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Evaluation of sex differences in a porcine behavior training method developed for use within a scientific research setting

Virginia Aida

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Porcine models are increasingly being utilized within the scientific setting due to their similarity to humans in many aspects of anatomy and biochemical processes. Unfortunately, when considering behavioral training, there is little information regarding appropriate training of pigs prior to inclusion within a scientific investigation. Accordingly, the purpose of this study was to develop a method of porcine behavior training for the use of pigs within a scientific research setting. The described methods are based on the behavioral observations of Yucatan miniature pigs and the need to evaluate porcine behaviors over time as an experimental endpoint. The developed regime describes a step-wise approach to training pigs with defined milestones and recommended time frames. Sex differences in training and behavior were also assessed, given that sex differences in behavior and training have been observed across species. This study found that female pigs more consistently and successfully perform trained behaviors, despite males learning the tasks at a faster rate. Our findings and developed methodology can serve as a foundation to guide any scientific study in which pigs are routinely required to perform behavioral tasks such as walking, either leashed or unleashed, to a specific target.

Biography

Virginia Aida has completed her Bachelor of Arts & Science in Biology at the University of Alabama at Birmingham (UAB). She is currently pursuing her Master of Science in Biology at UAB studying traumatic brain injury and spinal cord injury in both rodent and porcine models. In the past, she developed a training regimen designed to effectively acclimate pigs into the laboratory setting and to attenuate the pigs' stress levels during the study. In the near future, she hopes to attain her Doctor of Veterinarian Medicine and study animal behavior and ecosystem medicine.

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Biological control of gastrointestinal parasites (GIN) using various plant species

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Endo-parasitic diseases, caused by gastrointestinal nematodes (GIN) are one of the major causes of animal health deterioration and reduced productivity. Control of GIN solely relies on the use of synthetic therapy, which is becoming less effective and unacceptable, due to animals developing resistance as a result of overuse and the possibility of chemical residues finding their way into the human food chain. Few studies, if any, have evaluated the nutritional possibilities of reducing parasite burden which gaps are associated to cost and unavailability of feed in some regions. Little information, if any, is available on the biological control of GIN using various medicinal plant species that are readily available. Some *in-vitro* studies has proven that some plant species may be effective on GIN and few examples are *Allium sativum*, *Vernonia amygdalina*, *Phytolacca dodecandra*, *Rhoicissus tridentate* and *Zingiber officinale*. This paper will review the available information on some plant species with wide usefulness in controlling GIN, gaps, conclusion and recommendation on more effective model of administration.

Biography

Ayobami Adeyemo has completed his first degree from Ladoko Akintola University of Technology (LAUTECH), Nigeria. He is a well committed and devoted Young Researcher with a vast experience in Animal and Poultry Science. He is currently pursuing MSc at the University of Kwa-Zulu Natal, South Africa and his interest is in animal health with the aim of resolving various distressing issues associated to animal health, exploring wide range of possibilities to reducing or eradicating parasites in livestock animal.

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Evaluation of optimum dietary tryptophan requirement for broiler chicks reared in the cold season under tropical environment

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It has been suggested that the amount of nutrients consumed, environmental temperature and season may affect nutrient requirements of animals, interaction between broilers and season of rearing remains an important problem especially under the tropical environment. The experiment was conducted with broiler chicks from 1 to 28 days of age to determine the optimum tryptophan requirement in the cold season under tropical environment. A total of 285 day old chicks were used in this experiment. The mean minimum daily temperature was from 14-24°C. The experimental design was a completely randomized design, consisting of five treatments each with three replicates. There were five experimental diets with graded levels of supplemental tryptophan at 0.00, 0.04, 0.08, 0.12 and 0.16% to give total dietary tryptophan levels of 0.15, 0.19, 0.23, 0.27 and 0.31% respectively. The basal diet was based on corn (50.66%), groundnut cake (25%) and fishmeal (12.95%), 23% CP and 3008 Kcal/kg of ME. Dietary treatment had significant ($p < 0.05$) effects on final weight, weight gain, feed intake and feed conversion ratio. Chicks fed 0.24% dietary tryptophan gave the highest final body weight, average daily gain and better feed conversion ratio. Chicks fed 0.15% total dietary tryptophan had significantly ($p < 0.05$) higher value for feed intake (1,789.90 g) and significantly lower weight gain (1,021.00 g). Based on this study, overall results suggest that broiler chicks need approximately 0.24% dietary tryptophan between 1-28 days of age.

