

IRANIAN JOURNAL OF ANIAML SCIENCES
(Iranian Journal of Agricultural Sciences)

Vol. 46, No. 1, Spring 2015

- The effect of rosemary hydro-alcoholic (*Rosmarinus Officinalis* L.) extract on performance and egg quality in laying hens:** Heydar Zarghi, Abolghasem Golian and Hasan Kermanshahi 1
- Comparison of Gompertz and artificial neural network models of broiler growth received Artichoke extract in their drinking water:** Maryam Mirderikvandi, Abbas Masoudi, Arash Azarfar and Ali Kiani 2
- Effect of *in ovo* feeding of different nutrients into yolk sac and 36 h starvation after hatch on hatchability, growth performance and few blood parameters of broiler chicks:** Negin Amiri, Mohammad Salarmoni, Sima Tasharofi and Mohadeseh Eslami 3
- Comparison of the estimators obtained from ordinary least squares and principle component analysis methods to predict carcass yield in Lori goats breed:** Majid Khaldari and Saheb Foroutanifar 4
- Effect of dietary omega-3 fatty acids on ovarian and insulin dynamic in Holstein dairy cows:** Saber Kasaghaei, Armin Towhidi, Mahdi Ganjkanlou, Hamid Kohram and Hoda Javaheri Barforooshi 5
- No effect of filtration of home-made lecithin-based semen extender on post-thawed buck sperm quality:** Mahdi Zhandi, Reza Noei Razliqi and Mohsen Sharafi 6
- The effect of nano manganese sources on performance and manganese bioavailability in broiler chickens:** Leila Lotfi, Mojtaba Zaghari, Saeed Zeinoddini, Dariush Davoodi and Mahmood Shivazad 7
- Identification of genomic regions associated with wool diameter in Iranian sheep breeds:** Mahdiyeh Rastifar, Ardeshir Nejati-Javaremi, Mohammad Hossein Moradi and Rostam Abdollahi-Arpanahi 8
- Prediction of metabolizable energy of current barley cultivars in Alborz province by linear regression equations:** Rasoul Akbari, Hossein Moravej and Kamran Reza Yazdi 9
- Consequences and factors affecting the incidence of retained placenta in Holstein dairy cattle of Isfahan province of Iran:** Abolfazl Mahnani, Ali Sadeghi-Sefidmazgi and Mehdi Safahani-Langroudi 10
- Subsequent productive performance and breast muscle development in fasted neonatal broiler chicks injected with calcium gluconate:** Jafar Arvan, Heshmat-olah Khosravinia and Saeed Mohammadzadeh 11
- The effects of seaweed *Gracilariopsis persica* in the diet on performance and and thyroid hormones in laying Japanese quail:** Behnam Abbaspour and Seyed Davoud Sharifi 12

The effect of rosemary hydro-alcoholic (*Rosmarinus Officinalis* L.) extract on performance and egg quality in laying hens

Heydar Zarghi^{1*}, Abolghasem Golian² and Hasan Kermanshahi³

1, 2, 3. Assistant Professor and Professors, Department of Animal Science, College of Agriculture, Ferdowsi University of Mashhad, Iran

(Received: Aug. 16, 2014 - Accepted: Feb. 3, 2015)

ABSTRACT

This experiment was conducted to evaluate the effects using of different levels of rosemary hydro-alcoholic extract (*Rosmarinus Officinalis* L.) on productive performance and egg quality indicators, in laying hens. The levels of rosemary hydro-alcoholic extract in this experiment were 0, 500, 1000 and 1500ppm. This experiment was conducted in a Blok Completely Randomized Design with 160 "hy-line-W36" laying hens in 4 treatments and 4 replicate (with 10 hens in each replicate) from 29 until 38 weeks of age. The results showed that the using of different levels of rosemary hydro-alcoholic extract had significantly effects on some parameters of performance and egg traits in laying hens ($P < 0.05$). Hence, the highest rate of egg production and egg mass (g/b/d) and the lowest feed conversion ratio were belong to birds fed diets containing 1000ppm rosemary hydro-alcoholic extract. Also the albumen quality (HU) of eggs maintained for 21 days at 4°C in the resulting eggs from the birds that fed with diets containing rosemary hydro-alcoholic extract was higher than birds fed the control diet. The overall results showed that the additions of rosemary hydro-alcoholic extract in the diet of laying hens lead to improving performance and maintaining egg quality during storage.

