

The comparative study of steam treated sugarcane pith by digestibility rumen anaerobic fungi in Holstein cow and Khuzestan buffalo

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ABSTRACT

This study was conducted to compare fungi and whole rumen microorganisms (WRM) digestibility of treated sugarcane pith by fungi and of buffalos and Holstein cows. Dry matter (DM), neutral and acid detergent fiber (NDF and ADF) digestibilities of steam treated sugarcane pith (STP) by fungi and WRM were compared with a two-steps digestion technique, gas production (GP) and specific rumen fungi culturing (SRFC). Dry matter, NDF and ADF digestibilities of steam treated sugarcane pith by WRM in buffalo were higher (62, 32.31 and 22%, respectively) than cow (50.13, 27.07 and 16.2%, respectively) ($P < 0.05$). Regardless of microorganisms type, digestibility of DM, NDF and ADF were greater in buffalo (54.13, 27.51 and 19.86%) than in buffalo (49.69, 24.54 and 14.67) ($P < 0.05$). Potential of GP (B) of STP by WRM in cow was numerically more than that of cow ($P > 0.05$). Fractional rate of GP (C) for WRM and fungi was lower in cow than buffalo ($P < 0.05$). Regardless of microorganisms type, C was higher in buffalo was more than cow ($P < 0.05$) and vice versa for B ($P > 0.05$). Regardless of animal species, whole rumen microorganisms had higher digestibility and potential of GP than fungi ($P > 0.05$), but there was not any difference for rate of GP between them. In SRFC, DM digestibility of STP by fungi at day 12 in buffalo was significantly more than cow ($P < 0.05$). The concentration of fungi per ml of rumen liquor in cow was more than buffalo ($P < 0.05$). Although, the rumen population fungi in cow was more than buffalo, but that digestibility of fungi (in specific rumen fungi culture) and WRM of buffalo was more than cow in present experiment. Therefore, the results of this study showed the advantage and supremacy of buffalo in usage the low quality roughages.

Keywords: gas production, rumen fungi numeration, specific rumen fungi culture, whole rumen microorganisms.

Effects of using *Gracilariopsis persica* in layer hen diet on performance, egg quality and lipids of blood serum

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ABSTRACT

This study was conducted to investigate the effects of using *Gracilariopsis persica* in layer diet on performance, egg quality and lipids of blood serum of layer hens. One-hundred Hy-line W-36 hens were allocated to five dietary treatments (experimental diets containing 0, 5, 10, 15 and 20 percent seaweed) and five replicates and four birds in each for 12 week period (23-34 week of age). The results showed that in the birds fed diets containing more than 5% seaweed, had lower egg production and higher feed conversion ratio ($P<0.05$). There was significant decrease in egg mass for more than 10% seaweed in experimental diet ($P<0.05$). Inclusion of *Gracilariopsis persica* in diets increased egg shell thickness and egg density compared to control diet ($P<0.05$). The egg that laid by hens fed on diets containing different levels of *Gracilariopsis persica* had lower concentration of Malonedialdehyde and higher iodine content than those laid by control birds ($P<0.05$). Using *Gracilariopsis persica* in diets had no significant effect on yolk cholesterol, however, its inclusion at 15 or 20 % in diet, decreased cholesterol concentration of blood serum ($P<0.05$). These results demonstrated that *Gracilariopsis persica* can be include up to five percent in layer diets. It improves eggshell thickness and egg density, and also increases iodine content in yolk and the egg durability.

Keywords: *Gracilariopsis persica*, layer hens, egg quality, durability, iodine.