Biography

Opoola Emmanuel has obtained his BSc, MSc in Poultry Production from Ahmadu Bello University and currently pursuing PhD in Poultry Production from same university, Nigeria. His research interest is on the nutrition and digestive physiology of farm animals, particularly poultry. He has published more the 10 papers in reputed journals. He is a Member of Nigerian Society for Animal Production (NSAP), Animal Science Association of Nigeria (ASAN) and a Registered Animal Scientist (RAS) in Nigeria.

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Evaluation of Kendrapada sheep: Champion prolific meat type sheep in India

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Data on phenotypic characters, production and reproduction performance of 1332 numbers of Kendrapada sheep, recently registered as the 42nd sheep breed in India, were collected through an in-depth monitoring survey conducted in the native tract in Odisha, India. The area is situated between 19° 87' N to 20° 96' N latitude and between 85° 79' E to 86° 76' E longitude. The climate is hot and moist sub-humid to hot and humid in nature. The average annual rainfall is around 1500 mm. Odisha is gifted with sizable population of small ruminants distributed all over the state. Kendrapada sheep has been identified as second prolific sheep breed in India, which carries *FecB* mutation, responsible for prolificacy and found in eastern coast of Bay of Bengal in Odisha, India. More than 75% of Kendrapada sheep owners possess less than half hectare of cultivable land. Only 3.31% of the farmers rearing this sheep own more than a hectare land, reflecting poor resource profiling of Kendrapada sheep farmers in the native tract. The flock size ranges from 5 to 27. Predominantly deep brown, coat color ranges from light grey to blackish grey. Both the sexes are polled. Ears are medium and little drooping. The ewe of this sheep comes to heat at around 10 to 11 months and drops its first lamb at around 15 to 16 months of age. The average lambing interval in these sheep is 8 months with gestation period of 150 days. The reproductive performance of these sheep is the uniqueness of this sheep population with more than 80% multiple births; 71% twinning, 9% triplet and 1% quadruplets. The present study reveals that the mean body weight at birth, weaning/3 months, 6 month and 12 month were 1.70±0.03, 6.76±0.04, 11.18±0.07 and 16.98±0.10 kg, respectively in males and the corresponding values for females were 1.57±0.02, 6.42±0.04, 10.84±0.06 and 16.54±0.09 kg, respectively. Adult weights were recorded as 27.33±0.12 kg and 27.19±0.11 kg, respectively in male and female sheep. Endowed with the resistance to tropical diseases, these sheep have been proving their worth under extensive system of management under hot and humid climatic conditions, contributing to the livelihood of resource poor farmers.

Biography

Susanta Kumar Dash has completed his PhD in 2007 and presently serving as a Professor at the Department of Animal Breeding and Genetics, Orissa University of Agriculture and Technology, Odisha, India. He has registered 4 cattle, 2 buffalo and one sheep breed at national level, published more than 30 papers in reputed journals and completed 14 projects on animal genetic resources of the country and serving as a Member in livestock breeding policy of Government of Odisha.

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Efficacy of *Echinacea purpurea* and Protexin on immune response (IgA, IgG and HI) to Newcastle disease virus vaccination (VG/GA strain) in turkey poults

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The aim of this study was to evaluate the effect of *Echinacea purpurea* and probiotic (Protexin) in turkey poults on systemic immune response against Newcastle disease virus (NDV) following vaccination. A total number of 288, day old male turkey poults (premium) were obtained from Zarin Jooje Company (local company). Poults were divided into 6 groups with 4 replicates. Groups were followed: Birds received ND vaccine and water treated with 1 per 1000 liter of *Echinacea purpurea* (T1), birds received ND vaccine and water treated with 1 kg per 1000 liter of probiotic (T2), positive control or poults were vaccinated against NDV without additives (T3), water supplemented with 1 kg per 1000 liter *Echinacea purpurea* without vaccination (T4), water supplemented with 1 kg per 1000 liter probiotic without vaccination (T5) and negative control group, neither vaccinated against NDV nor given additives (T6). At the age of 10 and 20 days all poults were vaccinated with VG/GA strain ND vaccine by eye dropper according to the recommendation of the manufacturer. For systemic and mucosal antibody analyses, blood samples were collected and the titers of antibody against NDV were measured by ELISA and HI tests. The addition of *Echinacea purpurea* to water (T3) ameliorated the systemic IgG, IgA and HI antibody production as compared to the positive control; however, it was not significant for all time. Protexin supplementation of the water (T4) increased ($p < 0.01$) IgG and HI antibody production against NDV compared to the positive control, only at 28 day of age. However, an increase ($p < 0.01$) in systemic IgA antibody titers against NDV was observed compared to the positive control at 20 and 28 days of age. The birds supplemented with EP (T3) had higher specific and total mucosal IgA antibody levels than positive control birds, but it was not significant (except for total tracheal IgA at 23 day). First scientific evidence on the application of the EP and the Protexin in turkeys supports an improvement of systemic and mucosal immunity.

