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Proceedings & Abstracts

BOVINE MEDICINE
FREE ORAL COMMUNICATION ABSTRACTS
COMPARISON OF SEROLOGICAL EVALUATION (INDIRECT ELISA) AND CLINICAL MANIFESTATIONS IN DETECTION OF JOHNE'S DISEASE IN INDUSTRIAL CATTLE FARMS OF TABRIZ

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Topic: 3. Bovine Medicine / Infectious Diseases

Johne’s disease caused by *Mycobacterium paratuberculosis*, is a chronic, contagious bacterial disease that affects the small intestine of ruminants. As an immune response, infected tissues attempt to regenerate healthy tissue which leads to visible thickening of the intestines. Late in the infection, antibody production by the animal can be found in serum of animals and is an indicator that clinical signs of disease and death from the infection will soon follow. A total number of 360 cattle were clinically examined for the disease and blood samples were taken for the serological evaluation with a commercially available ID VET (France) indirect ELISA kit. All seropositive and suspect animals were examined 3 months later to double-check the current clinical signs of the disease. This study showed that among 360 cattle, 56 (%15.5) were seropositive, while 28 (%7.77) had the obvious clinical signs of the disease. 15 cases were considered suspected in clinical examination. In the second round of examination performed 3 months later, all clinically positive cases were approved again. Only 1 of 15 suspected animals showed the complete clinical signs and was approved. Among seropositive cases without any clinical signs, 2 more cases showed to be clinically positive in the second round of examinations. The results approves a double sensitivity in the diagnosis with ELISA compared to clinical examination. It is recommended to joint clinical examination with more sensitive low cost tests like ELISA based tests.
COMPARATIVE DIAGNOSIS OF BRUCELLOSIS USING PCR WITH OLD SEROLOGICAL TOOLS IN SHEEP AND GOATS

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Topic: 3. Bovine Medicine / Diseases of Small Ruminants

A comprehensive study was conducted for the *Brucella melitensis* detection in sheep and goats by serum agglutination test (SAT) and PCR. For this purpose, 250 samples each of blood and serum were collected from female sheep and goats at different livestock research farms of Punjab, Pakistan. Rose Bengal plate test (RBPT) was performed for screening which revealed nine positive samples. Out of nine positive samples, five goats and four sheep were positive. RBPT positive samples were further carried to SAT which detected six positive (2.8% goats and 1.8% sheep) out of nine positive samples. By the simple PCR, eight (3.2%) sheep and goats were found positive among 250 samples. One each of sheep and goat found negative by SAT were positive by PCR. RBPT was found less sensitive and more specific while SAT was less specific and more sensitive in detecting *Brucella* specific antibodies. The invariability of the sensitivity and specificity of RBPT and SAT in sheep and goats suggested that no single test was recommended for the accurate diagnosis of brucellosis however the combination of both is recommended for initial screening and afterwards the confirmation by PCR is needed for culling.
SCREENING OF BOVINE TUBERCULOSIS IN DOTS IMPLEMENTED AREA OF KAVRE DISTRICT OF NEPAL

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Topic: 3. Bovine Medicine / Infectious Diseases

Research was conducted to find out the cases of bovine tuberculosis in 50 animals reared by 25 tuberculosis (TB) infected persons that are getting the Directly Observation Treatment Shorts coarse (DOTS) at Kavre District during the period of August to December 2009. The intradermal cervical tuberculin test was followed to identify the bovine tuberculosis by injecting 0.1 ml of tuberculin antigen from Canadian Food Agency and measuring the increase in thickness after 48 and 72 hours. Results were taken to be negative if the change in thickness was less than 2.0 mm. The thickness remain the same in 45 animals (90%) and 5 animals (10%) were positive for tuberculin having the change in skin thickness. Similarly among the 25 tuberculosis infected household, 13(52%) had an extra pulmonary type of TB and 12(48%) had pulmonary type of TB. Animals were also higher infected (60%) in household where their owner had extra pulmonary type of TB. Overall prevalence of TB in human where their animal was infected with BTB in study area was 20%. Likewise total 25 TB infected household, 40% had the habit of drinking raw milk, similarly relationship between raw milk ingestion by TB infected person and number of infected animal was markedly higher (50%). Out of 25 TB infected household maximum (44%) were old person and higher animals were (14.28%) associated with infections in same households. The farmers’ knowledge on zoonotic aspect of bovine tuberculosis was generally very low (7%).
RELATIONSHIP BETWEEN VEAL CALVES’ TEMPERAMENT, CORTISOL LEVEL AND RESPIRATORY DISEASE INCIDENCE

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Topic: 3. Bovine Medicine

Bovine respiratory disease (BRD) has an enormous economic and animal-welfare impact in beef production. The etiology of BRD includes environmental, host and infectious factors. Susceptibility to BRD varies widely between individuals and may be related to the ability to resist stress. This study’s objective was to evaluate the relationship between temperament and the animals’ ability to adapt to a new environment with susceptibility to BRD. On the day after arrival (d1) the temperament of 73 male calves (average age 21 days) was assessed by an avoidance distance test (AD – allowed to touch; backed at distance < 1 meter; backed at distance >1 meter) and reaction to handling (RH). Reaction was classified by an observer when animals were restrained as no reaction, mild reaction and violent reaction. Blood (PC) and saliva (SC) were collected for cortisol evaluation. These measurements were repeated one week later (d8). During the following 2 months BRD was diagnosed in 46.6% calves of which three died. PC and SC were significantly higher on d1 compared with d8 (p<0.001). Calves with higher PC and SC on d1 had significantly more BRD (p=0.0015). RH2 calves on d8 showed higher incidence of BRD (p=0.036). On d8 those animals that had higher levels of cortisol were less likely to allow distances <1 meter (p=0.038) and were more likely to back at distances >1 meter (p=0.08). We concluded that stress related to the adaptation to a new environment increases susceptibility to BRD and that more fearful calves have higher levels of cortisol.
PRINCIPLES OF BIOSECURITY IN DAIRY HERDS

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Topic: 3. Bovine Medicine / Herd Health Management

Introduction: Optimal environmental conditions are essential for animals to reach their genetic potential. Agricultural biosecurity refers to management practices designed to prevent the introduction of pathogens into herds or the spread of pathogens within a herd that could harm the health of the herd and the quality of the products.

Materials and Methods: There was collected and analysed a complex of preventive measures designed to prevent the penetration of infectious agents into farm by persons, animals (wildlife, pets), technological systems and equipment (technology of housing, feeding, drinking, removing of excrements, ventilation), transport and sanitation.

Results and Discussion: Biosecurity depends on the concentration of dairy herds, the disease situation in the locality, as well as the level of immunity of animals. Adequate hygienic level of breed is the presumption of achievement of the high level of production and reproduction parameters of the cows and the stockman’s economical rentability. The infection pressure in farms and in stables proportionally increases with animal concentration, duration of their stay in the animal house.

Conclusions: The complex of dairy farm biosecurity is possible summarised into the ten golden points (farm location - closed herd turnover - control of entry and movement of persons - control of vehicle movement - black and white farming zones - optimization of technological systems - feed and drinking water hygiene - disinfection, insect and rodent control - targeted prophylaxis, diagnosis and therapy – herd health management).

