601 (3162)

EXPRESSION OF GROE GENE OF BRUCELLA ABORTUS ISOLATES BY E. COLI RECOMBINANTS

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The heat shock proteins including GroEL have been found to be immuno-dominant targets of both the humoral and cellular immune responses in bovine brucellosis. The groE gene of Korean isolates of B. abortus, encoding GroES and GroEL were amplified by polymerase chain reaction (PCR). To obtain recombinant subunit proteins to be used for diagnosis and prevention of B. abortus infection, the groE gene was cloned into pET-29a plasmid vector and the GroES and GroEL were expressed in E. coli. Five strains of B. abortus were isolated from the mammary lymphnodes of the dairy cattle diagnosed serologically positive. Polymerase chain reaction, DNA cloning, expression in E. coli and SDS-PAGE were performed by general methods. In PCR using BGroES and BGroE primers, the specific signals with the sizes of 353bp and 2,077bp were identified in five B. abortus isolates and reference strains. The DNA fragments amplified by PCR using BGroE primers were subcloned in pGEM-T plasmid vector. Following treatment with Ncol restriction enzyme, the groE gene was obtained and constructed pET29a-GroE recombinant plasmids. The inserted groE gene was confirmed by digestion with Ncol and EcoRI endonucleases and nucleotide sequencing. The cells transformed with pET29a-GroE was named E. coli BL21 (DE3)/pET29a-GroE. By analysis of SDS-PAGE and Western blot, it was found that E. coli BL21 (DE3)/pET29a-GroE effectively expressed the poly-peptides for GroES (10k Da) and GroEL (60 kDa) in 0.5, 1 and 2 hrs after IPTG induction. The immunogenicity of the expressed proteins was evident by mouse inoculation.

Funding: Grant No. R11-2002-100-00000-0 from ERC program of the Korea Science & Engineering Foundation

602 (3296)

INFLUENCE OF MASTITIS ON THE WITHDRAW PERIOD OF SEVERAL INTRAMAMMARY AND PARENTERAL ANTIMICROBIAL AGENTS USED IN LACTATING COWS

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The presence of antimicrobial residues in milk is a concern of public health, because it may cause allergic reactions and development of resistant strains of bacteria to antimicrobial agents. It is also an economic problem because it interferes with starter cultures for dairy products. Mastitis, the inflammatory process of the mammary gland, is the main reason to treat dairy cows with antimicrobials agents. The purpose of this study was to verify the influence of mastitis on the withdraw period of several intramammary and parenteral antimicrobial agents used in lactating cows, as well to evaluate the presence of detectable antimicrobial residues in bulk tank milk in relation to the mastitis rates among the studied dairy farms. A total of 60 bulk tank samples of dairy farms and 135 individual samples of the dairy cows with and without mastitis were screened to verify the antimicrobial residue occurrence with a microbiologic test (Delvotest™). A correlation was found between high clinical mastitis rate and antimicrobial residue in bulk tank (r=1.0; Spearman). Higher withdraw period was observed in the milk samples of mammary glands with inflammatory process than without, both in lactating cows treated with parenteral antimicrobials, as well as in samples of lactating cows treated with intramammary antimicrobial agents, exceeding the manufacture limits. This fact was observed in each treated group with different antimicrobial agents (betalactam antibiotics, aminoglycosides, tetracycline and sulfa) and ranged from 11 to 60% of analyzed samples. A significant statistical difference was found (p<0.05, Fisher) at seventy two hours after the parenteral treatments in the samples from the animals presenting the inflammatory processes, in relation to the samples from the animals without mastitis, i.e. there was a higher withdraw period in the samples from animals with mastitis. Among the main conclusions, it should be pointed out that there was a correlation between high clinical mastitis rate in the dairy herd and antimicrobial residues in the milk bulk tank. Another important result was that the mammary glands with inflammatory process exhibited higher withdraw period when compared with mammary glands without inflammatory process, and sometimes this withdraw period exceeded the manufacture recommended period.
Sarcocystosis, a protozoan disease has assumed greater zoonotic significance in cattle industry. Cattle act as main sources of human disease. Meat with sarcocysts is unacceptable to consumer and causes considerable economic losses and health hazards. The present investigation describes a systematic prevalence of Sarcocystis sp. in cattle. A total of 211 samples were tested during one year study out of which 128 (60.6%) were found positive for Sarcocystis sp. using pepsin digestion method while 116 (54.32%) samples tested positive by rapid isolation of intact micro-sarcocystis cysts from muscular tissues of cattle. The prevalence of various Sarcocystis sp. such as S. cruzi, S. hirsuta and S. hominis was 41.70, 9.47 and 3.79%, respectively, by rapid isolation technique. Only microsarcocystis cysts were encountered from oesophagus, tongue, diaphragm, eye, skeletal and heart muscles of 128 (60.6%) cattle. Sarcocystis sp. were differentiated on the basis of morphological characters and structure of cyst wall. Sarcocystis cruzi had thin cyst wall whereas S. hirsuta had thic cyst wall. Prevalence of sarcocystosis was found to be positively correlated with increase in age. Month wise and sex wise occurrence has also been studied. Pepsin digestion method revealed higher prevalence of sarcocystosis.

604 (2285)
THE ANTIOXIDANT DEFENCE AND METHANOGENESIS
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In many species of bacteria the catalase is one of the very important enzymes of antioxidant defense. The activity of this enzyme is revealed also in the rumen of ruminants and, in particular, in the methanogenic bacterium Methanosarcina Barkeri. Methane, which is formed in rumen, in the global plan, considerably strengthens the greenhouse effect of the atmosphere and influences on the climate of Earth. Moreover, additional energy of forages (about 5-10% of its total amount) is spent on methane production. As methanogens belong to group of ?igatory anaerobes and are very sensitive to oxygen and its reactive species, the decrease of the level of antioxidant defense in these bacteria would raise their sensitivity to oxidative stresses and by that would depress their growth and functional activity. In connection with aforesaid, the investigations of properties of catalase and its regulatory aspects in rumen bacteria and the effect of its activity modulators on intensity of methanogenesis are important. By the way of ammonium sulfate fractionation (65% saturation of (NH4)2SO4), gel filtration column and ion-exchange chromatography, the purification (in 28 times) of catalase from cattle rumen bacteria with 42% output of enzyme was carried out. It was established that purified enzyme was activated by hydrogen peroxide, and inhibited by sodium azide. As activators of catalase served also Zn2+, Ni2+, Fe3+, SO42-, CrO42-, and as inhibitors - Cd2+, SeO32-, cysteine.
It was shown that, at the incubation of rumen bacterial fraction in vitro during 24 hours at 38°C, the mass of bacteria in the medium increased. The use of modulators of catalase activity showed that addition of zinc and nickel ions activated the methane production by rumen bacteria in incubatory vesicles, whereas selenite anions, cysteine, cadmium ions, on the contrary, revealed an inhibitory effect on the formation of this gas. Thus, the opportunity of the directional regulation of methanogenesis in the rumen of ruminants by the influence on the level of antioxidant defense in bacteria is revealed.

605 (807)
ULTRASONIC AND HORMONAL EVALUATION OF THE OVSYNCH PROGRAM IN BUFFALO COWS (BUBALUS BUBALIS)
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The aim of the present study was to evaluate the efficiency of Ovsynch program in the Egyptian buffalo cows. Eight Egyptian buffalo-cows, 52-217 days postpartum were used in this study. Irrespective to the stage of estrous cycle, each buffalo-cow received three injections: GnRH on day 1, PGF2a on day 8, and GnRH on day 10 with AI 9 and 24h later. The first GnRH injection resulted in development and ovulation of a large follicle (DF1) in 7/8 cases. The mean time from injection to ovulation was 2.13 ± 0.4 days. This injection was also successful in synchronizing a new follicular wave 3.22 ± 0.8 days later. The rate of P4 production was much rapid in animals with double CL than in those with single one. After the 2nd GnRH injection, the
DF2 ovulated in 6/8 cases. All ovulation occurred between 24 and 48h after injection. Five of the eight buffalo cows conceived according to ultrasonographic pregnancy diagnosis one month after AI. In conclusion, this study provided some basic knowledge about the Ovsynch program in buffaloes, which might be used to dominate the problem of silent heat in this species.

Funding: Assiut University, Egypt

606 (654)
EVALUATION OF UTERINE INVOLUTION USING RADIO-OPAQUE MARKERS DURING THE POSTPARTUM PERIOD IN MAKUII EWES
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After completion of the third stage of parturition and expulsion of the placenta, the uterus started to involute until it reaches to normal size. The rate of uterine involution after parturition was studied in 6 native (Makuii) ewes with a normal history of breeding. Therefore during pregnancy the genital tract was exteriorised through a posterior midline laparotomy under general anesthesia and then four non-toxic split shots were sutured on the serosal wall of the uterine body and horns. After parturition, distances between markers were measured by sequential radiography. The mean length of the uterine body declined until 28 days after lambing but statistically maximum reduction was seen at 14 days after parturition (P<0.05). Also, the mean diameter of non-gravid horn rapidly declined until 14 days postpartum (P<0.05) but reduction continued until 42 days postpartum (P>0.05). The difference between the mean diameter of the gravid and non-gravid horn was not significant between days 14-42 (because of relatively small reduction in size). There were a good correlation between the measurement taken at the time of laparatomy and determined by radiography a few days after surgery for the mean length of uterine body (r=0.89), the mean gravid horn diameter (r=0.91) and non-gravid horn diameter (r=0.79). In conclusion, after final statistical analysis of sequential radiographic views by using a Repeated Measurement Analysis of Variance's Test, involution of the uterus in Makuii ewes were about 28 days postpartum for the uterine body and about 14 days for both the gravid and non-gravid horn and radio-opaque markers method is a useful method to study changes of the uterine size after parturition in live ewes.

Key words: Ewe, Postpartum, Uterine Involution, Radiography

Funding: Urmia University

607 (3437)
INTRAUTERINE PRESSURE RESPONSE TO OXYTOCIN IN COWS TREATED AT 12-14 H AFTER UNCOMPLICATED CALVINGS
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A recently validated, digital data acquisition and analysis technique for recording early puerperal intrauterine pressure (IUP) changes enables to test the effect of uterotonic drugs on uterine contractility in cows. In a previous study with untreated cows we found that mean contraction frequency, amplitude and area under pressure curves decreased significantly during the first 48 h after uncomplicated calving, with the largest drop (to nearly 50% of the initial mean values at 12 h postpartum) occurring between 12 and 24 h after parturition. Individual variation in uterine contractility between cows was high.

The present on farm study aimed to investigate the effect of a single dose of oxytocin on IUP during early puerperium. After shedding the fetal membranes within 12 h after calving, pluriparous dairy cows were randomly assigned to either a saline-treated control group (n=6) or an oxytocin treatment group (n=6) between 12 and 14 h after calving. For measurements of IUP, an open tip plastic catheter, which had been transcervically inserted and fixedated to a stalk of a caruncle, was connected to an externally attached disposable pressure transducer. Within LabVIEW® (Vers. 5.0), operator-made programs were used for data acquisition (sampling frequency: 4 Hz) and analysis. Baseline IUP recordings were performed for 60 minutes after which either a single injection of 50 IU. oxytocin or 5 ml saline was given IM. Recording was continued for another 12 hours, from which only the first three hours were selected for analysis.

The results showed a significant (repeated measures ANOVA) elevation of mean contraction frequency (P<0.001) and mean total uterine activity (described as the sum of the area under accepted pressure curves; P<0.05) when the first period of 60 min. after injection was compared with the pre-injection period: frequency and total uterine activity increased by 68% and 122%, respectively. The effect of oxytocin disappeared during the 3rd hour after treatment. Saline treatment did not alter uterine activity significantly.

It is concluded that, although a single injection with 50 IU. oxytocin significantly stimulates uterine contractility when given between 12 and 14 h after uncomplicated calving, this effect lasts only shortly. The clinical benefit of such a treatment remains to be demonstrated.

scholarship

608 (2640)

EFFECTS OF SIRE GENOTYPE AND FETAL SEX ON BOVINE FETUSES GROWTH
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The present study evaluated the gestation of Nelore females which included fetal growth by B-Mode real-time ultrasonography. The aim of this work was to study the sire and calf sex effects in the fetal growth and birth characteristics. Four groups of Nelore females were mated with Nelore (G1), Canchim (G2), Aberdeen Angus (G3) and Simmental (G4) sires. The animals were maintained under intensive rotation grazing on fertilized pasture of Panicum maximum. The estrus synchronization was achieved using progesterin, estradiol and pregnant mare's serum gonadotropin (PMSG). The fetal development was evaluated through ultrasonographic exams, accomplished at 31st, 45th, 59th, 94th, 150th, 192nd, 220th and 225th days of gestation. The evaluated parameters were the conceptus (embryo proper and diameters of the allantoic and amniotic cavities) and fetal head and optic diameters and circumference. At birth, the body weight, height, heart girth and head and optic diameters of the calves were evaluated. The results were analyzed by the procedure GLM of the SAS (SAS, 1993) and compared within groups. The studied characteristics did not show significant difference in fetal development at 122 days after conception, provided by the paternal breed or calf sex. At birth, the sire effect influenced the gestation length, birth weight, length, heart girth and optic diameter of the calves. Calves from the crossings with Bos taurus bulls (Simmental and Angus) showed phenotypical similarity and were more develop at birth, taking into account the weight, length and heart girth. The Canchim X Nelore calves litters were intermediary size and the pure Nelore calves were comparatively the smallest ones. The calf sex was also responsible for a difference in the gestational length and birth weight, both greater in male.

Unitems: Gestation; Bos indicus; Bos taurus; Crossing; Fetal Growth; Sex.

Funding: IAV Hassan II, AUF, EC

609 (2587)

OVIREP: AN ONLINE COURSE ON OVINE REPRODUCTION
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OVIREP is an online course, of six didactic units, presenting the sheep farming systems in Morocco and focusing on husbandry issues of sheep breeding. The didactic units of this course (physiology, lambing and lamb rearing, methods of reproduction and intensification, reproductive pathology) provide insights in breeding soundness of sheep and tools for managing a sheep enterprise.

The main goal of OVIREP is to apply husbandry and management principles to successful management of reproduction in sheep. This includes topics such as breeding, performance testing, health, nutrition, feeding and grazing systems, management and pathology matters. Current issues important to the sheep industry are also an important part of this course. Furthermore, this course provides the basic knowledge of sheep reproduction and husbandry needed for management of a sheep enterprise. The course gives a broad overview of sheep sector and its economic importance to Morocco.

OVIREP is a web-based course that contributes to (1) developing an understanding and appreciation for the sheep industry, (2) developing an understanding of the nutrition, reproduction, selection, and anatomy/physiology that is involved in livestock production, (3) providing learners with information for problem solving of infertility in sheep, and the opportunity to develop technical skills necessary for fertility evaluation, (4) teaching manipulative procedures for sheep handling, and (5) developing an understanding of the application, scientific principles, and recent research advancements involved in sheep production. In sum, the knowledge gained in this course acquaints the learners with a general understanding of sheep reproduction. After completing this course, the learner will have the skills necessary to answer general questions and to solve fundamental reproduction problems pertaining to sheep industry. The learner will also be able to develop a profitable sheep enterprise adapted to the Moroccan production environment, design feeding, housing, and health programs for sheep operations and be employed in some phase of the sheep industry.

Funding: IAV Hassan II, AUF, EC

610 (1695)

CHARACTERIZATION OF ABORTION AND PERINATAL LOSSES IN CATTLE IN ARGENTINA
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Necropsies were performed on Bos taurus 265 foetuses and 42 one-week-old calves from dairy and beef herds submitted from 2001 to 2003 to the diagnostic laboratories at INTA, Balcarce, Argentina. Aborted
fetuses were from dairy (36/265, 13.6%) and beef (198/265, 74.7%) herds, respectively. In 31 of these cases (11.7%), herd origin was not determined. One-week-old calves were from 37 (88.1%) beef herds and 5 (11.9%) from dairy herds. Samples from foetuses and one-week-old calves were examined for pathogenic organisms and processed for histopathological examination. In those cases where histopathological lesions were compatible with protozoal agents, immunohistochemistry for Neospora caninum was performed. Causes of abortion were determined and undetermined on 84 (31.7%) and 181 (68.3%) foetuses, respectively. Infectious agents were identified on 68 (25.6%) foetuses, being bacterial agents in 48 (18.1%), bovine viral diarrhea virus in 1 (0.4%) case and N. caninum in 19 (7.2%) cases. The most common bacterial agents isolated from the foetuses were Brucella abortus, Campylobacter fetus, and Escherichia coli in 15, 10 and 5 cases, respectively. Others miscellaneous agents were isolated on... cases. Noninfectious agents were established in 16 (6.1%) cases and causes as congenital abnormalities, dystocia, mummifications and twin were found in 5, 7, 3 and 1 cases, respectively. When a histopathological examination was performed on undetermined cases, 119/181 (44.9%) of these had lesions compatible with infectious agents. Determined causes of perinatal losses were found in 12/42 (28.6%) cases. Bacterial causes were found in 10 (23.8%) and noninfectious conditions in 2/42 (4.8%) cases. Undetermined diagnosis was found in 30/42 (71.4%), however, 14 (33.4%) of these cases

611 (3323)
A CASE OF BOVINE MUMMIFIED FETUS IN TWIN PREGNANCY
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A 6-year-old Holstein pregnant cow of 4 parities was diagnosed with twins by palpation of two embryonic vesicles in each uterine horn per rectum on Day 37 (Jan 17th 2003) after insemination (Dec 11th 2002). However, at 8 months pregnancy check before drying off (July 1st 2003), fremitus of middle uterine artery was detected in right side only. A normal fetal pedal reflex and fremitus of the right middle uterine artery were detected when the cow was examined 2 days overdue from her prospective calving date (Sep 17th 2003). In the next morning (Sep 20th 2003), the pregnant cow was recumbent as preparturient milk fever with weak labor pains. After recovery from milk fever, a stillbirth was withdrawn by forced extraction and the placenta was easily removed. While examining the cow's genital tract for the presence of others, we found oval shaped mummified fetus (6 cm x 4 cm x 2 cm) with a string of dried placenta (24 cm) and extracted that from left uterine horn.

612 (5069)
DETERMINATION OF PREGNANCY ASSOCIATED GLYCOPROTEIN, P4, E1S AND PGFM CONCENTRATIONS IN THE SHEEP DURING PREGNANCY
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Pregnancy-associated glycoprotein (PAG)-1 (PAG1) and pregnancy-specific protein B are either identical or closely related antigens released by trophoblast binucleate cells of placentas of cattle. Sheep and other ruminants produce similar products. There is evidence, however, that these antigens, which are related structurally to the pepsinogens and other aspartic proteinases, are not single gene products but members of an extensive family.