Biography

Tohid Tolouei is currently a PhD student in Department of Poultry Diseases, Faculty of Veterinary Medicine, University of Tehran, Iran.

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Nutritive evaluation of some *Acacia* tree leaves in the Sudan

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The present work was carried out to represent a review of the chemical composition and nutritive value of browse plants in the Sudan especially in arid and semiarid areas. The proximate analysis for these samples showed that browse plants studied in most cases constitute an excellent forage content, which had higher nutritive value, particularly protein 8.75-21.0%. The browse plants were found to have high content of macro elements and low content of trace elements. The samples in this study were found to have low content of anti-nutritional factors in terms of tannin and high content of lignin. Three fistulated goats were used; the nylon bags containing the browse plants sample *Acacia albida*, *Acacia nubica*, *Acacia seiberiana*, *Blanes aegyptiaca* and *Ziziphus spina-chrestis* were administered directly through the fistula to the rumen of goats. The digestion of the dry matter of the browse plants in the rumen of goat was found to be high in one sample and other samples have middle digestion rate and the rest were low. It is possible to conclude that browse plants complement grasses especially in the dry season, as dry season grasses are extremely deficient in protein and some minerals which cannot alone meet livestock maintenance requirements.

Biography

Nabaa Kamal Badawi Babikir has completed her PhD from Benha University, Egypt. She is a Staff Member in Department of Biochemistry and Molecular Biochemistry. She has published more than 10 papers in reputed journals.

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Comparison of intrauterine ozone and rifaximin treatment in cows with subclinical endometritis

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The aim of presented study was to compare the effect of intrauterine ozone and rifaximine treatment in cows with subclinical endometritis. The study was conducted on 53 Simmental cows with subclinical endometritis, which was diagnosed by ultrasonographic examination. According to results, interval between treatment to pregnancy (46.4 ± 6.2 vs. 40.0 ± 6.0), interval from calving to pregnancy (129.4 ± 9.0 vs. 125.0 ± 13.1), and insemination number (3.2 ± 0.3 vs. 3.1 ± 0.5) after treatment were similar in the groups ($P > 0.05$). In conclusion, intrauterine ozone treatment was observed as therapeutic as rifaximine and to be an alternative treatment approach in dairy cows with subclinical endometritis.

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Testicular cytological profiles of apparently healthy male dromedary camels during rutting and non-rutting periods

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The aim of this study was to evaluate testicular cytological profiles of apparently healthy dromedary bulls during rutting and non-rutting periods. Pairs of testes from 26 (18 non-rutting and 8 rutting seasons) dromedary bulls 6-12 years old that were slaughtered at Akaki, Addis Ababa abattoir were sampled. A 21 gauge needle attached to 20 mL syringe was used to collect Testicular Fine Needle Aspiration (TFNA) samples and five aspiration smears were prepared from each testis. A total of 312 slides (260 Testicular fine Needle Aspiration and 52 imprints) were examined. The modified May-Grunwald Giemsa (mMGG) technique and a light microscope were used to assess cellularity, morphology and quantification of the testicular. Sertoli and spermatogenic cells were identified and counted. The spermatogenic index (SI), Sertoli cell index (SEI) and the relationship between SI and SEI indexes (SSEI) were used to assess the ratio between mature spermatozoa and nursing cells. There were differences ($P < 0.05$) between the rutting and non-rutting seasons among the spermatogenic and Sertoli cells. There were no differences between groups for primary spermatocyte numbers, early spermatid numbers and SSEI. There was no difference ($P > 0.05$) between TFNA and imprint smear slides of the testicular cells except for Sertoli cell count and SEI. Filarial worm larvae were present on the TFNA smear slides of four animals. Imprint and TFNA smear slides had comparable cytological profiles in dromedary bulls and significant differences were observed between rutting and non-rutting periods.