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Infectious bovine rhinotracheitis, caused by bovine herpes virus type 1 (BHV1), is an important and widespread disease of wild and domestic cattle. It can cause severe economic losses in dairy cattle. The study aims to determine production losses caused by BHV1 and to analyse relations between dairy farm socio-economic characteristics and losses originated from BHV1 in Turkey. Firstly, a total of 234 sera sampled from non-vaccinated cows were analyzed using gB competition indirect ELISA. Thereafter the reproductive and production records of BHV1 seropositive animals were obtained from the farms which are located in Hatay province, Turkey. As a result of this project, serologically 18.37% of the cows were found positive. Average milk yield loss, live weight loss and extended calving interval (ECI) were found as 10%, 9% and 4.3 day per cow, respectively. Milk yield and live weight of seronegative cows are significantly (p˂.01) higher than seropositive cows tested. There is no significant differences between seropositive and seronegative cows in respect of ECI and abortion. Negative correlations were found between bredeers’ herd size and milk losses, educational level and numbers of abortion, income level and milk losses in dairy cattle (p˂.05); positive correlations was found between herd size and numbers of abortion in dairy cattle (p˂.05). Production losses can be reduced to acceptable levels by the biosecurity training programs, especially in bigger dairy farms. Furthermore, considering these production losses, partial budget analyses in farm level and cost-benefit analyses in regional or national level should be done.
The aim of this study was to determine the expression of cTn-I with practice cardiac kit, the levels of serum cTn-I and the rate of myocardial degeneration due to Foot and Mouth Disease (FMD). Sixtyeight cattle with acute FMD (Group I), mean age 12.4±3.1 months old and 20 clinically healthy cattle (Group II), mean age 10.4±2.9 months old were used. Mean CK-MB, LDH activities and cTn-I level were found as 795.1±587.5 U/L 1305.9±427 U/L and 3.6±2.7 ng/ml respectively in cattle with FMD. The mean of the same parameters were 306±91.8 İÜ/L, 1084.7±193.5 İÜ/L and 1.1±0.1 ng/ml in Group II, respectively. These parameters in Group I were statistically higher than those of group II (p<0.05). Cardiac Tn-I tests were positive in the only five cattle with FMD. The data of the cattles with the higher enzyme activity were seperated as Group Ia with higher average value (Group Ia, n = 24). Five animal with positive cTn-I were found from the Group Ia. Mean LDH activity and cTn-I level were determined as 2072.4±1186.1 U/L and 10.7±5.4 ng/ml in cTn positive cases (n=5) respectively. These levels were statistically higher than Group Ib and Group II (p<0.05). Macroscopic findings, serum cTn-I levels and positive cTn-I results were correleted with FMD cases suffering from myocardial degeneration. In conclusion, both quantitative cTn-I analysess and qualitative cTn-I expressions may be sensitive and specific marker for the determination of mortality rate in cattle with FMD, and can be used to predict the future cardiac disorders in cattle.
Increased wild game ranching bordering livestock production areas has brought many challenges to livestock farmers. Anthrax control through vaccination is difficult in wildlife and creation of an adequately vaccinated buffer of livestock around hot spot areas remains a feasible control strategy. An annual vaccination campaign analysis of Schmidtsdrift district in South Africa has shown that by the time of the next annual vaccination campaign, at least 43.6% ‘new’ naive cattle and 38.6% ‘new’ small ruminants are presented for initial vaccination. This is from a target vaccination of 75% of the population. The analysis has shown that outbreaks might occur in initially adequately vaccinated areas due to increased livestock movements leaving a significant naive population. In the same area, because of lack of vaccine for Bovine Malignant Catarrhal Fever- wildebeest derived, farmers lose large numbers of cattle. This shows that vaccination plays a pivotal role in disease control and in the absence of a vaccine; sound regulatory policies need to be formulated to prevent wildlife-human conflict.
**EIMERIA INFECTION IN DAIRY CATTLE OF INDUSTRIAL FARMS IN WESTERN IRAN**

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**Topic:** 3. Bovine Medicine / Herd Health Management

*Eimeria* infection is of importance protozoal infection in ruminants which causes economic lost in animal husbandry of Iran and worldwide. This study was aimed to determine prevalence and *Eimeria* species diversity in dairy cattle with different age groups under industrial management. The present study was carried out in industrial cattle husbandry of western Iran from spring 2011 to 2012. A total of 307 fresh fecal samples were randomly collected. The specimens were subjected for flotation and McMater methods. *Eimeria* species diversity was also determined by using oocyst sporulation method. The overall prevalence was 31.92%. The highest prevalence was found in dairy cattle (37%) with 1-3 years old. There was no significant difference between prevalence and different age groups. The intensity was variable and ranged from $3.18 \times 10^3$ to $2.71 \times 10^3$. There was no significant difference between the prevalence and intensity in all age groups. Fecal consistency findings revealed that the highest infection was significantly in dairy cattle with normal fecal consistency in all age groups. Seven *Eimeria* species were detected and *E. zuernii* (28.25%) was the most prevalent species in 5% dairy cattle (1-3 years-old) in spring (30%) and summer (30%). There was significant correlation between frequency of *Eimeria* infection and season. All infected cattle had mixed infections with two (42.85%) and three (3.15%) species of *Eimeria*. The results of this study elucidated attention should be paid within seasonal infection in young dairy cattle to avoid clinical coccidiosis, particularly in farms with poor hygienic conditions and no prophylactic treatments.
EVALUATION OF AN ANTIGEN-CAPTURE POINT-OF-CARE ASSAY FOR DETECTION OF BOVINE VIRAL DIARRHEA VIRUS

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Topic: 3. Bovine Medicine / Infectious Diseases

Introduction

Bovine viral diarrhea virus (BVDV) is one of the world's most costly bovine diseases. It suppresses the immune system, making the infected animal susceptible to other infections. Eradicating BVDV requires detecting and removing persistently infected (PI) cattle that constantly shed the virus in large amounts and expose other animals to disease. To make testing easier in remote areas, an antigen-capture point-of-care assay for bovine viral diarrhea virus (BVDV) was developed using lateral flow technology.

Material & Methods

The BVDV Ag POC was evaluated with samples of genotype 1 and genotype 2. 878 whole blood samples, 627 plasma/serum samples and 440 small ear notch samples collected from herds in China and Germany were used. BVDV PI status was confirmed with the IDEXX BVDV Ag/Serum Plus Test.

Results

The IDEXX BVDV Ag Point-of-Care Test shows high sensitivity (whole blood, 96.5%; plasma/serum, 98.5%; small ear notch, 100%) and high specificity (whole blood, 99.1%; plasma/serum, 99.4%; small ear notch, 100%).

Conclusions

This test is robust, easy and fast. It offers immediate ability to interpret results and draw conclusions when still on farm. It can be used on an individual animal basis in areas with limited laboratory infrastructure.
Cryptosporidiosis is a zoonotic disease caused by a protozoan parasite, *Cryptosporidium parvum*. In animals, it is considered as an economically important disease with clinical signs and death in young ruminants. The usual clinical course is acute diarrhoea affecting animals from 1 to 3 weeks old. Today, no drugs are fully effective in the treatment of cryptosporidiosis in man and animals. Therefore, the research for new therapeutic agents is crucial.

We report here details of the adaptation of *in vitro* culture systems (HCT-8 and Caco-2 cell lines) for *C. parvum* to investigate the "anticryptosporidial" activity of drugs and the results obtained with two new molecules, derivatives of Chitosan. Chitosan, a natural polysaccharide compound, has been found to be active against a variety of diseases (antimicrobial, antitumoral effects). We investigated the effects of Chitosan in our two *in vitro* models. Paromomycin, a classical drug used in veterinary medicine, was used as a positive control. Immunofluorescence technique was used for the quantification of the parasites.

Our results showed a very significant reduction of viability of *Cryptosporidium* oocysts (>95%) after pre-incubation of 24h at 37°C with Paromomycin (P < 0.001) and both Chitosan derivatives (P < 0.001). Paromomycin and Chitosan derivatives also inhibited significantly the development of *C. parvum in vitro* (P < 0.005).

In conclusion, these findings provide for the first time the evidence of *in vitro* inhibitory activities of natural polysaccharides against *C. parvum*. *In vivo* preliminary data showed clearly that these drugs are effective in decreasing diarrhoea in ruminants.
An analysis of the coagulation profile and its abnormalities is one of the key indicators of systemic homeostasis. In veterinary medicine, changes in the coagulation profile have been reported in many disorders.

In this study, 10 neonatal diarrheic and 10 clinically healthy neonatal calves aged one week were used. Routine clinical examinations were conducted in all calves. Plasma samples were collected from each animal for the measurement of prothrombin time (PT), Activated Partial thromboplastin time (APTT), thrombin time (TT), the concentrations of fibrinogen, D-dimer and antithrombin III (AT III).

