

The Indian Animal Sciences ABSTRACTS



**Indian Council of Agricultural Research
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SAMPLE ENTRY

1 ← 001 Paul, P.R.C.; Xavier, F.; Leena, A. (College of Veterinary and Animal Sciences, Trissur (India), Department, of Livestock Production Management) Dairysoft: A computer programme for dairy farms. Indian Journal of Animal Sciences (India). (Mar 2006).v. 76(3) p. 260-262 KEYWORDS: DAIRY FARMS; COMPUTER SOFTWARE

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To exploit the full potential of dairy sector, a computerized record management system dairysoft was developed. Visual Basis 6.0 was used as front end while MSAccess 97 was utilized as back end for the software. The menu base dairysoft was provided with facilities for obtaining necessary reports along with separate data entry options.

1. Entry number
2. Author(s)
3. Title in English
4. Source
5. Keywords
6. Organisation where work was carried out

C20 Extension

0001. Kumar, S.; Ravi; Mahesh Chander (Indian Veterinary Research Institute, Bareilly (India). Division of Extension Education). Livestock farmers perception on public veterinary service delivery In Andhra Pradesh. Indian Veterinary Journal (India) v.86(3) p.297-298 KEYWORDS: LIVESTOCK. LIVESTOCK NUMBERS.

The study revealed that majority of the livestock farmers had low to medium profile in terms of their personal, socio-economic and psychological characteristics. It was also observed that majority of the livestock farmers had medium positive perception towards public veterinary service delivery. Results of the study clearly indicated that the Livestock farmers with more herd size, high material possession, more income, high extension agency contact and mass media exposure and high economic and achievement motivation had more positive perception towards the livestock service delivery of State department of Animal Husbandry.

L01 Animal Husbandry

0002. Pradhan, P.C.; Kesh, S.S.; Dey, M.; Bera, S.; Nandi, D; Roy, S.; Samanta, A.K.; Majumdar, S.C.; Samanta, R.(West Bengal University of Animal and Fishery Sciences, Kolkatta (India). Faculty of Veterinary and Animal Science). Comparative study on different egg quality traits of rhode island red, vanaraja & desi (Non-descript) chicken in intensive system.. Journal of Interacademia (India) v. 13(2) p.193-197 KEYWORDS: EGG SHELL; EGGS; POULTRY; QUALITY

A study was undertaken to find out egg quality traits of three strains of poultry (Desi, Rhode Island Red and Vanaraja) in California cage system. One Hundred day-old chicks of each type were used. The RIR had shown highest egg weight and Desi had the least. The egg length of RIR was the highest followed by Vanaraja and desi. The egg breadth followed the same trend with the reading found to be highest in RIR followed the same trend with reading found to be highest in RIR followed by Vanaraja and then by Desi. The shape index of egg were 75.04 No. 0.68, 78.52 No. 0.95 and 73.52 No. 0.59 for RIR, Vanaraja and Desi respectively. The mean of egg volume revealed that RIR had highest egg volume and Desi had the least egg volume while it was intermediate in Vanaraja. The specific gravity of egg was highest in RIR followed by Vanaraja and desi. According to mean value RIR showed the highest egg surface area followed by Vanaraja and Desi. The mean value for shell weight was the highest in RIR followed by Vanaraja and Desi. As regard to percent shell weight RIR strain ranked the highest, Desi ranked the lowest while Vanaraja ranked intermediate. The shell weight per unit surface area for RIR, Vanaraja and Desi were 6.94 No. 0.58, 6.16 No. 0.85 and 4.14+ 0.72 gm/cm² respectively. The breaking strength was the highest in RIR followed by Vanaraja and Desi. The mean and S.E of breaking strength for RIR, Vanaraja and Desi were 2045.10 No. 13.38, 1850.15 No. 28.27 and 1478.30 No. 16.44 gms respectively. The yolk index for RIR, Vanaraja and Desi were 0.32 No. 0.14, 0.43 No. 0.40 No. 0.01 respectively.

0003. Pandit, D.; Ghosh, S.; Das, N.K.; Bagchi, S.N.; Bajpal, A.K. (Central Sericultural Research & Training Institute, Berhampore (India)). Knowledge and perception of sericulture farmers -A study in Malda district of west Bengal. Journal of Interacademia (India) v. 13(2) p.216-223 KEYWORDS: SERICULTURE. FARMERS. MORUS. SILKWORMS. WEST BENGAL.

The process of transfer of technology is influenced largely by the activities of extension personnel. They are mostly the key persons in motivating farmers to taken adoption decision in their desired direction. These extension personnel are often forget/ ignorant about the knowledge and perception level of the sericulture farmers and emphasize more on some aspects neglecting others. This study was conducted in Malda district of West Bengal to ascertain knowledge level of the sericulture farmers with respect to different practices of sericulture vis-a-vis their perception on performance of extension personnel in dissemination of sericultural practices. It was found that overall knowledge(45.92 out of 121) and perception score (130.33 out of 440) of farmers was low and poor respectively. Further, knowledge level was low in case of different aspects like mulberry garden (14.11 out of 49), silkworm rearing (20.53 out of 1) and miscellaneous aspects of mulberry

sericulture management (5.44 out of 12), while it was medium in case of marketing management (5.84 out of 9). On the other hand, the perception level was found to be poor in case of all the broad aspects like mulberry garden (45.01 out of 196), silkworm rearing (71.62 out of 192), marketing (8.30 out of 28) and miscellaneous aspects of mulberry sericulture management (5.40 out of 24). It is suggested that special attention needs to be paid in case of all individual activities as well as overall broad aspects which rated very low/low in respect of knowledge level of farmers and worst/poor in their level of perception on performance of extension personnel, in dissemination of sericultural practices.

0004. Hasib, M.; Hazarika, P. (College of Veterinary Sciences, Khanapara (India). Dept. of Extension Education). Studies of level of knowledge of the farmers regarding improved animal husbandry practices in Assam. *Journal of Interacademia (India)* v.13 (2) p.232-234 KEYWORDS: ANIMAL HUSBANDRY. ANIMAL HUSBANDRY METHODS. FARMERS. ASSAM.

The study was conducted on the farmers of Hazo development Block of Kamrup district of Assam to assess their level of knowledge regarding improved Animal husbandry Practices. In the study, it was observed that 35 percent, 34 percent and 31 percent of the respondents possessed 'low', 'high' and 'medium' level of knowledge respectively on the aspects covered in the study. The study also revealed that most of the respondents possess high level of knowledge in feeding, management and health care aspects of improved Animal Husbandry practices, while in the breeding aspects of the same, most of them had medium to high level of knowledge.

0005. Joshi, R.K.; Joshi, Namita; Shukla, Vivek Kumar Niyogi, D.; (N.D. University of Agriculture and Technology, Kumarganj (India). College of Veterinary Science and Animal Husbandry); Singh, Y. Damodar; Mukhopadgaya, S.K (West Bengal University of Animal and Fishery Sciences, Kolkata (India). Loop-mediated isothermal amplification of DNA (Lamp): A Novel tool for diagnosis. *Journal of Interacademia (India)* v. 13(3) p.387-395 KEYWORDS: DNA. DIAGNOSIS. PCR.

Nucleic acid amplification technologies are used in the field of molecular biology and recombinant DNA technologies. These techniques are used as leading methods in detecting and analyzing a small quantity of nucleic acid. The polymerase chain reaction (PCR) is the most widely used method for DNA amplification for detection and identification of infectious diseases, genetic disorders and other research purpose. However, it requires a thermo cycling machine to separate two DNA strands and then amplify the required fragment. Novel developments in molecular biology of DNA synthesis in vivo demonstrate the possibility of amplifying DNA in isothermal conditions without the need of a thermo cycling apparatus. DNA polymerase replicates DNA with the aid of various accessory proteins. Recent identification of these proteins has enabled development of new in vitro isothermal DNA amplification methods mimicking these in vivo mechanisms.

0006. Narang, M.L. (University of Horticulture and Forestry, Solan (India)); Akhtar, N. (Wildlife Institute of India, Dehradun (India)); Kumar, M. (National Zoological Park, New Delhi (India)). Avian fauna of Chail wildlife sanctuary in Himachal Pradesh, Western Himalaya. *Indian Journal of Forestry (India)* v. 31(3) p. 323-327 KEYWORDS: FAUNA. HABITATS. BIRDS.

An assessment of avian fauna of Chail Wildlife Sanctuary was carried out during a three year study between 1996-1999. The Sanctuary which is famous for its Cheer Pheasant population is highly disturbed because of the presence of 121 villages with a population of nearly 10,000. Various anthropogenic activities like cattle grazing, collection of timber, firewood, cultivation and fodder extraction etc. have contributed in degrading the Sanctuary. Nevertheless, the Sanctuary harbours a total of 138 species of birds. The list includes three endangered species included in Schedule-I of Wildlife (Protection) Act, 1972. Majority of birds (66.66%) are resident birds followed by winter migrants (15.20%) and summer migrants (13.76%). Efforts are being made by the Wildlife department to improve the habitat by carrying out plantations and developing water holes. These efforts need to be augmented by management practices like controlling forest fires and initiating eco-development programmes to reduce people's dependence on Sanctuary resources.

0007. Mohan, N.H. ; Tamuli, M.K. ; Das, Anubrata; Sarmah, B.C. ; Kalita, D. (NRC on Pig, ICAR, Guwahati (India). Bujarbaruah, K.M. (ICAR Krishi Bhawan, New Delhi (India)) Analysis of testicular and epididymal characteristics in crossbred piglets. Indian Journal of Animal Sciences (India) v.77(12) p.1254-1257
KEYWORDS: PIGLETS. TESTES. BIOMETRY. BODY WEIGHT. STATISTICAL METHODS.