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The effects of citrus peel oil supplementations on some blood parameters in broilers

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The present study was conducted to determine dietary supplemental citrus peel oils (orange, lemon, bergamot) in different levels (1, 2 and 3 ml/kg) on some blood parameters in broilers. The trial consisted of 1-day-old male and female (250 male and 250 female) Ross 308 chicks. The study consisted of 10 groups in total and each group had 5 subgroups. Experimental diets were prepared by adding orange, lemon and bergamot peel oil levels (1, 2 and 3 ml/kg) to basal diet. It was observed that supplementation of citrus peel oils to their diets significantly changed HDL-cholesterol. Especially, the highest HDL-cholesterol value was obtained from broilers fed with 1 ml/kg orange peel oil. However, LDL-cholesterol value was not affected by supplementing citrus peel oils. It was found that the lowest total cholesterol level was in the groups which had 2 ml/kg of orange peel oil in the ration and the highest cholesterol level was in the groups which had 1 ml/kg of orange peel oil in the ration. Citrus peel oils except for levels of 1 ml significantly increased glucose values. The lowest glucose value was obtained from broilers fed with 1 ml/kg lemon peel oil. Highest TG concentration was in the groups added 1 ml/kg of lemon peel oil and the lowest was in the groups added 3 ml/kg of orange peel oil to the ration. In this study, it was observed that with 2 ml/kg lemon and 3 ml/kg orange additions triglycerides values decreased significantly but 1 ml/kg lemon peel addition increased the value of triglyceride. As a result, because HDL cholesterol increased and decreased TG value and LDL cholesterol (numerically), 2 ml/kg lemon peel oil and 3 ml/kg orange peel oil addition to the ration may be suggested.

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Comparatives of two bio-stimulation protocols in relation to lifetime reproductive performance in South African Mukota sows

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30 sows were assigned per group to each of two bio-stimulation protocols, twice daily (08:30 to 09:00 and 16:00 to 16:30) per 30 minutes duration in a four-week observation per parity over three parities. The bio-stimulation protocols involved fence-line boar exposure (FBE), in which sows were exposed to fence-line boars during estrus detection and physical boar exposure (PBE), in which sows received physical contact with the boar during estrus detection. Estrus was synchronized in sows by a single subcutaneous injection of P.G. 600[®] (400 IU PMSG with 200 IU HCG/5 mL dose/animal). Sows on each treatment were artificially inseminated using semen from the same boars and collections. All experimental females received inseminations of 3.5×10^9 sperm/80 mL at 24 hours after onset of estrus. Sows that received physical boar exposure in parity 3 produced a higher estrus expressions (98 ± 23.1 vs. $77.5 \pm 25.5\%$), NRR (92.1 ± 6.3 vs. $74.4 \pm 3.5\%$), farrowing rate (88.2 ± 16.5 vs. $63.8 \pm 7.1\%$), litter size (12 ± 0.02 vs. 8 ± 0.05) and live piglets (10 ± 0.05 vs. 6.3 ± 0.02), respectively compared with those from sows that received fence-line boar exposure in parity 3. Direct exposure of boars to sows prior to estrus induction and artificial insemination progressively enhances the lifetime reproductive performance in South African Mukota sows.

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Comparison of metabolic profile in Brown Swiss cows that bearing male and female calf in periparturient period

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Ataturk University, Turkey

This study aimed to investigate trace element levels, metabolic and hormone profiles of male calf bearing (MCB) and female calf bearing (FCB) cows in periparturient period. In the present study, 20 Brown Swiss (4-5 years old and 500-550 kg weighing) cow was used as animal material. Blood samples were collected on prepartum 21th day. According to birth records samples were classified as MCB (n=11) and FCB (n=9). 9 of the cows were selected as the control group (C) and after 21 days from the births blood samples were collected. Biochemical analyses (glucose, urea, cholesterol, creatine, Ca, Cl, Na, P, K, Fe, Mg, FSH, LH and progesterone) of the samples were done. Our findings showed that glucose, Na, Cl, and progesterone levels in both pregnancy groups were significantly higher than the control group. Alternatively, cholesterol levels of the both pregnancy groups were significantly lower when compared to the C group. Urea level in MCB group was significantly higher than in both FCB and C group. Ca levels in MCB group were similar with FCB group but higher than the C group. On the other hand, there were no any differences among the all groups for creatine, K, P, Mg, Fe, FSH and LH levels.