TT and APTT values were prolonged at 32.05s and 39.9s respectively in calves with diarrhea than in control calves. The most common causes of prolonged APTT and PT are reported to be due to liver failure, vitamin K deficiency, and excessive consumption of clotting factors during the development of DIC. D-dimer concentrations were significantly increased in diarrheic calves (587.25 μg/L) than the control group which is indicative of seriously impaired haemostasis and the development of secondary fibrinolysis associated with DIC. A visible drop in AT III (103.75%) activity and PLT(598x10^3/μL) were observed in diarrheic group of calves. The results suggest that a compensatory type of disseminated intravascular coagulation (DIC) develops in diarrheic calves.
EFFECT OF SELENIUM, VITAMIN E, AGE AND WEIGHT ON DAILY WEIGHT GAIN AND RESPIRATORY DISEASE PREVALENCE IN FEEDLOT CALVES

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Topic: 3. Bovine Medicine / Infectious Diseases

Bovine respiratory disease (BRD) is considered the most damaging health and welfare problem in the beef industry. Economic impact results especially from reduced gain weight and carcass downgrading. The objective of this study was to assess the effect of initial age and weight and selenium+ vitamin E drenching, on daily weight gain (DWG) and BRD incidence. We randomly allocated 171 calves (127±29 days old) to three groups: no treatment (n=66); drench with 0.5 mg Se + 3,750 IU α-Tocoferol (n=58); drench with 0.25 mg Se + 450 IU α-Tocoferol (n=47). Calves were weighed and submitted to clinical examination on arrival and then every month until slaughter (age 243±33 days). Calves with rectal temperature above 39.5º C or signs of respiratory disease were treated. Lung lesions were recorded at slaughter. Morbidity and mortality due to BRD was 14.6% and 2.9%, respectively. Of the 166 animals slaughtered 51 had lung lesions of which 59% were never clinically detected. Animals with lung lesions showed a significantly lower DWG during all growing process. Heavier animals showed less BRD and performed better – for every extra kg on arrival calves gained an additional 1.4 g per day and 1.08 g of carcass weight per days on feed. Older animals grew faster in the first month. Drenching did not affect performance or morbidity to BRD. We concluded that BRD cases are difficult to identify clinically and these animals cause significant economic losses. Initial age and weight affects performance and are risk factors for BRD.
USING OF ENRICHED WHEY AS MILK REPLACER IN HOLSTEIN MALE CALVES

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Topic: 3. Bovine Medicine / Nutrition and Metabolic Disorders

In this experiment effect of replacing milk with treated whey as a milk replacer assessed on growth performance, body weight gain, dry matter intake, feed conversion ratio, rumen physical development and rumen parameters. Twenty Holstein bull calves (5±2 d) were randomly divided into two treatments of ten calves. Calves were housed in individual pens to prevent cross contamination among calves and fed starter \textit{ad libitum}. Group one were fed raw milk(M) and group two fed whey containing either soybean and corn grain flour (W). Rumen fluid and ventral rumen tissue samples were collected from all calves. There were no differences in final weight, average daily gain, feed conversion ratio, body measurements among treatments. The pH in rumen fluid was lower (P<0.05) in the W group than M or control groups at 50 d after birth. In rumen fluid of W group molar proportion of acetate and propionate increased compared to M group(P<0.10). There were no differences in number of rumen papillae/cm\textsuperscript{2}, length and width of papillae among treatments. This study demonstrates treated whey can fed to calves as a milk replacer.
ID: 67

TRANS-HUMAN NORMADISM, A MAJOR CONSTRAINT TO ANIMAL DISEASE CONTROL IN NIGERIA

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Topic: 3. Bovine Medicine / Herd Health Management

Fulani nomads do not have fixed settlement, but move between established territories and pastures. This uncontrolled animal movement is one of the factors limiting the control of animal diseases in Nigeria. The objective of this study was to assess various areas that these nomadic farmers have grazed their animals and livestock health problems encountered. A total of 132 Nomadic farmers in Yewa Local Government, Nigeria were sampled. After an initial familiarisation period of two years, field assessment and interactive group discussion meetings were conducted to respond to structured questionnaires. Respondents included the traditional Fula Nomadic farmers and Fulani settlers who termed themselves as indigenes. 51.5% of the farmers were aged 40 to 49 years of age, 42.4% had no formal education and the primary occupation of all the respondents was Livestock rearing. 52.3% of the respondents were from Northern Nigeria while 6.8% are from neighbouring West African countries. 67.4% practice Extensive system of animal management and 31.8% practice Semi-intensive system. 64.4% have crossed state boundaries while grazing their animals while 16.7% have crossed international boundaries. Problems highlighted by the respondents included inadequate grazing area, resulting in crop farmer-Nomadic farmer conflicts, non-availability of feed all year round, self-medication of their animals, absence of veterinary care services and unavailability of government support. The five major diseases identified by consensus of the pastoral settlers during the interview were Foot-and-Mouth Disease, Trypanosomosis, Dermatophilosis, fly and tick infestation.

Key Words: Nomad, Transhumant, Livestock Health problems, Nigeria
PREVALENCE AND ASSOCIATED RISK FACTORS OF COCCIDIOSIS IN SMALL RUMINANTS IN DERAS GHAZI KHAN, PUNJAB, PAKISTAN


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Topic: 3. Bovine Medicine / Diseases of Small Ruminants

The present study was aimed to determine the prevalence and associated risk factors of coccidiosis in sheep and goats in Dera Ghazi Khan. 752 fecal samples (n=376 sheep; n=376 goats) were collected, and examined coprologically. The prevalence of coccidiosis in sheep (52.92%) was significantly higher ($P<0.05$) compared to goats (44.41%). Eimeria infection was significantly higher ($P<0.05$) in female animals compared to males. The prevalence of coccidiosis was significantly higher ($P<0.05$) in ≤6 month age group sheep and goats followed by >6 months but <1 year, and above 1 year age groups. A significantly higher ($P<0.05$) prevalence was found in stall feeding and confined animals compared to grazing and animal having outdoor access. Prevalence of coccidiosis was significantly higher ($P<0.05$) in animal with poor and weak body condition compared to healthy animals. A strong association ($P<0.05$) was observed between fecal score and prevalence of Eimeria infection. Peak prevalence was observed in August while the lowest in October. The most abundant Eimeria spp. in sheep was E. ovinoidalis (56.78%) followed in order by E. ahsata (47.23%), E. parva (35.67%), E. intricate (30.15%), E. faurei (26.63%) and E. pallid (19.09%). In goats, the commonest Eimeria spp. was E. ninakohlyakimovae (68.86%), following by E. alijevi (59.88%), E. arloingi (53.29%), E. caprina (46.70%) and E. hirci (22.15%). It was concluded that various Eimeria spp. were quite prevalent and several risk factor affect the occurrence of coccidiosis in study area.
AN OUTBREAK OF HAEMONCHOSIS IN SMALL RUMINANTS IN A SEMI-ARID AREA OF SOUTH AFRICA

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Topic: 3. Bovine Medicine / Diseases of Small Ruminants

Haemonchosis in ovine and caprine species is caused by heavy infestation of a blood-sucking nematode, *Haemonchus contortus*, which predilicts the abomasum. The condition is characterised by poor performance to overt clinical disease. Development of the infective larvae from the egg occurs optimally in high humidity and warm temperature. Parts of the Northern Cape Province of South Africa have a ‘karoo’ type of vegetation comprising low shrubs and grasses. The climate is typically harsh with high temperatures and low rainfall. During the period January 2011 to April 2011, mortalities in sheep and goats ranging from 6.5% to 35% in different herds were reported. Affected animals were weak, reluctant to move, some recumbent and all with very pale mucus membranes. Post-mortems of recently dead animals resulted in huge amounts of *Haemonchus contortus* worms in the abomasum. Nematode fecal egg counts were very high with the highest registering 44200 epg. The outbreak shows that short periods of rainfall may transform usually unfavourable and hostile environment for nematode larval development into a favourable one particularly highly pathogenic *Haemonchus*. Weather focussing should be used to predict and prepare for increased parasite burden in the environment. Even in semi-arid to arid areas, strategic nematode control should be instituted with extensive use of FAMACHA system.
MOLECULAR DETECTING FOR ABUNDANCE OF SARCOCYSTIS SPECIES IN NATURALLY INFECTED SHEEP OF NORTHWESTERN IRAN

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Topic: 3. Bovine Medicine / Diseases of Small Ruminants