Keywords: egg quality, laying hens, performance, rosemary hydro-alcoholic extract.

Comparison of Gompertz and artificial neural network models of broiler growth received Artichoke extract in their drinking water

Maryam Mirderikvandi¹, Abbas Masoudi², Arash Azarfar^{3*} and Ali Kiani⁴

1, 2, 3, 4. M.Sc. Student, Ph.D. Candidate, Assistant Professor and Associate Professor,
Department of Animal Science, Faculty of Agriculture, Lorestan University, Khorramabad, Iran

(Received: Aug. 24, 2014 - Accepted: Jan. 26, 2015)

ABSTRACT

An experiment was carried out to estimate growth parameters of broiler chickens received Artichoke extract in their drinking water using Gompertz non-linear model and to compare Gompertz non-linear regression equation and artificial neural network modeling in terms of their ability to predict body weight of broiler chicks at day 42 of age. A total number of 250 one-day-old Ross 308 broiler chicks were used. The chicks received Artichoke extract in their drinking water at the doses of 0, 100, 200, 300 and 500 mg per liter. The birds were weighed at days 1, 2, 7, 14, 21, 24, 27, 30, 33, 35 and 42 of experimental period after 3 hours of fasting. Estimated mature body weight was significantly higher in birds received 200 mg/liter Artichoke extract in drinking water than the other birds ($P<0.05$). The chicks received 200 mg/liter Artichoke extract in their drinking water had a significantly higher coefficient of relative growth compared to the control group and those received 300 mg/liter Artichoke extract ($P<0.05$). The goodness of fit in terms of R^2 values of the artificial neural network (ANN) model showed a higher accuracy of prediction for body weight of broiler chicks at day 42 of age than the equation established by Gompertz model (0.998 vs. 0.997, respectively). Because mean square error (MSE), mean absolute deviation (MAD), mean absolute percentage error (MAPE) was lower in the ANN than in Gompertz model, it estimated body weight of birds at day 42 of age better than did Gompertz model.

Keywords: artichoke extract, artificial neural network, broiler chickens, Gompertz model, growth curve.

Effect of *in ovo* feeding of different nutrients into yolk sac and 36 h starvation after hatch on hatchability, growth performance and few blood parameters of broiler chicks

Negin Amiri¹, Mohammad Salarmoini^{2*}, Sima Tasharrofi³ and Mohadeseh Eslami⁴

1, 2, 4. Former Graduate Student, Associate Professor and Former Graduate Student,
Department of Animal Science, College of Agriculture, Shahid Bahonar University of
Kerman, Kerman, Iran

3. Ph.D. Candidate, Poultry Nutrition, Consultant of Agricultural Organization of Kerman, Iran

(Received: Oct. 20, 2014 - Accepted: Feb. 1, 2015)

ABSTRACT

This study was conducted to evaluate the effects of *in ovo* feeding of different nutrients on hatchability, initial weight after hatch, growth performance, blood parameters, immune organs and intestinal morphology of broiler chicks. The experiment was conducted in a completely randomized design with 5 treatments, 3 replicates and 16 fertile eggs from Ross 308 breeders (28 Week old) in each replicate. Experimental treatments Included: without injection (control) and injection of 0.7 ml of different nutrients into the yolk sac of fertile eggs on 14.5 d of incubation period, including: distilled water (sham), amino acids, dextrin 10% and dextrin 20%. Chicks were fasted for 36 hours after hatch. The results showed that *in ovo* injection of amino acids can led to heavier birth weight, in compare to sham and control treatments. Chicks hatched from eggs treated with dextrose 10% showed significantly the highest weight gain in 22- 42 d priod. Also, at the same time, chicks hatched from egges injected with distilled water (sham) showed significantly the highest feed intake and FCR. Blood glucose level after hatch was significantly lower in control and shame treatments than other treatment. Blood cholesterol level was significantly lower in shame treatment. *In ovo* injection of dextrin 10% led to higher relative weight of thymus (at 7 d of age). Also, the lowest relative weight of bursa at 42 d was for control treatment. Jejunal villus highet in chicks aged 3 d was significantly higher for those hatched from eggs treated with dextrin 10%. In conclusion, it seems that *in ovo* injection of nutrients especially dextrin 10% and 20% can be helpful to improve the performance of broilers.