The present study was undertaken to analyze the relationship between characteristics of testicles (volume, weight), as well as the body weight in piglets, between various epididymal regions with epididymal weight and the relation between epididymal weight and body weight in piglets. A formula for prediction of testicular volume and weight in piglets is also proposed. Testicles and epididymis (20 collected from apparently healthy ten crossbred (Hampshire x Assam local) piglets were utilized for the study. Testicular volume and weight was related to body weight of the animal by a correlation of 0.753 and 0.912 respectively. Correlation between testicular volume and weight was 0.969. The epididymal weight of the piglets was related to the body weight of the animal by 42.8. ($r=0.654$). The epididymal and testicular weight was related by 0.707. The mean testicular and epididymal weight, grams per kilogram body weight of the animal were 0.66 ± 0.036 and 0.638 ± 0.027 respectively. The testicular circumference and length was closely related to the body weight of the animal (correlation of 0.765 respectively).

0008. Murdia, C.K.; Nagpal, N.K. (Rajasthan Agricultural University, Bikaner (India)). Growth profile in Magra sheep in semi-arid region of Rajasthan at farmers flock level. Indian Journal of Animal Sciences (India) v.77(12) p. 1298-1300
KEYWORDS: SHEEP. LAND RACES. GROWTH. RAJASTHAN. STATISTICAL METHODS.

Instantaneous relative growth rate is true measure of growth rate and can be obtained by dividing the instantaneous weight gain (dw/dt) by the time. The various factors affecting the instantaneous relative growth rate included in the study were genetic group, sex of lamb, year of birth and centre. The least-squares means of instantaneous relative growth rate for 0- 6 months age group (1), 6-12 months age group (2) and 12-24 months age group (3) were estimated as 1.10, 0.18 and 0.07% per day, respectively. Genetic group, sex of lamb, year of birth and centre where lambs were reared had a significant effect on the growth rate of animals in field conditions. Progeny from elite rams excelled in growth at early stage of life but with advancement of age other factors also played a significant role on growth rate such as availability of pasture land at different places in different years. It is a general accepted fact that there is preferential care and management for the female young ones. The instantaneous relative growth rate of Magra breed of sheep at farmer's flock level in Bikaner district studied in this investigation may help in early selection program.

0009. Panda, A.K. ; Rao, S.V. Rama; Raju, V.L.N. (Project Directorate on Poultry, Hyderabad (India)). Dietary incorporation of sun dried cage layer manure on performance of broiler chickens. Indian Journal of Animal Sciences (India) v.77(12) p.1326-1329
KEYWORDS: CHICKENS. FEEDING. ORGANIC WASTES. CARCASS COMPOSITION.

The performance, humoral immune response and carcass traits were evaluated in broiler chickens fed diet incorporated with sun dried cage layer manure. Day-old commercial broiler chicks (150) were distributed equally into 5 groups with 6 replicates of 5 chicks each. The birds were reared on raised wire floor battery brooders under optimum managemental conditions. A basal diet based on maize-soybean meal-deoiled rice bran was formulated. Subsequently, another 4 test diets were formulated by incorporating sun dried cage layer manure (SDCLM) at 2.5, 5.0, 7.5 and 10.0% level. All the diets were made isocaloric and isonitrogenous and fed ad lib. to 6 replicates of 5 chicks throughout the experimental period of 6 weeks. The body weight gain and feed conversion ratio of broiler chickens fed 2.5% SDCLM incorporated diet was comparable with that of control group. However, incorporation of SDCLM beyond 2.5 and 5.0% level in the diet resulted in significantly lower weight gain and poor feed conversion ratio, respectively. Dietary incorporation of SDCLM up to 5 and 10% level did not influence the dry matter digestibility or retention of nitrogen, calcium and phosphorus, and humoral immune response, respectively. Similarly SDCLM up to 10% in the diet of broiler chickens did not influence serum concentrations of albumin, globulin, phosphorus and activities of enzymes

like SGOT and SGPT. However, the concentrations of serum protein decreased and that of uric acid increased by incorporation of SDCLM at 7.5% in the diet. Dietary incorporation of SDCLM up to 10% level in the diet of broiler chicken did not influence carcass traits such as dressing yield, gizzard, giblet or abdominal fat. However, the liver weight increased significantly by incorporation of SDCLM beyond 5% in the diet. It may be concluded that sun dried cage layer manure could be incorporated at 2.5% level in the diet of broiler chicken without affecting performance during 0 to 6 weeks of age.

0010. Sirohi, A.S.; Pandey, H.N.(Indian Veterinary Research Institute, Izatnagar (India)). Effect of different milking frequencies on reproductive performance of crossbred cows. Indian Journal of Animal Sciences (India) v.77(12) p.1344-1345 KEYWORDS: COWS. CROSSBREDS. MILKING. LACTATION. MILK PERFORMANCE. REPRODUCTIVE PERFORMANCE.

Milk production body weight and reproduction parameters were studied in crossbred cows milked with different milking frequencies. Milk production was higher but body weight gain was less among thrice daily milked cows than twice daily milked cows without any significant difference. The present study revealed that reproductive performance shown by cows milked 3- times daily was slightly poor than cows milked 2- times daily. This might be related to large changes in body weight over the lactation in response to milk yield with the consequence of negative effects on ovarian function.

0011. Pundiri, R. K.; Singh, P. K. (National Bureau of Animal Genetic Resources, Karnal (India)). Status, characteristics and performance of Red Kandhari cattle breed in its native tract. Indian Journal of Animal Sciences (India) v.78(1) p.56-61 KEYWORDS: CATTLE. BREEDS (ANIMALS).

The breeding tract of Red Kandhari cattle breed comprises Latur, Parbahni, Nanded, Hingoli and Beed districts of Maharashtra. The climate of the breeding tract is dry and semi-arid. Animals of the breed are reared mainly for draught purpose. Animals are medium in size, strong, compact and good looking. Body colour is dull red to almost dark brown. On an average cows had 109 cm body length, 128 cm height at wither, 150 cm heart girth, 46 cm face length, 24 cm ear length, 16 cm long horn and 75 cm long tail up to the switch. The corresponding figures in bullocks were 118, 131, 109, 48, 24, 21 and 85 cm. respectively. Herd size ranged from 2 to 5 animals. The birth weight, daily milk yield, peak milk yield, lactation milk yield, fat percent, lactation length and dry period ranged from 19-22 kg, 1.5 to 4.0 kg, 2.0 to 4.0 kg, 400-600 kg, 4.5, 230-270 days and 130-190 days, respectively. The age at first calving, gestation period, service period and calving interval ranged from 30-45 months, 272-290 days, 120-170 days and 360-700 days, respectively. Cows are low milk producers and bullocks of the breed are preferred over the Deoni breed for better draught ability and smaller size. The survey conducted revealed that animals of breed are sufficient in number and needs immediate attention to improve milk yield and draught ability.

0012. Gokhale, S. B.; Bhagal, R. L.; Singh, P. K.; Singh, Gurmej; Ahlawat, S.P.S. (BAIF Development Research Foundation, Central Research Station, Pune (India)) Performance of Khillar cattle under rural management condition. Indian Journal of Animal Sciences (India) v.78(1) p.62-65 KEYWORDS: REPRODUCTION. PRODUCTION. CATTLE. COPULATION. PARTURITION.

Data on 5351 Khillar animals from 60 randomly selected villages from Satara, Sangali and Solapur districts of Western Maharashtra were used for present study. The information on reproduction and production traits as well as draught ability of bullocks was collected from the farmers. For assessing milk production potential of cows, milk was recorded once in a month. Average age at first mating, age at first calving and average calving interval were recorded to be 40.92 ± 0.13 months, 49.39 ± 0.13 months and 505.59 ± 1.00 days, respectively. On an average 1.43 ± 0.01 services per conception were required. Out of 1106 cows in milk recording, 925 cows were actually milked by the owners and 181 cows were either not milked or allowed to be suckled by young ones. Overall milk production was observed as 2.42 ± 0.02 litres per day with average fat percentage as 4.22 ± 0.04 for an average lactation length 189.26 ± 0.88 days. On an average 7.18 ± 0.02 h work was taken by farmers per day in breeding tract (ranging from 6.24 ± 0.05 h in Solapur district to 7.89 ± 0.04 h in Satara). For

ploughing of one-acre of land, an average time 9.72 ± 0.03 h were required by Khillar bullocks. Khillar bullocks travel a distance up to 18.33 ± 0.15 km in a day with average 1304.24 ± 15.33 kg loads in a cart.

0013. Haile, Aynalem ; Joshi, B. K.; Ayaleq, Workneh; Tegegne, Azage; Singh, Avtar; Chakravarty, A. K. (National Dairy Research Institute, Karnal (India)). Prediction of first lactation milk yield of Doran cattle and their crosses with Holstein-Friesian in Central Ethiopia using multiple regression and principal components analysis. Indian Journal of Animal Sciences (India) v.78(1) p.66-69 KEYWORDS: LACTATES. CATTLE. MILK. YIELDS.

The data on 60 Ethiopian Boran and 428 Boran-Friesian crosses spread over 15 years (1990-2004) were used to predict first lactation milk yield (FLYD) based on earlier expressed traits using multiple regression analysis and principal components analysis. In the prediction of FLYD in Ethiopian Boran cattle, the step-wise regression found only AFCONC to be significantly associated with FLYD ($R^2=13.6$.) in adjusted data. In the Boran-Friesian crosses, Gain 2, BWT, AFS and YWT were significantly associated with FLYD ($R^2= 15.21$). The first principal component (PC1) out of 4 fitted composite variables was significantly associated with FLYD in Ethiopian Boran breed ($R^2= 13.29$). The third principal component (PC3) was more related to FLYD in Boran-Friesian crosses ($R^2= 11.83$) and inclusion of next important principal component PC1 improved accuracy of prediction to 13.76. The rest of the components were significant and dropped. The results indicated that first lactation milk yield could be predicted directly from the early expressed growth and reproductive performance traits, though with lower accuracy, and transformation of original variables into principal components offers no additional advantage in terms of accuracy of prediction.