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Investigation of the effects of chrysin on paracetamol-induced liver damage in rats

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In this study, it was aimed to investigate the effects of chrysin (CH) on the liver toxicity of high doses of paracetamol (PCM). A total of 35 Sprague Dawley rats were used in this study, including 5 groups with 7 rats in each group. The control group (healthy) was given orally saline (SF) only for 6 days but not any other drugs. The CH group was given 50 mg/kg/day of CH orally for 6 days. The PCM group was given SF orally for 6 days and then 500 mg/kg single oral dose of PCM 30 min after SF treatment on the 6th day. The PCM+CH 25 mg/kg/day group was given CH (25 mg/kg/day) orally for 6 days and then single oral dose of PCM (500 mg/kg/day) 30 min after CH treatment on the 6th day by gavage. Similarly, the PCM+CH 50 mg/kg/day group was given CH (50 mg/kg/day) orally for 6 days and then single oral dose of PCM (500 mg/kg/day) 30 min after CH treatment on the 6th day by gavage. It was determined that in the PCM group compared with the control group, the serum ALP, ALT and AST activities increased and that the liver SOD, CAT, GPx activities and GSH levels were decreased and the liver MDA levels were increased ($P<0.05$). It was found that in PCM+CH-25 and CH-50 groups compared to the PCM group, the serum ALP, ALT, AST activities were decreased and the liver SOD, CAT, GPx activities and GSH levels were increased and the liver MDA levels were decreased ($P<0.05$). It was concluded that both doses of CH treatments were effective on PCM-induced liver toxicity.

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The performance and susceptibility of different commercial broilers to dyschondroplasia

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A 49-day study was conducted to evaluate the performance parameters and susceptibility of different commercial broilers hybrid (B, A, C) to tibial dyschondroplasia (TD). Total of 1440 1-d-old chicks were attributed to 6 experimental groups and each sex of hybrids was represented by four pens of 60 broilers each. Incidence of tibial dyschondroplasia disorder by bone mineral density (BMD) method results, showed significant effect among hybrid at 28 and 49 days of age ($P \leq 0.05$), but the sex and reciprocal sex and strain effect were not effective on appearance of this disorder and its related physiological parameters. Whereupon the prevalence of TD in hybrid A was higher than hybrid B and C. Results showed that hybrid and sex had no significantly effect on total food consumption ($P > 0.05$). A significant difference was observed in daily weight and food conversion coefficient among hybrids and gender ($P < 0.01$), as, hybrid C showed the highest body weight gain, compared to other hybrids, over the test period.

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Molecular analysis of South African ovine herpesvirus 2 strains based on selected glycoprotein and tegument genes

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Ovine herpesvirus 2 (OvHV-2), is the causative agent of sheep-associated malignant catarrhal fever (SA-MCF), a generally fatal disease of cattle and other captive wild ruminants. Information on the OvHV-2 strains circulating in South Africa (SA) and other African countries with regard to genetic structure and diversity and pattern of distribution is not available. This study aimed to characterize the OvHV-2 strains circulating in SA using selected genes encoding glycoproteins and tegument proteins. To establish the genetic diversity of OvHV-2 strains, four genes, *Ov 7*, *Ov 8 ex2*, *ORF 27* and *ORF 73* were selected for analysis by PCR and DNA sequencing. Nucleotide and amino acid multiple sequence analyses revealed two genotypes for *ORF 27* and *ORF 73* and three genotypes for *Ov 7* and *Ov 8 ex2*, randomly distributed throughout the regions. *Ov 7* and *ORF 27* nucleotide sequence analysis revealed variations that distinguished SA genotypes from those of reference OvHV-2 strains. Epitope mapping analysis showed that mutations identified from the investigated genes are not likely to affect the functions of the gene products, particularly those responsible for antibody binding activities associated with B-cell epitopes. Knowledge of the extent of genetic diversity existing among OvHV-2 strains has provided an understanding on the distribution patterns of OvHV-2 strains or genotypes across the regions of South Africa. This can facilitate the management of SA-MCF in SA, in terms of introduction of control measures or safe practices to monitor and control OvHV-2 infection. The products encoded by the *Ov 7*, *Ov 8 ex2* and *ORF 27* genes are recommended for evaluation of their coded proteins as possible antigens in the development of an OvHV-2 specific serodiagnostic assay.