Keywords: amino acid, broilers, dextrin, *in ovo* feeding, yolk sac.

Comparison of the estimators obtained from ordinary least squares and principle component analysis methods to predict carcass yield in Lori goats breed

Majid Khaldari^{1*} and Saheb Foroutanifar²

1. Assistance Professor, Department of Animal Science, Faculty of Agriculture, Lorestan University, Khorram-Abad, Iran

2. Assistance Professor, University College of Agriculture and Natural Resources, Razi University, Iran

(Received: Oct. 2, 2014 - Accepted: Apr. 3, 2014)

ABSTRACT

The present study was carried out to establish the relationships between carcass yield and some body measurements in *Lori* goat breed. The first body weight (BW) and morphological traits of 186 heads goat were recorded. The animals were then slaughtered to calculate the carcass yield. Results showed the colinearity among the traits. In order to eliminate colinearity problems, principal component analysis was used. The final predicted coefficients of carcass yield for carcass weight, body weight, heart girth, paunch girth, height at wither, body lengthBL, animal length and body condition score was 0.0049, 0.0006, -0.0016, -0.0029, -0.0008, 0.0008, 0.0001 and 0.0175, respectively. Results showed that the problem of multicollinearity in the relationship between carcass yield and independent variables in goats can be solved using principal component analysis. This method leads to more stable and reliable coefficients with less standard error than those from ordinary least squares. Furthermore, Body measurements can be used as selection criterion to improve carcass yield that it cannot be recorded on a live animal.

Keywords: body measurements, carcass yield, multicollinearity, principle component analysis, selection criterion.

Effect of dietary omega-3 fatty acids on ovarian and insulin dynamic in Holstein dairy cows

Saber Kasaghaei¹, Armin Towhidi^{2*}, Mahdi Ganjkhanlou³, Hamid Kohram⁴
and Hoda Javaheri Barfourooshi⁵

1, 2, 3, 4. M.Sc. Student, Associate Professors, and Assistant Professor, Department of Animal Science, University College of Agriculture and Natural Resources, University of Tehran, Karaj, Iran

5. Assistant Professor, Department of Animal Production Management Research, Animal Science Research Institute, Iran

(Received: Dec. 1, 2013 - Accepted: Apr. 3, 2015)

ABSTRACT

The purposes of this study were to evaluate of ovarian and insulin dynamics in dairy cows fed omega-3 fatty acid source. Ten Holstein multiparous cows were selected and after adaptation period given diets containing palm oil (control) and fish oil (treatment) from day -40 to 60 after calving. The study carried to show the effect of omega-3 fatty acids on insulin resistance. Glucose tolerance tests were performed on days 14 and 42 after calving. The cows were synchronized using two injections of prostaglandin on days 20 and 34 after calving and consequently, ovarian dynamics were assessed. Blood samples were obtained on days -35, -21, 0, 21, 42 and 62 days after calving. Experimental diets have not significant effect on the concentration of cholesterol, triglycerides, HDL cholesterol; however, omega-3 treatment significantly decreased LDL cholesterol levels. The results of the glucose tolerance test showed that omega-3 treatment improved insulin sensitivity. The number of small follicles (less than 6 mm) and medium (between 7 and 9 mm) and large (greater than 10 mm), there were no significant differences between experimental groups. According to results we suggested that feeding omega-3 could improve insulin resistance in Holstein dairy cows.

Keywords: dairy cow, follicle, insulin, n-3 fatty acids.