0014. Bidarimath, Mallikarjun; Aggarwal, Anjali (National Dairy Research Institute, Dairy Cattle Physiology Division, Karnal (India)). Effect of exogenous oxytocin on cisternal and alveolar milk yield in murrah buffaloes. Indian Veterinary Journal (India) v.85 (1) p.86-87 KEYWORDS: WATER BUFFALOES. OXYTOCIN.

Lactating cows have more than 20 per cent of milk as cisternal fraction (Bruckmaier and Blum, 1992) but in buffaloes, cisternal milk accounts to about 5 per cent . This could be the reason for more milk let down time in buffaloes than the cows. The information on effect of different doses of exogenous oxytocin on cisternal and alveolar milk fraction is not available. Therefore, the present study was taken to study the effect of oxytocin on cisternal and alveolar milk, milk let down time, milking time and milk flow rate in Murrah buffaloes.

0015. Bidarimath, Mallikarjun; Aggarwal, Anjali (National Dairy Research Institute, Karnal (India) Dairy Cattle Physiology Division). Effect of exogenous oxytocin on mammary tight junction permeability in murrah buffaloes. Indian Veterinary Journal (India) v.85 (1) p.90-91 KEYWORDS: OXYTOCIN. WATER BUFFALOES.

Exogenous oxytocin alters the permeability of mammary tight junctions in goats.

The present study was conducted to find out the effect of oxytocin on mammary tight junction permeability in Murrah buffaloes.

0016. Mishra, P.; Arora, N. (College of Veterinary Science and A.H., Jabalpur India) Department of Animal Nutrition). Effect of feeding dolichos biflorus on Induced urolithiasis in cockerels. Indian Veterinary Journal (India) v.86(3) p.290-292 KEYWORDS: MACROTYLOMA UNIFLORUM. UROLITHIASIS. COCKERELS.

Seventy cockerels divided into 7 groups of 10 each and fed 7 different diets viz, diet I-control having normal calcium (1 %) and available phosphorus (ap 0.5%) - NCNP, 11high calcium (3.25%) and low ap (0.3%) HCIP (to induce urolithiasis), III - HCIP + 1% NaHCO₃; IV - HCIP + 1% NH₄Cl; VHCIP + 1% NAHCO₃ + Kulthi seeds; VI HeIP 1% NAHCO₃ + Kulthi extract and VII HCl+ 1% NAHCO₃ + double the quantity of kulthi extract. Diets were fed from 9 to 32 weeks of age. At the end of experiment all the birds were weighed and sacrificed. Kidney, liver and heart were weighed. The results of study, indicated significantly ($P<0.01$) higher kidney mass in diet II, III, VI and VII, whereas, body mass were at par in all the diets. Mean liver weight body weight ratio of diet VII was highest and differed significantly ($P<0.01$) from rest of the groups. The x-ray examination of kidneys

showed mineral deposits in all HCIP diets except HCIP (A). Incorporation of kulthi/kulthi extract has no beneficial effect on induced urolithiasis and on vital organs.

0017. Sampath, K T; Chandrasekharaiah, M; Praveen, U S (National Institute of Animal Nutrition and Physiology, Bangalore (India)). Improving production performance of dairy animals in the villages by strategic supplementation : On farm trial. Indian Journal of Animal Sciences (India) v.78(5) p.522-526 KEYWORDS: MILK YIELD. ON-FARM RESEARCH.

Two on-farm lactation trials of 8 months duration each were conducted in villages, Anagalpura and Menesi, respectively of Doddaballapura taluk of Bangalore district in Karnataka state to study the effect of strategic supplementation on the basal diet in lactating crossbred cows. On-farm trials in each village were divided into 2 phases based on the availability of basal roughage (phase 1: local green grass + finger millet straw; phase 2: local green grass alone). Phase 1 lasted for 5 months followed by phase 2 continuously for 3 months duration. Crossbred cows (22) yielding 8 to 10 litres of milk/day, were divided into 2 groups (control and experimental) of 11 each in Anagalpura village and 16 crossbred cows (8 to 10 litres milk/day) were divided into 8 each in Menesi village based on lactation number, milk yield and days after calving. In both the villages, the cows in control group were fed with supplements of groundnut cake and wheat bran as practised by the farmers in phase 1 and 2. Animals in experimental group (in both the phases) were fed supplements, viz. groundnut cake, wheat bran and maize grain by replacing part of wheat bran in this group. The animals in both the groups were fed the basal roughage as mentioned in phase 2 and 1. The average milk yield/day in experimental group was significantly higher than those in control group in Anagalpura and Menesi villages. Milk fat, total solids and SNF were significantly higher in experimental group than that in control group irrespective of the phases in both the villages. The farmers income increased by Rs 15.73 and Rs 11.59/cow/day respectively, in phase 1 and 2 in Anagalpura and Rs 8.95 and Rs. 16.98/cow/day respectively, in phase 1 and 2 in Menesi villages by improved method of feeding. The study indicated that strategic supplementation of limiting nutrients i.e. energy through maize grain to the local available basal diets increased milk yield and had a positive effect on milk composition. Hence it was demonstrated that with minimum alternation in the existing feeding practices by scientific intervention, the farmers income can be increased through enhanced milk production.

0018. Das, A.K.; Dass, Gopal; Singh, N P (Central Institute for Research on Goats, Makhdoom (India)). Growth, carcass characteristics and meat quality of Muzaffarnagari lambs at various stages under intensive and semi-intensive management. Indian Journal of Animal Sciences (India) v.78(5) p.541-546 KEYWORDS: AGE. CARCASSES. GROWTH. LAMBS. MEAT. QUALITY. ANIMAL HUSBANDRY METHODS

Male Muzaffarnagari lambs (28) were reared under intensive and semi-intensive management system, to assess their growth attributes, carcass characteristics and meat quality. Average daily weight gains were significantly higher in the intensive management system in the age group of 2^û6, 6^û9 and 2^û9 months, respectively. Lambs reared under intensive system attained 35.27 kg slaughter weight as against 22.52 kg at 6 months of age leading to 56.62% increase in slaughter weight, whereas at 9 months of age, it was 44.22%. Hot carcass weight and dressing% were significantly higher in lambs managed under intensive system in both the age groups. Carcass measurements including breast fat and back fat thickness, GR measurement, leg circumference and loin eye area were also different between the management systems in both the age groups. Similarly the depot fat weight was significantly higher under intensive management system in both the age groups. Percentage of separated lean and fat significantly increased and bone% declined significantly in the carcass of intensively managed lambs for 6 months compared to semi-intensively commensurating with significantly higher back fat and breast fat thickness in the carcass of former group. Meat physico-chemical qualities pH, water holding capacity and cooking loss were not significantly different between management systems and in both the age groups. The meat of intensively managed lambs had significantly lower moisture and higher fat content but similar protein and ash contents compared to meat of semi-intensively managed lambs in both the age groups. Carcass chemical fat (CCF), total body fat (TBF) and fat

free carcass weight were significantly higher in meat of lambs managed under intensive system at 6 months of age, whereas at 9 months of age, CCF, TBF and fat free carcass weight were still higher in meat of intensively managed lambs. It was concluded that Muzaffarnagari sheep are more suitable for quantity and quality mutton production at 6 months of age and targeting for production of heavier weight carcass for more meat production would be uneconomical.

0019. Singh, Surendra; Bhar, L M; Paul, A K; (Indian Agriculture statistical Research Institute, New Delhi (India)). Growth pattern of crossbred cattle under homoscedastic and heteroscedastic error variance condition. Indian Journal of Animal Sciences (India) v.78(5) p.560-564 KEYWORDS: GROWTH RATE. CROSSBREDS. CATTLE.

Different growth models are fitted in growth data for Friesian||Sahiwal breed at Agra station. Gompertz model gave better fit than Logistic model. The GLS estimates are found to be more precise than OLS estimates for both Logistic as well as Gompertz model under heteroscedastic error condition.

0020. Padhi, M.K.; Panda, B.K.; Sahoo, S.K. (Central Avian Research Institute, Regional centre, Bhubaneswar (India)). Comparative performance of khaki campbell, 'desi ducks and their crossbreeds. Indian Veterinary Journal (India) v.86(9) p.942-945 KEYWORDS: DUCKS. EGG PRODUCTION. CROSSBREDS. BODY WEIGHT. LAYING PERFORMANCE.

Comparative performance of khaki Campbell (K), Desi (O) and their two crossbreds (KO and OK) were studied. Growing period and laying period body weight were statistically significant ($P<0.05$) between genetic groups. The egg production was highest in OK crossbred irrespective of period of measurements. The egg weight in crossbred was better than the Khaki Campbell and both the crossbred recorded lower mortality during growing and laying period than the purebreds. The results indicated that the crossbreds were producing well with better egg size and lower mortality making it more promising crossbred for commercial exploitation.

L02 Animal Feeding

0021. Pailwan, G.H.; Karanani, L.K.; Singh, Sultan; Maity, S.B.; (Indian Grassland and Fodder Research Institute, Jhansi (India)). Effect of varying levels and degradability of dietary protein on nutrient utilization and milk production in Murrah buffaloes fed grass legume forage based diet. Indian Journal of Animal Sciences (India) v.77(12) p.1316-1320 KEYWORDS: WATER BUFFALOES. ANIMAL FEEDING. LEAF MEAL. FEED LEGUMES. FORAGE. NUTRIENTS. PROTEINS. NUTRITION PHYSIOLOGY.