The anatomy of the sheep cervix and its influence on the transcervical passage of an inseminating pipette into the cervix

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ABSTRACT

Specific structure of ewe's cervix is one of artificial insemination limitation in sheep. Successful insemination in ewes has a close relation with morphology of their cervix. The objective of this experiment was to compare anatomical structure of cervix in Makui, Kurdish and Afshari ewes. In this study, reproductive tract of 300 ewes of aforesaid sheep (100 ewes of each strain) were collected during breeding season in slaughterhouses of Alborz and Tehran provinces. Exterior shape, opening, length and diameter of cervix, measure of penetration, kinds and number of rings were studied. The most frequent exterior shape and length were the shape of papilla and the length of 3 to 4 centimeter respectively. The dominant shape of opening in cervix in Kordi and Afshari ewes was papilla where as in Makui ewes, the dominant shape was flop. The results showed that average cervix diameter in collected respectively was 9.34 ± 1.7 . The average number of rings for all sheep between these strains was 5.59 ± 0.8 . The most frequent layout and arrangement of rings in cervical canal was the second type. The correlation between the length of cervix and number of rings, and the length and diameter of cervix were 0.24 and 0.25, respectively. There was not a significant correlation between length of cervix with ring's angle, opening shape and age. Length of cervix, diameter and number of rings were not significantly different among 3 breeds. Average penetration of insemination gun into cervical canal for all data was 3.92 ± 2.5 mm and approximately 4.24 ± 2.2 , 3.46 ± 1.1 , 3.84 ± 2.5 in Makui, Kordi and Afshari ewes, respectively. The measurement of gun's penetration into cervix is affected by cervix diameter. Estrus cycle had a significant effect on measurement of penetration, while depth of penetration was lower during luteal phase and higher in non- luteal phase. Also, the measurement of penetration was affected by number of rings, while cervixes with more number of rings resulted in less measurement of penetration. Evaluated parameters did not show any differences among breeds except the exterior shape of cervix opening.

Keywords: anatomy, artificial insemination, breed, cervix.

Determination of meat and bone meal's amino acid content and their true digestibility coefficients in Legharn ceceltomized roosters

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ABSTRACT

Amino acid (AA) content of six meat and bone meal (MBM) samples was determined by ion-exchange chromatography. True AA digestibility of amino acids was determined of using precise sibbald's feeding method. Metionin and Lucien, with averages of 0.35 and 2.29 percent, had the lowest and highest values among essential AA of MBM samples. Average content of individual AA, sum of essential and non-essential AA and sum of AA values were lower than the corresponding values in NRC (1994). Individual digestibility values of AA, sum of essential and non-essential AA, Sulfur AA and sum of AA were not significant different among MBM samples Except Met and Pro ($P < 0.05$). Average digestibility values of Cys and Arg were 73.7 and 89.4 percent which were respectively the lowest and highest AA digestibility values among MBM samples. It was concluded that AA digestibility values of MBM samples were at high levels but due to their low content MBM samples, their digestible AA content values were at low levels.

Keywords: amino acid, metionin, sibbald feeding method, true digestibility.

The effect of adding different levels of zinc sulfate to semen diluent on quality of frozen-thawed sperm in bull

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ABSTRACT

The aim of this study was to investigate the effect of adding different levels of zinc sulfate in semen extender on bovine sperm quality during cryopreservation. Semen was collected from 4 Holstein bull twice a week and the proper samples were pooled. Semen were allocated to four extender treatments consisted of 0, 50, 100, 150 μM of zinc sulfate in 5 replicates and then, were frozen. Post-thaw sperm quality including mobility, morphology, viability, membrane integrity, acrosome health, chromatin dispersion and malondialdehyde production were examined. No significant difference was observed in sperm motility and morphology in the Zinc groups, compared to control group. Viability and membrane integrity of 100 μM group of zinc was better than control group ($P < 0.05$, $P < 0.01$ respectively). Significant difference was observed in sperm acrosome integrity in the groups 100 μM and 150 μM Zinc compared to control group ($P < 0.01$). Percentage of spermatozoid with damaged DNA in 150 μM group was higher than the other groups. Percentage of malondialdehyde in groups 100 μM and 150 μM of Zinc was less than other groups ($P < 0.05$). Results showed that the zinc sulfate could improve some parameters of post-thaw sperm in bull.

Keywords: bull, cryopreservation, sperm, zinc.