This study was carried out to determine ovine pregnancy associated glycoprotein (oPAG), P4, E1S and PGFM levels in the serum of Berichon ewes throughout gestation and the first week post partum. Ovine pregnancy-associated glycoprotein (oPAG), progesterone (P4), estron sulphate (E1) and PGFM concentrations were monitored weekly during the gestation and one week post partum. The oPAG levels were determined with a heterologous RIA using bovine PAG as a standard and tracer and rabbit antiserum against oPAG. The P4, E1S and PGFM levels were measured with RIA procedure. The levels were determined with heterologous RIA using bovine PAG as standard and tracer and rabbit antiserum against oPAG; sensitivity was 3.2 ng/ml. There were no differences (P < 0.01) in the oPAG profile between breeds from weeks 1 to 18. From week 18 to lambing, oPAG concentrations increased rapidly in Berichon ewes (around 250 ng/ml). After lambing oPAG decreased rapidly in 4 weeks to basal values. The oPAG concentrations at weeks 19, 20 and 21 of gestation caring male fetuses were higher than in those caring female fetuses. From the results, we conclude that the sex of the fetus could influence the production of oPAG. P4 concentration from weeks 12-20 of gestation than those caring a single lamb, but afterwards there was no difference. Normal fetal development during gestations is correlated with the production of high levels of oPAG. No difference was found between P4 and oPAG concentrations at each stage of gestation studied in any group. Mean weekly progesterone values varied significantly with the time of pregnancy. Ewes carrying twins presented higher progesterone concentrations than those carrying single lamb. After parturition
613 (5075)
THE STUDY OF IMPORTANT FACTORS ON REPRODUCTION OF AZERBAIJAN BUFFALOS (BUBALUS BUBALIS)
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Buffalos are one of cattle which are kept in different part of world, but the most population of this animal is in
Asia. Buffalo's population is 400000 in Iran and 112393 in Azerbaijan, particularly. Azerbaijan buffaloes
produce 4355 tons of milk and 58771 tons of meat in one year.
This survey was performed on 2100 Azerbaijan buffalo over a ten year period. Considered important factor
were age of first parturition, period between two parturitions, length of pregnancy period, length of milking
period, length of dry period, mean of milk production in one year, mean of daily milk production, mean of fat
percentage and economic age. For this survey, many population of Azerbaijan buffalo were selected in
different regions of East Azerbaijan, randomly, and studies were performed on them. Studied buffalos have
Indian husbandry.
Obtained results of this survey were: that the age of first parturition is 1260 days after birth, period between
two parturitions is 480 540 days, length of pregnancy period is 305-315 days, length of milking period is 206
days, length of dry period is 90-120 days, mean of milk production in one year is 1244 liters, mean of daily
milk production is 6.04 liters, mean of fat percentage is 7.56% and economic age is ten years.

614 (2848)
VARIATION FACTORS OF IN VIVO EMBRYO PRODUCTION IN CHAROLAIS BREED
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In the county of Burgundy (France), 83 Charolais heifers and 245 Charolais cows were superovulated (n=927
treatments) between 1989 and 1999. Embryo collection was performed in routine veterinary practice.
Embryos were recovered from 873 females (873/927=94.2%). The effect of age of donor, parity, genetic merit
(IBOVAL index), season of embryo collection, rank of treatment during lactation, calving conditions, calving to
embryo collection interval were tested on the total number of embryos/ova recovered (TOT) and on the
number of transferable embryos recovered (TER) per female and per collection. Multivariate models of
variance analysis were used including a random effect of the female to take into account multiple collections
on the same cow (SAS software).
Mean TOT was 12.2 ± 7.7. It was lower for heifers than for cows (p<0.001), decreased with rank of collection
(p<0.001) and was influenced by the year of collection (p<0.05). In cows, TOT decreased with calving to
collection interval (p<0.001), however this effect was only significant when the interval was higher than 380
days (permanent embryo donor females): 5.02 ± 0.05 embryos/ova before 380 days vs 4.25 ± 0.06 after.
Mean TER was 6.7 ± 5.8 (54.8% of TOT) and was only significantly influenced by the year of collection (p<0.05). A trend was observed for a season effect (higher TER between December and April than between
may and November, p=0.09). In cows, a trend for a calving to collection interval effect was observed on TER
(higher TER for intervals less than 380 days than for intervals greater than 380 days, p=0.07). Genetic merit
and calving conditions did influence neither TOT nor TER.
In conclusion, embryo production was high in Charolais females in the population studied. For comparison,
mean TOT and TER for all embryo collections performed in France during year 2002 were respectively 9.7
and 5.5 (embryo collections mainly in milk breeds; AEFE, 2003). This can be related to the naturally high
polyovulation rate in this breed. Variation factors were those classically observed in other breeds, except
calving to collection interval due to the existence of permanent donors.

615 (3420)
UTERO-OVARIAN STATUS PRIOR TO FIRST SERVICE - 1. RELATIONSHIPS WITH DAIRY COW
FERTILITY
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Ultrasound reproductive tract scores (URTS), (7,797) were performed on 5,734 Holstein-Friesian cows in 61
spring-calving herds over 2 years prior to first service using an Aloka SSD-210 DXII equipped with a 5 MHz
probe. Cows with URTS 1 were ovulatory with a normal uterus. Cows with URTS 2 had a small volume of
mixed echogenicity fluid and were ovulatory. Cows with URTS 3 had a moderate volume of mixed
echogenicity fluid and were ovulatory. Cows with URTS 4 had a small or moderate volume of mixed
echogenicity fluid and were anovulatory. Cows with URTS 5 had a pyometra with a persistent corpus
luteum. Cows with URTS 6 had a normal uterus and were anovulatory. The incidence of cows with cysts was
also recorded. The mean interval between calving and scan was 57 days. The majority of cows (84%) had

Proceedings of the WBC Congress, Québec, Canada, 2004
ovulated and had either partial or complete uterine involution (URTS 1 & 2). A minority of cows (11%) had not yet ovulated (URTS 4 & 6). The majority of cows (70%) had completed uterine involution (URTS 1 & 6) by the start of the breeding season. Very few cows (2%) had pyometra (URTS 5) or cysts (4%). The calving to scan interval was longer in cows with URTS 1 (62 d) compared to 2 (53 d) and 6 (50 d) and between the latter two groups and cows with URTS of 3 (36 d), 4 (35 d) or 5 (46 d). The odds ratio of conception to first service was lower for all URTS compared to URTS 1 (P<0.01). Similarly, the odds ratio of pregnancy in the first 6 weeks of breeding were lower for all URTS compared to URTS 1 (P<0.001). The odds ratio of pregnancy at the end of the breeding season was numerically lower for URTS 2 and significantly lower for all other URTS compared to URTS 1 (P<0.01). The odds ratio of conception to first service and pregnancy in the first 6 weeks of breeding was lower for cystic compared to non-cystic cows (P<0.001). Similarly, the odds ratio of pregnancy at the end of the breeding season was lower for cystic compared to non-cystic cows (P<0.05). This study is the largest to report on the ultrasonographic utero-ovarian status of dairy cows before insemination. Ultrasonography can now be used to detect subclinical uterine pathology, which would not be detected by rectal palpation. Furthermore, these ultrasonographic reproductive tract scores were significantly associated with probability of conception to first service, probability of conception in the critical early breeding season and probability of failure to conceive in a seasonal breeding season.

Funding: AIB, HUKI, AI Co-ops, Da. Levy

616 (2720)
SYNCHRONIZATION AND ARTIFICIAL INSEMINATION OF MAKOEI AND GHEZEL EWES IN WEST AZERBAIJAN IRAN
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Synchronization and artificial insemination cause increasing of farm management and prevention of many coital diseases in herds(3). This study was conducted on 390 head Makoei and 350 Ghezel 2-3 parturient ewes at 2002 at same time and rearing program. In order to synchronize the ewes, firstly vaginal sponge is located in vaginal by applicator for 14 days(1,2). On due time after removing the sponges each ewe received intramuscularly 1.5 ml pregnant mare serum gonadotropin (PMSG). Semen was collected by use of artificial vagina and then 1 ml semen was diluted with 1 ml pasteurized milk(1,3). Each ewe was inseminated with 0.25 ml diluted semen at 54 -56 hours after removing inserted sponge. The pregnancy rate in Makoei and Ghezel sheep was 44.5% and 43.3%, respectively. Some pregnant sheep of each group gave birth to twins. Twinning rate was 24.4% Makoei and 20.4% in Ghezel sheep. The higher pregnancy rate in Makoei than in Ghezel sheep, was probably related to breed, because the rearing condition was same.It is suggested that more studies must be done.


617 (3465)
ENDOCRINOLOGY OF SUBFERTILE HOLSTEIN COWS IN A PASTORAL DAIRYING SYSTEM
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In the seasonal-calving, pastoral dairying systems in New Zealand (NZ), cows with high proportions of overseas Holstein (mainly US) genetics (OSH) have lower 1st service conception rates (CR1), conceive later and are more likely to be non-pregnant (NP) at the end of a 12 week breeding season than local Holstein-Friesian cows (NZF). The hypothesis that differences in the activity of the endocrine system during the post-calving and peri-conceptual periods might underlie differences in reproductive outcomes was investigated. Endogenous patterns of luteinizing hormone (LH) and follicle stimulating hormone secretion, and the ability of the pituitary to secrete LH in response to buserelin (10mcg i/v) were similar in cows (n=8/group) containing high (>70%; H) or low (<25%; L) proportions of OSH genetics, over the periods between 7 and 28, or 21 and 42, days post partum (dpp). Administration of 1 mg oestradiol benzoate to L and H cows (n=12/group) between 7 and 35 dpp or to OSH or NZF cows on 17/18 dpp resulted in similar patterns of LH secretion between strains. Thus, pituitary LH secretion and responsiveness to endocrine stimuli did not differ between strains of cows during the post-partum period. It was postulated that postpartum anovulatory periods would be longer in OSH/H cows than NZF/L cows, but in fact they were shorter in the OSH and H cows. The first dominant follicle also emerged 5 days earlier in the post partum period in H than L cows. Oestradiol (OE) concentrations were significantly lower during the 24 h before ovulation in spontaneously cycling OSH than NZF cows and there was a longer interval between the decline in plasma progesterone (P4) concentrations and the LH surge in OSH than NZF cows. This was associated with a significantly earlier decline in milk and plasma P4 at the end of the luteal phase in cyclic OSH and H cows than in NZF or L cows. More importantly, milk P4 also declined significantly earlier in H and OSH cows which were NP after 1st insemination, than in L or NZF cows; reaching base-line values on, or before Day 16 post-insemination. It was concluded that there is little difference in the activity of the
gonadotrophic axis between strains of Holstein cows during the post-partum period, but the responses of the ovary to those gonadotrophins may differ. The premature decline of P4, before the time of the maternal recognition of pregnancy, in OSH and H cows may contribute to lower conception rates of those animals.

Funding: New Zealand Dairy Board

618 (1579)
VIABILITY AND MOTILITY OF WATER BUFFALO EPIDIDYMAL SPERM IN CAFFEINE AND GLUCOSE SUPPLEMENTED MEDIA
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Recently many laboratories have focussed on in vitro maturation and in vitro fertilization (IVF) of water buffalo. Studying the epididymal sperm would provide a costless reservoir of sperm cells used for IVF. On the other hands epididymal sperm has been proven to be of beneficial in insemination program for men and animals. The present experiment was carried out to study the effects of 4 different media for incubation of water buffalo epididymal sperm recovered and transported to the laboratory. The basic medium used for the collection and transportation of spermatozoa was the modified BO medium used in our previous experiments (Tajik and Niwa; Theriogenology, 49: 771-777) which consisted of 103.0 mM NaCl, 4.02 mM KCl, 2.25 mM CaCl2, 0.83 mM NaH2PO4, 0.52 mM MgCl2, 46.0 mM NaHCO3, and 1.25 mM sodium pyruvate. This control medium (S) was supplemented either by glucose and/or caffeine and provided 4 media as follows: adding glucose (G), adding caffeine (C) or adding both glucose and caffeine (GC). Sperm cells collected from caudal epididymis of water buffalo slaughtered at a local abattoir put into the different media containing glucose, caffeine, glucose + caffeine or a medium without them and transported to the lab. Then the sperm cells were incubated in those media in a 5% CO2 incubator in humid air. The viability and motility of sperm cells were assessed every hour up to 7h post-incubation. The viability rate drastically decreased in the medium S (5% after 7 h incubation). However, no significant difference was seen between G and S supplemented media in which 70% viability were seen after 7 h sperm incubation. The results of sperm motility showed that almost no (2%) motility was seen in the medium S four hours post incubation and it was significantly lower (P<0.001) than the sperm motility in the other media (50-95%). After 7 h incubation, the highest motility rate (90%) was maintained in the medium GS, which was significantly different (P<0.01) form the motility rates in the other media (260%). The results of the present study shows that epididymal sperm obtained from water buffalo cauda epididymis can successfully be kept in a medium containing 10-mM caffeine and 13.9 mM glucose. The future use of the sperm is under examination.

Funding: University of Tehran

619 (1598)
EFFECT OF DIFFERENT FACTORS IN DYSTOCIA DUE TO FETAL DISPOSITION
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Presentation, position and posture are used to indicate the condition of calving. In a normal calving, the presentation position and posture are: anterior-longitudinal, dorso-sacral and extended posture, respectively. The purpose of this study was the effect of factors contributing to dystocia due to fetal Malpresentaion, malposition and malposture such as the age and the number of parturition of dam, season of parturition and weight of calves in Holstein dairy cattle.

During a 4 years survey, records on 2140 single calving were used to analyze above factors at dystocia. Differences were assessed using X2 for continuity.

There were 108 (5.04%) faulty presentation, position and posture out of 2140 single calvings. The incidence of malpresentaion, malposition and malposture were 3.27%. -0.9% and 1.68%, respectively. Two years old dams had the highest faulty disposition (31.48%), whereas the 6 years old dams had the lowest (5.5%) incidence. The highest fetal disposition was observed in the first calving cows (31.42%) and the lowest was in the 5th parturition. The most abnormal conditions were in winter (28.7%) and the lowest (25.92%) were in autumn. The average weight of calves with normal condition for male and female calves were 41.52 and 39.22 kg, respectively. But, calves with malpresentation, malposition and malposture were 40.92, 50.3 and 53.3 kg for male calves whereas 39.39, 31.29 and 35.36 kg for female calves, respectively. There were no significant differences between fetal disposition and age of the dam, calving number of the dam, the season of calving and the weight of the calves (P>0.05).

620 (5052)
EFFECT OF HORMONAL LACTATION INDUCTION ON MILK YIELD AND SOME REPRODUCTIVE PARAMETERS IN HOLSTEIN FRIESIAN COWS
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Despite the fact that treatments for induction of lactation have been used for more than thirty years, results are still controversial. Sixty eighth cows with infertility problems (abortion, follicular persistence and repeat breeding) were treated with a hormonal treatment, which included bovine recombinant somatotropin (bST), to induce lactation. Days in milk, daily milk production and total milk yield were evaluated along with days to first...
estrus, days to first service, services per conception and open days (considering the first day of milk
production as the day of parturition). Cows received the following treatment: day one, 0.03 mg/kg of estradiol
cipionate (ECP), 2 mg/kg of progesterone (P4) and 500mg of bST; days 2-7, 0.03 mg/kg ECP and 2 mg/kg
P4; day 8, 0.01 mg/kg of ECP and 500 mg of bST; days 9-14, 0.01 mg/kg ECP; day 15, 0.04 mg/kg of
dinoprostenol and 500 mg of bST; days 16 and 17, 0.04 mg/kg of dinoprostenol; days 18 and 20, 0.04 mg/kg of
dexamethasone; day 21, 500 mg bST and 200 IU of oxytocine. Thereafter, 500 mg/kg of bST were
administered every 14 days, until the end of lactation. Hormones were administered by intramuscular
injection. Milk yield was 7,849 ± 1,973 kg (n= 68) in 314.3 ± 29.2 days, with a daily production of 24.8 ± 5.6
kg/cow. Milk production and reproductive parameters, were analyzed by ANOVA, comparing the different
reproductive problems of the cows. No significant differences were found (P>0.05).

Days to first estrus were 98.5 ± 50, days to first service were 105.9 ± 49.8 and open interval was of 149.6 ± 76.2
days with 2.5 ± 1.7 services per conception. Eighty percent of the cows were having normal estrus
cycles by the end of the induced lactation. Fertility rate was 73.5%.

In conclusion, this treatment is able to induce lactation in cows with reproductive problems, which could avoid
premature culling of valuable infertile cows. Additionally, the average milk yield is similar to that of non treated
healthy cows.

621 (666)
COMPARISON OF THREE TYPES OF SYSTEMIC TREATMENT WITH PENICILLINE, TRIMETOPRIM-
SULFANAMID & CEFTIOFOR SODIUM (EXCENEL) ON CURE RATE OF TOXIC METRITIS IN DAIRY
COWS
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There is no evidence in literature, on comparison between Excenel, Penicillin & Sulfamamide on cure rate of
toxic metritis in the cow. Therefore we decided to compare them. In this study a large dairy herd in suburb of
Tehran was selected which had over 1000 heads of dairy cows. We grouped toxic metritis cows randomly into
3 groups, group 1 (Excenel, 2.2 mg/kg), group 2 (Penicillin procaine 20,000-40,000 IU/kg), group 3
(Sulfanamides 15-30 mg/kg); of course all cows were treated simultaneously with intrauterine Oxytetracycline
%5 for two or three days.

Our results showed that Days Open (DO) in group 1 & group 2 & group 3 were 103.55 days, 128.65 days,
145.1 days, respectively. Using ANOVA test there was significant difference between group 1 & group 3. On
the other hand, there were no significant differences between the three groups regarding Service per
Conception (S/C) but we could see appear difference and group 1 had better S/C than other groups.

We concluded that Excenel is highly effective for toxic metritis treatment as well as Penicillin, and it is superior
than Sulfanamides. Because the Excenel hasn't any residual in milk, this drug can be recommended for
treatment of toxic metritis in dairy cows.

Funding: University of Tehran

622 (1577)
A PRELIMINARY REPORT ON THE OCCURRENCE OF DILATED CARDIOMYOPATHY IN DANISH
CATTLE
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Dilated cardiomyopathy (DCM) is a hereditary disease in cattle genetically related to the Canadian Holstein
sire Montwick Red Apple Sovereign (MRAS) (HOCANM155159). DCM has been reported in both purebred
Holsteins as well as in the Red Holstein and Simmental breeds. Following an initial report of DCM in
Switzerland, further cases were reported worldwide. Few cases of DCM were reported in Danish cattle in
1994. Here, a follow-up study on the occurrence of DCM in Denmark is presented. Fourteen cases of DCM were diagnosed from January 1st 1991 to October 1st 2003. A presumptive diagnosis was based on the presence of morphological changes consistent with progressive heart failure, while a
definitive diagnosis was established by histopathological observation of cardiomyopathy dominated by
interstitial fibrosis. Based on the cattle identification numbers, pedigree information was obtained from cattle
registration databases.

The cattle identification number was available in 13 cases, while one abattoir case was of unregistered origin,
breed, sex, and age. Nine cases were registered as Red Danish Dairy (RDD) breed, one case as a Holstein
(H), one case as a Red Holstein (RH), and two cases as cross breeds.