A 150 d lactation trial was conducted on IS Murrah buffaloes divided into 3 groups, G1, G2 and G3, of 5 in each based on their body weight and milk yield to study the effect of level and degradability of dietary protein using berseem fodder and dry mixed grass based diet on nutrient utilization and milk yield. The concentrate mixture of G1, G2 and G3 animals contained 19.16, 18.88 and 15.01% CP, respectively. The ruminal CP degradability of concentrate mixture in G1 was 70% and in G2 and G3 was 50%. Animals were fed isocaloric diet containing roughage and concentrate in a ratio of 70:30. DM, OM, TDN and ME was similar among groups, however, DCP intake was higher in G1 (1.10 kg) and G2 (1.07 kg) than in G3 (0.96 kg) as CP content of concentrate in G1 and G2 was about 20% higher than in G3. RDP to UDP intake in G1, G2 and G3 was 76:24, 68: 32 and 69:31, respectively. Nutrient digestibility did not vary significantly among groups, however urinary N excretion was significantly lower ($P<0.05$) in G3 than in others. Blood glucose and plasma protein concentrations in different groups were similar. Plasma urea level (mg/dl) was lower ($P<0.05$) in G3 (11.32) than in G1 (15.93) and G2 (12.09) and the trend was similar to milk urea, however milk composition was not affected by dietary treatments. The average FCM yield (kg) was higher in G2 (9.08) than in G1 (8.80) and in G3 (8.55), however variation among groups was not significant. The results suggested that increasing the UDP content of concentrate mixture from 30 to 50% in a berseem-mixed grasses based ration in lactating buffaloes, producing daily about 8-9 kg FCM, CP content of concentrate mixture can be reduced from 19 to 15% without affecting milk production.

0022. Chaudhary, L.C; Agarwal, Neeta; Sahood, A.; Kamra, D.N.; Pathak, N.N; (Indian Veterinary Research Institute, Izatnagar (India) Centre of Advanced Studies in Animal Nutrition) Effect of microbial feed additives and replacement of cereal grain with wheat bran on the performance of male crossbred calves. Indian Journal of Animal Sciences (India) v.77(12) p.1338-1340 KEYWORDS: CALVES. CROSSBREDS. FEED ADDITIVES. WHEATS. BRAN. DIGESTIBILITY.

The results of the present study revealed that there was no difference in dry matter intake among the groups. Neither wheat bran nor microbial feed additives had any effect on the digestibility of dry matter, organic matter, neutral detergent fibre,-acid detergent fibre, crude protein and ether extract. The average daily gain and feed conversion efficiency were also similar among the groups. The results of this experiment indicated that maize grain can be successfully replaced by wheat bran without impairing the performance of growing crossbred calves. There was no further improvement in the performance of the animals by supplementation of lactic acid producing bacteria Under present experimental conditions.

0023. Das, M.M.; Samanta, A.K.; Singh, K.K; Mojumdaer, A.B. (Indian Grassland and Fodder Research Institute, Jhansi (India)). Stylo feed block for goats and sheep. Indian Journal of Animal Sciences (India) v.77(12) p.1341-1343 KEYWORDS: GOATS. SHEEP. STYLOSANTHES. ANIMAL FEEDING.

Six Bundelkhandi goats (average BW 29.08 kg) and six Jaiaini sheep (average BW 30.75 kg) were fed Stylosanthes hamata block (stylo) as sole ration. Similar DM intake (%BW) in goats (3.16) and sheep (3.18) showed good palatability of stylo block in both species. The digestibility of DM, OM, NDF was higher (P<0.05) in goat than in sheep, however, N balance as well as DCP and TDN intake were similar in both species, resulting in similar rumen fermentation and blood metabolites. Thus it can be concluded that stylo block was sufficient for maintenance requirement of both species.

0024. Barman, K.C.; Das, A.K.; Sarma, S (Krishi Vigyan Kendra, Dirang, (India)). Effect of feeding melia azadarach leaves blood constituents in crossbred Goats. Indian Veterinary Journal (India) v.86(3) p.284-285 KEYWORDS: GOATS. MELIA AZEDARACH. MELIA. LEAVES. FEEDING. BLOOD. BLOOD SERUM.

Estimation of biochemical parameters of serum from six Beetal cross bucks fed exclusively on Ghoraneem leaves was carried out. The mean post feeding of serum protein (7.27 g/100 ml), urea (41.03 mg/100 ml), urea-N (19.16 mg/100 ml), creatinine (1.25 mg/100 ml), calcium (10.64 mg/100 ml) and inorganic phosphorus (4.35 mg/100 ml) recorded were in normal range. It is concluded that goats can be fed solely on Ghoraneem leaves without any adverse effect on health and body condition.

0025. Moorthy, M.; Viswanathan, K.; Selvarap, P. (Veterinary College and Research Institute, Namakkal (India).Department of Poultry Science). Effect of extracted coconut meal diet in white leghorn layer. Indian Veterinary Journal (India) v.86(3) p.286-289 KEYWORDS: POULTRY. COCONUTS. EGG PRODUCTION.

The ileal digestibility of dry matter crude protein, ether extract, crude fibre and nitrogen free extract in extracted coconut meal (ECM) were 67.58, 71.61, 62.67, 35.99 and 74.81 per cent respectively. A biological experiment was conducted to study effect of extracted coconut meal on egg production for a period from 21 to 52 weeks Overall hen housed and hen day egg production were significantly (P<0.05) reduced in T5 (20 per cent ECM) compared to other treatment groups. The overall mean per cent broken eggs was significantly (P<0.05) higher in T4 and Ts compared to control group. As per the experimental results, it is concluded that extracted coconut meal could be included in the egg type chicken diet up to 10 per cent without any adverse effect on egg production.

0026. Mahanta, S.K.; Maity, S.B.; Pailan, G.H.; Das, M.M.; Karnani, L.K. (Indian Grassland and Fodder Research Institute, Jhansi (India). Plant Animal Relationship Division) Effect of replacement of mustard cake with

berseem on feed intake and nutrient utilization in buffalo heifers. Indian Veterinary Journal (India) v.86(5) p.495-496 KEYWORDS: FEED INTAKE. ANIMAL NUTRITION. NUTRITION PHYSIOLOGY. HEIFERS. TRIFOLIUM ALEXANDRINUM. MUSTARD.

Present findings indicated that complete replacement of mustard cake with new variety (JHB -146) of berseem fodder in growing buffalo heifers fed sorghum stovers (kabdl) based rations did not elicit any untoward effects on feed intake and nutrient utilization.

0027. Karaalp, M. (Gaziosmanpasa University, Faculty of Agriculture, Department of Animal Science, (Turkey)). Effect of decreased amino acids in a low-crude protein diet in Japanese quails. Indian Veterinary Journal (India) v.86(5) p.497-499 KEYWORDS: PROTEIN CONTENT. CRUDE PROTEIN. QUAILS. AMINO ACIDS. EGG PRODUCTION.

Aim of this study was to investigate the effect of decreasing methionine, lysine and threonine amino acids in a low protein diet for Japanese quails from pre-laying to peak egg production period. Control diet consisted of the National Research Council (NRC) suggested values of these three amino acids. Other diets had 96 and 92% of NRC suggestion. For each treatment, twenty 355day old quails were separately kept in individual cages. Trial was terminated when quails became 60--day old. Decreasing the amino acid contents in low protein diets did not negatively affect the average days to the first egg production. Besides, decreasing the amino acid contents did not increase feed consumption, both the costs of diets of each group and the costs of total feed consumed by quails decreased compared to control group. Japanese quails can be fed from pre-laying to peak egg production period using low protein diets whose methionine, lysine and threonine contents are decreased to as low as 92% of NRC recommended values, without increasing the feed consumption and any performance loss.

0028. Chandrasekharaiah, M; Sampath, K T; Praveen, U S (National Institute of Animal Nutrition and Physiology, (India)). Effect of feeding bypass protein on milk production performance in crossbred cows.. Indian Journal of Animal Sciences (India) v.78(5) p.527-530 KEYWORDS: CONCENTRATES. MILK YIELD. ON-FARM RESEARCH. MILK PRODUCTION. CROSSBREDS. COWS.

On-farm lactation trial of 4 months duration was conducted in Anagalpura and Menesi village of Doddaballapura taluk, Bangalore district in Karnataka state to study the effect of feeding bypass protein (UDP) on the milk production performance of crossbred cows. Crossbred cows (24) yielding 8 to 10 litres of milk/day were divided into 2 comparable groups (control and experimental) of 12 each based on lactation number, milk yield and days after calving. Cows in control group were fed a concentrate mixture (CMC) which contained 37% of CP as UDP (bypass protein), while those in experimental group were fed a concentrate mixture (CME) containing 50% CP as UDP. The animals in both the groups were fed ad lib. local mixed grass as the major source of roughage. The average milk yield per day in experimental group was significantly higher than those in control group. The milk fat, SNF and total solids were significantly higher in experimental animals than in control group animals. The milk yield was increased by 1.07 litres, feed cost was reduced by Rs 2.20 and the overall income of the farmers was increased by Rs 12.40/cow/day in experimental group. The study indicated that feeding of bypass protein increased quantity and quality of milk in cows producing 8-10 litres milk/day on local mixed grass based diets.

0029. Dutta, T. K.; Kundu, S. S. (National Dairy Research Institute, Karnal (India)). Response of mixed viable probiotics culture on milk production and nutrient availability in crossbred mid lactating cows.. Indian Journal of Animal Sciences (India) v.78(5) p.531-535 KEYWORDS: COWS. MILK YIELD. PROBIOTICS.