Sarcocystis is one of the most prevalent parasites of domestic ruminants worldwide. This study was aimed to determine prevalence of Sarcocystis infection and molecular discrimination of Sarcocystis gigantea and Sarcocystis medusiformis infecting domestic sheep of North West of Iran. Tissue samples from 638 sheep slaughtered at Urmia abattoir were randomly collected from February 2011 to January 2012. Genomic DNA extraction and polymerase chain reaction (PCR) was performed to amplify a 964 bp fragment of nuclear 18S rRNA gene. The PCR products were digested to create restriction fragment length polymorphism (RFLP) patterns for discriminating Sarcocystis species. Results indicated that the overall prevalence of Sarcocystis unspecified species was 36.83% (235/638) in which male (19.75%, 126/638) and female (7.52%, 48/638) sheep over 4 years-old had the highest prevalence. There was significant difference between prevalence of macrosarcocysts and sex. Two macrosarcocysts forms were found as fat (27.9%, 178/638) and thin (8.93%, 57/638) in striated muscles. There was significant difference between frequency of macrosarcocysts and body distribution. Mixed infection with both fat and thin macrosarcocysts was also found in 11.13% (71/638) of infected sheep. There was no significant difference regarding the prevalence of mixed infection in both age groups. PCR-RFLP patterns showed that fat sarcocysts were S. gigantea (29.31%, 187/638) and thin sarcocysts were S. medusiformis (7.52%, 48/638). It was concluded that Sarcocystis infection was prevalent in sheep of North West of Iran and a combination of conventional methods and molecular study for sheep sarcocysts could be informative.
ULTRASOUND GUIDED EPIDIDYMIS LIGATION TO MAKE TEASER RAMS

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Topic: 3. Bovine Medicine / Reproductive Disorders

The methods making teaser animals are used for improvement in artificial insemination in the herds of ovine, bovine and caprine. A teaser animal is an animal which has libido while he is infertile or the mating ability has been omitted. By use of epididymis ligation technique which has recently been introduced and its improvement by using ultrasonography there would be lower chance of technique failure. The method was evaluated in two steps. One on 5 in situ specimens from slaughtered animal (bovine, ovine and caprine) and the main study on five healthy rams. For pilot study the ultrasound probe was placed lateral to the testes while inserting needle. For main study, after local anesthesia, epididymis ligation was achieved by restraining the testis distally within the scrotal sac and passing suture through a hypodermic needle inserted between tail of epididymis and distal pole of testis, caudomedial to cranio lateral through the scrotum. The needle was removed leaving the suture in place and the testis pushed up dorsally, then the needle was reinserted through the former holes and the suture passed back through the needle, which was later withdrawn. The suture ends were tied ligating and occluding the epididymis. Semen samples evaluated pre and post ligature. Testes were removed after 30 days for gross and histological examination. The results showed that by aid of ultrasonography epididymis ligation can be securely done with no chance of failure.
HYPOSPADIAS AND URETHRAL DIVERTICULUM IN TWO GOAT KIDS: A CASE REPORT.

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Topic: 3. Bovine Medicine / Diseases of Small Ruminants

Hypospadias with associated urethral diverticula are less frequently reported in kids and lambs in Pakistan. The cases are generally accompanied by urethral stenosis, testicular hypoplasia, cryptorchidism, bifid scrotum or urethral agenesis. However, the latter two are seldom operated, since owners choose to slaughter such animals, while cryptorchids are also seldom encountered. During January to December 2012, two goat kids, aged between 3-4 months, were presented at the clinic, with complaints of dysuria, stranguria and urine scalding. General inspection revealed fluctuating swellings in the penile region of the two kids. On clinical examination, testicular and penile hypoplasia was also observed. The opening of the urethra, however, was located at the penile position. The case was diagnosed to be hypospadias and urethral diverticula, evidenced by formation of leaking urine pockets (diverticula) under the penile urethra as urine had continuously leaked into the subcutaneous tissue of the prepuce. In these kids, permanent penile urethrostomy with subsequent diverticulectomy were performed at the proximal region of the defect. On opening the diverticulum in one of these goat kids, however, two rudimentary urethral orifices were found; one of these ended up as a blind pouch and was closed with catgut using a transfixing ligature, while the other, which communicated with the urethra was surgically opened up for a permanent urethrostomy. The urethral epithelium was finally sutured with the skin using 2-0 Mersilk sutures in a simple interrupted pattern. No post-operative complications were reported by the owners in either animal on follow-up examinations.

Key words: Hypospadias; urethral diverticula; goat kids; Pakistan.
INCIDENCE OF ENERGY AND ACID BASE METABOLISM DISORDERS IN HOLSTEIN FRIESIAN DAIRY HERDS DURING THE LAST FIFTEEN YEARS

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Topic: 3. Bovine Medicine / Nutrition and Metabolic Disorders

At the beginning of 1970’s more than 30 thousand Holstein Friesian bred and calf heifers were imported from USA and Canada as well as simultaneously the local Hungarian Fleckvieh populations was subjected to crossbreeding with Holstein Friesians. These two major actions in the Hungarian dairy industry have increased the milk yield of herds substantially. This genetic progress increased the nutritional requirements and made the cow populations more sensitive to even minor errors committed especially in the feeding during the transition period, which might induce subclinical or clinical metabolic disorders.

In order to reveal the subclinical metabolic disorders metabolic profile test was done at 90 large-scale dairy herds with the population of approximately 52,000 Holstein-Friesian cows, aged 5-6 years on average in Hungary between 1996 and 2011.

In the present study 27,566 dairy cows were sampled in different stage of lactation and gestation.

The groups tested were as following:

Group I.: cows in the close-up period (n=6469);

Group II.: fresh cows 2-5 days after calving (n=5417);

Group III.: early lactation cows (n=7777);

Group IV.: cows at the peak of lactation (n=7903).

The occurrence rate of hyperketonaemia, subclinical fatmobilisation syndrome, acid load and imminent metabolic acidosis was higher at the beginning of the survey than at the end of the examined period.

The results of the study may permit to draw the conclusion that utilisation of the results of the study by the farmers contributed to the decrease of incidence of the subclinical metabolic disorders in Holstein-Friesian cows during the examined period.

The paper was supported by TÁMOP-4.2.1.B-11/2/KMR-2011-003 project.
IMPACT OF A PERIPARTURIENT SUPPLEMENTATION OF LIVE YEAST ON ANIMAL PERFORMANCE, RUMINAL FERMENTATION AND METABOLISM IN HOLSTEIN DAIRY COWS

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Topic: 3. Bovine Medicine / Nutrition and Metabolic Disorders

The objective of the study was to examine the impact of addition and retrieval of live yeast (LY) Saccharomyces cerevisiae (ACTISAF Sc47, Lesaffre Feed Additives, France) to the diet of dairy cows during the periparturient period (21 days prepartum) and 21 days postpartum on physico-chemical parameters of ruminal milieu.

Eight rumen fistulated Holstein cows were selected from the dairy herd of the Animal Research Institute, Praha Uhříněves, Czech Republic. The cows were fed an acidogenic diet. They were divided into 2 experimental groups. The Yeast Group received live yeast at 2.5g/day from d-28 to calving and 5.0 g/day from calving till d21; the Control Group did not receive any LY.

The cows were fitted with indwelling wireless ruminal probes for continuous measurement of ruminal pH, redox potential (Eh) and temperature.

Prepartum, the effect of LY on ruminal pH and redox was inconsistent until 3 weeks after the start of supplementation, and pH was markedly lower and Eh higher in the Control cows. Postpartum, the effects were similar to prepartum ones but more pronounced.

The results indicate that it takes approximately three weeks before live yeast start to influence ruminal pH and Eh. Live yeast seem to have more pronounced effect on ruminal redox potential values than on ruminal pH.
ACCUMULATION OF XANTHOPHYLLS FROM THE PHAFFIA YEAST (XANTHOPHYLLOMYCES DENDRORHROUS) IN CATTLE ORGANS

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Topic: 3. Bovine Medicine / Nutrition and Metabolic Disorders

Carotenoids are important nutrients not only for humans but for livestock as well. Carotenoids enhance immunity and the reproduction performance for livestock. About thirty years ago, carotenoid rich green grass was used for cattle feed. Major feed for cattle has changed to carotenoid less imported hay. Therefore, the accumulation of carotenoids in cattle has dramatically decreased. As a result, reproduction performance and immunity of cattle have dwindled. These are serious problems in Japan.

Recently, astaxanthin have focused on several biological functions such as radical scavenging, singlet oxygen (¹O₂) quenching, and immune enhancement activities etc. However, there are no reports on absorption and accumulation of phaffia yeast carotenoids including astaxanthin in cattle.