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Effect of kisspeptin-10 on serum testosterone levels in stallion, donkey and mule

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This study was conducted to determine the response of serum testosterone in male equines following bolus doses of Kisspeptin, hCG and LH. Male animals of each equine species (stallions, donkeys and mules) were divided into four groups. Kisspeptin-10 was administered intravenously into the jugular vein of all animals. Group-1: Treated with 3 ml (0.95% saline); Group-2: Treated with 50 µg Kisspeptin; Group-3: Treated with 2500 IU hCG and, Group-4 treated with 400 µg LH. Serum testosterone levels among different treatment groups were compared through one way ANOVA, $P < 0.05$ was taken as significant difference. Administration of Kisspeptin to all the three species i.e., stallions, donkeys and mules led to significant ($P < 0.001$) increase in testosterone concentration at 240 min post dose as compared to the saline treated group. Upon LH administration a highly significant increase ($P < 0.001$) in serum testosterone concentrations was noticeable at 240 min in stallions, donkeys and mules as compared to pre dose testosterone concentrations. In case of hCG treatment, the concentration of serum testosterone was also found significantly greater in stallions ($P < 0.05$), in donkeys ($P < 0.01$) and in mules ($P < 0.001$) at 240 min post dose as compared to the pre-dose concentration. Administration of Kisspeptin and other reproduction related hormones to male equines causes significant increase in serum testosterone concentration demonstrating similar effect of all the peptides.

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Activation of AMPK/Nrf2 signalling by Manuka honey protects human dermal fibroblasts against oxidative damage by improving antioxidant response and mitochondrial function promoting wound healing

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Excessive amounts of free radicals are deleterious for cells, resulting in cell damage, affecting the wound healing process and causing premature ageing or even neoplastic transformation. Here the capacity of Manuka honey (MH) to protect against oxidative damage and improve the process of skin wound healing was investigated. Up to 16 compounds were identified in MH with leptosin derivatives and methyl syringate as the major ones. MH protected against apoptosis, intracellular ROS production and lipid and protein oxidative damage. MH also protected mitochondrial functionality, promoted cell proliferation and activated the AMPK/Nrf2/ARE signaling pathway, as well as the expression of the antioxidant enzymes such as SOD and CAT. Here we describe for the first time that one of the possible mechanisms by which MH exhibits its ability to promote wound healing could be due to its capacity to improve the antioxidant response by activating AMPK phosphorylation and the ARE response.

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The value of cow signs in assessment of the quality of nutrition on dairy farms

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The quality and quantity of the nutrition of dairy cattle affects their productivity, health and reproduction. As a consequence it is an important profit driver. Hence, the assessment of the quality of nutrition is a very important task for anyone dealing with dairy cattle. The most commonly used method of assessment of the adequacy of nutrition is by taking representative samples and carrying out a nutritional (feed) analysis. From the variety of approaches to assessment 'cow signs' which are behavioral, physiological and management parameters that can be observed and measured without instrumentation and laboratory analyses will be discussed. The important cow signs related to nutrition include signs related to the general condition of cattle (e.g., mentation and hair coat, body condition score), behavioral signs related to feeding (e.g., appetite, thirst, prehension and rumination) and physiological parameters related to feeding (rumen fill, fecal score and fecal digestibility scoring). The interpretation should be based on the current best evidence-based information. Diagnosis of a problem is therefore based on establishing a farm profile of cow signs. Routinely collected herd data, such as milk production and composition, nutritional analysis, fertility indexes and body condition scoring records will be discussed. Their potential value in estimating nutrition is recognized and but they are already elaborated elsewhere. The intention of this workshop is to provide practitioners, nutritional consultants and scientists and/or clients with an additional toolbox that can be used in assessment of the nutrition of dairy cattle.

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Protective effects of rutin on acute lung injury induced by oleic acid in rats

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The purpose of this study is to explore the protective effects of different doses of rutin with the antioxidant and anti-inflammatory properties on acute lung injury (ALI) induced by oleic acid (OA) in rats. 35 Sprague-Dawley male rats were randomly separated into five groups: comprising: Control, rutin 150 mg, OA, rutin 75 mg+OA and rutin 150 mg+OA. In the rutin 75 mg+OA group, the malondialdehyde level (MDA) was significantly lower than that of the OA group. In the rutin 75 mg+OA group, the GPx, GSH, CAT and SOD levels were significantly higher than those of the OA group and significantly lower than those of the control group. In the rutin 150 mg+OA group, the MDA level was significantly lower than that of the OA group. In the rutin 150 mg+OA group, the GPx, GSH, CAT and SOD levels were significantly higher than those of the OA group and when compared to the control group the GPx, CAT and SOD levels did not have any difference but the GSH levels were significantly lower. In the rutin 75 mg+OA and rutin 150 mg+OA groups, iNOS expressions in the interstitial parts of the lungs were significantly lower than those of the OA group. The iNOS expression was lower in the 150 mg+OA group compared to the rutin 75 mg+OA group. It was concluded that on the ALI induced by OA, rutin had protective effects through the antioxidant and anti-inflammatory properties and that this protective effect of rutin was higher in the 150 mg/kg dose compared to the 75 mg/kg dose and that the application of rutin as a supportive treatment in ALI would be beneficial.