Effect of feeding probiotics culture in triple combination (*Saccharomyces cerevisiae*, *Lactobacillus plantarum* and *Enterococcus faecium*; ratio 6: 2: 2, total dose 10×10^9 cfu/animal) to crossbred mid lactating cows was studied to observe the lactation performance and nutrient utilization. Dry matter intake (DMI)/100 kg body weight tended to increase due to inclusion of probiotics culture and significant between control (T_1) and treatment groups (T_2) in second ($P < 0.10$), fourth and sixth fortnights. Crude protein intake (CPI)/100 kg body

weight was not affected due to probiotics supplementation. Addition of probiotics increased milk yield (kg/day/animal) significantly from 10.16 kg in T₁ to 10.60 kg in T₂. Fat corrected milk (FCM) (kg) yield was also increased significantly due to probiotics supplementation from 9.94 kg (T₁) to 10.34 kg/day (T₂). The milk production efficiency (kg milk/kg DMI) was higher in T₂ (0.90) than T₁ (0.88). Probiotics supplementation had no impact on milk fat percentage in milk. Total milk solid, protein and milk ash per cent remained unaffected due to mixed culture supplementation. Digestible organic matter (DOM) intake and TDN intake per kgW^{0.75} were significantly higher in T₂ over T₁. Digestible crude protein (DCP) intake/W^{0.75} kg followed the same trend; 4.25 MJ extra ME and 2.24 MJ NE were consumed by probiotics supplemented animals at similar level of DMI in both the groups, which could be the reason for higher milk yield due to probiotics addition.

0030. Sultan, Singh; Theodorou, M K; Katiyar, D S; Prasad, S V S; Mishra, U S; Pandey, K C; Bhaskar, R B; Verma, O P S (Indian Grassland and Fodder Research Institute, Jhansi (India)). Relative intake, nutrients utilization, nitrogen balance and fermentation pattern in sheep fed stay-green and go-brown sorghum silage. Indian Journal of Animal Sciences (India) v.78(5) p.536-540 KEYWORDS: NITROGEN CONTENT. SHEEP. SILAGE. SORGHUM.

Based on 2 years evaluation of 6 stay green and 4 go brown sorghum cultivars for nutritional and morphological attributes, 2 promising cultivars each of stay green (M35-1 and CSV-15) and go brown sorghum (HD-20 and J Sel-10) were grown, harvested 1 month after grain collection and then conserved as silage. Silage was fed ad lib. to 16 crossbred sheep divided equally to silage of each cultivar. Metabolism trial was conducted to assess intake, nutrients utilization and N balance, and rumen liquor samples were collected at 0 h to determine the rumen fermentation pattern. The intake of stay green sorghum was higher than go brown. Similarly w^{0.75} intake of DE, TDN and DCP was higher in sheep fed stay green sorghum silage. Sheep fed stay green sorghum silage had 4-5 units more nutrients digestibility. OM and hemicellulose digestibility was higher in animals fed stay green. N absorption and retention was higher in sheep stay green than go brown sorghum silage. DCP, TDN and DE contents of stay green sorghum were higher than go brown sorghum silage. Mean NH₃-N contents were higher in rumen liquor of sheep fed stay green than go brown sorghum silage. Results indicated that silage from stay green sorghum cultivars is more palatable and nutritious than go brown cultivars.

0031. Saini, N; Sharma, T; Arya, R S (Rajasthan Agricultural University, Bikaner (India)). Effect of sulphur supplementation fed wheat straw based diets on performance of sheep.. Indian Journal of Animal Sciences (India) v.78(5) p.552-556 KEYWORDS: SHEEP. SULPHUR. SUPPLEMENTS. WHEAT STRAW.

Optimum level of sulphur required for local fodder of sheep was determined by in vitro studies and further evaluated in 20 male Marwari sheep in completely ypoageal d design. Control group (T1) was fed wheat straw (*Triticum aestiva*), and concentrate mixture containing 10% CP whereas, group T2 was offered wheat straw supplemented with sulphur 0.18% DM basis, and in group T3, T4 and T5 wheat straw of T2 was replaced with 50% groundnut straw (*Arachis hypogaea*), moth straw (*Phaseolus aconitifolius*), and sewan hay (*Lasirus indicus*), respectively. Intake, % digestibility and plane of nutrient utilization were significantly influenced by supplementation of sulphur and type of roughage. Supplementation of sulphur significantly improved clean wool yield, staple length and medullation percentage as well as total live weight gain in supplemented groups compared to control group. The study indicated that supplementation of sulphur needed for straw diet to maximize utilization of nutrients and moth straw added sulphur supplemented wheat straw diet was superior among all the experimental diets.

0032. Chaudhary, J L; Gupta, L; Tiwari, G S; Garg, R (Maharana Pratap University of Agriculture and Technology, Udaipur (India)). Effect of feeding different levels of energy along with groundnut straw (*Arachis ypoageal L.*) as a sole diet on nutrient utilization in draught camels. Indian Journal of Animal Sciences (India) v.78(5) p.557-559 KEYWORDS: GROUNDNUTS. NUTRITION PHYSIOLOGY. CAMELS. DRAUGHT ANIMALS.

Experimental trials were conducted on 9 draught camels to study the effect of feeding different levels of energy on dry matter intake (DMI), digestibility coefficient of the nutrients, nutritive value of feeds and draught. The camels were divided into 3 groups of 3 animals each and fed 3 different levels of energy concentrate mixture along with groundnut straw (*Arachis hypogea* L) as a sole diet of camels. The differences for dry matter intake (kg/d) and DCP intake (g/d) were nonsignificant, but TDNI (kg/d) differed significantly among the treatments. The voluntary water intake (l) and total water intake (l) were significantly higher in T1 as compared to T3. There was nonsignificant difference for VWI and TWI between T2 and T1. The digestibility coefficients of DM and CP were significantly higher in T3 as compared to T2 and T1 but there was nonsignificant difference between T1 and T2 for DM and CP digestibility. Different levels of energy did not affect the digestibility of OM, CF, EE and NFE. The DCP, TDN, DE and ME values were significantly higher in T3 followed by T2 and T1. The draught (kgf) and power developed (hp) were higher in T3, which was significantly different from T1 and T2. Nutrient utilization and draught performance of camels improved by increasing the level of energy in the diet.

0033. D. Basheer Ahamad; Vairamuthu, S.; George, V. Titus; Balachandran, C.; Manohar, B. Murali; Balasubramaniam, G.A.(Tamil Nadu Veterinary and Animal Sciences University, Veterinary College and Research Institute, Department of Pathology, Tamil Nadu (India)). Occurrence of aflatoxin B1 in the compounded feeds and feed ingredients of poultry ration. Indian Veterinary Journal (India) v.86(9) p.894-895
KEYWORDS: AFLATOXINS. POULTRY. RATIONS. CITRININ. OCHRATOXINS.

A limited survey on the level of contamination of aflatoxin B1 in the compounded feed and individual feed ingredients was conducted in and around Namakkal area of Tamil Nadu. Out of 63 compounded feed and 43 feed ingredient samples analysed 42.86 and 32.56 per cent respectively, were contaminated with for AFB1 singly and in co-occurrence with other mycotoxins such as ochratoxin A and citrinin. The concentration of AFB1 ranged between 10 and 215 ppb in the compounded feed and 40 and 320 ppb in the individual feed ingredients. The highest contamination of AF B1 in the compounded feed and feed ingredients was a broiler finisher mash and ground nut oil cake respectively.

0034. Dubey, Meenu; Dubey, D.D.; Tiwari, S.P. (College of Veterinary Science and A.H. Durg (India). Department of Animal Nutrition). Effect Of Dietary Replacement Of Cereal Maize With Rice Polish On The Performance Of Layers. Indian Veterinary Journal (India) v.86(9) p.924-926
KEYWORDS: NUTRIENTS. CEREALS. MAIZE. RICE POLISHINGS. NUTRITION PHYSIOLOGY.

A trial was conducted to study the effect of non cereal low energy and non cereal iso caloric diets to control diet on nutrient utilization in laying birds. All the birds in different dietary groups were in positive energy, nitrogen, calcium and phosphorus balance. However, birds fed on non cereal low energy diet voided more energy, more calcium through faeces that directly reflected the performance of laying birds. The birds on NCLE diet though tried to compensate energy deficit best to their capacity but failed to come to the level of the layers fed on C and NCIC diet.

0035. Senthilkumar, S.; Valli, C.; Balakrishnan, V. (Madras Veterinary College, Chennai (India) Department of Animal Nutrition) In Vitro Ruminal Volatile Fatty Acids Production Of Enzyme of Urea Treated Paddy Straw. Indian Veterinary Journal (India) v.86(9) p.927-929
KEYWORDS: IN VITRO. VOLATILE FATTY ACIDS. ENZYMES. Rice straw.

An in vitro Hohenheim gas production technique was carried out with the control, water sprayed paddy straw (WSrS), enzyme treated paddy straw (ETPS), enzyme supplemented paddy straw (ESPS) and urea treated paddy straw (UTPS). The experiment was carried out to assess the ruminal total volatile fatty acids (TVFA), VFA fractions and its stoichiometric derivations of enzyme treated and urea treated paddy straw variety ADT 43. It was found that, TVFA, VFA fractions and its stoichiometric derivations did not yield any statistical difference, but numerically there was difference noticed among treatments. The enzyme treatment and urea

treatment of paddy straw was comparable, but the measurements of TVFA, VFA fractions and its stoichiometric derivations were numerically higher than the control in both the treatments.

0036. Mahanta, S.K.; Pailan, G. H.; Singh, K.K. (Indian Grassland and Fodder Research Institute, Jhansi (India). Plant Animal Relationship Division) Lactation Performance of Milch Cows Fed on Low Grain Forage Based Diets. Indian Veterinary Journal (India) v.86(9) p.933-935 KEYWORDS: LACTATION. COWS. GRAIN CROPS. SUMMER. DIET TREATMENT.