Age was established in 12 cases (variation: 14.0 to 47.6 months, mean = 28.4 months). All cases were
females. Maternal and paternal pedigree information was available in seven cases, while five cases were of
unregistered or partly unregistered maternal or paternal descent. Pedigree information was completely
unavailable in one case. The cases were progeny of eight sires. It was possible to link all dams and sires
genetically to a common ancestor identified as MRAS. Mostly this was done through his son A B C Reflection
Sovereign (HOCANM198998). Several other former internationally used elite sires genetically related to
MRAS occurred in the pedigree of affected animals.

The study demonstrates that DCM occurs in the RDD, H, and RH breeds in Denmark. In all breeds, cases
were found in a familial pattern. Most cases were of the RDD breed. However, this finding may be biased by an unequal distribution of cattle breeds in Denmark. Therefore, it is impossible to determine the importance of DCM for the Holstein and Red Holstein breeds in Denmark based on this study. Breeding associations are urged to evaluate the present use of AI sires related to MRAS and to introduce procedures to prevent a dissemination of DCM in cattle populations.

623 (2764)
PRENATAL INTUSSUSCESSION IN A CALF
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A calf (crossbreeding Holstein X Limousine) was born from a Holstein cow by natural delivery, suffering a late natal death. Calf examination revealed some evident anatomical alterations such as arthrogryposis, abdominal and scrotal severe distension with impaired umbilical closure and the presence of plentiful amber-like liquid and multiple solid yellow to greenish masses with a diameter of nearly 3 cm coming to the outside from the umbilical closure. The arthrogryposis was possibly due to an oligoamnios. At the necropsy the macroscopic examination revealed an abundant yellowish oedema affecting the abdominal subcutaneous tissue and the lower limb of the calf. Moreover there was visceral and parietal peritonitis, and multiple nodular yellow to greenish masses were surrounding the rumen. Meconium rests were found in the peritoneum. The most important finding was the presence of an intussusception affecting the distal portion of ileum and proximal ascending colon. Histological examination of the intestine revealed the presence of large venous infarction and secondary ischemic necrosis. In addition, at the visceral and parietal peritonum the abdominal cavity presented granulomatous peritonitis with foreign body reaction associated to the meconium presence at peritoneum. Histopathological study explained the cause of the intussusception by amniotic liquid ingestion. Due to the secondary ischemia the intestine terminated being perforated, so that the amniotic liquid, meconium and bile emerged into the peritoneum. Therefore, abdominal cavity sterility was present. In addition, as a consequence of the presence of foreign content in peritoneum, abdominal distension and oligoamnios with growing retard and slight arthrogryposis was produced.

624 (1591)
DOXYCYCLINE POISONING IN CALVES: 18 CASES IN BELGIUM
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In the last decade, troubles occurring after oral intake of high levels of doxycycline in calves were reported in the Netherlands, Canada and Israel. Main presented clinical signs were apathy, anorexia, excessive salivation and respiratory distress. Sudden death occurred within 3 days after doxycycline administration. Necropsy and histopathology revealed degeneration and necrosis lesions in the ventricular myocardium, which were suggestive of cardiomyopathy. Between February 1999 and June 2001, 18 calves out of 5 farms were referred to our veterinary teaching hospital for troubles that appeared after high dosage doxycycline medication. Calves were aged from 6 to 14 weeks. Depression, hypersalivation, tongue ptosis, tachypnea, dyspnoea, tachycardia, arrhythmia and weak pulse were observed in most cases. Blood was sampled in 13 calves, ECG tracings were recorded in 3 calves, and Doppler echocardiography examination was performed in 2 calves. Necropsy and histopathology were performed on 8 calves. Clinical biology revealed an increase in creatine kinase (13/13), lactate dehydrogenase (8/8), aspartate aminotransferase (5/6), creatinine and urea (4/7) and a decrease in vitamin E (1/2) and selenium (2/2). ECG records showed ventricular premature beats in the 3 evaluated cases. Echocardiographic examination showed a sharp decrease in all parameters of cardiac performance and systolic function: fractional shortening, aortic peak flow velocity, aortic flow velocity integral, left ventricular ejection time, acceleration time, stroke volume, stroke index, cardiac output and cardiac index; the pre-ejection period and pre-ejection period to ejection time ratio were increased. At necropsy, the myocardial lesions were identical in all calves: the walls were extensively interspersed with white spots and strands, mostly in the septum and the left ventricle. Histopathologic examination of the myocardium revealed degeneration and necrosis. Cellular infiltrations were scarce and vasculitis was never seen, which suggest myocarditis rather than myocarditis. The obtained results confirm that overdosing doxycycline in calves can result in signs highly suggestive of cardiomyopathy that can be detected by electrocardiography and echocardiography. In our knowledge, this is the first paper describing doxycycline poisoning in calves in Belgium and the first paper describing echocardiographic observations in calves suffering from doxycycline poisoning.

625 (2853)
POST MORTEM FINDINGS IN 22 DOXYCYCLINE OVERDOSED CALVES REFERRED FOR SUDDEN...
DEATH
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Between February 1999 and April 2003, 22 calves out of 8 farms were necropsied in our veterinary school with anamnesis of sudden death after oral intake of high levels of doxycycline in order to treat respiratory disorders.
At necropsy, the picture was identical in all calves with respect to the myocardium, whatever the farm of origin: the walls were extensively interspersed with white spots and strands, mostly in the septum and the left ventricle. Hemorrhages were also a reproducible sign. Approximately half of the calves were remarkable by the fact that the tongue was discolored and hemorrhagic. All calves showed variable degrees of pulmonary edema.
Histopathologic examination of the myocardium revealed extensive multifocal and monophasic necrosis. It was evident that the phenomenon was acute and that it was responsible for the death. Cellular infiltrations were scarce and vasculitis was never seen, which suggest myopathy rather than myocarditis.
Histopathologic examination of the tongue revealed extensive and severe lesions, consisting of myopathy (multifocal and polyphasic necrosis) and subacute glossitis (important cellular infiltration). Clearly the pathologic process in the tongue was evolving since a few days rather than a few hours, indicating that the tongue was affected before the myocardium. Unambiguously, the lesions were severe enough to cause significant dysfunction/pain of the tongue.
Microscopically, pulmonary changes were characterized by variable degrees of edema. There was no acute interstitial pneumonia and bronchial syncytia were absent. However, scattered cellular infiltration of the interstitium occurred, but remained discrete. The pulmonary lesions were not responsible for the deaths. Histopathologic examination showed also that some striated muscles (mostly the respiratory muscles) exhibited similar monophasic and multifocal necrosis. The lesions present there were quite similar to those found into the myocardium, but were, by far, less severe.
These observations corroborate clinical and pathological cardiomyopathy-consistent observations made previously on doxycycline-poisoned calves in the Netherlands, Canada and Israel.

626 (2438)
EIMERIA ZUERNII COCCIDIOSIS IN A LARGE DAIRY HERD
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A large dairy farm had been experiencing problems with catarrhal to haemorrhagic diarrhoea in their 3-4-month-old calves, in some cases with a fatal outcome, for about one year. The farm profile is as follows: 1. Dairy unit with about 1,800 dairy cows, nursery (newborn calves up to 10 days of age housed in single pens) and starter section (calves up to 12 weeks of age penned in groups of 25 on deep litter); 2. Calf rearing unit (grower section: calves to 24 weeks of age, loose-housed in groups of 12-25); 3. Heifer unit. From April to June 2002, 20% of the calves were clinically examined in groups to ascertain their parasitological status. E. ellipsoidalis was the only Eimeria species encountered in the nursery. Scouring began 3 to 4 weeks after the calves had been moved from the starter to the grower section and was associated with increasing coccidial excretion. The infection spread rapidly throughout the herd, affecting up to 100% of calves within this time. Eimeria zuernii was diagnosed as the primary cause of the clinical coccidiosis cases. Five further species were identified in the grower section: E. ellipsoidalis, E. bovis, E. auburnensis, E. subspherica and E. cylindrica. Following the appearance of clinical cases, the entire group of calves was treated with Vetoprim® 900-N via the feed; severely ill calves were given the drug by injection. In July 2002 the calf rearing unit was evacuated, thoroughly cleaned and disinfected with Lomasept®. However, continued tests following restocking in September 2002 revealed no change in the herd's health status. The recurrence of diarrhoea and mortalities with excretion levels for E. zuernii of up to 700,000 opg demonstrated that the measures taken (litter hygiene, thorough disinfection, treatment of the group post infection) failed to control the problem of E. zuernii coccidiosis in the herd.

627 (5003)
SYNDACTYLY IN GERMAN HOLSTEIN CALVES
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In 8 black and white German Holstein calves congenital syndactyly was observed. The objectives of the study were to examine if syndactyly still occurred in German Holstein and if artificial insemination bulls were involved who haven't been recognised as mulefoot carrier. The affected calves were born in different farms between 1995 and 2002. The number of feet affected varied from one, more than one and all four. All syndactylous calves could be traced back to a joint ancestor, which was already identified as a carrier sire for the mulefoot gene. The pedigree was consistent with a monogenic autosomal recessive inheritance and
variable expressivity. Genotyping of 6 polymorphic microsatellite markers from cattle chromosome 15 revealed significant linkage to the syndactyly phenotype. The subsequent haplotype analysis confirms the suggested segregation pattern of the mulefoot mutation in this family. Furthermore, the results allow the identification of unaffected carrier animals.

628 (3065)
CALF CERVICAL DISKOSPONDYLITIS - A CASE REPORT
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A female calf Holstein, of two month old, was admitted at the Veterinary Hospital of the Faculdade de Medicina Veterinária e Zootecnia from Universidade de São Paulo, Brazil, with a history of cervical trauma and tetrapsis for 40 days, not responsive to medical treatment. At the physical examination, functional impotence was spastic on thoracic limbs and flaccid on pelvic limbs, associated with a cervical stiffness, insinuating a medullar cervical lesion hypothesis. The animal did not present alterations of vital function and food ingestion was maintained. The haemogram, renal and hepatic functions, glycaemia and liquor exam discarded an infectious disease or an acute inflammatory process, reinforcing the trauma hypothesis. These exams were done in order to help in diagnosis, but any alteration was found, and the limitations of using these exams to a definitive diagnosis of diskospondylitis were in agreement with other authors. As the literature describes brucellosis and urinary infections as common causes of diskospondylitis in other species, serologic test for Brucella sp. antibody and urine culture were made, with negative results. The X-ray exam showed an evident reduction of intervertebral space, loss of visualization of vertebral bodies (osteolysis) with bone proliferation, ventral and dorsal, between C5 and C6. This suggests an old trauma, resulting in diskospondylitis at cervical column. In the face of this finding, euthanasia was recommended. At the necroscopy exam, the suspects were confirmed. Although not so often, diagnosis of diskospondylitis should be considered, independently of age, in virtue of the bad prognosis. This case is the first report of this condition in calves.
Funding: Clinica de Bovinos e Pequenos Ruminantes, Hospital Veterinário, FMVZ, USP, Brazil

629 (5041)
CLINICAL AND LABORATORY INVESTIGATIONS ON GOSSYPOL TOXICITY IN FRIESIAN DAIRY HERD IN SOHAGE, EGYPT
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Seventy seven suckling calves and twenty three cows fed on a ration containing 41% cotton seed meal (CSM ) died between 6 and 20 weeks of age respectively. Observed clinical signs were anorexia, weakness, rough coat, emaciation ascitis and drop in milk yield in lactating cows. Laboratory indices revealed decreased Haematocrit and Hemoglobin values. Sorbital dehydrogenase serum enzyme activity was markedly elevated. Total serum proteins and serum albumin values were decreased. Necropsy findings indicated hepatomegaly with "nutmeg" appearance, accumulation of fluids with high protein content in the body cavities.

630 (1815)
COMPLEX VERTEBRAL MALFORMATION (CVM) IN A HOLSTEIN CALF: CLINICAL AND RADIOLOGICAL (X-RAY AND CT-SCAN) ASPECTS
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Complex Verbral Malformation (CVM) constitutes the most recent genetic concern for the Holstein Breeders all over the world. We describe the clinical and radiological aspects (X-ray and CT-scan) of the first case which has been completely documented in Italy.
A two-day-old Holstein female calf, weighing 19.4 kg, was submitted due to bilateral symmetrical flexural contraction of the metacarlo-phalangeal and metatarso-phalangeal joints and medial rotation of the digits, which hindered the calf in maintaining the quadrupedal stance. Extension of carpal joints was also evident. The cervical part of the vertebral column was shorter than normal. The thoracic spinous processes were prominent whereas the lumbosacral vertebral tract resulted concave. The tail was bent and measured only 15 cm. Calf was alert and showed physiological appetite. Despite repeated attempts to stand up, the calf was not able to and remained laying down in a frog-like decubitus.
Lateral and ventrodorsal radiographs of the whole vertebral column, and mediolateral and dorsopalmal projections of both the distal forelimbs were obtained. In addition, a CT-scan of the vertebral column was performed.
The vertebral column showed multiple vertebral anomalies including hemivertebrae, fused and misshapen vertebrae and ribs, and scoliosis that affected mainly the caudal cervical and the thoracic regions. In particular, the vertebral column was composed of 42 vertebrae: 7 cervical, 12 thoracic, 7 lumbar, 5 sacral, and 11 caudal. Vertebrae C6 and C7 were fused and multiple hemivertebrae were observed in the thoracic (T1,
T2, T7, T8) and lumbar (L2) regions. Each thoracic vertebra had a pair of ribs but the heads of the ribs and
the dorsal spinous processes were fused at the level of each hemivertebral.
The radiographic features of the distal forelimbs revealed a severe medial rotation of the phalango-metacarpal
joints associated with a medivial deviation of the phalanges.
CT-images of the column provided sharp details of the cervical and thoracic malformed vertebrae and
demonstrated a low density of the same bone structures.
At necropsy, besides the already described skeleton anomalies, complex malformation of the heart was
observed, and included atrial and interventricular septal defects (the latter 2.0 cm diameter), and patent
ductus arteriosus.
The calf resulted to be homozygous for CVM-mutation, based on the results of the DNA-PCR test.

631 (2391)
CONGENITAL PAUNCH CALF SYNDROME IN ROMAGNOLA CATTLE
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In the last decade genetic diseases have become a matter of considerable concern for the Romagnola
breeders, with Spastic Paresis being the most commonly referred disorder (estimated prevalence of 0.6%).
We describe here a new congenital and possibly inherited defect observed in 12 Romagnola calves (10 were
stillborn, two lived only some hours) admitted to our Department. Breeders seem to be finding this problem
particularly worrisome. We have decided to call this defect Congenital "Paunch Calf" Syndrome because of
the main clinical feature and because this is the name farmers use to describe the affected animals.
All the calves showed an enlarged and floating abdomen, denoting a considerable abdominal effusion.
Moreover they all had facial deformities characterized by shortened and flattened face and in some cases by
enlarged head. A disproportionate shortness of the limbs (rhizomelia) was evident in one case. Cleft palate
was evident in four calves.
At necropsy all but one animal had marked subcutaneous oedema, especially in the ventral part of the
abdominal wall. Different quantities of ascites fluid (in some cases up to 10 liters) were present in the
abdominal cavity. The liquid ranged from yellow to red, with different grades of turbidity. The liver presented a
moderate to severe diffuse fibrosis. It was moderately tough and enlarged with irregular and enhanced lobular
pattern. One or more cysts, with serous or reddish fluid content, were observed on the peritoneal surface of
the left lobe and/or of the hepatic hilus. On surface section, the parenchyma was irregularly separated by
slight fibrous bands. Diffuse ectasia of the intrahepatic veins was also detected. Representative samples from
the liver were collected and processed for histological examination. Five micron sections were stained with
haematoxylin and eosin (HE), Masson-trichrome stain, Gomori and rhodanine techniques. Microscopical
examination revealed an extensive distortion of lobular architecture by widespread fibrosis in periportal areas
and around centrolobular veins. In some lobules the fibrosis was extended to perisinusoidal spaces. Capsular
fibrotic thickening and cellular degeneration or atrophy were detected in some cases.
Cardiac malformations were evident in 10 calves; they were characterized by atrial (one calf) and
interventricular septal defect (eight calves), and patent ductus arteriosus (three calves).
A genetic cause is strongly suspected.
Funding: University of Bologna

632 (2803)
FIRST CONGENITAL ABDOMINAL DISTENSION SYNDROME REFERENCED IN CATTLE ("PRUNE
BELLY-LIKE SYNDROME")
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A 15-day-old Holstein calf presented a pendulous abdomen and a thin abdominal wall. The last ribs of both
sides were in contact at the costocondral junction. The abdominal viscera were caudoventrally displaced and
the left lobe and/or of the hepatic hilus. On surface section, the parenchyma was irregularly separated by
slight fibrous bands. Diffuse ectasia of the intrahepatic veins was also detected. Representative samples from
the liver were collected and processed for histological examination. Five micron sections were stained with
haematoxylin and eosin (HE), Masson-trichrome stain, Gomori and rhodanine techniques. Microscopical
examination revealed an extensive distortion of lobular architecture by widespread fibrosis in periportal areas
and around centrolobular veins. In some lobules the fibrosis was extended to perisinusoidal spaces. Capsular
fibrotic thickening and cellular degeneration or atrophy were detected in some cases.
Cardiac malformations were evident in 10 calves; they were characterized by atrial (one calf) and
interventricular septal defect (eight calves), and patent ductus arteriosus (three calves).
A genetic cause is strongly suspected.
Funding: University of Bologna

Proceedings of the WBC Congress, Québec, Canada, 2004
urinary tract lesion, hindering the descent of testes. The muscular lesions may be caused directly by the embryological development defect at the mesodermal plaque or indirectly by the distension and vascular failure. In veterinary medicine, two similar cases have been described, one in a dog and other in piglets. In cattle, the congenital abdominal distension has been described due to ascites in calves, which were stillbirths or abortions caused by malformation, tumours or infectious processes. On the other hand, serosal liver cysts have been described, but they normally were small, and, in the extra-uterine life, in most cases empty.

In our opinion, the muscular alterations observed in the present case were caused by the liver cysts, which produced the muscular lesion through pressure, and consecutively an abdominal distension. Before delivery, the cysts that were enormous, filling the whole abdominal cavity, were reabsorbed leaving the muscular lesion as only sequel.

633 (2599)
CASE REPORT: A SUSPICION OF CORTICO-CEREBRAL NECROSIS IN A BELGIAN BLUE HERD AFTER INGESTION OF MOULDED SILAGE
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After ingestion of moulded beet pulp silage, cases of cortico-cerebral necrosis (CCN) and mortalities have been observed in a Belgian Blue (BB) herd. Contamination with Paecilomyces spp., a mould that produces byssoschlamic acid, mafiformins and patulin, has been proven. Among these toxins, patulin is known to have cancerogenic, immunosuppressive and tremorgenic effects, but also acts on the respiratory and digestive systems.

Twenty-five days after progressive introduction of beet pulp silage into the ration of a dual purpose BB herd, most of the animals showed diminished appetite, salivation and decreased milk production. All 35 cows were reluctant to consume the beet pulp silage, but continued to eat grass silage voluntarily. Seven of them showed anorexia and nervous symptoms, like head pressing and blindness. Four animals died within 1 week after onset of neurological symptoms. No necropsy has been performed, since legislation does not allow post-mortem examination of the central nervous system in the field. The three survivors had been treated successfully with thiamine (10 mg/kg, IV, TID) and recovered completely within five days. After the beet pulp silage had been identified as causative agent, it had been removed from the animals' ration and no more clinical case has been observed. Four weeks later, the same beet pulp silage has been reintroduced into the animals' ration and provoked again diminished appetite, salivation and a decrease in milk production in most of the animals. Clinical signs were also suggesting lead poisoning but any contact with lead containing material could have been excluded.

