed conversion rate were evaluated just for 20% of birds within 23 and 54 day of age. At the end of experiment, all birds were slaughtered and some carcass traits like breast weight, liver and abdominal fat were assayed. The results of current study showed that mature index and the age at inflection point in male birds of line B were higher than that in line A. Female broilers in line B showed higher hatch weight, mature index and age at the inflection point than that in line A. The hatch weight, mature index and age at the inflection point were similar between male and female birds in both parental lines. Liver weight, abdominal fat and feed conversion rate among male birds in paternal lines were no significant, but the difference in breast weights in male broilers was significant. Breast weight, Liver weight and abdominal fat in female broilers in line B were significant and higher than female broilers line A but food conversion rate was no significant. Liver weight and abdominal fat were significant between males and females in parental line but, only breast weight between male and female in line B was significant. The growth rate of birds in line B during 17 to 35 day of age was higher than that in line A. Moreover the growth rate in male birds during 17 to 54 day of age was higher than that in female birds.

Keywords: Growth curve, Parental line, Mathematical functions, Arian broiler line

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Assessing Polymorphism in BM6444, INRA13 and Oarhh35 Microsatellite Markers Associated with Inhibin Gene in Sanjabi Sheep

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Abstract

The purpose of this study was to identify the rate of polymorphism in BM6444, INRA13 and orahh35 microsatellite markers associated with Inhibin gene in Sanjabi sheep. For this purpose, blood samples were taken randomly from 100 Sanjabi sheep (78 females and 22 males) at Mehregan Breeding Station at Kermanshah. Modified salting out method was employed for extracting DNA. Subsequently, Polymerase Chain Reaction (PCR) was carried out with specific primers pairs for amplification of microsatellite marker sites. The PCR products were electrophoreses on acryl-amid gel. For detecting genotypes within the population, silver staining method was used. Genetic analyses on genotypic data were carried out using POPGEN 1.32 and Cervus 2.0 softwares. Results showed, three alleles (C: 0.42, B: 0.28, A: 0.29), and 2 genotypes respectively, (AB: 0.32, BC: 0.68) for oarhh35 marker. For this marker, PIC index was 0.71, and the effective number of allele was 2.48. INRA13 had six alleles (A: 0.21, B: 0.25, C: 0.21, D: 0.09, E: 0.11 and F: 0.12) and three genotypes (AB: 0.42, BD: 0.29 and CD: 0.27) with a PIC index of 0.72 and an effective number of allele as 5.21. For BM6444 marker, four alleles (A: 0.18, B: 0.38, C: 0.31 and D: 0.12) and four genotypes (AD: 0.32, CD: 0.18, AB: 0.12 and BC: 0.38) were identified. For this marker, the PIC index and the effective number of allele were 0.62 and 3.42, respectively.

Keywords: Sanjabi Sheep, Microsatellite Markers, Inhibin, Oarhh35, BM6444, INRA135

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