No effect of filtration of home-made lecithin-based semen extender on post-thawed buck sperm quality

Mahdi Zhandi^{1*}, Reza Noei Razliqi² and Mohsen Sharafi³

1, 2. Assistance Professore and Former Student, Department of Animal Science, College of Agriculture and Natural Resources, University of Tehran, Karaj, Iran

3. Assistance Professore, Department of Poultry Sciences, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran

(Received: Nov. 5, 2014 - Accepted: Jan. 2, 2015)

ABSTRACT

The goal of this study was the evaluation of semen extender filtration on post-thawed buck sperm quality. A total 16 ejaculates were collected from four buck (4 ejaculates from each buck) twice a week. After semen collection and primary evaluation, collected semen samples were pooled and divided into two equal parts. Each part was diluted with one of the following extenders: 1) non-filtered lecithin-based extender and 2) filtered lecithin-based extender. After thawing, sperm motility and velocity parameters, plasma membrane integrity and functionality, MDA level, acrosome integrity, and apoptosis features were evaluated. The obtained results showed that all evaluated parameters, with exception of LIN, did not alter by both extenders ($P > 0.05$). In conclusion, it seems that filtration of lecithin-based semen extender have no detrimental effect on *in vitro* sperm quality parameters. However, more study is required to reveal the effect of extender filtration on advance *in vitro* assessments and fertility.

Keywords: buck, filtration, freezing, lecithin, sperm.

The effect of nano manganese sources on performance and manganese bioavailability in broiler chickens

Leila Lotfi¹, Mojtaba Zaghari^{2*}, Saeed Zeinoddini³, Dariush Davoodi⁴
and Mahmood Shivazad⁵

1, 2, 3, 4. Ph.D. Candidate of Poultry Nutrition, Associate Professors and Professor,
Department of Animal Science, University College of Agriculture and Natural Resources,
University of Tehran, Karaj, Iran

2. Assistant Professor, Department of Nanotechnology, Agricultural Biotechnology
Research Institute of Iran (ABRII), Karaj, Iran

(Received: Mar. 12, 2015 - Accepted: Apr. 25, 2015)

ABSTRACT

This study was conducted to evaluate the bioavailability of nano and micro sources of manganese in broiler chickens. Two hundred and eight, 10-d-old male Ross 308 broilers in a completely randomized design with 13 treatments, 4 replications and 4 chicks per replicate were studied for 35 days. During the experimental period, a basal corn-soybean meal diet containing 20 ppm Mn (control treatment) was supplemented with 70, 120, and 170 mg/Kg, Mn as graded levels, from four different sources (nano manganese oxide, carbonate and sulfate and micro manganese sulfate) and fed *ad libitum*. Results indicated that in comparison with micro MnSO₄, nano manganese increased bone breaking strength significantly (P<0.01). The bioavailability of different sources of nano manganese in comparison to micro MnSO₄ was higher significantly (P<0.01). The bioavailability of nano manganese sulfate, Carbonate and Oxide in comparison to micro manganese sulfate, on the basis of bone manganese content, was 324, 158 and 125 percent respectively. In conclusion, nano manganese had the substitutability of micro manganese sulfate in broilers diet to reduce leg abnormalities with no negative effect on performance.

Keywords: bioavailability, broilers, nano manganese, performance parameters, tibia strength.

Identification of genomic regions associated with wool diameter in Iranian sheep breeds

Mahdiyeh Rastifar¹, Ardeshir Nejati-Javaremi^{2*}, Mohammad Hossein Moradi³ and Rostam Abdollahi-Arpanahi⁴

1. M.Sc. Student, Department of Animal Science, University College of Agriculture and Natural Resources, University of Tehran, Karaj, Iran

2. Associate Professor, Department of Animal Science, University College of Agriculture and Natural Resources, University of Tehran, and Center of Excellence for Improvement of Sheep Carcass Quality and Quantity, Karaj, Iran

3. Assistant Professor, Department of Animal Science, College of Agriculture and Natural Resources, Arak University, Arak, Iran

4. Assistant Professor, Aborayhan, University of Tehran, Pakdasht, Iran

(Received: Dec. 26, 2014 - Accepted: May 11, 2015)