An investigation into the absorption and accumulation of carotenoids from phaffia yeast in two to three week old calves was carried out. One calf was used as a control. Colostrum and silage, which was given to mother cows, were also investigated. Carotenoids in colostrum were about 400ng/ml (2 days postpartum) and about 100ng/ml (8 days postpartum), and carotenoids in silage were about 25mg/kg. This amount of carotenoids may be not enough for cattle.

β-Carotene, echinenone, (3R)-3-hydroxyechinenone and (3R,3’R)-astaxanthin were identified in blood, liver, pancreas and spleen etc. Higher levels of xanthophylls excluding β-carotene were found in the liver, testis and kidney. Among the xanthophylls, 3-hydroxyechinenone and echinenone were found to be major components. The results suggest that carotenoids in phaffia yeast may be useful for cattle which are not given sufficient carotenoids.
The periparturient period is the most critical period in dairy cows regarding health status and production with the occurrence of the most of metabolic disorders. Therefore, the objective of this study was to evaluate the diagnostic value of major bovine acute phase proteins (APPs) – haptoglobin (Hp) and serum amyloid A (SAA) – in dairy cows with selected peripartal disorders (lipomobilization syndrome, mastitis, lameness). In the first part of the study we evaluated the relationships between the acute phase response and altered energetic metabolism in cows with physiologic and elevated concentrations of non-esterified fatty acids (NEFA). The results showed significantly higher mean concentrations of Hp and SAA in cows with NEFA concentrations above 0.35 mmol/l compared with those with NEFA values below 0.35 mmol/l (P<0.001 and P<0.001, respectively). In the second part of the study, we evaluated the influence of mastitis in dairy cows on the concentrations of mammary associated milk amyloid A (M-SAA), and selected APPs in blood serum. The obtained results showed elevated production of M-SAA in cows with clinically manifested changes on the mammary gland, and also in cows with sub-clinical mastitis. In the concentrations of APPs in blood serum, less marked changes were found. The findings presented in the third part of the study showed elevated production of APPs in animals affected by hoof diseases and lameness. The obtained results suggest that the assessment of acute phase proteins would be a valuable supplementation to the laboratory diagnosis of peripartal disorders in dairy cows.
MILK FEVER (MF) IN COWS - THE WEATHER HAS AN ETIOLOGICAL EFFECT?

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**Topic:** 3. Bovine Medicine / Nutrition and Metabolic Disorders

**Introduction and Objective:** The milk fever is one of the most important metabolic disorders in dairy cows in early lactation and caused significant direct and indirect losses. We tested at 182 cows whether meteorological factors affecting the milk fever.

**Results:** At fair weather, the percentage of paresis is 22.7%, in changing weather at 24.7% and in low pressure weather 52.7% (p <0.05). The direct losses of animals are at low pressure weather (5.9%) over fair weather (5.2%) and changing weather significantly higher. At changing and low pressure weather the Ca and Pi concentrations decrease in MF cows stronger (p<0.05). The concentrations of urea, glucose (p<0.05), and FFS and the CK activities (p<0.05) are rising faster than in cows during low pressure weather. Characterize the metabolic changes are more substantive and thus complicate the clinical picture caused by stress effects and circulatory loading. The liver indicators GGT, GLDH, bilirubin and haptoglobin don’t change in any weather conditions in MF cows. The inverse relationship between energy and calcium metabolism can be explained by leptin mediated central nervous influences on the osteocalcin in bone.

**Conclusions:** The results suggest that neurotropic weather conditions complicate the MF. In bad weather optimal stable climate and conscientious prophylaxis (Ca salts, Vitamin D3) are particularly important. The success of treatment can be further improved by glucocorticoids.
IMPACTANCE, DIAGNOSIS AND TREATMENT OF THROMBOSIS IN COWS

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Topic: 3. Bovine Medicine / Reproductive Disorders

Introduction and Objective: Thrombosis is uncommon in cattle. She is regarded as prognostically unfavorable. We have examined the importance for bovine patients.

Results: In the Leipzig autopsy statistics from 1999 to 2007 make pulmonary thromboembolism from 11%, the patients of the Medical Clinic 10.6%. Thrombosis is mostly accompanied by retained placenta, endometritis, phlegmon pelvis, peritonitis, mastitis and abomasal ulcers. They are in our own patients the cause of circulatory disorders that manifest themselves clinically as typical septicemia-hypovolemic shock symptoms, accompanied by decreasing blood pH and base excess and increasing urea concentrations. The septicemic circulatory insufficiency includes hypercoagulability and microthrombosis in the lungs, respiratory disorders and insufficient blood supply to other organs. This may also be the cause of downer cows. Indirect signs of septicemia include leucopenia, increased bilirubin and glucose, decreased potassium, cholesterol and phosphate concentration, and thrombocytopenia. Cows with puerperal septicemia have altered levels of coagulation factors fibrinogen, factor XIII, D-dimer, procalcitonin and platelet counts. Basic treatment are the hemodynamic stabilization and focus medication. Increased clotting can be treated by heparin and Dexamethasone. For prophylaxis is important: The predisposition for thrombosis start in the dry period with metabolic disorders followed by chain reaction - dystocia - delayed uterine involution – retained placenta - Endometritis - septicemia.

Conclusions: Thrombosis can be common cause of death in early lactation in cows. They are accompanied by septicemia. These must be treated consistently.
TRAUMATIC RETICULITIS IN CATTLE AND BUFFALOES OF PUNJAB, INDIA: A CLINICAL STUDY

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Topic: 3. Bovine Medicine / Herd Health Management

This study was conducted on 25 buffaloes and 11 cattle diagnosed with traumatic reticulitis, on the basis of radiography and/or rumenotomy. Ten were pregnant and 26 were non-pregnant. Mean duration of illness was 10.25±2.65 days. The clinical findings in majority of cases were anorexia, fever, dullness, mild to moderate dehydration, absent or reduced ruminal motility, scanty faeces or complete loss of defecation. Sudden reduction in milk yield (n=12), abdominal pain (n=14), tympany (n=12) and brisket edema (n=5) were not observed in majority of cases. On perrectal examination rumen was doughy, mushy or hard and faecal particle size was increased in majority of cases. Hematology revealed neutrophillic leukocytosis with mean WBC count of 11940±824.99/µl, mild to moderate toxic changes and left shift in majority of cases. Mean values of serum total bilirubin (1.29±0.31mg/dl), AST (315.94±48.18U/l), ALP (120.72±19.34U/l), GGT (98.06±19.17U/l), fibrinogen (0.83±0.07g/dl), glucose (83.75±8.33mg/dl), lactate (7.26±0.81mmol/l), BUN (31.83±3.99mg/dl), creatine (2.47±0.44mg/dl) and rumen chloride (37.62±2.12mEq/l) were higher, while albumin (2.73±0.10g/dl), chloride (86.92±2.19 mmol/l) and calcium (7.68±0.26 mg/dl) were lower, and total protein (7.32±0.18g/dl), globulin (4.60±0.15g/dl), cholesterol (86.39±10.13mg/dl), triglyceride (31.88±3.37 mg/dl), sodium (132.83±1.85mmol/l), potassium (3.87±0.19mmol/l) and magnesium (2.41±0.20mg/dl) were within normal reference ranges. Mean serum C-reactive protein in 21 cases was (2.54±0.4mg/dl) higher than the reference range. Blood gas analysis of 20 cases revealed metabolic alkalosis with compensatory respiratory acidosis. Therapeutic rumenotomy was performed in 26 animals, out of which 20 made uneventful recovery, while 6 died. All 10 animals in which rumenotomy could not be performed also died in due course of time.
SYNCHRONIZATION OF OESTRUS WITH VAGINAL SPONGES ASSOCIATED WITH DIFFERENT DOSES OF ECG IN ALGERIAN EWES

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Topic: 3. Bovine Medicine / Reproductive Disorders