Silage was obviously moulded and analysis revealed the presence of 1.6 million CFU Paecilomyces spp./g of silage. Although no further investigation has been made to identify the mycotoxins, an intoxication with patulin has been suspected, since other mycotoxins produced by these species are less toxic. Although it has not been described that CCN can be induced by ingestion of Paecilomyces spp., it seems that there is a close relation between ingestion of Paecilomyces-contaminated silage and observed clinical signs in this herd.

634 (2570)
THREE CASES OF INCARCERATION OF THE SMALL INTESTINE IN THE EPIPOICO FORAMEN IN CALVES
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Intussusception and partial or complete volvulus of the small intestine are the major causes of small intestinal obstruction in cattle, while strangulation of the small intestine by fibro-serosal cords or incarceration in mesenteric rents are less frequently occurring causes. Incarceration and strangulation of the small intestine in the epiploic foramen is a major cause of colic in the equine species, but in cattle this type of obstruction has almost never been reported.

Over a period of 15 years (1988-2003) approximately 900 cattle were presented at the large animal clinic with symptoms of intestinal obstruction and in three cases the diagnosis of small intestinal incarceration in the epiploic foramen (EF) was made. These three animals were female calves, aged between 1.5 and 3 months and with a history of moderate to severe abdominal pain for 2 to 3 days prior to admission. Physical and clinicopathological examination revealed normal temperature and respiration rates, elevated pulse rates, reduced to absent fecal production with bloody mucoid feces in one case, hemoconcentration and mild acidosis. On transabdominal ultrasound, distended small intestines and in one case an increased amount of peritoneal fluid were visible.

An exploratory laparotomy through a right flank incision was performed in all three calves because of a suspicion of mechanical small intestinal obstruction. In two calves a mediolateral and in one calf a lateromedial incarceration of a portion of the small intestine through the epiploic foramen was diagnosed. In one calf with a mediolateral incarceration fibrous adhesions made reposition of the intestine impossible and the calf was euthanatized during surgery. In the two other calves reposition of the incarcerated intestine was possible. One of those animals made an uneventful recovery after surgery and was doing well three months later. In the other calf, viability of the entire small intestine was judged very poor after repositioning of the
incarcerated segment so no attempt was made to remove the strangulated part of the intestine. This animal was treated with IV fluids and anti-inflammatory drugs but died shortly after surgery. This report indicates that incarceration of the small intestine in the epiploic foramen is very rare but not nonexistent in cattle and that it should be added to the differential diagnosis when confronted with strangulated small intestinal segments in the cranial part of the abdomen.

635 (756)
AN OUTBREAK OF MALIGNANT CATARRHAL FEVER IN A SMALL HERD OF CATTLE IN IRAN
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Malignant catarrhal fever (MCF) is an acute, highly fatal disease of cattle and other bovidae. It occurs in two forms. One, the wildebeest-associated form (WA-MCF), is caused by infection of cattle with the wildebeest alcelaphine herpesvirus-1. The second form occurs in cattle which have been in contact with sheep and has been termed sheep-associated MCF (SA-MCF).
SA-MCF generally occurs as single cases, but there are a few reports of outbreaks of multiple cases in some countries (Spain, Malaysia, Ireland and so). This report describes an outbreak of MCF in a small herd of Holstein cattle from Mashhad, northeast of Iran.
In September 26th of 2001, a cow showed clinical signs including: high fever, excessive mucopurulent nasal discharge, salivation, severe keratoconjunctivitis, oral erosive lesions and lymphadenopathy. Then within 48 days six other animals showed same clinical signs and were slaughtered or necropsied. The age of the affected animals ranged from 1 to 10 years.
Necropsy findings varied according to the duration of illness. There were severe gastroenteritis which included erosive lesions in the buccal cavity, oedema and haemorrhage of the abomasum and extensive haemorrhage and oedema of the intestines which were particularly severe in the large bowel. All lymph nodes were swollen and oedematous and sometimes haemorrhagic and friable. Severe hyperemia of mening and enlargement of the liver recognized too. Histopathology showed nonsuppurrative interstitial nephritis and meningoencephalitis, cystitis and epithelial necrosis concurrent with vasculitis.
There was no direct contact of this herd with sheep and we could not found the source of the outbreak in this herd. There was also no additional case(s) until 20 months after that outbreak.
Funding: Dept. of Vet. Clinical Sciences

636 (947)
MANDIBULAR FRACTURE AND ASSOCIATED NEUROLOGICAL AND SYSTEMIC DISORDERS
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A Holstein heifer was referred to the “Large Animal Hospitalisation Unit” of the National Alfort Veterinary School (Maisons-Alfort, France) for a mandibular fracture. The fracture took place one week before the admission, because of the wedging of the head in a head gate; the heifer was administered antibiotics (penicillin) and an anti-inflammatory drug (ketoprofen) during one week. At the admission, the cow presented a mandibular deformation on the left side. The fracture was confirmed by a lateral radiography of the head: it was a complete transversal fracture located on the level of the left mandibular body. Moreover, the animal had the left ear lower than the right, a no-closing of the eyelids of the left eye, a deviation of the nose towards the right side and an asymmetry of nostrils. These clinical signs lead to hypothesize a disorder of the facial nerve in addition to the fracture. The heifer presented also ptyalism, dysphagy, dehydration and acidosis (venous pH 7.26, base deficit of 12 mmol/l). Isotonic fluids (NaCl 0.9% added with glucose and potassium) and bicarbonates (NaHCO3 1.4%, administration of 50% of the deficit) were administered intravenously during several days before the fracture reduction because the pH remained low (between 7.22 and 7.30). A surgery was carried out on the animal, which was placed in lateral recumbency and deeply sedated with tiletamin-zolazepam. A cerclage wire was fixed after a difficult fracture reduction. After the surgery, the heifer received antibiotics (sulfamid) and an anti-inflammatory drug (flunixin meglumine) to control infection, pain and inflammation, and a nervous system stimulant (strychnine) to try to correct the associated neurological deficit. The venous pH remained low during two days after the surgery (acidosis), then it went back to normal. A surgical wound infection appeared a few days after the surgery, and was controlled by a daily disinfection. In spite of the fracture stabilization, the animal continued to regurgitate the food during a week after the surgery and the ptyalism persisted during his month’s hospitalization. The facial nerve neurological affection remained stationary (no visible recovery) during a month. Today, the animal is in good health and, according to its owner, it does not seem to have sequelae except a mandibular deformation. However, no neurological examination was actually carried out to see whether there was -or not- a recovery of the facial nerve.

637 (956)
FOREIGN BODY IN THE RUMEN OF A DROMEDARY

Proceedings of the WBC Congress, Québec, Canada, 2004
ABDOMINAL DISTENTION IN A CALF DUE TO OMENTAL BURSITIS

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There are few references to bursitis omentalis in cattle and the condition appears to be rare. Animals with abdominal distension and suspected for omental bursitis are confirmed by exploratory laparotomy only. It is presumed that when either the left wall of the abomasum or the ventral sac of the rumen are perforated, ingesta collects in the bursa omentalis, and this may stimulate the formation of several liters of inflammatory exudate, and cause the abdominal distention.
A six month old Holstein female calf with the history of abdominal distention was referred to the clinics of the Ferdowsi School of Veterinary Medicine of Iran for diagnosis and treatment. Clinical examination revealed ventral abdominal distention, as well as splashing sounds at ballottement of the ventral abdomen. Abdominal centesis yield creamy white, thick material. The calf was controlled in right lateral recumbency and manual exploration of the abdominal cavity was done through ventral abdominal incision. Then a large quantity of exudates was drained (near 14 liters) by incising the bursa. On owner's request, the calf was sent to the abattoir without any further treatment. At necropsy a purulent sac, which extended along the abdominal floor from the xyphoid region to the pre-pubic area was seen. Ulcers were found in the left wall of the abomasum and one metallic foreign body had penetrated the reticular wall. This report indicates that omental bursitis should be considered in the differential diagnosis of calves with signs of abdominal distention.

640 (3113)
ENCEPHALITIS CAUSED BY HISTOPHILUS SOMNI (HAEMOPHILUS SOMNUS) IN A BOVINE: CASE REPORT, SÃO PAULO, BRAZIL
Histophilosis is a complex disease that may present several different clinical manifestations, such as pneumonia, thrombotic meningoencephalitis, arthritis, reproductive disorders, and occasional occurrence of mastitis, conjunctivitis, otitis and septicemia. Main route of infection is the respiratory tract, however, in reproductive disorders, they may be transmitted by contaminated prepuical mucus, semen and vaginal secretions. Thrombotic meningoencephalitis in bovines is characterized by fever, incoordination and death caused by bacteremia, leading to embolism of the smaller vessels in the brain and infarcticaion. More than one syndrome may be observed in the same animal, and neurological manifestation is frequently fatal. One sample of the encephalon of a bovine female, 36 months old, which presented an acute case of encephalitis, anorexia, paralysis of the hind legs and death in 24 h, was submitted to differential diagnosis of encephalitis and encephalopathy. This animal came from a dairy herd, composed of 184 Holstein cows destined to reproduction, located in Taubaté, SP. The organ was processed by different bacteriological, virological, parasitological and histopathological techniques, in order to obtain differential diagnosis of the following infectious causes of encephalitis: rabies, BSE, Aujeszky's disease, Malign catarrhal fever, Bovine Herpesvirus 1 and 5, Bovine viral diarrhea, Neospora caninum, Listeria monocytogenes and Histophilus somni. The sample was positive in pure culture for Histophilus somni and negative for the rest of the agents. Histopathological examination showed foci of lymphocitic encephalitis. This is the first confirmed case of encephalitis caused by Histophilus somni in Brazil, which emphasizes the importance of monitoring of bovine encephalitis using large spectrum differential diagnosis.

Funding: FAPESP

641 (3290)
RUBBER AS A CAUSE OF ALLERGIC CONTACT DERMATITIS OF BOVINE TEAT SKIN
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A seven-year old Holstein Friesian dairy cow demonstrated a severe dermatitis on all four teats, 1-2 weeks after commencement of the fourth lactation. Clinical signs included heat, swelling, redness, pain on contact and extensive crust formation. There was no response to any dermatitis therapy during the lactation period. Within two weeks of drying-off, all teats had recovered spontaneously. Four to five days following the start of the next lactation the same clinical signs reappeared. Hypersensitivity to the cluster rubber was suspected and for this reason a silicon cluster was substituted. Consequently the dermatitis recovered again without the use of medicaments, within a period of three weeks. To confirm the suspicion of hypersensitivity to the synthetic rubber of the cluster a 'patch test' was conducted.

642 (2883)
OCCURRENCE OF CONGENITAL CORTICAL BLINDNESS IN ASSOCIATION WITH UNINTELLIGENCE IN HOLSTEIN CALVES IN A DAIRY IN VARAMIN AREA OF TEHRAN STATE
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Occurrence of this disease started sometime in January and ended late in April 2001. During the period, 19 affected calves (47.4% female and 52.6% male) were born and rate of their nascence in every of the three months was 6.5, 9.2 and 7.2 percent, respectively. The blind calves dams pregnancies took place in April, June and July, 2000 and the rate of being pregnant in each of these months was 47.4, 42.1 and 10.5 percent.
respectively. The parity of the mothers was 1 to 8 and the semen used was either national or imported. In addition to cortical blindness, the affected calves showed different degrees of unintelligence in behavior like drinking milk from the bottom of milk bucket with its consequences of outpouring milk, many times asphyxia during each milking time, occurrence of aspiration pneumonia, matting of hairs on lower and upper jaws and then shedding of them to such extent that alopecia was developed. The blind calves did behave more or less the same with feed bucket. Because of this behavior, more than 84% of ill calves had abnormal to apparent cachectic body condition. Beside the abovementioned signs, domed head was clinically apparent in a proportion of blind and stupid calves. Four affected calves were slaughtered. At necropsy, more or less complete loss of hemispheres but instead hydranencephaly with well-developed brain stem and cerebellum were obvious findings in each case. Histopathologic examination of central nervous system revealed: severe edema, diffuse gliosis, presence of gemistocytes, small hemorrhagic foci, thickening of vascular wall, nerve fibers which underwent degeneration and became rarefied and spongy, neuronal necrosis in brain and a remarkable decrease in number of ventral horn neurons. On the basis of clinical, macroscopic as well as histopathologic evidences, Akabane disease was satisfactorily diagnosed.

Funding: Tehran University

643 (1817)
ARACHNOMELIA IN ITALIAN BROWN CALVES
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Among the genetic defects that might affect Brown cattle, Arachnomelia (spider-legs) - a congenital abnormality giving the animal a spidery look - has begun to worry the Italian Brown cattle breeders.

Four dead Italian Brown calves (A, B, and C were female, D was male; A, C, and D were born dead, B was put down at the 3rd day of life) were submitted because of macroscopic skeletal malformations of the skull and the hind legs. All animals presented facial deformities, mainly characterized by a short lower jaw (brachygnatia inferior) and concave rounding of the dorsal profile of the maxilla. The tip of the latter was tapered and slightly turned upwards. In calf B the maxilla was also shifted laterally. The cranium of calf A presented multiple fractures with evident sinking of the skullcap. All legs appeared much longer and thinner than normal (dolichostenomelia). Moreover severe angular deformities were evident in the distal part of the hind legs. In fact, fetlocks appeared to be in great hyperextension with the extremity of the toe forward and parallel to the trunk of the body. In calf A, the fetlock joints were stiff. Leg muscle resulted as clearly atrophic. Cardiac malformations were evident in calf C. They were characterized by complete transposition of the arterial trunks and bilateral concentric ventricular hypertrophy.

All calves traced back to the same sire (Tommy-ET). The hypothesis of overlapping with the Marfan Syndrome in human medicine, (Arachnodactyilia, defect in the metabolism of the connective tissue) was put forward in the past. However we think that the clinical identification between the bovine Arachnomelia and the human Marfan Syndrome is inopportune. Contrary to the almost undisturbed vitality of human patients, bovine Arachnomelia has a rapidly lethal course. Moreover it should be kept in mind that a true bovine Marfan Syndrome more closely resembling human Marfan Syndrome has been described in cattle.

Regarding the aetiology, although it has not been possible to find candidate genes until now, the condition is attributed to a simple autosomal recessive inheritability. In addition to these reports, many Italian Brown cattle breeders have reported the occurrence of other cases of Arachnomelia; all the indicated calves were offspring of Tommy-ET or Amaranto. As both these two bulls have been widely used for artificial insemination in Italy, we expect many cases of Arachnomelia in the future.

Funding: University of Bologna

644 (3293)
DEATH OF POSTPARTURIENT COWS AT A DAIRY FARM IN TEHRAN, IRAN, DUE TO FATTY LIVER DISEASE
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Fatty liver, a major metabolic disease of dairy cow, is caused by the mobilization of excessive quantities of fat from body depots to the liver, during periods of negative energy balance (at time of parturition or commonly in early lactation). The feeding of dairy cow in large groups as in loose housing systems has been associated with increase in the incidence of the disease. The disease may be highly fatal.

In a dairy herd in suburb of Tehran- Iran, during 3 months (in the beginning of the 2003), seven highly producing cows, 5 to 15 days after parturition showed clinical signs such as : anorexia, ataxia, star gazing, muscular tremors, tachycardia and recumbency. Terminally there was coma, and then all of them died. The diagnosis of fatty liver was confirmed by evaluation of nutritional and managerial condition of the herd (especially dry cows), as well as blood testing, macroscopic and histopathologic findings of the last died case.
Changes in blood acid-base and electrolyte status can often lead to serious homeostatic disturbances. The

**Blood Samples**

**Comparison of Some Acid-base and Electrolyte Analysers Using Bovine and Ovine Blood Samples**

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Changes in blood acid-base and electrolyte status can often lead to serious homeostatic disturbances. The
fast on site determination and the causative correction of such malfunctions is therefore crucial. This is an important reason why more manufacturers develop their equipments as portable units.

The main purpose of this experiment was to check the usefulness of portable and desktop acid-base and electrolyte analysers when using them for on site measurements of bovine and ovine blood samples.

Blood was withdrawn from the jugular vein of 16 non pregnant cows, 16 calves and 17 pregnant sheep, and from the coccygeal artery of cows, as well. Syringes (10 ml) were prepared using equalized Na-heparin (157,5 I.U.) and blood samples were taken anaerobically. Until analysis within 2 hours, samples were stored on melting ice at +4°C. Desktop acid-base (ABL 330), electrolyte (EML 105) and combined analysers (IL GEM Plus, Easy STAT) as well as portable combined analysers (ABL 77 and iSTAT) were involved in the comparisons.

Data analysis included the description of both the precisity of the instruments as described by the relative deviation of individual results from the empirical averaged value of each parameter of all instruments, and their measuring reliabilities characterized by the deviations of the differences as calculated from the actual value and the empirical averaged value.

ABL-77 and Easy STAT measured acid-base values most precisely around the empirical mean, although all instruments showed inaccuracies in measuring various blood pO2 values. Ionized sodium was measured near the empirical mean in all cases, but the reliability of these measurements was in general poor. IL-GEM Plus consequently measured higher ionized calcium and potassium concentrations in all species, while ABL77 gave lower ionized calcium results from the bovine samples and also Easy STAT showed similar results in calves.

As conclusion, all instruments showed a rather high variability especially when measuring pO2, Na+ and partly Ca2+ concentration. Despite the different precisity and reliability of the individual analyzers, portable units that have significant benefits during the measurements under farm conditions showed at least such good results as the desktop types.

Funding: OM OMFB-00340/2002 Grant, NKB-2003-KUT-7-011 Grant, Faculty of Veterinary Medicine of Utrecht University, Diatron Ltd, Hungarian State Eötvös Scholarship, Bolyai János Research Scholarship.

652 (5007)
LACTOFERRIN IN MILK OF DAIRY COWS IN PASTURE
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Lactoferrin (Lf) is a protein present in the cow milk. It is an iron-binding protein that has numerous functions related to its iron-binding properties. Literature has reported extensive antimicrobial activities against bacteria, fungi and virus as well as antitumor, anti-inflammatory and immunoregulatory actions. Lactoferrin inhibits bacterial growth by sequestering essential iron, however, it is well established that its bactericidal activity is due to a direct interaction between the protein or lactoferrin-derived peptides mediated by a N terminus highly charged. These proprieties are of interest in therapy in cows and in man. The determination of the natural contents of lactoferrin in milk of cows feeding in pasture was our objective.

Sixteen series of milk samples from individual Holstein cows of one herd (n=214) and 509 milk samples from individual cows of 24 commercial herds were collected. Samples were cooled and processed in the laboratory within 6 hours. Skimmed milk was prepared for the determination of the different protein fractions using one-dimensional electrophoresis with a polyacrylamide 12% (SDS-PAGE) in miniature vertical gels (Mini Protean II, Bio-Rad®). The technique of Laemmli (1970) was used, running gels with 200 V during 60 min and stained with blue Coomasie R 0.1%. The gels were scanned and their images analyzed with software (GelPro®). In order to quantify the optical density of each protein fraction, the percentage results of each band of electrophoresis was calculated based on the total proteins in lane.