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Effects of chromium (III) picolinate and chromium (III) picolinate nanoparticles supplementation on growth performance, organs weight and immune function in cyclic heat stressed broiler chickens

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The experiment is conducted to investigate the effects of dietary chromium (III) picolinate (CrPic) and chromium (III) picolinate nanoparticles (NanoCrPic) supplementation on growth performance, organs weight and immune function of broilers exposed to heat stress. Heat stress (36 °C) was applied for 10 hours per day from the 21st to the 42nd days. Among 8 experimental treatments; only group T1 represented the non-heat stressed control group fed with a basal diet in comfort zone whereas group T2 represented the heat stressed control group fed with a basal diet. Heat stressed T3, T4, T5 groups were fed with basal diet supplemented with 500, 1.000, 1.500 ppb of CrPic/kg while T6, T7, T8 groups were fed with basal diet supplemented with 500, 1.000, 1.500 ppb of NanoCrPic/kg respectively. Results of the current experiment showed that the non-heat stressed group had a higher final BW, daily weight gain and daily feed intake compared with heat stressed groups during the experiment period (d 21-42), among heat stressed groups, FCR values improved by supplementation of Cr into the diet. NanoCrPic 1.500 treatment had the lowest ($P<0.05$) FCR (2.14) of the total experimental period among heat stressed groups. The liver weight values of the day 35 of experiment differed significantly ($P<0.05$). Serum complement component C3 of experimental broilers was severely affected by the Cr supplementation. The results indicated that the nanoparticle supplementation might be an influential method for reduction of heat stress induced disorders which may attribute to the lowering of FCR and provoking the hepatic related alteration including the liver weight.

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Antibiotic susceptibility and molecular identification of antibiotic resistance genes of staphylococci isolated from bovine mastitis in central region of Algeria

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The study was carried out to investigate the phenotypic and genotypic identification of *in vitro* antimicrobial susceptibility of 21 Staphylococci (10 *Staphylococcus aureus* and 11 Coagulase Negative Staphylococci) isolated from bovine mastitis to 12 antimicrobial drugs frequently using in veterinary medicine in Algeria. Isolates of staphylococci from bovine mastitis were tested for antibiotics with disc-diffusion method according to the National Committee for Clinical Laboratory Standards guidelines in the Mueller-Hinton agar and resistant genes *mecA*, *blaZ*, *aac-aph*, *ermA*, *ermC*, *tetK* and *tetM* were detected by PCR. Staphylococci isolates showed high resistance to penicillin (95.23%), oxacillin (80.95%), clindamycine (80.95%) and erythromycin (76.19%) but, no resistance of all these strains was detected for gentamicin. Among 21 isolates of Staphylococci, 20 were found to be methicillin and multidrug resistant. Multidrug resistant strains exhibited several antibiogram patterns (antibiotic I to XIII). The distribution of antibiotic-resistant genes was *mecA* (100%), *tetM* (100) followed by *blaZ* (42.85%). In the present work, the significant determination was the high prevalence of methicillin-resistant Staphylococci, which were resistant to multiple antibiotics. The finding of methicillin-resistant staphylococci (MRS) from bovine mastitis is the first report in Algeria and revealed the status of resistant isolates in herd that might be helpful in treatment, controlling of resistant strains and for deciding culling of cows.

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Prospective evaluation of pain in dogs undergoing ovariohysterectomy and castration