ABSTRACT

The objective of the present study was to scan the whole genome in sheep for identifying the loci associated with wool diameter. Blood samples were collected from 94 animals, consisting 47 samples per each Lori-Bakhtiary and Zel breeds. Genotyping of samples were performed using Ovine 50k SNP Chip arrays. Quality control filters were applied for the initial genotyping data and 48,056 SNPs belonging to 90 animals were used in the final analysis. The wool samples of these animals were collected and analyzed for the mean fiber diameter and the proportion of fiber that were equal or more than 30 μm using OFDA technology. The fixed effects of herd, birth date and sex were examined and the genome wide association study (GWAS) was performed using PLINK software where FDR correction was used to adjust the error rate. Considering the significant fixed effects in the genomic wide association analysis, three SNPs on chromosomes 1 and 6 (two SNPs) were identified that significantly affect ($P < 0.05$) the trait proportion of fiber equal to or more than 30 μm . Study of genes that had previously been identified in these regions revealed the presence of major genes affecting the quality of wool in these regions.

Keywords: genome wide association, Iranian sheep, quantitative trait loci, wool diameter.

* Corresponding author E-mail: javaremi@ut.ac.ir

Tel: +98 26 32248082

Prediction of metabolizable energy of current barley cultivars in Alborz province by linear regression equations

Rasoul Akbari¹, Hossein Moravej^{2*} and Kamran Rezayazi³

1, 2, 3. Former Graduate Student and Associate Professors, University College of Agriculture & Natural Resources, University of Tehran, Karaj, Iran

(Received: Jan. 11, 2014 - Accepted: May 11, 2015)

ABSTRACT

This study was carried out to determine regression equations for prediction of apparent metabolizable energy corrected by nitrogen (AMEn) using 11 barley cultivar (valfajr, Karon, Bahman, Aras, Dasht, Afzal, Zarjo, Kavir, Reihani, Makui and Yousef) the seeds obtain from Alborz province, Iran. All of the cultivars were analyzed based on proximate analysis, starch, NDF and ADF. Result showed that ether extract (EE) and nitrogen free extract (NFE) is related to the most (25.5) and lowest (4.2) CV, respectively. The metabolizable energy was measured on adult roosters (Rhode Islandred) using Chromic Oxide marker. The experimental diets were composed of 30% of test sample and the remaining 70% was a combination of other ingredients held constant across diets. The result of multiple regression equations was shown that starch was the best factor for prediction of AMEn of diets. The equation for prediction of AMEn based on chemical composition was: $AMEn_{\text{barley}} \text{ (kcal/kg of DM)} = 52 \times \text{Starch} \text{ (R}^2=0.983, P<0.000)$

Keywords: adult Roster, barley, metabolizable energy, regression equation.

Consequences and factors affecting the incidence of retained placenta in Holstein dairy cattle of Isfahan province of Iran

Abolfazl Mahnani¹, Ali Sadeghi-Sefidmazgi^{2*} and Mehdi Safahani-Langroudi³

1, 2. M.Sc. Student and Assistant Professor, Department of Animal Science, Faculty of Agriculture, Isfahan University of Technology, Iran

3. Veterinarian, FKA Dairy Company, Isfahan, Iran

(Received: Jan. 19, 2015 - Accepted: May 11, 2015)

ABSTRACT

The objectives of this study were to 1) describe the risk factors, incidence, production and reproduction consequences of retained placenta in dairy cows, and 2) estimate the financial losses associated with retained placenta. Calving records from March 2008 to December 2013 comprising 59,341 calving were included in the data set. The effects of risk factors on retained placenta incidence were quantified using a multivariable logistical regression model and effect of retained placenta on production and reproduction performance were analyzed using a mixed linear model in SAS software. The average incidence of retained placenta per year was 9.7% ranged between 7.9 to 11.6%. Results from the logistic regression analysis demonstrated that calving year, parity number and calving season, twinning, dystocia, and stillbirth significantly influenced ($P < 0.01$) the incidence of retained placenta. Cow with highest odds of retained placenta were those first parity cows that calved in winter and had stillbirth, twinning, and dystocia in recent years. Results showed that a case of retained placenta significantly ($P < 0.05$) reduced 305-d milk yield by 320 kg/cow per lactation but had no significant effects on 305-d fat and protein percentages. Depressive effects of retained placenta ($P < 0.05$) on reproduction efficiency were quantified by an increase in open days and number of inseminations per conception of 11.55 ± 1.48 and 0.17 ± 0.02 per cow per lactation, respectively. Economic losses due to retained placenta ranged from \$US 144 to 279 with a mean of \$US 200 per case. Results of the present study could be useful in cost-benefit analysis of retained placenta management control programs.