It is important to give more consideration and attention to this technique, especially at a dose of equine chorionic gonadotropin (eCG) following progestin treatment. The aim of this study was to compare the effect of halving the intravaginal sponges impregnated with 40 mg of flugestone acetate (FGA; 40) and a different dose of equine chorionic gonadotropin (eCG) on fertility in Algerian ewes and to improve the reproductive performance of ewes of mixed breed Ouled- Djellal X Rumbi by the use of hormone progestin in combination with different doses of eCG (0, 350, 500 and 700 IU). For this we have implemented an experimental protocol of a staff of 40 sheep divided into four homogeneous groups. The Pregnancy rate is not significantly influenced by different doses of eCG, although we note an improvement for lots with a dose of 350 and 500 IU of eCG. The fecundity rate is influenced significantly by the difference in doses. The best rate is obtained by the lot with a dose of 500 IU eCG. Given our results, it seems possible to improve the reproductive performance by using a heat synchronization processing associated with a dose of 500 IU eCG.
Super ovulation is an important step in the protocol of embryo transfer. We tried to optimize it by using and comparing 2 doses of FSHp (32 mg and 40 mg) in cows of local Algerian breed "Brown of Atlas." For this aim, 13 cows had been used, 6 of them received 32mg of FSHp (FSH-32 group) and 7 others a dose of 40 mg (FSH-40 group) from the 10th to the 13th day of a controlled estrous cycle through a subcutaneous implant. After 2 injections of PGF2α, harvesting of embryos was performed on day 7 after insemination. Responses to different treatments were evaluated by the following criteria: the rate of heat coming into the interval PG-onset of estrus, heat’s intensity of estrous and the number of palpated corpora lutea on the ovaries.

In our conditions, the rate of estrus synchronization reached 100%. The interval PG-onset of estrus was about 37.27 ± 2.39 h, and the average intensity scores of events estrous was around 173.58. The total number of palpated corpora lutea was slightly (p=0.17) higher in cows of FSH-32 group comparing to those of FSH-40 group (21.33 ± 2.50 and 18.86 ± 3.44, respectively).

Our data revealed no major significant difference between the 2 doses used.

Key words: Embryo transfer, Superovulation, local breed, FSH dose, heat’s intensity, corpora lutea.
DIAGNOSIS OF REPRODUCTIVE ORGANS BY ULTRASOUND IMAGE AND HISTOLOGICAL FINDINGS IN CATTLE

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Topic: 3. Bovine Medicine / Reproductive Disorders

The recent spread of portable ultrasonic diagnostic devices is remarkable in the diagnosis of reproductive organs. However, there are no clinical diagnostic criteria on the state of the uterus with the rectal palpation and the ultrasound findings. Therefore, we have examined how to accurately grasp the status of the uterus in ultrasound imaging and histological examination.

Ten Holstein dairy cattle under the age of 6.7 ± 2.5 (mean ± SD) were used to examine genital organs. Reproductive organs were examined by rectal palpation and the portable ultrasonic diagnostic device (linear type Honda 5.0 MHz HS-101V) before slaughter, after which they were observed by macroscopic observation, ultrasound water immersion method and histopathological examination.

Histological examination showed a statue from mild to severe inflammation of the uterus in all 10 cases. Three layers of the uterine wall were identified; an endometrium, a blood vessel layer and a muscle layer from transrectal ultrasound images of the lifetime of the uterus. In the water immersion method after slaughter, five layers were identified. Furthermore, eight layers were identified by histological findings.

In future, it will be necessary to distinguish between normal and abnormal when monitoring the physiological changes of the uterus, such as estrous cycle and pregnancy. It will also be necessary to unify the diagnostic criteria for uterine diseases based on histological examination in order to apply the treatment utilizing the clinical diagnostic ultrasound imaging of the uterus.
ID: 274

COMPARISON OF INTRAUTERINE PRESSURE CHANGES IN THE UTERINE HORNS OF DAIRY COWS AFTER TWIN CALVINGS DURING THE EARLY POSTPARTUM STAGE

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Topic: 3. Bovine Medicine / Reproductive Disorders

Intrauterine pressure (IUP) changes in both uterine horns of early postpartum cows after twinning had been compared using a non-invasive, low-cost system under farm conditions.

In 5 Holstein-Friesian cows that had delivered twins, a 4-h continuous IUP was simultaneously recorded in each uterine horn, starting 14 to 17h postpartum and 1-h recordings were additionally repeated three times in 12-h intervals. Pressure changes have been acquired with 2 independent, non-invasively fixed, polyethylene open tip catheters and were transformed into electrical signals using externally fixed disposable pressure transducers. For digital recording and analysis LabVIEW® 5.0 was used. Contraction frequency (FREQ), amplitude (AMP), duration (DUR), mean and total area under the curve (AUC, TAUC) were quantified and compared between the two uterine horns and with published data after single calvings.

FREQ was higher during the first 12h in cows after twinning than in reported data from cows with singletons, while by 48h this changed to the opposite. AMP was higher in the left uterine horn, except during the first recording period, when they were equal. AMP and AUC in twins were consequently higher, while DUR lower than observed after single calvings. Despite some sporadic differences, no major trends could be recognized between the mechanical activity of the two uterine horns in puerperal cows after twinning.

In general, the uterus of cows after twin parturition showed greater activity than those after single calving. However, the activity of the two uterine horns within each twinning cow showed hardly any differences.

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VASCULARISATION TO PREOVULATORY FOLLICLE AND CORPUS LUTEUM- A VALUABLE PREDICTOR OF FERTILITY IN DAIRY COWS

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The early prediction of an outcome of impregnation can help reduce the number of inseminations in an animal. Hence, the aim of the present study was to predict pregnancy rate based on vascularisation to follicle and corpus luteum (CL). 26 Holstein Friesian cows were synchronized using Ovsynch protocol. On day 10 of the protocol, vascularisation and morphological characteristics of follicle was assessed and animals were inseminated. Morphological evaluation and vascularisation to CL was assessed on day 12 and 21 following AI and blood samples were obtained for estimation of progesterone. Pregnancy diagnosis was performed on day 60 of AI and was classified as normal, complicated and non-pregnant. The overall conception rate was 69.23 %. Complications observed in pregnancy were Intrauterine growth retardation, Late embryonic death and Infection. Cows with a highly vascularised follicle (> 550 pixel²) underwent a normal pregnancy, whereas those that had moderately (250-550 pixel²) and poorly (< 250 pixel²) vascularised follicle experienced complicated pregnancy or remained non-pregnant, respectively (Fig 1). Luteal blood flow (LBF) was higher (P < 0.05) in CL of pregnant cows (PCL) than CL of non-pregnant cows (NPCL), however other parameters assessed on day 12 following AI were not useful in differentiating among the three groups. LBF alone was not beneficial in differentiating among them (P > 0.05), but assessment of LBF along with turbulence to blood flow in day 21 CL (Fig 2) proved highly valuable due to increased turbulence in CPCL (66.67%) compared to PCL (16.67%).
THE EFFECT OF SAMPLING METHODS ON THE IDENTIFICATION OF STAPHYLOCOCCUS AUREUS IN COW MILK

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Topic: 3. Bovine Medicine / Mastitis

Mastitis is one of the most common diseases of the dairy cows. From the many causing agents, Staphylococcus aureus is the most prevalent mastitis pathogen in Hungary. In case of a massive Staphylococcus aureus infection in a dairy herd, a preventive program is the only reliable solution which means that large number of milk samples must be examined to identify the infected animals. In the practice the current method is culturing these samples on agar plates. In our first experiment we examined how the long-term congelation can alter the microbiological results. We could culture the Staphylococcus aureus bacterium after one year, so the bacterium definitely can survive that maximum 1-1.5 months what it spends in the farms deep freezer before the veterinarian sends it to the laboratory. On the other hand we also examined how the sampling procedure can affect the results. In two experiments, the effectiveness of pre- and post-milking composite samples, and individual quarter samples were compared. It is generally believed that post-milking samples are more reliable than the pre-milking ones, but it has turned out in both experiments, that the pre-milking composite milk samples are more effective to identify the infected animals than after-milking composite samples. We also found that culturing the same sample 3 times raises the accuracy while the examination of individual quarter samples cost four times more than composite samples and the results was only slightly better, so this method is unprofitable and not advised in practice.