It was concluded that neither the low grain concentrate mixtures nor the variation in protein source did elicit any adverse effect on feed intake, nutrient utilization, blood biochemical constituents, milk yield and its composition in lactating cows fed forage based diets during summer months.

0037. Das, M.M.; Mahanta, S.K.; Mojumdar, A.B.; Samanta, A.K. (Indian Grassland and Fodder Research Institute, Jhansi (India)). Effect of Replacement Of Concentrate Mixture With Stylo Leaf Meal On Nutrient Utilization In Ewes. Indian Veterinary Journal (India) v.86(9) p.936-939 KEYWORDS: CONCENTRATES. STYLOSANTHES. LEAF MEAL. NUTRITION PHYSIOLOGY. EWES. SUPPLEMENTARY FEEDING.

Fifteen adult Jalauni ewes (average BW 25 kg) were randomly divided into three groups of five animals each. The animals of control group (T1) were fed diet consisting of natural grass hay and concentrate mixture while in T2 and T3, the CP of concentrate mixture was replaced with stylo leaf meal (SLM) by 50% and 100% respectively. Total VFA concentration was significantly higher in T1 and T2 than T3. Ammonia N concentration was significantly higher in T1 followed by T2. Digestibility coefficients (%) of OM, OM, NDF and NFE were significantly higher in T2 than T1 or T3. OCP intake was sufficient for maintenance however TON intake was 50% higher than maintenance in all the groups. Blood glucose, protein and urea N were within the normal physiological range in all the groups.

0038. Doley, S.; Gupta, J.J.; Reddy, P.B. (ICAR Research Complex for NEH Region, Meghalaya (India). Animal Nutrition Division) Effect of Supermunetm on the performance and immune response In Broilers. Indian Veterinary Journal (India) v.86(9) p.940-941 KEYWORDS: SUPPLEMENTS. IMMUNE RESPONSE. BROILER CHICKENS.

A feeding trial of seven weeks duration was conducted on one hundred and eight straight run day old broiler chicks to study the performance as well as immune response on supplementation of Supermunetm, as poultry feed supplement. Significantly ($P < 0.05$) higher body weights and FCR were recorded in the supplemented groups. Supplementation had no significant effect on the immune response against New castle disease. It was concluded that the supplementation of Supermunetm in the broiler diets, enhanced the performance significantly and higher dose rate of 150 gm per ton feed was found to be better.

0039. Chandrahas; Singla, M.; Handa, M.C. (Guru Angad Dev Veterinary and Animal Science Univ, Ludhiana (India). College of Veterinary Science, Department of Livestock Production and Management) Effect of increasing protein levels on soviet chinchilla kits during post-weaning period. Indian Veterinary Journal (India) v.86(9) p.946-948 KEYWORDS: PROTEINS. WEANING FEEDS. WEANING. RABBITS.

A study on 24 Soviet chinchilla kits, with 8 in each group, as heavier (1750 g, T1), medium (1600 -1750 g, T2) and lighter $\frac{1}{2}$ 1600 g, T3) after weaning, was carried out to know the effect of increasing level of crude protein on decreasing weaning weight. Respective level of crude protein in heavier, medium and lighter weighed kits was 20%, 23% and 26% with almost equal digestible energy (2600 kcal/kg). Overall body weight gain, ADG, FCR and % increase in body weight were better in T3 and T2 in comparison to T1 but there was no difference between T3 and T2; There was no difference in fodder intake among various groups but feed intake was different in T1, T2 and T3 in decreasing order. From the study it was concluded that lighter and medium weanings can attain higher growth rate and better FCR when supplemented with protein rich diet during post-weaning period. It can also be concluded that increasing level of crude protein than recommended level has no deleterious effect on growth rate of kits.

L10 Animal Genetics and Breeding

0040. Maurya, V.P.; Sejian, V.; Naqvi, S.M.K. (Central Sheep and Wool Research Institute, Avikanagar (India)). Body condition scoring system-a strategic tool for optimising productivity in sheep farm. Indian Farming (India) v.58(12) p.28-33 KEYWORDS: SHEEP. PRODUCTIVITY. BODY CONDITION.

Body condition scoring is followed world wide with encouraging result in terms of improved productivity and reproductive efficiency in sheep. Studies on various breeds of sheep reveal that by maintaining optimum body condition score between 3.0-3.5 the productivity can be maximized in terms of economic point of view. Result from our institutes farm also suggest the similar finding in different breeds of sheep. hence under Indian farming condition, achieve management of breeding sheep flock to achieve optimum BCS of 3.0-3.5 will ensure economically viable return from these flock.

0041. Choudhary, Sharad; Gupta, N.; Gupta, S.C (National Bureau of Animal Genetic Resources, Karnal (India)) Gaurav, S.S (CCS University, Meerut (India)) Ahlawat, S.P.S. (Indian Veterinary Reserach Institute, Izatnagar (India)). Single strand conformation polymorphism of PRNP exon-III region in Karnah sheep breed of India. Indian Journal of Animal Sciences (India) v.77(12) p.1289-1292 KEYWORDS: SHEEP. LAND RACES. SCRAPIE. PCR. GENOMES. GENES.

SSCP polymorphism was detected of ovine PRNP coding region exon-3 in 50 genomic DNA samples from Karnah sheep (*Ovis aries*), an endangered fine wool breed of Jammu and Kashmir State in India. Patterns of nucleotide variation associated with PRNP polymorphism in exon-3 were screened using PCR-SSCP primers covering different nucleotide base pairs. Primer set-I covering 19-373 nucleotide and showed 9 haplotypes, primer set-II covering nucleotide regions from 354-711 showed 7 haplotypes and primer set-III nucleotide region from 692-1001 showed 7 haplotypes. The frequency of A, B, C, D, E, F, G, H, and I haplotypes in segment-I were 6.00, 6.00, 6.00, 20.00, 36.00, 6.00, 6.00, 6.00 and 8.00. respectively. PCR-SSCP haplotypes in segment-II, covering scrapie susceptibility/resistance codons A, B, C, D, E, F and G were in 10.00, 44.00, 18.00, 18.00, 4.00, 4.00 and 2.00. frequencies respectively. In third segment, PCR-SSCP variants A, B, C, D, E, F and G were in frequencies of 34.00, 18.00, 16.00, 8.00, 10.00, 6.00 and 8.00. respectively. Data generated in this study will be useful for the screening of SNP markers related to scrapie disease resistance or susceptibility in India.

0042. Kushwaha, B.P.; Kundu, S.S.; Kumar, Anil; Maity, S.B.; Singh, Sultan (Indian Grassland and Fodder Reserach Institute, Jhansi (India). Netwrok Project on Bhadawari Buffaloes) Status of Bhadawari breed of buffalo in its breeding tract and its conservation. Indian Journal of Animal Sciences (India) v.77(12) p.1293-1297 KEYWORDS: WATER BUFFALOES. LAND RACES. ANIMAL GENETIC RESOURCES. GENETIC RESOURCES.

The report pertain to a survey of 217 village in Etawah, Jalaun Jhansi and Lalitpur districts in Uttar Pradesh and Bhind and Morena district in Madhya Pradesh. Etwah is considered to be the heart of the breeding tract, where 138 villages were surveyed. Results point a sheep decline in the number of Bhadawari buffaloes over the years. Ambah and Porsa tehsil of Morena district were earlier know for the best quality Bhadawari animals but presently it is difficult to find pure Bhadawari animals in the area. After surveying 9 villages in Morena district only 5 Bhadawari type animals could be located. A similar situation prevailed in Bhind district. The Etwah district that lies in the centre of the breeding tract has only 8-9 Bhadawari buffaloes per village left. Storage of breeding bulls, comparatively poor milk yield infiltration of Murrah buffaloes and crossbreeding policy adopted by state government to upgrade the local buffaloes by Murrah were the main reasons for decline in the number. Changes in the physical characteristics of Bhadawari animals were also recorded. About 70. of bhadawari buffaloes found in the area were of medium size, 65. showed copper colored skin and rest about 35. of the buffaloes were having blackish colour and comparatively larger body size. Deviation in the horn pattern was also observed and about 50. of the Bhadawari buffaloes had two white lines (chevron) at lower side of the neck, 30. of them had one white line and the rest 20. did not have

the chercron through they had all their characteristics of Bhadawari type. Result indicated that their population is decline at an alarming rate and only a few thousand animals are now remaining in the field. It is high time to conserve and propagates this breed for posterity. Sustained efforts over a few decades will restore the Bhadawari buffaloes in the fields.

0043. Mishra, A. K.; Arora, A. L.; Kumar, Sushil; Prince, L L L; Singh, V. K. (Central Sheep And Wool Research Institute, Avikanagar (India)). Productive and reproductive efficiency of Malpura and prolific Garole ewes and their crosses in semi-arid region. Indian Journal of Animal Sciences (India) v.78(1) p.70-74 KEYWORDS: EWES. PRODUCTIVITY. FERTILITY. REPRODUCTIVE PERFORMANCE. SHEEP.