Effects of pioglitazone on ovulation and selected postpartum diseases in Holstein cows

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ABSTRACT

The aim of the present study was to determine the effect of dietary supplementation of pioglitazone (PGT) during transition period on the ovarian function and the incidence of several diseases after parturition. Eighty Holstein cows were randomly allocated to four treatment groups (n=20) using a 2×2 factorial design. Pioglitazone was fed for 14 day before the expected parturition time, or for 21 days after parturition, or during both pre- and post-partum period. The cows received either 0 or 6 mg PGT/kg live weight. Data on the incidence of production diseases (laminitis, mastitis, cystic ovaries, infected uterus and inactive ovaries) and the day of ovulation were recorded and analyzed using the GENMOD and GLM procedures of SAS. Postpartum supplementation of PGT decreased the mean days to ovulation (P<0.02). The percentage of cows which ovulated during 14 DIM was significantly increased when PGT was supplemented postpartum (P<0.03). PGT supplementation during prepartum (P<0.01) and postpartum (P<0.10) periods decreased laminitis. Prepartum PGT supplementation had no significant effect on mastitis incidence. Prepartum (P<0.03) and postpartum (P<0.08) PGT supplementation resulted in decreased uterine infections. Postpartum PGT supplementation significantly decreased the proportion of cystic cows (P<0.04). PGT had no significant effect on the percentage of cows with inactive ovaries (P>0.05). In conclusion, supplementation of PGT during transition period in dairy cows may be beneficial in decreasing the incidence of some postpartum diseases, and may enhance ovarian cyclicity after parturition.

Keywords: dairy cows, ovarian function, pioglitazone, postpartum diseases, transition period.

Effects of thyme leaves powder and it's essential oil on performance, meat quality and intestinal characteristics of meat type quails

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ABSTRACT

This experiment was conducted to investigate the effect of thyme essential oil and powder in comparison to antibiotic on performance of meat type quails, in a completely randomized design with 6 treatments, 4 replicate. The dietary treatments consisted of the basal diet without any added compounds (control), 100mg virginiamycin/kg, 0.1 or 0.2% thyme powder and 100 or 200 mg thyme essential oil/kg. The measurement parameters included performance, meat quality, morphology and microbiology of intestine. Supplementing 0.1% powder thyme and virginiamycin increased body weight gain of quails at d 0 to 35. Thyme powder and essential oil caused reduction in thiobarbituric acid, Dripping Loss and Cooking Loss and increased water holding capacity. The highest counts of lactobacilli bacteria belong to thyme treatment (except for 200 mg essential oil/kg) and the lowest of it has been seen in antibiotic ones and the lowest count of coliform bacteria belonged to antibiotic treatment. Maximum length and width of the villi and minimum depths of crypts was observed in thyme treatments (except for 200 mg essential oil/kg). In antibiotic treatment, crypt depth was significantly increased in addition to increase of length and width of the villi.

Keywords: antibiotic, intestinal microflora, intestinal morphology, thyme powder and essential oil.

The influence of *Eucalyptus camaldulensis* leaves on *in vitro* ruminal fermentation, protozoa population and methane production

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ABSTRACT

The effect of three levels of eucalyptus leaf (0, 28.65 or 57.37mg/200mg substrate), which were either oven, freeze or air dried on *in vitro* ruminal fermentation characteristics was assessed. The studied parameters were *in vitro* gas production (IVGP), methane production, ammonia (NH₃-N) concentration, *in vitro* organic matter degradability, partitioning factor (PF) (ratio of substrate truly degraded to gas volume produced at 24 h of incubation) and total volatile fatty acids (VFAs) concentration. Three subfamily of *Entodiniinae*, *Ophryscolecinae*, *Diplodiniinae* and family of *Isotrichdae* were, also, identified and enumerated. Methods of air (L effect; P<0.01) and freeze drying (Q effect; P<0.05) have decreased the concentration of VFAs. However, oven drying method has increased propionic acid concentration (L effect; P<0.01). Adding eucalyptus leaf has significantly decreased gas production from insoluble fraction (*b*) (L effect; P<0.01), IVGP at 24, 54 h (L and Q effect; P<0.01), methane production (L effect; P<0.05), NH₃-N concentration (L effect; P<0.01) and total VFAs (L effect; P<0.01). However, such additive has improved PF (L effect; P<0.01) only at 57.31 level. Moreover, the inclusion of eucalyptus has significantly decreased total protozoa population (P<0.01), *Entodiniinae* subfamily (P<0.01) and *Isotrichdae* family (P<0.05). The results suggest that eucalyptus leaves has positively manipulated *in vitro* ruminal fermentation, and oven dried method was more effective than two other methods.