The average results of Lf of the electrophoresis lane for milk proteins in the series of individual cows samples from one herd were: 4.95 ± 1.46%, coefficient of variation (CV)=29.4, n=214. These values were in order of 2.4 mg/ml. Significant lower Lf values were observed in spring (3.99 ± 0.19%), (p<0.01). Age: between 2 to 10 years old, colostrum and lactation period did not influence Lf values in the milk of these cows. Results of Lf in the milk of the cows from 24 commercial herds were similar to the serial study: 5.49 ± 1.22%, CV=22.2, n=509.

Primary values of the composition of lactoferrin in milk of cows in pasture were established.

653 (2627)
EFFECTS OF AN AUTOMATIC MILKING SYSTEM ON FREE FATTY ACIDS IN DIFFERENT MILK FRACTIONS
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Goal of the study: It has been reported that, for reasons not totally cleared yet, the application of robotic milking systems (AMS) evokes a statistically significant increase in the free fatty acids (FFA) content of herd bulk milk. This study was performed to evaluate the influence of an AMS on the FFA content in two milk fractions: the quarter composite (QCM) and the cow composite milk (CCM).
Material and methods: A group of 31 high-yielding German Holstein Friesian cows at different lactation stages and numbers were milked robotically (VMS: voluntary milking system, DeLaval; vacuum 43 kPa, pulsation rate 60 cycles/min, pulsation ratio 65%). The sampling session lasted over 24 h, and samples included n = 307 QCM and n = 78 CCM. Mean milking frequency was 2.52 milkings/cow/day. The milk samples were analysed for somatic cell count (SCC; Fossomatic), fat (MilcoScan 4000) and FFA content (Autoanalyser).

Results: For the intervals <6h, 6 - 9h, 9 - 12h and >12h, mean SCC in QCM (including standard deviation) were 4.81 ± 0.46, 4.78 ± 0.58, 4.67 ± 0.67 and 4.55 ± 0.46, in CCM 4.96 ± 0.43, 4.95 ± 0.55, 4.88 ± 0.65 and 4.60 ± 0.33 log10 of cells/ml, respectively. Corresponding values for fat in QCM were 4.34 ± 0.85, 4.06 ± 0.87, 3.45 ± 0.94 and 3.60 ± 0.90% (approx. 0.20% higher in CCM), and for FFA in QCM 0.32 ± 0.07, 0.29 ± 0.10, 0.28 ± 0.09 and 0.25 ± 0.07 mmol/l. For the latter parameter, the differences between QCM and CCM were minimal (0.01 mmol/l). The FFA values in both milk fractions showed the highest level at an interval of <6h. When comparing the interval extremes (<6h and >12h), significant differences (p<0.01) were found for FFA, but also for SCC and fat percentage.

Implications: With a mean level of FFA in quarter and cow composite milk samples of approx. 0.28 mmol/l, milk produced by AMS ranges within the same level as herd bulk milk from conventional bucket milking systems does. Therefore, no detrimental influences on the FFA content by applying VMS could be observed.

654 (2571)
PLASMA AND MILK CORTISOL LEVELS AND WHITE BLOOD CELL COUNTS IN DAIRY CATTLE UNDER LOOSE HOUSING AND STANCHION BARN SYSTEM
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The purpose of this study was to determine the white blood cell counts (WBC) as an immune index and their relationship with the plasma and milk cortisol levels in dairy cows kept under two different loose housing and stanchion barn system. 20 primiparous cows from the two system (10 from each system) with similar body weight and days in milk were chosen from a farm with 1500 dairy cows kept in two different systems. Milk and blood samples were taken at the same time. A second milk sample was taken two days later. Cortisol levels in both blood and milk were significantly (p<0.01) lower in the loose cows. There was a strong negative correlation between WBC, and both plasma and milk cortisol levels in the two groups of cows. A positive correlation was found between the two milk samples and also between the cortisol levels in milk and plasma for the two groups of cows.

Key words: Immune system, Glucocorticoids, Stress

655 (2528)
LEUKOCYTE SUBPOPULATIONS AND SURFACE ACTIVATION MARKERS IN GROWING CALVES
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The newborn calf starts life with an intact, competent immune system, ready to respond to the challenges of a variety of foreign microorganisms and potential pathogens. Still, specific responses take time to develop and are not as effective as in older animals. Therefore, the innate immune mechanisms play an important role in the calf's defense against infectious diseases, along with the protection provided by maternal immunity. The aim of the present study was to characterize the leukocyte populations and determine their level of activation in calves during the first six months of life.

Fifteen clinically healthy calves of the Norwegian Dairy Cattle breed were bled every week during the first five weeks of life and thereafter every month until the age of six months. Haematological parameters, including differential counts, were recorded. The leukocytes were incubated with primary antibodies against either CD4, CD8, CD21, 7d-T-cell receptor, WC1, a B-cell marker or an NK cell marker, labelled with secondary fluorochrome conjugated antibodies and analysed by flow cytometry. To determine the level of activation of the leukocyte subpopulations, labelling of the interleukin 2 (IL-2) receptor a-chain was performed. There were changes in the leukocyte populations during the calves' first months of life. The total number of neutrophil granulocytes decreased, whereas the total number of lymphocytes and monocytes increased. The relative proportions of CD4+, CD8+ and 7d-T-cells showed large variability between the calves, but remained quite stable within each individual during the study period. The percentage of cells expressing the B-cell maturation marker CD21 increased over the first five weeks of life. IL-2 receptor expression was detected on a proportion of the CD4+ cells while few other leukocytes expressed this receptor.

656 (5042)
EVALUATION OF PROOXIDANT-ANTIOXIDANT STATUS IN BLOOD OF COWS LIVING IN DIFFERENT ENVIRONMENTAL CONDITIONS
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Proceedings of the WBC Congress, Québec, Canada , 2004
Prooxidant and antioxidant processes and diseases of cattle resulting from decreased bioavailability, or redundant zinc, copper and molybdenum in animal feed are often connected with biogeochemical and antropogenical factors. Therefore, it is very important to include biogeochemical and antropogenical zones in which animals were raised while analysing bioavailability of trace elements in feeds and the disturbances in their oxidant/antioxidant balance.

The goal of experiment was to evaluate nutrition of dairy cows with a feeding stuff originating from the region irrigated with utility refuses from the potato industry over prooxidant and antioxidant activity in blood of cows. The experiment lasted for 1 year, and it comprised 120 cows of the Black-White breed, at the age of 5 - 7 years. Cows were chosen from the 3 districts in the valley of the Narew river, each group (A, B and C) with a different irrigation method. Cows from A and B (experimental groups) inhabited areas irrigated with utility refuses from the potato industry company. Area inhabited with cows from group A was irrigated with utility refuses by using a flow method. Area inhabited with cows from group B was irrigated with utility refuses by using a sprinkle method. Cows from group C (control) inhabited an area where utility refuses irrigation was not used. Concentrations of minerals were determined by atomic absorption spectrophotometry and antioxidant status using RANDOX clinical reagents. Mineral analysis of utility refuses had been made before experiment started. Utility refuses contained: K-10.23, Na-5.9, Ca-2.5, and Mg-1.23 mmol/dm³, Cu-0.63, Mo-0.104, Zn-10.71, Pb-less than 0.004, Cr-2.5, and Cd-0.0017 µmol/ dm³. Cows blood parameters that were determined are: superoxide dismutase, glutathione peroxidase, total antioxidant status, ceruloplasmin, ascorbic acid, copper, molybdenum, zinc, and malondialdehyde. Average value of particular parameters for cows from group A was respectively: 62.09 U/gHb, 457.33 U/dm³, 0.14, 1.51, 58.48, 9.86, 0.23, 12.66, and 1.84 µmol/ dm³; for cows from group B was respectively: 46.76 U/gHb, 426.35 U/dm³, 0.96, 46.1, 8.23, 0.21, 10.8, and 1.99 µmol/ dm³; for cows from control group C was respectively: 75.89 U/gHb, 558.95 U/dm³, 0.54, 1.66, 69.41 46.1, 10.57, 0.25, 13.69, and 1.59 µmol/ dm³.

The analysis of results showed that nutrition of dairy cows with a feeding stuff originating from the region irrigated with utility refuses from potato industry produces: intensification of prooxidant process and antioxidant activity decrease in blood of cows. Analogous value differences of a particular distinctive parameters for prooxidant and antioxidant activities in blood of cows from the region irrigated with flood and sprinkle methods suggest the necessity of taking into account the way of fertilising the soil during production of feeding stuff for cows.

657 (862)
SICKMOO: A COMPUTER SIMULATION TO TEACH VETERINARY STUDENTS HOW TO EXAMINE A SICK BOVINE
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Sickmoo is a web-based version of an original DOS-based computer application that simulates the clinical examination of a cow. It will run successfully on either PC or Mac platforms. A stand-alone application contained on a single CD is also being developed. Authoring of cases is a simple process using a separate module. This can allow the accumulation of a large number of different cases.
Sickmoo is designed to be an aid in the teaching of fundamental clinical skills to undergraduate veterinary students. The main skill taught is that of a comprehensive and logical examination routine. It does not provide training in the practical techniques of clinical examination, but encourages a thorough search for abnormalities in body systems. This provides the opportunity for students to practice the process of a clinical examination without the complications associated with examining client's animals. In addition, students can be exposed to a much greater range of potential case material than they can hope to experience in a 'real world' setting. The user is initially provided with a brief case history and basic presenting signs. They can then request specific clinical information using free text input. Sickmoo then provides the user with clinical information relevant to the user's request. This information can be in the form of either text or images, or both. Up to five images can be linked to each clinical finding.
Users are also able to request laboratory testing of samples from the case, although results are not available until after the clinical examination procedure is complete. Rectal examination, laparotomy and autopsy findings are also available on request by the user. At the end of the process, the user is provided with a summary of the case and suggested background reading material.
Funding: University of Melbourne

658 (5010)
CATTLE INTOXICATION BY THILOA GLAUCOCARPA (COMBRETACEAE)
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Annual outbreaks of cattle intoxication with the poisonous plant Thiloa glaucocarpa (Combretaceae) have been described in the Northeastern part of Minas Gerais State (Brazil). The disease occurs during the winter season, especially in dry areas in which there is no forage available. The most important clinical sign of the disease is subcutaneous edema, which is observed mainly in the perineum, supramammary area, prepuce, scrotum, and abdominal wall. Digestive disturbances such as anorexia, rumen paralysis, and dried feces with
mucus and blood are also often observed. All the animals develop emaciation, dry hair coat, slowness, and polydipsia. The course of the disease is generally subacute (average of 12 days). Post mortem findings include subcutaneous edema, accumulation of serous fluid in the abdominal, pleural and pericardial cavities, and edema of perirenal tissues. The liver and kidneys are pale, and hemorrhages can be found in the digestive tract. The histopathological changes include tubular nephrosis, characterized by severe necrosis of epithelial cells in the distal convoluted tubules, and hepatic necrosis. Although this plant is not palatable, hungry cattle will eat the plant. It were isolated several potentially toxic tannins such as casuarinin, stachyurin, castalagin, and vescalagin from Thiloea glaucocarpa. Other plants such as Quercus spp and Amaranthus retroflexues have been described as cause of tubular nephrosis in other parts of the world. This disease results in direct economical losses (due to death and decreased milk production) as well as indirect losses (due to undergrowth and immune deficiency). This intoxication is a result of deforestation and fires in Northeastern (Caatinga), which extinguish several trees thus providing optimal conditions for the growth of Thiloea glaucocarpa, since it has a well developed root system and germinates quickly after these inappropriate management practices.

Funding: Fundação de Estudo e Pesquisa em Medicina Veterinária e Zootecnia (FEPMVZ), Coordenação Clínica e Cirurgia, Escola de Veterinária - UFMG

659 (1658)
USE OF HOMEOPATHIC MEDICINES IN DAIRY CATTLE IN BRAZIL
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The objective of the field trial was to demonstrate the results of using the homeopathic medicines Fator Fertil* and Fator Cria* in the fertility of dairy farms. During 2002 and 2003, a group of 360 cows and 133 heifers (over 1.5 year) were monitored in 40 farms. Two farmers used those medicines continuously in their herds in some months of the year and the others used for individual treatment. All of them were using the Fator M&P* for mastitis control.

Some important fertility parameters were used to evaluate the performance of the homeopathic treatment in those farms: heat, calving intervals, time from calving to heat, pregnancy rate and number of inseminations. Of the 493 monitored animals, 22.92% presented problem of heat absence and after treatment 85.84% had resolved that problem. The homeopathic treatment worked in until 15 days in 43.30% of the cases, between 15 and 30 days in 41.24% of the animals with problem and more than 30 days in 15.46%, proving that the homeopathic medicine acts quickly. Chemical hormone was used in only 3 animals (0.61%) that didn't reacted to the homeopathy. The average calving interval was superior to 13 months in 58.54% of the animals before the homeopathy and 12 or 13 months in 50.41% of the animals after the homeopathy.

Evaluating the time between calving and first heat, before the homeopathy, 6.50% entered in heat in until 30 days after calving, 34.96% from 30 to 90 days and more than 90 days in 58.54%. With the homeopathy those figures were 47.15%, 44.72% and only 8.13%, respectively. Of the 133 heifers, 66 (49.62%) became pregnant, 40 (30.07%) entered in heat and 27 (20.30%) did not present heat during the monitored time. During the 2 years there was also significant increase in the number of inseminations going from 90 to 95/month and the average number of heat repetitions per month dropped from 9.8 to 4.4.

The homeopathic medicines for the improvement of the fertility rates proved to be effective under field conditions considering the warranty of the animals being pregnant and all the parameters evaluated meaning improvement in all the fertility rates evaluated in this trial.

(*) Trade Marks

660 (794)
EFFECT OF TRANSPORTATION STRESS ON THE HEMOGRAM IN CALVES
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The effect of transportation stress on the hematological parameters of 20 male calves (16 Holstein-Friesian and 4 crossbred), 4 - 10 months old and average in weight of 160 kg was studied. The calves were healthy with no history of any serious diseases.

During an experimental period of 42 days, the calves were kept indoors and fed alfalfa hay and corn silage ad libitum.

After a period of adaptation, on day 21, the first blood samples were taken from all calves in order to have baseline data. Then the calves were divided into three groups: 1- Control group 1 (5 calves) which was kept at stable and had free access to food and water during a 12-hour period of transportation of the experimental group; 2- Control group 2 (5 calves) which stayed at stable but was kept deprived of food and water at the same time; 3- Experimental group (10 calves) which was transported and deprived of food and water too.

On day 26 when transportation began, blood samples were obtained simultaneously from all groups at 0, 1, 3, 6, and 12 hours of transportation. On day 27, blood samples were taken from the experimental group and
both control groups. Then on days 31 and 42, blood samples were taken from both experimental and control group 2.

Hematological examination of blood samples revealed that number of R.B.C., W.B.C., neutrophils, and levels of cortisol and P.C.V significantly increased, but lymphocytes and monocytes significantly decreased in the experimental group compared with the control groups (1 & 2) on the day of transportation (P<0.05).

661 (5067)
HAPTOGLOBIN (HP) AND PLASMA VISCOSITY (PV) IN HEALTHY AND SICK CATTLE
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Objective: Even today, there is a gap between the theoretical possibilities and the clinical - diagnostic usage of Acute Phase Proteins (APP). Therefore, 178 cattle were used to investigate the references of Hp and PV: their storage capabilities, their peripartal behaviour and behaviour during various diseases.

Experimental design: PV was determined with help of a capillary tube viscosimeter. Hp through its binding capacity of haemoglobin. The dynamics of lactation were analysed in 16 cows at 5 different times.

Results: The fact that healthy calves in comparison with cows showed a lower PV was confirmed. Hp concentrations do not differ between calves and cows. Near parturition, PV and Hp concentrations are significantly higher. The PV and Hp values were the following: Healthy cows n = 16, PV = 1.39, Hp <0.05; Pneumonia 11, 2.33, 3.68; Mastitis 14, 1.63, 1.70; Endometritis 16, 1.56, 1.40; Gut diseases 12, 1.50, 1.06; Diseases of limbs 18, 1.47, 1.05; Abomasal displacement 18, 0.39, 2.23; Healthy calves 36, 1.20, <0.05; calves with pneumonia 10, 1.40, 2.21; calves with diarrhoea 12, 1.50, 0.24.

During all diseases, PV and Hp concentrations were significantly calves, their highest in case of pneumonia. These parameters correlate with protein and albumin. No correlation was observed in relation to haematocrit and AST. Dislocatio abomasi lead to no changes of PV, but it was related to serious changes of Hp.

Conclusion: Hp and PV are to be considered sensitive markers for various diseases in cattle, especially during inflamed genesis; they are relatively stable and their determination is quick and cost-effective. However, the dynamics of lactation are to be considered.

662 (3220)
CURRENT STATUS ON CHRONIC HAEMATURIA IN CATTLE OF HIMACHAL PRADESH
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Purpose: Chronic haematuria continues to be a not very manageable production limiting disease of montane cattle of the state. The disease has been also reported from other states of the country like West Bengal, Uttar Pradesh (Uttaranchal), Jammu and Kashmir, Kerala, Arunanchal Pradesh and Nagaland and virtually from most parts of the globe. The ailment is principally characterized by continuous escape of blood through urine, which intensifies during pregnancy, production, draft and severe inclement weathers. Low production, gradual weakness and terminal casualty are usual in due course of time.

Methods: Studies were considered on the ailing cattle brought from the affected areas of the state.

Summary: Investigation revealed abnormalities in haemogram, erythrocytic indices, biochemical constituents comprising calcium, phosphorus, glucose, blood urea nitrogen and serum creatinine. Pathologically, carcinomatous growths in the urinary bladder and concretions in the kidney were noted. The ailing cattle were treated with aminocaproic acid and jaunkhar and other Ayurvedic haemostepic, in separate groups.

Conclusion: Managemental trials could provide some amelioration temporarily. Varied vegetations of the montane pasture consumed by the cattle were alleged to initiate the disease. A search for proper containment and control of the disease appear imperative.