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THE RELATION BETWEEN SOMATIC CELL COUNT AND VISCOSITY OF MILK

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Topic: 3. Bovine Medicine / Mastitis

SCC counter was developed in our Institute under project: "MLIEKO č. 26220220098" supported by the Operational Program: "Research and Development", funded from the European Regional Development Fund and "APVV-0632-10" of the Slovak Research and Development Agency. SCC counter works on the basis of milk viscosity measurement. Three types of equipment were designed. First one is small and portable. Second and third are bigger and are suitable for more precise measurement in milk laboratory. Second equipment can measure one sample and third measures four samples (all quarters of the udder) at the same time. We did an experiment on a group of 45 dairy cows of Holstein breed. The quarter’s samples of milk were taken from the udder before morning milking. Samples were mixed thoroughly and divided to two equal parts. One of them was sent to the milk laboratory for SCC assessment. Second part of them was used for milk viscosity measurement with SCC counter. The correlation coefficient between milk viscosity and SCC was evaluated and it was $r = 0.87$ for the first type of SCC counter and $r = 0.92$ for second and third ones. We found that SCC counter can measure SCC from 150 000 to 3 000 000 with the error 15%. On the basis of that we can assume that SCC counter would be a useful tool for rapid mastitis detection.
HEALTH DISORDERS MONITORING BY MEANS OF MILK ELECTRICAL CONDUCTIVITY MEASUREMENT

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Topic: 3. Bovine Medicine / Mastitis

Rapid electronic mastitis test (REM test) was developed in our Institute under project: "MLIEKO č. 26220220098" supported by the Operational Program: "Research and Development", funded from the European Regional Development Fund and "APVV-0632-10 of the Slovak Research and Development Agency". The REM test can monitor milk electrical conductivity (EC) from each quarter of the udder. Mastitis and other health disorders (acidosis, ketosis, laminitis and fever illnesses) of dairy cows can be detected by this means. We realized an experiment in which the EC of milk from each quarter of the udder was measured on the group of 45 dairy cows. SCC and bacteriology was observed also. The data from REM test was evaluated and compared with health status of cow. The health status was assessed on the basis of SCC. The basic facts about possibilities of mastitis and other health disorders detection were summarized. We found that conductivity of healthy cows was 4.7 mS/cm ± 0.4 S.m⁻¹ and cows with mastitis had EC 6.2 mS/cm ±1.0. Correlation coefficient between EC and SCC was 0.65 (p<0.05). The sensitivity and specificity of mastitis detection by means of EC measurement was found 0.87 and 0.93. It was true for method of inter-quarter difference (IQD) which was stated on 0.6 mS/cm. Another health disorders can be detected in the case if EC is higher than 6.0 mS/cm and IQD is lower than 0.6 mS/cm.
Prevalence of subclinical mastitis and associated risk factors were studied in smallholder dairy farms in Jimma, Ethiopia. Forty-two herds were visited, a questionnaire was performed, and 704 quarters belonging to 176 lactating cows were tested to detect the presence of subclinical mastitis using the California Mastitis Test (CMT). Sixty-two % of the cows and 51% of the quarters were CMT positive indicating subclinical mastitis is more prevalent in Jimma compared to other Ethiopian regions. Quarters from cows milked by stripping, in later stage of lactation, and affected by tick infestation were more likely to be CMT positive. This study stresses the high prevalence of subclinical mastitis in smallholder dairy farms in Jimma and suggests hand milking technique and tick control could be important in control and prevention of mastitis.

Keywords: Risk factor, subclinical mastitis, smallholder dairy farm, Jimma, Ethiopia, California Mastitis Test
PREVALENCE OF TRICHOMONAS FETUS IN BULLS IN THE NORTHERN CAPE, SOUTH AFRICA

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Topic: 3. Bovine Medicine / Infectious Diseases

A protozoan, *Trichomonas fetus*, causes bovine Trichomoniasis. The organism is well adapted to the genital tract of cattle and transmitted mainly by asymptomatic bulls. It is a common cause of foetal wastage worldwide especially where natural breeding occurs. Preputial sheath washes and scrapings from bulls (n=201) from the Northern Cape Province in South Africa where tested using polymerase chain reaction (PCR) and sixteen (16) bulls were found positive to *Trichomonas foetus*. This raises the concern of production-limiting conditions and diseases in communal, small scale and commercial farming where natural breeding occurs. Intervention policies such as livestock restocking programs by the state and non-governmental organisations should take consideration of prevailing conditions before introducing new replacement stock. The study shows that *Trichomonas foetus* might be a significant problem in the Northern Cape and should be considered when investigating infertility.
EFFECT OF PROTEIN TYROSIN KINASE INHIBITOR (GENISTEIN) IN ASSOCIATION WITH NITRIC OXIDE ON KINEMATIC PARAMETERS OF BULL SPERMATOZOA IN VITRO

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Topic: 3. Bovine Medicine / Reproductive Disorders

The present study investigated the effects of exogenous protein tyrosin kinase (PTK) inhibitor (Genistein) on kinematic parameters of epididymal bull sperm in vitro. After incubation of epididymal sperm samples for 45 and 90 min in the presence of Genistein (1, 10, and 100 μM) and nitric oxide (NO) donor (NOC-18) (0.0005, 0.5, and 500 μM), motion parameters were evaluated by computer aided sperm analysis (CASA). No motility parameters were significantly changed after 45 or 90 minutes of incubation. Most of the kinematical parameters remained unchanged at 45 min and after 90 min only some of the kinematical parameters were significantly increased at 10 and 100 μM concentration, include VCL, VSL, LIN, WOB and STR. In conclusion, we suggest that protein tyrosin kinase inhibitor (Genistein) did not affect motion parameters of bull epididymal sperm and probably PTK is not a cell signaling pathway for effect of nitric oxide in the cell.
ULTRASOUND-GUIDED FEMORAL NERVE BLOCK AS A DIAGNOSTIC AID IN DEMONSTRATING QUADRICEPS INVOLVEMENT IN BOVINE SPASTIC PARESIS.

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Topic: 3. Bovine Medicine / Claw and Leg Diseases

The aim of this study was to evaluate the clinical effects of diagnostic anaesthesia of the femoral nerve performing a dorsal paralumbar injection technique in healthy calves and calves suffering from bovine spastic paresis. Based on bony landmarks and with ultrasound guidance, the femoral nerves of eight healthy calves were blocked with a 4% procaine solution containing blue dye. After euthanasia of the calves successful location of the injection was confirmed during dissection work. In 69 percent of the cases a paralysis effect of the quadriceps muscle was obtained after performance of the injection technique. A total paralysis of the quadriceps muscle was obtained in 50% of the cases. In 75% of the cases, the blue dye was less than 2 mm perineurally. Clinical use of the technique is demonstrated in two clinical cases suffering from atypical presentations of bovine spastic paresis. In calves suffering from these presentations of bovine spastic paresis an objective diagnostic tool is needed to declare an animal suitable for surgery to avoid unwanted aggravation of symptoms following partial tibial neurectomy. Femoral nerve blocking has the potential to be a valid diagnostic method to establish involvement of the quadriceps femoris muscles in young calves suffering from the quadriceps form (BSP-Q) or mixed presentation (BSP-M) of bovine spastic paresis.
COMPARISON OF EFFICACY OF MEDETOMIDINE AND XYLOCAINE AS EPIDURAL ANALGESICS IN BUFFALO CALVES

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² Dept. of Clinical Medicine & Surgery, University of Veterinary & Animal Sciences, Lahore, Pakistan