Keywords: ammonia nitrogen, *Eucalyptus camaldulensis*, gas test, methane, ruminal fermentation, sheep.

Effects of nitrogen and phosphorus fertilizers on nutritive value of safflower forage and silage

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ABSTRACT

The aim of this study was to determine the effects of ensiling and using of fertilizers nitrogen and phosphorus on chemical composition and ruminal DM degradability of safflower plant (*Carthamus tinctorius* L.). The safflower plant was cultivated at December 2009, and harvested at June 2010 in flowering stage, chopped to 3-5 cm particles and then ensiled in the laboratory silos for 60 days. The experimental treatments were: unfertilized forage (control), phosphorus fertilized forage (100 kg per ha), nitrogen fertilized forage (300 kg per ha), nitrogen and phosphorus fertilized forage (300 kg N and 100 kg P per ha), silage produced from unfertilized forage, silage produced from phosphorus fertilized forage (100 kg per ha), silage produced from nitrogen fertilized forage (300 kg per ha), silage produced from nitrogen and phosphorus fertilized forage (300 kg N and 100 kg P per ha). Chemical composition, DM degradability and digestibility were determined using standard methods. Nitrogen and P fertilizers reduced the NDF and ADF and increased the ash, Ca and P contents of plant ($P < 0.05$). The N fertilizer increased the CP, NPN and buffer soluble protein and decreased the ADIN content of plant ($P < 0.05$). The N and P fertilizers and ensiling increased a and c fractions and ruminal effective degradability of DM ($P < 0.05$). Applying the N and P fertilizers and ensiling also increased the gas production parameters including b and c fractions and ME and OMD content of plant. Based on results of this research, using of safflower silage produced from nitrogen and phosphorus fertilized forage compared to unfertilized forage is recommended.

Keywords: chemical composition, forage, gas production, ruminal degradability, safflower, silage.

Effect of different levels of processed broiler litter on the feed intake, digestibility, performance, ruminal and blood metabolites in Moghani male lambs

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ABSTRACT

This experiment was performed in a completely randomized design with four treatments and nine replicates per treatments, using of 36 Moghani male lambs. Four diets containing 0, 7, 14 and 21 percent (dry matter basis) of processed broiler litter (PBL) were used. Results showed that voluntary feed intake, average daily gain and total body weight gain were not influenced ($P>0.05$) by the experimental diets. Digestibility of DM and NDF decreased linearly ($P<0.05$) while no differences ($P>0.05$) were detected in OM and CP digestibility by inclusion of PBL in the diets. The Ruminal acetate concentration decreased but ammonia increased linearly ($P<0.05$) as the rate of PBL enhanced in the diet, however no differences ($P>0.05$) were obtained for the other metabolites between the animals received different diets. Blood urea-nitrogen increased linearly ($P<0.05$) by increasing of PBL in the diet, but other blood metabolites were not influenced ($P>0.05$) by the experimental rations. Results of current study indicated that feeding PBL in the diet of Moghani lambs up to 21percent, did not affect the nutrients intake and growth performance but decreased digestibility of DM and NDF and ruminal acetate concentration. In Addition, feed cost per unit of live weight gain was decreased ($P<0.05$) by inclusion of PBL in the ration. It is concluded that processed broiler litter could be used up to 21 percent of the diet for fattening lambs.

Keywords: broiler litter, digestibility, metabolites, Moghani lamb, performance.