Data on productive and reproductive efficiency of Malpura (M), prolific Garole (G) and crosses of Garole x Malpura (GM) ewes were used to study the comparative ewe's reproductive efficiency of M, G and GM. The GM sheep weaned 32.94% more lamb weight over G and 11.09% more over M. At 6 months of age the corresponding figures were 65.83% and 14.18%, respectively. The ewe productivity efficiency (EPE) measured in terms of total weight of lambs produced per kg of ewe body weight per year (WLPKEW) was 0.104, 0.115 and 0.118 in G, M and GM at birth; 0.378, 0.460 and 0.540 at 3 month, 0.434, 0.702 and 0.835 at 6 month and 0.528, 0.897 and 1.177 at 12 month of age, respectively. The increase of WLPKEW in GM over M averaged 2.61% at birth to 31.22% at 12 month of age. The genetic groups and year significantly affected EPE from weaning to 12 month of age whereas the difference due to parity was significant only at birth. The fecundity was 1.49, 0.96 and 1.47 in G, M and GM respectively. The weaning rate (WR) of the corresponding groups averaged 0.89, 0.93 and 1.27 and rearing ability (RA) averaged 128.46, 101.22 and 140.97, respectively. The increase in GM over Malpura was 53.13 and 36.56, respectively, for fecundity and WR. The average fertility (F) and apparent fertility (AF) in GM was better than G and M ewes while ewes reproductive performance (ERP) of G and GM ewes was similar. The results revealed that GM sheep showed increased EPE, WR, ERP and fecundity as compared to native M-sheep.

0044. Chatterjee, R. N.; Niranjana, M.; Panda, A. K.; Reddy, B. L. N.; Branja, S. K.; Singh, D. (Project Directorate on Poultry, Hyderabad, (India)). Inheritance of important economic traits in 3 pure lines and a control population of White Leghorn. Indian Journal of Animal Sciences (India) v.78(1) p.75-79 KEYWORDS: CONTROL METHODS. GENETIC PARAMETERS. PURE LINES.

The data on 514, 609, 513 and 530 progeny of : IWH, IWI, IWK and control populations of White Leghorn for different economic traits were analyzed. The effect of hatch was significant for most of the traits in different populations studied. The average age at sexual maturity was lowest (146.13 days) in IWK. There was no significant difference in 20 week body weight. The body weight at 40 weeks of age was significantly higher in IWK and control populations than IWH and IWI strains. The early egg weights (EW28 and EW40) and egg mass (EM40) were highest in IWK, while part period egg production (EN40) was highest in IWH. The heritability of age at sexual maturity from sire, dam and sire + dam component of variance was low to moderate in IWH, IWK and control populations, while in IWI strain, it was moderate. The heritability estimates of body weight at 20 and 40 weeks of age (from different components) were low in IWH strain, while in other populations, these estimates were moderate to high. The heritability of EW28 from sire component variance was moderate to high in different populations, while the heritability of EW40 from sire component was high in all the 4 populations. The heritability of part period egg production (EN40) and egg mass (EM40) was low in IWH and IWI strains and low to moderate in IWK and control populations. The genetic and phenotypic correlations between different combinations of traits varied in direction and magnitude in different populations. There was highly positive genetic and phenotypic correlations between EW28 and EW40 and between egg mass with its component traits. However, there was negative genetic correlation between egg weight and part period egg number.

0045. Kumar, Sunit; Singh, Y.P.; Kumar, Dharendra (Sardar Vallabh Bhai Patel University of Agriculture and Technology, Meerut, (India)). Genetic studies on performance traits in Frieswal cattle. Indian Journal of Animal Sciences (India) v.78(1) p.107-110 KEYWORDS: CATTLE. GENETIC CORRELATION. HERITABILITY. PHENOTYPES.

First lactation records (766) collected from Military Dairy Farm, Meerut, spreading over a period of 21 years i.e. from 1975-1995 were utilized to assess the effect of season and period of calving on various growth, production and reproduction traits of economic importance in Holstein FriesianxSahiwal halfbreds. The least squares means estimated were 26.92±0.18 kg, 206.70±1.05 kg, 329.73±1079 kg, 381.41±1.67kg, 962.13±6.34 days, 313.34±2.21days and 2871.11± 32.64 litre for birth wt, weight at 12 and 24 months of age, weight at first calving, age at first calving, first lactation length and first lactation milk yield, respectively. The heritability estimates for corresponding traits were 0.216 ± 0.092, 0.344±0.11, 0.596±0.143, 0.373±0.150, 278±0.101, 0.041±0.064 and 0.353±0.112 for birth wt, weight at 12 and 24 months of age, weight at first calving, age at first calving, first lactation length and first lactationmilk yield, respectively. The phenotypic and genetic correlation between the traits ranged from very low to very high in magnitudes. The season effect was observed nonsignificant for all the traits except for weight at birth and 12 month of age while effect due to period was significant for all the traits under the study.

0046. Singh, P.K.; Pundir, R.K.; Ahalwat, S.P.S; Kumar, S; Naveen Govindaiah, M,G; Asija, Karuna (National Bureau of Animal Genetic Resources, Karnal (India)). Phenotype characterization and performance evaluation of Hallikar cattle in its native tract. Indian Journal of Animal Sciences (India) v.78(2) p.211-214 KEYWORDS: CATTLE. PHENOTYPES. PERFORMANCE TESTING. BREEDS (ANIMALS).

The study revealed that efforts should be undertaken for improving the milk production of the breed without affecting its draught efficiency through a well planned breeding programme and the artificial insemination coverage of Hallikar cow might come any Hallikar breed needs to be increased so as cover more number of females.

0047. Nagawade, P.P.; Jagtap, D.Z.; Kamble, S.S (College of Agriculture, Khadki (India)). Effect of non-genetic factors on colostrum and production traits of Phule Triveni (triple crossbred) cattle. Indian Journal of Animal Sciences (India) v.78(2) p.215-217 KEYWORDS: COLOSTRUM. PRODUCTION. CROSSBREDS. CATTLE.

Record (588) of 144 Phule Triveni (triple crossbred) cattle for colostrum and production traits, i.e. colostrum yield at 1st to 4th day (CYA 1,2,3 and 4) and colostrum yield up to 4th day (CYU 4) production traits such as lactational milk yield (LYM), lactation length (LL0, daily milk yield of lactation length (DmY/LL) and milk yield of 300 days (My 300) for period of 26 years (1977-2003) were collected from research cum development project on Cattle Mahatma Phule Krishi Vidyapeeth, Rahuri. Influence of parity period of calving (POC) and season of calving (SOC) were assessed on traits under study. Parity and period of calving had highly significant effect on all traits except L.L. Whereas, SOC had no significant effect on all traits.

0048. Gaur, G.K.; Kumar, Arun; Beniwal, B.K.; Praveen; Project Directorate on Cattle. Meerut (India)). Genetic evaluation of Frieswal bulls under farm and field conditions. Indian Journal of Animal Sciences (India) v.78(2) p.218-221 KEYWORDS: CATTLE. FIELDS. FARM AMALGAMATIONS.

The present investigation was undertaken to determine the genetic worth of Frieswal bulls under farm and field conditions and to assess their rankings in both production systems. The average of first lactation milk yield in crossbred cows was 2818±47 kg at Military Farms (Frieswal) and 2489±66 kg at field units. Best linear unbiased prediction (BLUP) estimates of the sires ranged from 2664±72 to 3076±99 kg (accuracy from 0.50 to 0.95) under farm conditions and from 2422±130 to 2633±117 kg (accuracy from 0.53 to 0.88) under field conditions. The product moment correlation (-0.098±0.23) between breeding values of bulls for first lactation milk yield under farm and field conditions was negative, very low and nonsignificant. The corresponding rank correlation (-0.12) was also negative, low and nonsignificant. The results revealed that bulls with higher ranks

for milk production under farm conditions did not retain their superiority under field conditions. Therefore, top ranked Frieswal bulls tested under farm conditions cannot be recommended for their use in field conditions.

0049. Chaudhary, U.B.; Gupta, V.K.; Singh, Monika (Central Institute for Research on Goats, Mathura (India)). Comparative evaluation of different dna Extraction methods from rumen fungi. Indian Veterinary Journal (India) v.85 (1) p.4-7 KEYWORDS: DNA. FUNGI.

Under the present communication five different protocols were compared in relation to recovery of pure DNA in optimum concentration. Result indicated varied concentration and purity of DNA under five protocols on account of rigid cell wall of rumen fungi. Pure yield and optimum concentration.

0050. Aravindakshan, T. V.; James, Smitha P. (Kerala Agricultural University, Centre for Advanced Studies in Animal Genetics and Breeding, Thrissur (India)). Kappa caesin gene polymorphism in vechur and kasargode cattle. Indian Veterinary Journal (India) v.85 (1) p.31-36 KEYWORDS: GENES. POLYMORPHISM. CATTLE. PCR. The DNA sequence variations at the K-casein (K-CN) gene locus in Vechur and Kasargode cattle were investigated by the PCR-RFLP and DNA sequencing methods. A 0.9 kb region of the K - CN gene, enclosing the nucleotide substitutions diagnostic of A or B allele, was amplified by PCR and separately digested with four restriction enzymes namely, HindIII, PstI, RsaI and TaqI. The frequencies of AA, AB and BB genotypes were 0.75, 0.23 and 0.02 for Vechur and 0.76, 0.21 and 0.03 for Kasargode cattle. The frequencies of A and B alleles were 0.86 and 0.14 in both the genetic groups tested. There were no differences in the sequences of A and B alleles between Vechur and Kasargode cattle. The two alleles differed at eight positions out of which four have been reported earlier. The additional variations reported in this study may facilitate more accurate typing and may offer more flexibility in the selection of enzymes for genotyping K - CN locus.

0051. Banerjee, Sandip (G.B. Pant University of Agriculture and Technology, Department of Animal Science, Pantnagar (India)). Selection indices in holstein friesian X sahiwal crossbreds. Indian Veterinary Journal (India) v.85 (1) p.84-85 KEYWORDS: LAND RACES. CROSSBREDS. DAIRY CATTLE. MILK PRODUCTION. BODY WEIGHT. LACTATION.