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Six female dogs were operated for ovariohysterectomy and six male dogs were castrated to assess severity of pain, wound healing and its complications if any from post-operative care. The heart rate, body temperature and respiratory rate were also recorded. Body temperature, heart rate and respiration in male and female dogs during the process of operation differed significantly ($P < 0.05$). On average the body temperature of female dogs was significantly higher (102.01 ± 0.91 °F) than the male dogs (101.86 ± 0.60 °F). The heart rate of female dogs was significantly higher (109.42 ± 23.06 beats per minute) than the male dogs (95.42 ± 15.97 beats per minute). Respiratory rate of female dogs was significantly higher (40.68 ± 5.07 breaths per minute) than the male dogs (35.93 ± 6.03 breaths per minute). The post-operative body temperature on average of female dogs (ovariohysterectomy) was higher than the male dogs castrated. The heart rate varied between animals in the same sex and on average heart rate of female dogs was higher than the male dogs. The respiration also varied between animals as well as between male and females, but respiration rate was higher in female dogs than the male dogs. The female and male dogs varied markedly in relation to postoperative pain due to their respective operations. There was great variation between dogs for the degree of pain or severity of pain after ovariohysterectomy surgery and this might be associated with the physical health of these animals. The male dogs physically were of different health conditions and may be the weaker dogs felt prolonged pain as compared to those with good health.

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Islamic attitudes towards animal ethics

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The Abrahamic religions, including Islam, believe that human life is more valuable than animal life and that humans have a God given authority over animals, but they should not be cruel to animals and cause their pain or suffering. Because of the widespread use of experimental animals in Iran these days, special rules have to be defined for their living conditions. Therefore, all our researchers should have enough information about ethical codes of treating experimental animals as well as Islamic principles in this regard. In the present study, all Islamic sources related to treating animals and the relevant international literature and valid ethical guidelines from other countries were compared. Finally, a strategy for an appropriate and complete framework for the national ethical guidelines for animal research in Iran was developed based on Islamic rules. These rules have been adopted as a national framework. In general, they seem comparable with other laboratory animal guidelines against animal cruelty.

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Impact of inulin on increase of calves' body weight and methane emission

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There are many researches about different prebiotics which can increase live weight and at the same time can reduce methane production in livestock (Fao, 2010; Mirzaei-Aghsaghali, 2015). There are no information about prebiotic inulin, so the aim of this research was to determine the impact of different dosages of inulin concentrate (50%) on increase of calves' body weight and methane emission. Four week clinically healthy different Holstein Friesian crossbreed calves (n=24) which were kept in groups of 8 calves in partly closed space with passive ventilation system divided into three groups: control group (CoG; n=8) and 2 groups fed with additional flour supplement (Pre12 (n=8); Pre24 (n=8)). The length of research was 57 days, during this time on research start day, 29th and 57th day we determined each calf's weight and methane emission PICARROG-2508 (Fleck, 2013). Conclusion: 1. We found out that inulin supplement showed good results of live weight gain at the end of the research comparing Pre24 and CoG (P=95%). In Pre24 it was 128±18.8kg and in CoG 116±7.1kg, also there was a significant (P=95%) difference between Pre12 and Pre24- respectively 114±12.4kg and 128±18.8kg. 2. The biggest methane emission on 1 kg body weight at the end of the research was noticed in CoG - 5.72±0.08 mg/m³, comparing to Pre12- 4.10±0.06 mg/m³ and Pre24 - 4.17±0.05 mg/m³. 3. The highest amount of methane in surrounding space where calves were kept was noticed in Pre24 - 15.4±0.77 mg/m³, comparing to Pre12 - 13.8±0.7769 mg/m³ and CoG - 10.2±0.51 mg/m³.

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Changes in some blood serum enzymes after the use of glucocorticoids

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Glucocorticoids are widely used in human and veterinary medicine. They are indicated in diseases associated with inflammation, pruritus and others. Except the positive effect of this group of drugs, there are complications associated with the use of steroids, such as diabetes mellitus, iatrogenic Cushing syndrome, steroidhepatopathy in dogs. Steroid hepatopathy is unique pathology in dogs which may develop even after the first use of glucocorticoids. Despite this fact usually the steroid hepatopathy is taken as mild secondary complication in dogs. To describe the influence of drugs to the body, studies should be made on clinically healthy animals for better understanding of the effect. But sometimes animals with discovered pathologies may react to medication differently. The objective of this study is to compare the changes in some blood serum enzymes in healthy dogs and in dogs with already discovered immunmediated pathologies after the long-lasting methylprednisolone acetate was used once. Seven clinically healthy beagle dogs and seven home dogs took part in the study. The study took place with the permission N 70 of Latvia Committee of Ethics. To reach the aim such blood serum enzymes as ALAT (alaninaminotransferase), AP (alkaline phosphatase) and cAP (corticosteroid induced alkaline phosphatase) were analysed and changes were compared. There was significant difference in ALAT concentration between clinically healthy and injured dogs. AP and cAP concentration were within the reference ranges on the 29th day in both groups after the glucocorticoid was used once.

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