663 (3434)
DETERMINATION OF CREATINE KINASE (CK), ASPARTATE AMINO TRANSFERASE (AST) AND ALANINE AMINOTRANSFERASE IN THE BLOOD SERUM OF SOME DOWNER COWS IN TEHRAN PROVINCE, IRAN
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The downer cow syndrome is a condition which occurs in cattle usually following hypocalcemic parturient paresis. It is characterized clinically by prolonged recumbency even after two successive treatments with calcium and removal of primary cause(s) of the disease. Pressure damage, which occurs secondarily, is a factor common to all cases and the underlying cause of the downer cow in most cases. It has been reported in various studies that CK and AST activities increase remarkably in the affected cows. In this study serum samples of 21 downer cows were collected and CK, AST and ALT levels were measured by RA 1000, using commercial kits. The relationship between age, number of parturitions, sex of calf, and duration of recumbency with the level of above mentioned enzymes were studied. Mean (± SD) CK, AST and ALT activities in healthy cows were 60 ± 6.3, 43.8 ± 5.8 and 8.0 ± 4.4 U/L and in downer cows were 1047.4 ±
Funding: Islamic Azad University, Science and Research Branch

664 (3062)
EFFECTS OF EXTREMELY LOW FREQUENCY ELECTROMAGNETIC FIELDS EXPOSITION ON CIRCADIAN RHYTHMS AND DISTRIBUTION OF SOME LEUCOCYTE DIFFERENTIATION ANTIGENS IN COWS
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Some recent epidemiologic studies have suggested that extremely low frequency magnetic and electric fields (ELF EMFs) affect human health. It was reported that exposition can influence energetic metabolism in cows. The aim of the present study is to investigate whether or not ELF EMF emitted from 380 kV transmission lines affect some leucocyte differentiation antigens in cows. The study was carried out on 4 cows exposed to an ELF EMF of 1.98-3.28 microT and in 4 cows (control) exposed to 0.2-0.7 microT. The following haematologic and immunologic parameters were measured in both groups: total white blood cells; neutrophils; lymphocytes; eosinophils; and CD45R, CD6, CD4, CD8, CD21, CD11B, and CD4/CD8 ratio.

Some of the haematologic and immunologic parameters under investigation were similar in both groups. Although T lymphocyte surface antigens, such as levels CD8, were found to be higher in exposed groups (1.35 ± 0.120 vs 0.50 ± 0.14 x10^3/microL). A different value of CD4/CD8 ratio (0.84 ± 0.05 and 2.19 ± 0.16 for exposed and not exposed cows respectively) was found between groups. In conclusion these results suggest that ELF EMF exposition could be responsible of the abnormal temporal variations of haematologic and immunologic parameters in cows.

665 (3339)
EFFECT OF THREE DIFFERENT METHODS OF DEHORNING ON CORTISOL LEVELS AND BEHAVIOUR OF CALVES
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The purpose of the study was to determine the effect of different methods of dehorning (hot-iron, chemical (NaOH) and scoop), on cortisol levels and behaviour of calves. Blood cortisol was measured by radioimmunoassay, prior to dehorning (-5 minutes) and 1, 3, 6 and 24 hours after dehorning. Behaviour responses were observed by a veterinary blind to treatment, for periods of five minutes, immediately after dehorning and 1, 3, 6 and 24 hours after. Four different behaviours considered significantly related to pain were noted: head shaking, ear flicking, scratching head with hind feet and bellowing.

The animals were distributed in the following way: Group 1 (hot-iron) - 4 calves; Group 2 (chemical) - 3 calves; Group 3 (scoop) - 5 calves.

Results: The cortisol levels (ng/ml) measured at the moments depicted above were: G 1: 6.07, 9.18, 5.83, 8.94, 12.05; G 2: 7.04, 21.62, 10.49, 6.64, 3.15; G 3: 7.21, 27.63, 26.58, 14.05, 11.03. The total number of behaviour signs were: G 1: 19, 10, 4, 11, 0; G 2: 23, 8, 11, 5, 1; G 3: 8, 21, 4, 10, 5. Ear flicking, head shaking and scratching were relatively common signs. Bellowing was only recorded once.

Conclusions: Hot iron dehorning causes smaller increases in cortisol. This could mean that it is the less stressful or painful. Some effect is still evident after 24 hours. The use of chemical products seems to cause some discomfort soon after application but the values return soon, after 6 hours, to baseline levels. Dehorning by scoop causes the largest increase in cortisol levels that persists for, at least, 24 hours. This data could mean that this method causes the most severe and prolonged pain. The difference in cortisol values between scoop dehorning and the other methods is statistically significant.

Behaviour responses, after the use of chemical and hot-iron, increase very quickly but then subsides. With the scoop the increase appears latter but persist for longer. The lack of an evident correlation between behaviour traits and cortisol levels need further studies - could mean that cortisol is an unreliable method of predicting pain in calves; that cortisol levels also depend on individuals capability to resist pain; or that animals demonstrates pain in ways not perceptible to human eyes. Bellowing should not be considered as a sign of pain in calves. Nevertheless there is evidence that behaviour may be used to evaluate pain in some animals but the lack of a response should not be used as an indicator of no-pain.

Funding: CIISA - FMV

666 (3384)
PLASTIC BAGS A SERIOUS THREAT FOR THE PRODUCTION OF RUMINANTS IN THE STATE OF...
TLAXCALA, MEXICO
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The state of Tlaxcala in Mexico is one of the first settlements established by the Spaniards that came to Mexico. It has had since the year 1519 a strong vocation to raise brave cattle, especially suited for the bullfights, for the Spanish colonists that established there came from Extremadura. The brave cattle raising is carried out with a minimum of investment and they do not leave the cattle ranch until the time for the bullfight. For this reason it is seldom that the animals could present a problem of ingestion of foreign bodies. Small cattle producers for dairy purpose and small ruminants are nevertheless also established in Tlaxcala. These small herds are taken out to graze and they can be seen eating grass by the roads. Frequently they come into plastic wrappings and plastic bags that lay on the ground. The scent and flavor they keep incites the animals to ingest them and they end up in the animal's stomach accumulating these plastic materials. In the last three years, we have found plastic materials in 37 animals. Most of the animals presented evidence of severe physical deterioration; dairy cows showed a decrease of milk production. The sheep suffered low wool production as well as a significant decrease in muscle production. We removed more than twenty plastic bags from the stomach of a single cow. Even though the mortality rate is low, the decrease in production is important. The accumulation of the plastic material impairs the ruminating process and the overall function of the digestive system. Of course the surgical procedure, rumenotomy is the indicated immediate treatment, but it is of extreme urgency to develop legislation for the packing of food and an educational campaign to help keep the fields free of these contaminants.

667 (3378)
MYTHIC-RELIGIOUS RELATIONSHIP BETWEEN THE ILLNESS AND HEALING OF CATTLE IN THE CENTER OF MEXICO
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The raising of ruminants in Mexico dates back to 1519, year in which the Spaniard Hernán Cortés, disembarks in the coast of Veracruz, and engages into the invasion of the Great Tenochtitlan, now Mexico City. There were no domestic ruminants then in America, but the Mexicans and other native cultures were acquainted with wild ruminants, especially three kinds, the white tailed deer, the mule eared deer and the “temazates”. Because of the fertile land and great vegetation, the ruminants, especially the bovines and ovines had great success. Dating from the times of the Renaissance in Spain, they were brought to America for the production of dairy products, meat and wool and also for the production of brave bulls for the bullfights. The first herds date back to the sixteenth century in what used to be “Nueva España” (now Mexico). In the rural areas the owners of small herds or ruminants feel much attached to their animals and when they get sick, besides the service of the local veterinarians, they also seek healing through prayers to God and the saints of the Catholic cult. That is why, when the animals recover, they paint in small metal plates scenes representing their region, and the animal or animals that were healed thanks to the intervention of the celestial protector they had invoked. In the States of Tlaxcala and Puebla you can still find this type of religious token in the flea markets, where people sell them after having brought them from a church of the region. It is a tradition that the owner puts up the painting in the neighborhood church or goes to a distant, important sanctuary. The most important saints invoked are the Virgin of Guadalupe, Christ represented as the Holy Child of Atocha and Saint Francis of Assisi. The most numerous representations include ovines and bovines. This popular iconography shows the various natures of the ailments, which go from snake bites to fevers of unknown origin. It is important for the veterinarian who practices medicine in these regions to be aware of the social practices and cultural traditions of the region. In the other hand, this expression of religious faith through the primitive art evidences the appreciation of the people of the land for their cattle.

668 (2495)
HYPERVITAMINOSIS A AND HYENA DISEASE
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Hyena disease is a growth disorder of young cattle characterized by a dorsal profile similar to that of a hyena. Hypervitaminosis A is considered to be the most important factor in the development of the skeletal alterations typical of the disease. In growing animals, in fact, excessive amounts of vitamin A can cause the focal loss of the methapalseal growth plate, due to its premature closure. To confirm this etiological hypothesis the Authors reproduced the Hyena disease in calves by administering high doses of vitamin A and evaluated the clinical aspects and radiographic changes that occurred at stifle and elbow joints during the subjects' first year of life. Six newborn male Holstein calves were divided into two groups: group A (experimental, four calves) and group B (control, two calves). Commencing at 15 days of age, 1,000,000 UI/day of vitamin A was injected subcutaneously in group A calves; the treatment lasted for three months. Group B calves did not receive any
vitamin supplementation. Clinical and radiographic examination and weighing of the calves were performed every three weeks during the period of vitamin administration and subsequently every three months until the calves were one year old.

Growth disturbances and radiographic changes were already evident after two months of vitamin administration; clinical findings typical of Hyena disease became more obvious during growth. The experimental group calves showed: reduced growth, tight pelvis, kyphosis, hyena-like dorsal profile (type I for three calves and type II for one calf), and a disharmonious walk particularly evident in hind limbs. Furthermore, calves showed itching, dermatitis and alopecia during the vitamin administration period alone. X-rays of knees in group A calves showed, as early as 20 days after commencement of vitamin supplementation, the presence of a radio-opaque strip located on the metaphyseal cement lines of the femur and tibia. X-rays of elbows showed a picture similar to those of the knees, but developing a little later. These radio-opaque strips were evident at the age of six months. In addition, the radiographic images also showed alterations in the outline of examined bones: a) enlarged distal femoral epiphysis closed in on itself; b) caudal femoral angle about 85°-90°; c) transverse axis of proximal tibial epiphysis elongated caudally about 1-1.5 cm. None of the above-mentioned pathological aspects were observed in the group B calves.

669 (2214)
VACCINATION STUDIES OF LAMBS AGAINST EXPERIMENTAL PASTEURELLA (MANNHEIMIA) HAEMOLYTICA INFECTION
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In this study, efficiency of a commercial vaccine (One Shot Ultra 8; Pfizer Animal Health, USA) against experimental Pasteurella (Mannheimia) haemolytica infection in sheep was investigated. Antibody responses following vaccinations were also detected by leucotoxin neutralization test (LNT) and ELISA, respectively. The trial was performed with 45 lambs, divided into three groups comprised of 15 lambs, each. One of the groups was determined as control group while the other two were the trial groups. Lambs in the first trial group were vaccinated once with One Shot Ultra 8 vaccine, and the second group was vaccinated twice, with two week intervals. Two weeks after the second vaccination all of the lambs were challenged. Following the challenge, all of the lambs were slaughtered and after the necropsy, lung lesions were scored. Antibody titers following vaccinations were also determined serologically. In the trial, when the lung lesion scores were comparatively examined, while statistically important differences (P<0.05) were observed between the control and the two trial groups, there was no significant differences (P>0.05) between the two trial groups. After the evaluation of serological investigations by LNT test, antibody titers of lambs in the first group were determined to be between 1/20-1/40, while they differed between 1/20-1/80 in the second group. Serum antibody titers were found to differ between 1/80-1/320 in the first group vaccinated only once with One Shot Ultra 8, while they differed between 1/160-1/320 in the second group vaccinated twice, by ELISA tests.
Conclusion: when the control group and the trial groups were compared, vaccinating the lambs with One Shot Ultra 8 was found to decrease the lung lesions in the trial groups. No significant differences were observed between the two trial groups concerning the lung lesions.
Funding: Pfizer VMRD, Sandwich UK

670 (2924)
SEASONAL COMPARISON OF COPPER CONCENTRATION IN SHEEP’S SERUM AND INCIDENCE OF COPPER DEFICIENCY IN MAHABAD AREA OF IRAN
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The current study is done in conjunction with research institute to evaluate the amount of copper element found in Mahabad, which is one of the active veterinary areas in the western part of the country. The duration of this study was about one year which started April 2000 and ended in April 2001. At each season 100 blood samples of sheep from different areas of Mahabad were taken and concentration of copper element in the serum was measured. In this research the average copper concentration in the sheep’s serum was measured in the seasons of fall, winter, spring and summer which was found to be 0.65, 0.54, 0.71 and 0.55 ppm, respectively. At the second phase of the study, samples were taken from the soil and pasture where the sheep under study were grazing. Copper and molybdenum contents of the soil and pastures of seven areas were measured. Average copper concentration was found to be 41 ppm and that of molybdenum 34.1 ppm. Measurements were made of average copper, molybdenum and sulfur concentrations in the plant samples and they were found to be 24.75, 17.75 and 1000 ppm, respectively. Analysis of these sera, soil and plant samples indicates the existence of copper deficiency in Mahabad area, but considering the abundance of molybdenum and sulfur concentrations in soil and plant samples, this deficiency is of a secondary form.
671 (1360)
A SURVEY ON SEASONAL PREVALENCE OF HYPODERMOSIS IN SHEEP AND GOATS' CARCASSES IN MASJEDSOLEYMAN SLAUGHTERHOUSE
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Hydrodermosis is a myiasis caused by the larva of Hypoderma spp. This myiasis is characterized by the presence of warbles under the skin of the back and flank of the animals. Infestation of sheep and goats with the larva cause heavy economic losses due to serious damage to hides and occasional deaths.

The timing of the life cycle, i.e. the period when grubs are present under the skin of the back and flank and the time at which the flies are present in large numbers, varies with the climate and is of importance in a control program. This study was designed to reveal the timing of the life cycle and prevalence of the hypodermosis in Masjedsoleyman region in sheep and goats (Khozestan province- Iran).

To do this, samples have been taken from the grubs under the skin of the back and flank in carcasses of sheep and goats in Masjedsoleyman slaughterhouse from April 2002 to April 2003. Of 8848 goats and 16705 sheep examined, 476 (5.3%) and 34 (0.2%) of sheep and goats' carcasses were diagnosed to be affected, respectively. The collected sample were inspected in parasitology laboratory and two species, Przhevalskiana cossii and Przhevalskiana aegagrei, were diagnosed in grubs.

Statistically significant differences were observed in prevalence of the disease between males and females and also between different seasons in goats (p<0.05). The results were the same for sheep with this exception that in this species there was no significant difference between prevalence of the disease in summer and autumn.

Finally, the results of this study revealed that the “fly season” in Masjedsoleyman region is May and June.
Funding: Shahrekord University

672 (2984)
DISEASES WITH NEUROLOGIC SIGNS OF SHEEP IN CENTRAL BRAZIL
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The death of sheep from diseases which present neurological symptoms can incur serious financial losses. The differential diagnosis of these diseases is an important instrument for decreasing the mortality rate and improving the health of the flock. The objective is to observe the profile and prevalence of neurological diseases in the region of Brasilia. All the sheep at the Veterinary Hospital of Brasilia University that manifested neurological signs were used. The sheep were submitted to clinical exams and material was collected for laboratorial exams in accordance with clinical suspicion. Nervous tissue from sheep that died was collected, examined macroscopically and fixed in formalin, then processed and analyzed by optic microscopy. 25 animals with neurological symptoms were examined and seven different diseases were diagnosed: eleven cases of Bracharia spp intoxication (hepatoencephalopathy) (34.4%), eight of pregnancy toxemia (25%), six cases of polioencephalomalacia (18.8%), two cases of endotoxemia (6.3%), one case of compression of cervical marrow for abscess caused by Corynebacterium pseudotuberculosis (3,1%), one case of tetanus (3,1%) and one case of uremia (3,1%). Two cases were not concluded (6.3%). The study demonstrated the importance of researching and/or instituting specific prophylactic programs for the diseases in this geographic region.
Funding: FINATEC

673 (2067)
CRYPTOSPORIDIOSIS IN BUFFALO CALVES: CLINICAL AND BIOPATHOLOGICAL FINDINGS
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In the present study, 120 diarrheic buffalo calves in Dakahlia province were investigated for cryptosporidial infection. Fecal samples were examined using modified Ziehl-Neelsen stain and severity of infection was determined. 9.16% of animals were found positive. On the basis of oocyst count, 4.15% had mild infection, 2.5% moderate and 2.5% had severe infection. The occurrence of the disease was more common in winter (6.66%) than other seasons. 9 to 15 days-old calves were found to be more infected (8.36%) than younger or older calves.

Clinically, most of affected calves were alert, non-febrile and had good appetite. Their feces were yellowish pasty to watery. One case had severe systemic signs with yellow watery blood stained diarrhea. Hematological examination showed non-significant increase in erythrocytes, PCV% and hemoglobin. Serum protein fractionation using polyacrylamide gel electrophoresis showed significant decrease in total protein and Gama globulin in severely affected cases (p<0.05) than other cases.

In this study, it could be concluded that cryptosporidiosis seemed to produce less severe signs in buffalo
calves and low Gama globulin level provided an opportunity for development of severe illness.
Funding: Faculty of Veterinary Medicine, Mansoura University

674 (2072)
2-D-ECHOCARDIOGRAPHY IN BUFFALOES
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Echocardiography was used efficiently for diagnosis of cardiac diseases in horses and small animals. Recently it was introduced as a rapid and reliable visualizing technique in Swiss and Holstein Friesian cows. However, it is not used routinely for examination of buiatrics. The aim of the present study was to recognize how heart of Egyptian buffaloes appeared sonographically. Dimensions of heart, aorta and pulmonary artery were included to establish a base criteria for reference values. 13 adult, non-pregnant native breed buffaloes were studied. Standing animals were examined in 3-4 intercostal space on both sides of the thorax using 3.5 MHz phased array transducer. Dimensions of the heart were measured in caudal long, caudal short and cranial long axes on the right side and in caudal long and cranial long axes on left side. Animals were examined five consecutive times within 3 weeks. All chambers of the heart were clearly visualized in the caudal long axis view. Meanwhile, the two chambers (right and left ventricles) were visualized in the caudal short axis view of the right side. On the left side, right and left ventricles and ventricular outflow could be imaged.