Keywords: financial losses, Holstein dairy cows, odds ratio, retained placenta.

Subsequent productive performance and breast muscle development in fasted neonatal broiler chicks injected with calcium gluconate

Jafar Arvan¹, Heshmat-olah Khosravinia^{2*} and Saeed Mohammadzadeh³

1, 2, 3. Former Graduate Student, Associate Professor and Assistant Professor, Department of Animal Science, Faculty of Agriculture, University of Lorestan, Iran

(Received: Sep. 23, 2013 - Accepted: May 19, 2015)

ABSTRACT

This study was carried out to examine the effect of post hatch fasting (PHF) period with and without subcutaneous injection of 0.6 ml Ca-gluconate (Ca-g) on productive performance and breast muscle development in broiler chicks up to day 28 of age. Weight gain (WG) and feed intake (FI) were significantly reduced and FCR was increased as PHF lasted for 36 h. Injection of Ca-G did not improve WG and FI of the chicks compared to the control group (without injection). Post hatch fasting through 36 h of age suppressed WG, FI and FCR and increased mortality rate up to day 28 of age ($P>0.05$). Economic efficiency factor was decreased in coordinate with increase in PHF periods and it was lower in Ca-G injected birds compared to the control birds. Breast weight, breast muscles weight, breast external dimensions and breast muscle histology was not affected by extended PHF up to 48 h and Ca-G injection. Breast bone weight was decreased in the chicks experienced PHF for 48 h. It was concluded that PHF greater than 24 h has negative impact on productive performance in broiler chicks at 28 d of age. Administration of Ca-g to the neonate broiler chicks did not improve performance and showed an adverse effect on viability of the birds.

Keywords: breast, broiler chickens, calcium gluconate, neonatal fasting, productive performance.

The effects of seaweed *Gracilariopsis persica* in the diet on performance and thyroid hormones in laying Japanese quail

Behnam Abbaspour¹ and Seyed Davoud Sharifi^{2*}

1, 2. Ph.D. Student and Associate Professor, Department of Animal and Poultry,
Aborayhan, University of Tehran, Iran

(Received: Apr. 23, 2013 - Accepted: May 4, 2015)

ABSTRACT

The aim of this study was to investigate the effects seaweeds *Gracilariopsis persica* in diets on performance and TSH, T3 and T4 hormones in serum of laying quail. A total of 112 laying quails were randomly allocated into four dietary treatments (diets containing 0, 1, 3 and 5% seaweed) with 4 replicates of 7 birds each. The birds were fed on experimental diets for 12 weeks. Eggs were collected daily and weighed. Then egg yield (based on hen day), egg mass, feed conversion ratio and the percent of abnormal eggs were calculated during the 7-10, 11-14, 15-18 and 7-18 weeks of age. At the end of the experiment, the blood samples were taken from two birds per each replicate and analyzed for T3, T4, TSH hormones. There were no significant differences in egg production, feed intake, feed conversion ratio, egg weight, egg mass and percentage of abnormal eggs between treatments. However, the highest egg production was belonged to birds fed 3% of seaweed in diets and had significant difference with birds fed on diets containing 5% seaweed ($P < 0.05$). There were no significant differences in T3, T4, TSH of serum between treatments. As conclusion, *Gracilariopsis persica* can be include up to 3% in laying quail diets.

Keywords: *Gracilariopsis persica*, Japanese quail, performance, thyroid hormones.