The efficacy of medetomidine HCl as epidural anesthetic was experimentally studied in twenty-four healthy buffalo calves of either sex and body weights between 150-200 kg. The animals were randomly divided into 6 groups A, B and C (n=4), [including the four subgroups A1, A2, A3 and A4 of the Group A]; Medetomidine HCl was used at four different doses 15, 30, 45 and 60 µg/kg BW, in each subgroup, respectively. Group B animals were administered with Lignocaine HCl 2%, while 3ml normal saline (placebo) was used in the Control Group C. The onset and duration of analgesia were evaluated every 15 minutes, using the pin-prick and pinch tests. The data was analyzed using analysis of variance followed by Dunnett’s test. The onset of skin analgesia was dose dependent, higher and rapid with increase in dose; hence, analgesia was earlier in animals of group A as compared with group B. Significant change in the duration of analgesia was seen till 40 minutes after injection (P<0.05). The recovery pattern showed a similar trend. The sedation score showed a significant dose-dependent effect, becoming more pronounced with increase in dose of Medetomidine HCl. Group B animals showed very mild sedation, while in group C, no sedation was observed at any stage. Incoordination in calves after epidural injection was highest and significant in group A4 (P<0.050) at 20 and 40 minutes. Conclusively, it was inferred that despite early induction and longer duration of analgesia, medetomidine is suitable for standing surgeries of hindquarters in buffalo calves.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Drugs used</th>
<th>No. of animals</th>
<th>Analgesia Time (Mean±SD)</th>
<th>Sedation Time (Mean±SD)</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Medetomidine 15 µg/kg</td>
<td>4</td>
<td>3.17±1.2</td>
<td>45.50±1.7</td>
<td>6.05±1.0</td>
</tr>
<tr>
<td>A2</td>
<td>Medetomidine 30 µg/kg</td>
<td>4</td>
<td>2.75±1.2</td>
<td>44.60±1.7</td>
<td>5.05±1.0</td>
</tr>
<tr>
<td>A3</td>
<td>Medetomidine 45 µg/kg</td>
<td>4</td>
<td>2.73±1.5</td>
<td>47.50±1.7</td>
<td>4.50±1.0</td>
</tr>
<tr>
<td>A4</td>
<td>Medetomidine 60 µg/kg</td>
<td>4</td>
<td>2.50±1.0</td>
<td>53.50±1.7</td>
<td>4.05±1.0</td>
</tr>
<tr>
<td>B</td>
<td>Lignocaine 2%</td>
<td>4</td>
<td>3.31±1.2</td>
<td>34.63±1.7</td>
<td>5.05±1.0</td>
</tr>
<tr>
<td>C</td>
<td>Normal saline</td>
<td>4</td>
<td>0.05±1.0</td>
<td>0.05±1.0</td>
<td>0.05±1.0</td>
</tr>
</tbody>
</table>

*Significant change was observed (P<0.05), while values having different superscripts differed significantly (P<0.05).

<table>
<thead>
<tr>
<th>Groups</th>
<th>Drugs used</th>
<th>No. of animals</th>
<th>Temperature</th>
<th>Pulse</th>
<th>Respiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Medetomidine 15 µg/kg</td>
<td>4</td>
<td>102.40±2.6°</td>
<td>78.90±1.9°</td>
<td>22.50±1.7°</td>
</tr>
<tr>
<td>A2</td>
<td>Medetomidine 30 µg/kg</td>
<td>4</td>
<td>102.70±2.0°</td>
<td>77.70±1.9°</td>
<td>27.50±1.9°</td>
</tr>
<tr>
<td>A3</td>
<td>Medetomidine 45 µg/kg</td>
<td>4</td>
<td>102.70±2.0°</td>
<td>72.70±1.9°</td>
<td>31.50±1.9°</td>
</tr>
<tr>
<td>A4</td>
<td>Medetomidine 60 µg/kg</td>
<td>4</td>
<td>101.60±1.9°</td>
<td>68.80±1.9°</td>
<td>27.50±1.9°</td>
</tr>
<tr>
<td>B</td>
<td>Lignocaine 2%</td>
<td>4</td>
<td>102.70±2.0°</td>
<td>71.70±1.9°</td>
<td>28.00±1.9°</td>
</tr>
<tr>
<td>C</td>
<td>Normal saline</td>
<td>4</td>
<td>102.70±2.0°</td>
<td>76.20±1.9°</td>
<td>25.5±1.9°</td>
</tr>
</tbody>
</table>

*Significant change was observed (P<0.05), while values having different superscripts differed significantly (P<0.05).

<table>
<thead>
<tr>
<th>Groups</th>
<th>Drugs used</th>
<th>Time (Mean±SD)</th>
<th>Temperature</th>
<th>Pulse</th>
<th>Respiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Medetomidine 15 µg/kg</td>
<td>20 min.</td>
<td>4.70±5.0°</td>
<td>7.50±5.0°</td>
<td>2.0±5.0°</td>
</tr>
<tr>
<td>A2</td>
<td>Medetomidine 30 µg/kg</td>
<td>40 min.</td>
<td>2.50±5.0°</td>
<td>7.50±5.0°</td>
<td>2.0±5.0°</td>
</tr>
<tr>
<td>A3</td>
<td>Medetomidine 45 µg/kg</td>
<td>60 min.</td>
<td>2.50±5.0°</td>
<td>7.50±5.0°</td>
<td>2.0±5.0°</td>
</tr>
<tr>
<td>A4</td>
<td>Medetomidine 60 µg/kg</td>
<td>80 min.</td>
<td>2.50±5.0°</td>
<td>7.50±5.0°</td>
<td>2.0±5.0°</td>
</tr>
<tr>
<td>B</td>
<td>Lignocaine 2%</td>
<td>20 min.</td>
<td>4.70±5.0°</td>
<td>7.50±5.0°</td>
<td>2.0±5.0°</td>
</tr>
<tr>
<td>C</td>
<td>Normal saline</td>
<td>40 min.</td>
<td>4.70±5.0°</td>
<td>7.50±5.0°</td>
<td>2.0±5.0°</td>
</tr>
</tbody>
</table>

*Significant change was observed (P<0.05), while values having different superscripts differed significantly (P<0.05).
The effect of lameness on the behaviour at the feed bunk and on the level of stress was examined in Holstein cows (DIM: 150±23.6) on a commercial dairy farm. Based on their locomotion score two groups of cows (non-lame: scores 1-2, N=28; lame: scores 3-5, N=24) were formed. The number of aggressive interactions exhibited as performer or receiver was determined for each cow over a 30 min period at the feed bunk. Dominance score (DS) was calculated for each animal based on aggression rate (AR; aggressive interactions as performer/total aggressive interactions). DS1 corresponded to AR<33.33%, DS2 corresponded to AR between 33.3 and 66.66%, while DS3 corresponded to AR>66.66%. Heart rate variability (HRV) parameters were calculated in frequency (LF, HF and LF/HF ratio), time (rMSSD) and non-linear domains (Lmax, REC%) for four 5-min bouts of each animal. There was a lower dominance level in lame (DS: 1.44±0.69 vs. 2.24±0.79; P<0.001) cows. Higher rMSSD (P<0.001), HF (P<0.05) and Lmax (P<0.01) were found in lame cows reflecting higher parasympathetic tone, while lower LF and LF/HF ratio (P<0.05) showed lower sympathetic activity in lame cows during feeding. Daily milk yield of the sound cows was higher compared to lame ones (35.27±7.58 vs. 29.84±7.56; P<0.001). Results suggest that the effect of lameness can be manifested in HRV confirmed by the observed differences in aggression levels of lame and non-lame cows.
THE EFFECT OF LAMENESS ON HRV PARAMETERS DURING MILKING

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⁶ Department of Animal Hygiene, Herd Health and Veterinary Ethology, Faculty of Veterinary Science, Szent István University, Budapest, Hungary

Topic: 3. Bovine Medicine / Claw and Leg Diseases

Heart rate (HR) and heart rate variability (HRV) were compared in non-lame (locomotion score: 1–2, N=28) and lame (score: 3–5, N=24) Holstein cows during conventional milking. Stepping rate and HRV parameters were recorded at the evening milking. Number of steps made while the teat cups were on differed significantly between non-lame (5.86±4.93) and lame cows (11.00±8.96) (P<0.05). HRV parameters were calculated in time (HR, rMSSD), geometric (SD1, SD2) and frequency domains (LF, HF, LF/HF ratio) regarding different phases of milking process: preparation, first minute of milking, main milking, last minute of milking and in the time between teat cup removal and leaving the milking stall (waiting). HR was higher in all phases in lame cows (P<0.05). Short-term HRV indicators (rMSSD, SD1) were higher in lame cows than in healthy ones during preparation (P<0.01), in the first minute of milking (P<0.05) and during finishing (P<0.05) reflecting a higher vagal activity in lame cows. RMSSD, HF and SD1 were higher; LF, LF/HF and SD2 were lower in lame cows (P<0.05) reflecting parasympathetic predominance and a shift of sympatho-parasympathetic balance towards parasympathetic tone. No differences were found in HRV parameters in the last minute of milking. Frequency-domain parameters were reliable indicators of autonomic nervous system activity during main milking, however, effect of a chronic stressor during shorter periods of milking (preparation, first minute of milking and waiting) was more prominent in time and geometric domain indices.