The diameter of the left ventricle during both systole (4.15 ± 0.47 cm) and diastole (6.69 ± 0.38 cm) were greater than those of right ventricle during systole (3.57 ± 0.41 cm) and diastole (3.89 ± 0.50 cm). The same findings were observed in other planes of examination. The size of the ventricles was greater during diastole than systole. Diameter of the aorta during systole and diastole was 4.57 ± 0.21 cm and 4.73 ± 0.29 cm respectively. Estimated coefficient of variation of variables was less than 13%. Comparison of our results with that previously estimated in cattle revealed that there were slight differences in dimensions which may be attributed to variation in body weight and animal species.
Funding: Faculty of Veterinary Medicine, Mansoura University

675 (871)
CECAL DILATATION AND TORSION IN A BUFFALO
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Cecal dilatation and torsion was diagnosed in a 4-year-old buffalo at the animal farm station of the Faculty of Veterinary Medicine, Suez Canal University, Ismailia. It was presented with complain of anorexia and cessation of lactation. The major clinical signs were severe emaciation with tucked abdomen, tachycardia (75 beats/minute) with arrhythmia (variation of the intensity of the heart sound), quite mild abdominal pain, ruminal stasis, scanty feces or nearly empty rectum. Right side ping was heard on the right side flank dorsal to middle area of the three last ribs. Rectal examination revealed scanty solid balls of fecal matter and a large cylindrical distended sac was palpated, protruded in the pelvic canal, spilled under the hard and occupied nearly the left side of pelvic cavity and extended cranially so that rumen couldn't be palpated rectally. Haemogram showed normal haematological values (PCV 28%, Hb 10gm%, RBCs 4x10^6/ml and WBCs 7.5x10^3). Serum electrolytes revealed mild Hypochloraemia (78.4 mEq/l) and hypokalaemia (3.6 mEq/l). Mild ketonuria (+ve) was also detected. The diagnosis of case was confirmed by the post-mortem examination which showed the cecum grossly distended and protruding to the pelvic canal and extended cranially for about 50 cm with a twist present between the gas filled cecum and proximal colon. The serosa of the cecum was discoloured. No abnormalities were found regarding the abomasums or reticulo-rumen.
Funding: Suez Canal University

676 (5025)
INFECTIONS DISEASES IN THE YAK (BOS GRUNNIENS) - AS OVERVIEW
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A lack of research on infectious diseases (bacteria and viruses) exists in yak. Parasitic infestations are relatively well documented and comparable to cattle. Yak and cattle often share the same habitat, especially during the winter season. Therefore many of infectious cattle diseases are also reported in yak. The distribution of the various diseases depends on the country/region where yaks are kept. The majority of the information comes from China. Of bacterial diseases, Anthrax and Botulism have there a long history. Incidences (up to 50%) declined extremely due to vaccinations. Brucellosis is common among yak. The rapid transmission to humans underlines the importance of Brucella spp. Based on serum samples, infection rates up to 57% are reported. The disease is controlled by hygiene measures and vaccination. Various relatively recent studies have revealed positive rates of 3 - 43% of Chlamydia spp. related to abortion. Exceptionally high incidence of 54% was recorded for Contagious Bovine Pleuropneumonia (Mycoplasma mycoides).
Escherichia coli infections (calf scours) are wide-spread in young animals with incidence of almost 80% and a mortality rate of 20 - 30%. Other reports are relating to Leptospirosis (Incidence of 10 - 20%), Tuberculosis (13%), Salmonellosis (11 - 40%), Pasteurellosis (0.3 - 2.3%) and all forms of mastitis known of in cattle. Of the viral diseases, Foot and Mouth Disease (FMD) has been well known in yak in the past. Infection rates of 72% were recorded with FMD virus subtype O. Yaks are very susceptible to the Rinderpest virus. Mortality rates of 90 - 100% were reported. Today the disease is controlled by vaccination programs. Other important virus infections are Infectious Bovine Rhinotracheitis (Bovine Herpes Virus 1 - BHV1) with an incidence of up to 36% and Bovine Viral Diarrhoea / Mucosal Disease (BVD/MD) with infection rates of 28 - 38%. Our own serological studies were carried out in a 330 head yak herd in the Gansu province of China. To determine typical bovine antibodies, BHV1, BVD/MD, PI3 (Parainfluenza 3), BLV (Bovine Leucosis Virus), Brucella spp., Chlamydia spp., Coxieilla burnetti, Salmonella spp. and Paratuberculosis were used as antigens. A positive antibody status could be demonstrated in 96% of the samples for PI3, 34% for BHVI, 18% for BVD/MD and 2% for Coxieilla burnetti. BHVI and PI3 incidences are comparable to cattle in other regions of the world. The values are high for Chlamydia and low for BVD/MD.

677 (1954)
INTESTINAL NON-ROTATION IN A GOAT
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There are some reports on intestinal rotational abnormalities in human, but there seems to be no reports of such cases in ruminants. This study is a report on intestinal non-rotation in a goat, about one year old which was embalmed for dissection in anatomy laboratory. In ruminants, the superficial layer of greater omentum is connected to cranial and descending duodenum. They are the only parts visible immediately under the abdominal wall when the peritoneal cavity is opened from the right side. The rest of the intestinal mass is hidden in the supraomental recess. Descending part of duodenum is continuous with ascending part by caudal flexure situated caudal to cranial mesenteric artery (CMA). Ascending colon is situated on the right side, transverse colon on cranial side, and descending colon on the left side of the CMA. In this abnormal case all the intestinal mass was in contact with right abdominal wall. The greater omentum and descending part of duodenum were not visible. After careful inspection, it was observed that all parts of duodenum were situated at the cranial aspects and to the right of the CMA, not turning around it. The transverse colon was also situated caudal to CMA. The layers of greater omentum were attached to the distal loop of descending colon, instead of duodenum hidden under cover of the intestinal mass. This study shows that intestinal rotational abnormalities may cause anatomical dispositional disorders of intestine and omentum in ruminants.
Funding: University of Tehran

678 (2550)
PHOTOSENSITIZATION OUTBREAK CAUSED BY PITHOMYCES CHARTARUM (BERK & CURT) M. B. ELLIS, IN SHEEP IN THE STATE OF SÃO PAULO
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The objectives of the present study were to investigate a hepaticogenic photosensitization outbreak diagnosed in ovine in state of São Paulo, and to assess the origin of the disease in order to establish adequate control measures. Three males and 11 females were sent to the Clínica de Bovinos do Centro de Pesquisa e Diagnóstico de Enfermidades de Ruminantes - USP. Animals presented skin crusting and sloughing around the eye, nostrils and ear pavilion, besides presenting coriacious skin. At laboratory examination, serum was icteric, and liver function of all animals was as follows: AST, from 94 to 1,003 U/L; GGT, from 53 to 288 U/L; total bilirubin, from 0.6 to 10.89 mg/dl; direct bilirubin, from 0.2 to 2.69 mg/dl. Renal function and hemogram were inside the normal range for the species. Samples of forage used in animal feeding were collected from the farms were animals were kept and sent to Instituto Biológico, in order to identify the fungus Pithomyces chartarum (Brachiaria brizantha). Forage was submitted to two kinds of analyses: direct method and filter paper technique. The former was based on the compression of transparent adhesive tape on the surface of the forage to be examined. After that, the tape was placed on a glass slide containing Aman's blue stain and observed under an optical microscope, in order to assess the presence of spores and/or colonies of the fungus. In the filter paper technique, small fragments (approximately 1 cm) of the material was placed on filter paper humidified with distilled water, which were placed inside plastic Petri dishes, and kept for 7 to 8 days under 12-hour cycles of black light. After that, samples were analyzed under a stereomicroscope, in order to assess the development of P. chartarum and to isolate the fungus in pure culture. P. chartarum was identified in all different forages analyzed, in both methods. This shows that not only Brachiaria decumbens, but also the other forages given to the animals were contaminated with P. chartarum, a fungus that produces a

Proceedings of the WBC Congress, Québec, Canada , 2004
PESTIVIRUS INFECTION IN SHEEP, GOATS AND DEER IN AUSTRIA

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Introduction: The purpose of the present study was to estimate the current seroprevalence of neutralizing antibodies against pestivirus in sheep, goats and deer in Austria.

Materials and Methods:
Sheep and goats: The prevalence of antibodies to pestiviruses was investigated in 4931 sheep (377 flocks) and 549 goats (80 flocks) in Austria. All sera were tested with a commercially available ELISA detecting antibodies against BDV and BVDV.

Deer: Blood samples from 12 captive deer, 128 free-living deer and 5 free-living chamois were collected in Carinthia, where Alpine pasturing is an important part of farming. Using serum neutralization assays all serum samples were tested for antibodies against three BDV and one BDV strains.

Results:
Sheep and goats: Positive results were obtained from 1448 sheep (29%) in 237 flocks (63%) and 63 goats (12%) in 25 flocks (31%). In sheep there were significant geographical variations in herd prevalence ranging from 9% in parts of Lower Austria to 100% in Landeck, a region in Tyrol. The same was true for the seroprevalence rates of individual sheep and goats ranging in sheep from 4% in parts of Lower Austria to 68% in Vorarlberg and in goats from 4% in parts of Lower Austria to 57% in Vorarlberg.

Deer: Only one sample (0.7%) of a red deer was seropositive with antibody titres of 1:91 against the BDV-1 strain NADL, 1:32 against the BVDV-1 strain Oregon and 1:8 against the BDV strain Chemnitz. The deer sample did not show any neutralizing activity against the BVDV-2 strain 125.

Discussion: The results of this study indicate that in Austria the highest animal and flock seroprevalences in sheep, as well as in goats, were found in those parts of the country where communal Alpine pasturing of sheep, goats and cattle is an important part of farming. The results also indicate that communal Alpine pasturing in these regions may play a role in the spread of pestiviruses.

Deer: The seropositive deer was killed near a communal Alpine pasture, where herdsmen observe ruminant wildlife grazing and licking salt stones. In this region the seroprevalence to ruminant pestiviruses among cattle is between 70-80% and among sheep 9%.

Based on these facts we assume that persistently infected cattle in this region may play an important role in the epidemiology of pestivirus infection in free-living ruminants.
LAMENESS IN WILD RUMINANTS - CLINICAL CASES: LIMITS AND POSSIBILITIES OF DIAGNOSIS AND THERAPY

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Introduction: Wild ruminants kept in zoological gardens under conditions simulating the wild habitat are difficult orthopaedic patients. Examination and treatment is only possible under general anaesthesia. In many cases it is not even possible to separate the patients from the herd during the period of convalescence.

Case report:

A 2-year-old Pére David hind of a wild park was presented with a severe lameness of the right front limb. It had to be narcotised using a blow pipe (Immobilon®). Clinical examination and X-rays were carried out under general anaesthesia. The operation was performed under additional regional intravenous anaesthesia after the application of a tourniquet (10 ml 2% Minocain® = 200 mg procaine hydrochloride). The right lateral claw had a hole at the tip and was partly exungulated. The distal third of the pedal bone showed a pathological fracture with necrosis of the bone. The X-ray findings were consistent with a diagnosis of pathological fracture showing marked osteolysis. All infected structures including parts of the pedal bone were resected. 4 weeks after the operation the hind was reintegrated in the herd. The hind is still alive and healthy.

A 2-year-old Axis deer had shown lameness and swelling at the right front limb for several weeks. At the examination a slight lameness was visible. Clinical examination and X-rays were performed under general anaesthesia. There was no sign of soft tissue swelling or old wound on the right front limb at that time. The X-rays showed periostitis and periosteal new bone formation. Several weeks later, the lameness increased and radiography was performed again. By then, massive destruction of the distal metacarpus and the adjacent epiphysis confirmed osteomyelitis. Due to the poor prognosis the deer was euthanized.

Discussion: The long-term prognosis depends not so much on the medical problem itself as on the post-operative management. In the first case, the wound of the hind healed quickly enough for the animal to be turned out in time to get the winter coat. Osteomyelitis is a disease with a poor prognosis. If a lameness remains, the herd instinctively tries to get rid of the animal in question because of a possible liability in a conflict with a predator. The lame deer usually are attacked by the males of the herd and are not strong enough to fight for their share of the food, leading to death by starvation. The worse prognosis in case 2 led to euthanasia.

682 (3418)

THE ROLE OF CENTRAL CCK RECEPTOR SYSTEMS IN THE VISCERO-VISCERAL INHIBITORY REFLEX IN SHEEP

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Introduction: Reticulo-rumen motility of sheep is modified by many factors, e.g. gasses or bowel content. Increased amounts of gasses in gastrointestinal tract (GIT) inhibit reticulo-rumen motility. Other factors of different kind such as pain inflammation processes, pressure or trauma, cause hypothalamic pituitary adrenal axis activation and result in catecholamines (CA), cortisol, cholecystokinin (CCK) releases. The aim of this study was to investigate the influence of central CCK1 receptor antagonists treatment intraventricularly (ICV) on GIT activity, CA and cortisol concentrations in blood of sheep.

Material and methods: Six apparently healthy ewes, under general anesthesia, undergone surgical treatment: electrodes were placed into muscular layers of different parts of GIT; rumen fistula and duodenal cannula and lateral ventricle cannula were inserted (1). To stimulate intestinal colic conditions, the distension of duodenal (DD) wall was performed using a 10 cm long balloon filled with 40 (DD40) or 80 (DD80) ml of water. ICV bolus of CCK antagonist, lorglumide or PD140.548 at doses 25 and/or 50 µg/kg B.W., was used 10 min prior to duodenal distension lasting 5 min.

Results: Duodenal distension leads to traumatic causing rise of cortisol concentration in blood: 10.51 in control vs 24.72 during DD and to 34.44 ng/ml 5 min after DD ending. Analogically, epinephrine level increase from 0.32 to 2.42 and 2.87 nmol/l in 2h after DD was observed. Also norepinephrine level increase from 1.153 to 2.87 and 2.31 nmol/l 120 min after was noticed. Stress condition accompanying DD leads to considerable changes of animal behavior, heart beat and respiratory frequency. ICV administration of antagonists at the dose of 25 and/or 50 µg/kg B.W. 10 min before DD prevented to a great extent the stomach motor activity breaking, increase release of cortisol, epinephrine, norepinephrine to blood and precluded changes in animal behavior.

Discussion: Obtained results suggest that in case of viscer-visceral inhibitory reflex activation central CCK1 receptors take place. It has been postulated that released in these conditions CCK, which is a normal antagonist of endogenous opioids (2), cause rise of nociceptive actions.
MORPHOANATOMICAL STUDY OF MIDDLE EAR BONES BETWEEN COW AND CAMEL
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In this study twenty skulls from Holstein cows and camellus dromedarius (each of them ten skulls) were collected from Shahrekord and Isfahan abattoirs. After dissecting them, the middle ear bones (malleus, incus and stapes) were removed. Many factors such as weight, length and process of each bone were measured by caliper device; using t.test, all of factors between two animals were compared. We concluded that in camel, the mean weight of malleus (39.05 mg) was more than cow (32.22 mg) but the total length of it, in cow (11.260 mm) was more than camel (10.250 mm). Lateral process of malleus in camel (2.350 mm) was well developed and its head diameter was observed larger than cow. Rostral process of malleus in cow (1.780 mm) was more than camel (1.115 mm). In camel, the length of incus (11.260 mm) was well developed and was larger than camel (10.250 mm). Lateral process of malleus in camel (2.350 mm) was well developed and its head diameter was observed larger than cow. Rostral process of malleus in cow (1.780 mm) was well developed and was larger than camel (0.0650 mm). Mean weight of incus in camel and cow was similar but the length of trunk with long process in cow (6.20 mm) was more than camel (4.840 mm). In camel, dimensions of stapes were larger than cow.
Funding: Veterinary College, Shahrekord University, IRAN
USE OF PLASMA COPPER AND CERULOPLASMIN FOR DIAGNOSIS OF HYPOCUPROSIS IN GOAT
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The diagnosis of copper (Cu) deficiency in ruminants is based on blood plasma or hepatic concentration of this trace element. Accurate Cu determination in liver biopsies is not a routine method nor in the live animals neither in post-mortem reviews. In order to establish a diagnosis of hypocuprosis by a practical procedure, the concentrations of plasma Cu and ceruloplasmin (Cp) were determined in 5 to 7 months old goats. The induction of hypocuprosis was achieved by the oral administration of gelatin capsules containing 273 mg of molybdenum (Mo) in the form of ammonium molybdate. Each animal in the experimental group (n=12) received the capsules three times a week for nine weeks. A control group (n=6) received the same diet as the experimental group without Mo supplement. Blood plasma concentrations of Cu and Cp were determined at 0, 3, 6 and 9 weeks of treatment and were within the reference intervals in all samples. In addition, for monitoring health status of the animals, packed cell volume, white blood cell count, fibrinogen, urea, total protein, albumin, globulin, calcium, inorganic phosphorus, aspartate-aminotransferase and gamma-glutamyl-transferase, were determined at 0 and 9 weeks. The Cp:Cu ratio was determined as a possible indicator of hypocuprosis. Clinical signs of Cu deficiency or other disease were not observed during the experimental period. Analyses of variance and correlation coefficients between Cu and Cp values were not significant (p>0.05). On the basis of the obtained results, it was not possible to establish any usefulness of Cp:Cu ratio as a predictor for Cu status in goats.
Funding: PAPIIT IN552198, DGAPA-UNAM

DIFFERENTIAL CELL COUNTS IN THE MILK OF SHEEP, GOAT AND COW WITH SPECIAL REGARD TO EPITHELIAL CELLS
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As the appearance and percentage of epithelial cells in the milk is difficult to ascertain, information in the literature varies widely. An uncertain differentiation between epithelial cells (EC) and macrophages (MO) may be the main reason for inconsistent results. Therefore this study was designed to establish a technique allowing a clear differentiation between EC and MO. During mid lactation, milk samples were taken from each udder half or quarter of 15 ewes, 22 goats and 19 cows, respectively. Udder health was assessed by clinical examination of the mammary gland, bacteriological status and somatic cell count of the milk samples. Only milk samples of healthy udders were used. Cytospin smears were prepared from 43 samples (11 ewes, 12 goats and 10 cows) and a modified Wright's stain was performed to determine the differential cell counts. EC and MO were not differentiated due to morphological similarity. In a further, step EC were detected immunocytochemically. A primary antibody against epithelial-specific cytokeratin and a fluorescent second antibody were used to visualize EC. The specimens were counter-stained with propidium iodide to determine the percentage of EC. Positive and negative controls were performed. Results of the modified Wright's stain and indirect antibody staining were combined to obtain complete differential cell counts. In the milk of ewes 23.4 ± 9.3% PMN, 19.9 ± 10.4% lymphocytes, 54.0 ± 10.5 MO and 2.7 ± 1.3% EC were found. The differential cell count of goat's milk was composed of 55.0 ± 10.5% PMN, 21.9 ± 6.2% MO, 22.1 ± 9.4% lymphocytes and 1.0 ± 0.8% EC. In cows' milk percentages of PMN, MO, lymphocytes and EC were 41.2 ± 9.2, 37.0 ± 10.5, 20.3 ± 11.6 and 1.5 ± 1.1, respectively.
Our study shows that the applied method allows the determination of the differential cell count and a clear differentiation between EC and MO. Furthermore it is concluded that the percentage of lymphocytes does not vary much in the species examined. Goats and cows have similar percentages of EC. PMN predominates in goat's milk, whereas MO are the major cell population in ewe's as well as in cow's milk.
Funding: University of Munich

EFFECT OF MONENSIN SUPPLEMENTATION ON HIGH CONCENTRATE:FORAGE RATIO ON GHEZEL LAMB PERFORMANCE
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An experiment was carried out in vivo to determine the effect of monensin on rumen fermentation, concentration and blood metabolites. A total twenty wether Ghezel lambs were fed, in a completely randomised design, diets different in the monensin concentration (0, 10, 20 and 30 mg /kg DM). The experiment was carried out over 12 weeks. Lambs were initially fed a diet containing 55:45 concentrate to forage for 3 weeks. The concentrate to forage ratio was increased weekly by 5%. Group 5 consumed constant C:F ratio (45: 55 with no added monensin). The diets were offered ad libitum to all animals twice a day with free access to water and salt. Daily feed intake for individual lamb was estimated from difference between
feed offered and refusals. The live weights of lambs were recorded on day one in each weeks of 12 week of study before morning feeding. Blood samples were collected from 4 lambs in each treatment by jugular venipuncture into an heparanized evacuated tube, 4 hours after morning feeding at the start and last week of experiment. The plasma was assayed for urea and glucose. Rumen fluid was collected via ruminal tube before morning feeding and squeezed through 4 layer of cheesecloth. All data were subjected to ANOVA and treatment means comparisons were conducted by Duncan’s Multiple Range test using procedure GLM (SAS, 1996). Effects of the treatments were tested using animal within period as treatment as the error term. The results indicated that supplementation of diets containing high amount of concentrate with monensin significantly decreased feed intake (p<0.05). As expected, significantly difference in BWG and FCR were obtained by step-up feeding especially by using 30 mg/kg DM monensin (7.52 and 5.93 for 30 mg monensin/kg DM vs. 6.93 and 7.47 for control groups respectively). There was a non-significant trend to suggest a dose related response in the blood plasma glucose to increasing monensin in the step-up diets (44.02 mg glucose/DL in 30 mg monensin/kg DM compared to 38.48 mg glucose/DL for control group). There were no differences (P>0.05) in the total plasma protein due to ionophore inclusion in the diets. No significant changes were observed in the urea in the blood plasma. Total rumen acidity and pH was significantly (P<0.05) affected by monensin and level of concentrate in the ration (6.38 for 30 mg monensin/kg DM vs 5.72 for 0 mg monensin/kg DM). Treatment had significant effects on the rumen redox oxidation (P<0.05) with higher rate for no supplemented monensin (342.50 Sec.) and lower for 10 mg monensin/kg DM (271.25 Sec.) The results obtained in this experiment indicated that inclusion of high level of concentrate supplemented by monensin in the complete diets had improved animal performance and did not affect on the blood metabolites and also has a beneficial effect for the improving in the rumen ecosystem and pattern of fermentation.

689 (3353)
CLINICO-BIOCHEMICAL CHANGES ASSOCIATED WITH INTRAVENOUS INFUSION OF HYPERTONIC SALINE SOLUTION IN BUFFALOES SUFFERING FROM FORESTOMACH IMPACTION
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Forestomach impaction is an important condition of buffaloes in summer months in Punjab (India) owing to shortage of green nutritious fodder and ingestion of low-grade dry roughage. The standard recommended treatment is fluid therapy, calcium supplementation along with oral administration of oils. The present study was undertaken with the objectives to observe the clinico-biochemical alterations following i.v. infusion of hypertonic saline (7.5%) solution (HSS) in six buffaloes suffering from forestomach impaction. As per the history, these animals had impaction for last 3-10 days and the clinical signs exhibited were anorexia, dehydration, passing scanty or no feces, distension of abdomen and tachycardia. The experimental protocol involved i.v. infusion of HSS at the rate of 2 ml/kg bodyweight as a constant infusion over a period of 2 hrs and blood was collected at regular intervals during this period. The blood was analyzed for routine hematology, cell morphology and electrolyte analysis. Following parenteral infusion of HSS, these animals became quite alert and consumed 10 to 20 liters of water. There was improvement in the plasma sodium and chloride concentrations but a decrease in packed cell volume and hemoglobin concentrations was observed. There was no significant change in the morphology of RBC except mild degree of poikilocytosis in one case and poikilocytosis and anisocytosis in another case. After completion of fluid therapy with HSS, these animals were treated with parenteral administration of 450 ml calcium borogluconate (25%) along with oral administration of 1 liter of linseed oil. Clinical recovery manifested by restoration of ruminal movements and passing of feces in 24 to 48 hrs was observed in five animals. Surgical intervention to relieve forestomach impaction was required in one animal. From this study it appears that i.v. infusion of the HSS can be tried for correction of dehydration in the treatment of animals suffering forestomach impaction.

Funding: Punjab Agricultural University

690 (2340)
ANALYTICAL STUDIES ON NATURAL 19-NORTESTOSTERONE IN SHEEP
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The use of steroids, steroid-like agents, and other anabolic hormones to food producing animals for growth promotion purposes is strictly prohibited in the European Union. The present study was prompted by the repeated detection of 17alpha-19Nortestosterone (17α-19NT) in urine of fattening sheep by the official Austrian food surveillance authorities. Presently, these “positive” findings cannot be interpreted in terms of natural occurrence or exogenous administration of 17beta-19Nortestosterone (17β-19NT). The aim was to
obtain reference data for 17β-19NT and its metabolites 17a-19NT and 19norandrostenedione (19N-AD) in urine, faeces and plasma samples, systematically collected over a period of more than 6 months from untreated male, non pregnant female and pregnant sheep of the Bergschaf breed. A limited number of urine samples from sheep of the Milchschaf breed was also tested. All samples were analysed by an HPLC-ELISA technique. For confirmation, selected urine samples were re-analysed for 17β-19NT and 17a-19NT by an LC-MS method (Department of Agriculture and Rural Development, Veterinary Science Division, Belfast, UK).

HPLC-ELISA analysis of Bergschaf breed urine samples suggest an intermittent excretion of 17a-19NT but not 17β-19NT by pregnant ewes (highest concentration 4.8 ng/ml) and, to a lower extent, also by lambs of both sexes. In 4 out of 7 pregnant animals tested, excretion peaks of 17a-19NT appeared to be linked to the time of parturition. Signals corresponding to 17a-19NT and 19N-AD were also recorded in faecal samples from pregnant ewes with maximum levels linked to parturition of 15 ng/g and 18 ng/g, respectively, and, to a lower extent, from male and non-pregnant female sheep. Plasma samples were free of 17a-19NT and corresponding metabolites.

In urine from pregnant sheep of the Milchschaf breed HPLC-ELISA analyses revealed 17a-19NT and 19N-AD peaks of approximately 16 ng/ml and 3 ng/ml, respectively, on the day of parturition. Similar concentrations of 17a-19NT were confirmed by LC-MS re-analysis of the same samples. No 17β-19NT metabolites were found in urine from male and non pregnant female sheep of the Milchschaf breed.

This study provides evidence for the natural occurrence of 17a-19NT in urine from sheep. Notwithstanding the physiological conditions of the animals (e.g. pregnant), the detection of this metabolite in urine per se is not indicative of exogenous treatment with 17β-19NT.

691 (1732)  
CLINICAL EVALUATION OF TEAR SECRETION BY COTTON THREAD TEST IN LAMBS  
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The objectives of this study were to determine to applicability of cotton thread test as a new method for the assessment of tear secretion in healthy male and female lambs and to establish normal values in these animals.

The study was performed on 30 healthy Awassi lambs aged 1 to 3 days. The animals were divided into two groups, as group I (15 male lambs) and group II (15 female lambs). The phenol red impregnated thread was inserted into the fornix conjunctivae inferior for measuring tear secretion. After 15 seconds, the thread was removed and wet portion of the thread measured in millimeters.

The mean cotton thread test values of 30 eyes of 15 lambs were 25.61 ± 5.36 mm. Mean values of right and left eyes were found as 27.93 ± 5.75 and 27.53 ± 6.80 mm in group I. These values were 23.80 ± 3.78 and 23.20 ± 2.86 mm in group II, respectively. There were no significant differences between the values of right and left eyes, but significant differences (p<0.05) occurred between the two groups in either right and left eyes.

As a result, it was concluded that cotton thread test was an easily and rapidly performed diagnostic tool for determining tear production and this measured values could be taken as reference for healthy lambs.

Key words: Cotton thread, tear secretion, lamb

692 (1052)  
COMPUTED TOMOGRAPHIC ANATOMY OF THE THORACIC REGION OF THE RAYEN GOAT  
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Rayen goat is one of the Iranian breeds of goat, kept in Kerman province of IRAN and which, due to excellent and exceptional wool quality, has attracted attention during the recent years. There are a few anatomical and biological data about this breed without which, disease management is not too accurate. On the other hand anatomical data can be a fundamental tool for breed recognition and are useful for biologists. The purpose of this study is to identify the anatomical structures of Computed Tomographic images of the thoracic region of Rayen goat to be used by veterinary radiologists, clinicians and surgeons.

Five male Rayen goats with average age of 2 years were used in this study. At first, one of the animals was fixed by routine anatomical method. Following general anesthesia, the other animals were restrained in sternal recumbency and the thoracic region was scanned by high resolution imaging, using a general diagnostic C.T. system, with transverse slices in the cranial and caudal portions of each thoracic vertebra. Tomograms were made almost perpendicular to the long axis of the thoracic region. Following euthanasia, the goats were frozen with their frames and sectioned with cuts as closely as possible to the C.T. slices. The cuts were studied twice, freshly and after being fixed in formalin. C.T. images were compared with the fixed goat and anatomical slices. Thoracic skeleton was used as the reference. Finally relevant structures and landmarks were identified and labeled in C.T. images. The results of this study can be considered as reference data for diagnosis of abnormal conditions and evaluation of treatment procedures of the thoracic region. It can also be useful for biologists to compare this specific breed for the differences.
COMPUTED TOMOGRAPHIC ANATOMY OF THE HEAD OF THE RAYEN GOAT
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As a native Iranian breed of goat, Rayen goat has received much attention during the last few years, for its excellent and exceptional wool quality. There are a few anatomical and biological data about this breed, without which, disease management is not too accurate. Also, anatomical data can be used as a basic tool for breed recognition and by the biologists. The purpose of this study is to identify the anatomical structures of Computed Tomographic images of the head of Rayen goat to be used by veterinary radiologists, clinicians and surgeons. To our knowledge this is the first report of CT scanning in this breed.

For this study, five male Rayen goat with average age of 2 years were used. At first, one of the animals was fixed by routine anatomical methods. Following general anesthesia, the other animals were restrained in sternal recumbency and the head was scanned by high resolution imaging, using a general diagnostic C.T. system, with transverse slices of 5 mm thick. Tomograms were made almost perpendicular to the long axis of the head. Following euthanasia, the head of the animals was cut from the second cervical vertebra, frozen, and sectioned with cuts as closely as possible to the C.T images. The cuts were studied twice, freshly and after being fixed in formalin. C.T. images were compared with the fixed head and anatomical slices. A skull was used as the reference. Eventually the relevant structures and landmarks were identified and labeled in C.T. images.

The results of this study can be considered as a reference data for diagnosis of abnormal conditions in the head of the animal. It can also be used by biologists to study this breed and compare it with other breeds of goat.

Funding: Shahid Bahonar, Univ. of Kerman, Iran

AN EPIDEMIOLOGICAL STUDY OF FACTORS AFFECTING MILK QUALITY IN NORWEGIAN DAIRY GOAT HERDS
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The purpose of the study was to identify herd factors influencing milk quality in dairy goats. The study was based on data from a questionnaire regarding herd factors in dairy goat production, and herd level data from Norwegian Goat Recording System (NGRS) corresponding to those presented in the Annual Report for 2001. The questionnaire was mailed to all 451 herds attending NGRS in 2001, and 268 farmers answered (59.4%). These data were merged with data from NGRS, and the final material included 235 herds. Data on milk quality included milk somatic cell count and bacterial count (annual geometric mean of all bulk milk samples), and rancid/bitter taste (the ratio of positive samples in relation to all bulk milk samples).

The effects of factors affecting milk somatic cell count and bacterial count (log10 transformation) were tested in regression models. Logistic regression was used to test the effect of factors affecting bitter taste (0=Bitter taste not recorded in 2001 and 1=Bitter taste recorded). Initial models included all factors having significant effects in the bivariate analyses (p<0.10), and factors were successively removed until the final models only contained factors with significant effects.

The following factors had significant effects:
- Milk somatic cell count: Region (highest on Vestlandet), Drinking water system (lower when water nipples were used as compared to water bowls), Ratio of grass silage in roughage (lower when the ratio was more than 70% as compared to 70% and less).
- Bitter taste: Region (lowest on Vestlandet), Milking place (lowest in herds with separate milking stalls as compared to combined feeding-milking stalls), Summer housing in rainy periods (higher when the goats were kept outdoors all time as compared to access to housing/shelter).
- Bacterial count: Decreasing with increasing milk yield and increasing with increasing somatic cell count, Region (lowest in Nord-Norge), Summer farming (higher in individual mountain dairying as compared to common mountain dairying or on the farm), Concentrate feeding per day (higher when the goats were fed concentrates only two times per day as compared to more than two times), Udder preparation before milking (lower with premilking in cup as compared to premilking in towel/hand/stall floor, or no premilking).

THE EFFECT OF QUANTITY AND QUALITY OF DIETARY PROTEIN ON GROWTH AND FIBER PRODUCTION OF MERGHZO GOAT
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Many studies have shown that in contrast to single-coated goats, fiber production by double-coated goats...
appears to be relatively insensitive to changes in quantity and quality of nutrition (e.g. Russel, 1990; Souri et al., 1998). The objective of this experiment was to investigate the effect of quantity and quality of dietary protein on growth and fiber characteristics of Merghoz goat. Fifteen castrate male Merghoz goats with initial live weight of 28.5 kg were used in a 125 day experiment in the time period from May to September. Animal were blocked according to live weight and randomly assigned to one of three treatments: dietary supplementation, per kg DM, with 80 g Soya meal (S), 46 g Soya meal and 37 g fish meal (SF), 48 g Soya meal and 91.7 g fish meal (FS). Total rations, based on concentrate and dried alfalfa forage (20:80) were offered throughout the experiment and contained, per kg DM, concentration of estimate metabolizable energy of 1.98 Mcal and Crude protein concentration of 120 g (S), 120 g (SF) and 150 g (FS). The goats were offered a restricted intake according to their live weight to meet the current estimates of 50 g/d live weight gain. Nitrogen balance study was conducted from day 41 to 54 of experiment. Fiber growth measurements were carried out by taking patch samples (10x10 cm²) from the mid-side area of the goat every 4 weeks.

The results showed that daily live weight gain and raw fiber growth were significantly greater in animals offered the fish meat supplemental diets. Nitrogen retention was significantly increased due to fish meal supplementation only at higher concentration of dietary protein, which was associated with significant incremental changes in fiber diameter.

Conclusions: The results of the present study indicated that live weight gain and fiber growth were affected by both changes in quantity and quality of dietary protein in Merghoz goats but that fiber diameter was affected only by protein nutrition. These observations suggest that fiber production in Merghoz goats is sensitive to quantity and quality of protein supplied to the animals.

Funding: Razi University

696 (3363)
THE EFFECTS OF A XYLANASE ENZYME PREPARATION FROM THERMOMYCES LANUGINOSUS ON THE RUMEN FERMENTATION IN SHEEP
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A study was conducted to gain data about the effects of a fungal fibrolytic enzyme preparation (Rumino-zyme, with 250 FXU/g xylanase activity) from Thermomyces lanuginosus on some rumen fermentation parameters in sheep. Eight rumen cannulated Merino wheters of 50 kg average liveweight, fed a daily ration of 800 g meadow hay and 500 g lamb concentrate were used in the experiment. After a baseline data collection during one week (control period, CO), 2.5 g/day enzyme preparation was administered (experimental period, E, two weeks) for the animals, mixed to the morning feeding. Rumen fluid samples were taken just before the morning feeding (T0), 2h (2H) and 4h (4H) after the feeding. Xylanase activity (FXUI), pH, concentration of ammonia and VFAs (mmol/l) and molar ratio of VFAs (%) were measured. Rumen fluid pH was higher in E at T0 than that in CO (p<0.001). Rumen pH fell down after feeding but there was no difference between E and CO either at 2H or 4H. Xylanase activity of the rumen fluid was higher in E than in CO (T0: 63.9 vs 45.7, p<0.01; 2H: 103.9 vs 71.3; 4H: 87.8 vs 63.3, p<0.001). Ammonia concentration of the rumen fluid was almost the same in E and CO (9.9 vs 9.4) at T0 and similarly, there was no significant difference at 2H (12.1 vs 11.5), but it was lower in E at 4H (6.9 vs 8.9, p<0.001). There was no significant difference between E and CO in acetic acid concentration at T0 (42.6 vs 39.8), but its molar proportion was higher in E (69.7 vs 67.6%, p<0.01). After feeding, acetic acid concentration (2H: 62.5 vs. 53.6; 4H: 61.1 vs. 54.5, p<0.001) and also molar ratio (2H: 64.9 vs. 63.2; 4H: 67.3 vs. 64.1, p<0.01) were higher in E. Propionic acid concentration was lower in E at T0 (11.0 vs. 9.7, p<0.01) but it was higher at 2H (21.6 vs. 18.5, p<0.001) than that in CO, though there was no difference in molar proportion. There was no difference in propionic acid concentration or molar ratio at 4H. Total VFA concentration was somewhat lower in E than that in CO at T0 but it was higher thereafter (2H: 96.3 vs 85.1, p<0.001; 4H: 90.9 vs 85.8, p<0.05). A/P ratio was higher in E at T0 (4.2 vs 3.9, p<0.01), then it fell down but there was a difference between E and CO only at 4H (3.4 vs 3.1, p<0.05). N-butyric acid concentrations and molar ratios were significantly lower in E during the whole experiment. It can be concluded that the enzyme preparation from Thermomyces lanuginosus had positive effect on the major rumen fermentation parameters in sheep.

697 (3397)
HISTILOGIC EVALUATION OF CARTILAGINOUS STRUCTURE OF FREE PART PENIS IN IRANIAN ONE-HUMPED CAMEL (CAMELUS DROMEDARIUS)
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Since camel was one of special animals in the middle east, anatomical researches on its several part of the body, all the time was attended by researchers. The goal of this survey was detecting of cartilaginous status in free part of penis in Camellus dromedarius .6 samples of camels penis were prepared. Free part of penis was divided in three regions: proximal end, middle part and distal end. The samples were fixed with
formalin10% solution and each sample, after several histotechnical preparation stages and H&E staining, was microscopically observed. Result showed that at proximal end region in internal layer of tunica albuginea there are some limited count chondrocyte. Number and intensification of these cells will be increase when the riogon moves to distal end. From proximal end to distal end or free part of penis chondrocytes move to corpus cavernosum. It means that corpus cavernosum penis from proximal to distal region of free part modifies to a fibrocartilaginous structure. Funding: Semnan University

698 (5040)
SMALL RUMINANTS’ MYCOPLASMOSIS IN THE CZECH REPUBLIC
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There is little information on mycoplasma infections in small ruminants in the Czech Republic. Our study reports the first preliminary results based on clinical, culture and serological examination from selected herds of sheep and goats.

A total of 32 sheep and 32 goats coming from five Czech herds were examined for the presence of mycoplasma infection. None of the animals showed any clinical signs of disease. From all of them, swabs were collected (conjunctival, nasal, vaginal/preputial and from external ear canal), altogether 246 samples. On cultivation, frequent biochemical activities were found in the liquid media used and also a great number of colonies were detected on solid media. The isolates were further examined, on the basis of their biochemical activity and sensitivity to digitonin, to identify species. In sheep, the highest number of isolates was demonstrated in the liquid medium with glucose, in goats it was in the liquid medium with urea. The digitonin sensitivity test revealed that the highest number of isolates belonged to the genus Mycoplasma. However, neither antibodies against contagious agalactia of sheep and goats nor Mycoplasma agalactiae antigens were demonstrated by ELISA methods on the animals studied. From this it can be concluded that, at present, the Czech Republic is free of this contagious disease. The mycoplasma isolates obtained will be identified in detail in the following study.

23rd World Buiatrics Congress, Quebec City, Canada, 2004
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