The study was undertaken to construct the selection indices incorporating the body weights at 12 months of age (W12), body weight at calving (WC) and first lactation milk yield (LMY). The indices were constructed to determine their effectiveness as regards to the breeding worth of the crossbred animals of Holstein Friesian (HF) and Sahiwal (S) cattle being reared at two different Military Farms of North India.

0052. Ulemale, A.H.; Kulkarni M.D.; Karkeli, M.S.; Borikar, S.T. (Mahatma Phule Krishna Vidyapeeth, Research - cum - Development Project on Cattle, Rahuri (India)). Effect of genetic and non-genetic factors on birth-weight of crossbred calves. Indian Veterinary Journal (India) v.85 (1) p.103-104 KEYWORDS: BIRTH WEIGHT. CALVES. GENETICS.

The proper birth weight of calf indicates a good health. The growth rate, lifetime expectancy of productive and reproductive traits depends on birth weight of calf. This study on genetic and nongenetic factors affecting birth weight of crossbred calf was undertaken to facilitate the selection criteria at early age and to avoid economic losses on management.

0053. Sharma, Rekha; Pandey A.K.; Prakash, B.; B.P.; Singh, P.K.; Gurmej (National Bureau of Animal Genetic Resources, Kamal (India)). Genetic diversity of ganjam goat by microsatellite markers. Indian Veterinary Journal (India) v.86(3) p.275-277 KEYWORDS: GOATS. MICROSATELLITES. GENETIC MARKERS. DNA. GENETIC VARIATION.

Using neutral genetic markers we showed that Ganjam breed of goat still has sufficient genetic variability. Hence the genetic variation that has persisted in Ganjam population could provide a valuable source of

genetic material that may be used for meeting the demands of future breeding programmes. It is right time to initiate planned and organized breeding, as FIS is indicative of inbreeding in the population. Thus appropriate breeding strategies should be designed under field conditions for its conservation and improvement.

0054. Ramnath, V.; Lini, C.C.; P.S. Rekha (Kerala Agricultural University, College of Veterinary and Animal Sciences, Department of Veterinary Physiology, Kerala (India)). Storage Stability Of Certain Serum Enzymes Of Rats. Indian Veterinary Journal (India) v.86(5) p.463-465 KEYWORDS: KEEPING QUALITY. ENZYMES. RATS. TEMPERATURE. STABILITY.

The present study was designed to evaluate the effect of time and various storage temperatures on the activity of rat serum enzymes like CK, ALP, LDH, ChE, ALT and AST. It was found at the end of 10 days of post collection, the activity of ALP and CK was significantly ($P < 0.05$) higher in the serum samples stored at freezing ($-20 \pm C$) temperature when compared to sample stored at $4 \pm C$. Sera stored at $4 \pm C$ showed significantly ($P < 0.05$) higher values for the activity of LDH, ALT, ChE and AST, while comparing with other temperature considered for storage on day 10 post collection. It was concluded that ideal temperature of storage for sera meant for ALP and CK activity determination being $-20 \pm C$ while, refrigeration temperature yielded better results for LDH, ALT, ChE and AST, 10 days post collection.

0055. Mishra, A.K.; Arora, A.L.; Prince, L.L.L.; Kumar, Sushil; Gowane, G.R. (Central Sheep and Wool Research Institute, Avikanagar (India) Division of Animal Genetics and Breeding). Genetic Analysis Of Performance Traits Of Malpura Sheep. Indian Veterinary Journal (India) v.86(5) p.484-486 KEYWORDS: GENETICS. SHEEP. GENETIC VARIATION. BREEDING METHODS. WOOL PRODUCTION. GENETIC PARAMETERS.

Study revealed that Malpura sheep has genetic potential for increased mutton production. The least squares means were 3.09, 14.16, 21.44 and 28.00 kg for birth, 3, 6 and 12 months respectively. The body weight at different ages and GFY are associated with moderate to high degree of genetic variation. Genetic correlations among all the traits are positive indicating that selection for any of body traits would result in genetic improvement in other traits.

0056. Thiruvankadan, A.K.; Panneerselvam, S. (Veterinary College and Research Institute, Department of Animal Genetics and Breeding (India). Body Weight And Its Association With Body Measurements In Kanni Adu Goats. Indian Veterinary Journal (India) v.86(5) p.487-490 KEYWORDS: BODY WEIGHT. BODY MEASUREMENTS. BREEDING METHODS. MEAT YIELD. GOATS.

It may be concluded that agreement between the actual and predicted body weight and observation of high correlation coefficients and coefficients of determination showed that body size measurements can be used to provide valid and precise estimates of body weight for use in field studies and management of kanni goats. The regression equation with higher R^2 with smallest MSE may be chosen for estimation of body weight.

0057. Kumar, Subodh; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Genetics) Optimum Age And Body Weight At First Calving In Two And Three Breed Interse Crosses. Indian Veterinary Journal (India) v.86(5) p.491-493 KEYWORDS: BODY WEIGHT. PARTURITION. COWS. INTRODUCED BREEDS. SEX DIFFERENTIATION DISORDERS.

Data on age at first calving (AFC), body weight at first calving (BWFC) and standard milk yield (SMY) was analyzed on first and second generation three breed ($n = 94$) and two breed ($n = 63$) interse crosses of cattle to find out optimum combination of AFC and BWFC to obtain maximum SMY. The optimum AFC and BWFC were 811-870 (27-29 months) and 390 kg respectively.

0058. Mehta, S.C.; Potdar, V.V.; Sahani, M.S.; National Research Centre on Camel, Bikaner (India)). Amplifications and RFLP Of EXON 2 Of MHC-DRB3 Locus In Livestock Species. Indian Veterinary Journal (India) v.86(3) p.250-254 KEYWORDS: LIVESTOCK. PCR. IMMUNITY. MAJOR HISTOCOMPATIBILITY COMPLEX. RFLP.

The restriction fragment length polymorphism of exon 2 of MHC DRB310cus in Rathi cattle, Magra sheep and French donkey was studied using Hint I, Rsa I and Hae III. restriction enzymes. A fragment of 308 bp was successfully amplified in cattle (BoLA), donkey (ELA) and sheep (OLA). The digestion of BoLA - DRB3 fragment with HinfI revealed heterozygous status at this locus in all the animals under investigation. The molecular size of fragments were 261,47 and 167,94 and 47 bp. Analysis of ELA (221 and 87 bp) and OLA DRB3 (212 and 96 bp) fragments revealed homozygous status at this locus. Digestion with HaeIII in donkey resolved two fragments of 169 and 139 bp. Rsa I revealed heterozygous status in all three species. No intra-species variation was detected. The fragments observed in cattle and sheep were of the same size (308 and 160, 81, 67 bp) indicating the genetic similarity in the two species. In French donkeys the fragments resolved were of 308 and 138, 85, 85 bp.

0059. Singh, V K; Singh, C V; Kumar, D; Sharma, R J (Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)). Genetic parameters for first lactation and lifetime performance traits in crossbred cattle. Indian Journal of Animal Sciences (India) v.78(5) p.497-500 KEYWORDS: ANIMAL MODELS. CATTLE. STATISTICAL METHODS. HERITABILITY. LACTATION.

The data for the present investigation were obtained from the performance records of 1085 crossbred daughters belonging to 7 different genetic groups and by 57 of bulls maintained at Dairy Farm of G B.Pant University of Agriculture and Technology, Pantnagar, during 1974-2004 were used to estimate genetic parameters of first lactation and life time performance traits. The averages of AFC, FLMY, FLP, FDP, FCI, HL, TLL and LTM were found as 1371.06 ± 15.49 days, 3064.74 ± 49.40 liter, 356.63 ± 5.12 days, 172.85 ± 7.23 days, 529.48 ± 8.51 days, 1653.54 ± 26.06 days, 1338.64 ± 26.50 days and 8931.46 ± 154.49 liter, respectively. The heritability estimates for the corresponding traits were 0.12 ± 0.06 , 0.12 ± 0.060 , 0.18 ± 0.07 , 0.09 ± 0.06 , 0.09 ± 0.06 , 0.10 ± 0.06 , 0.12 ± 0.06 and 0.07 ± 0.05 by LSA method and the heritability estimates of the corresponding traits found as 0.24 ± 0.08 , 0.23 ± 0.08 , 0.22 ± 0.07 , 0.12 ± 0.07 , 0.14 ± 0.07 , 0.12 ± 0.06 , 0.13 ± 0.06 and 0.14 ± 0.06 , respectively. The estimates of heritability for first lactation and lifetime traits from DFREML analysis were higher and significant than least square analysis method. These difference in h^2 estimation revealed that sire model ignores both the dams of cow and relationship between females while DFREML evaluate both the sires and cows simultaneously. AFC had positive genetic correlation with all other first lactation traits except with FLP. FLMY had positive genetic and phenotypic correlations with all other first lactation traits and values varied from low to medium. These results suggested that selection on the basis of FLMY would be expected to improve lifetime performance traits.

0060. Dass, Gopal (Central Sheep and Wool Research Institute, Bikaner (India)). Characterization and evaluation of Pugal sheep in the home tract. Indian Journal of Animal Sciences (India) v.78(5) p.501-504 KEYWORDS: SHEEP. BREEDS (ANIMALS). ANIMAL PERFORMANCE.

Pugal, a sheep breed of north-western arid and semi-arid region of the country, is mainly found in Bikaner district of Rajasthan. Animals are known for good mothering ability and adapted to harsh climate. The population of this breed has tremendously declined due to usage of breeding rams of Magra sheep of the same habitat. The least squares averages of morphometric traits viz. body length, height at withers, chest girth, ear length and tail length ranged from 32.76 ± 0.24 to 63.20 ± 0.43 , 39.36 ± 0.28 to 62.88 ± 0.31 , 35.64 ± 0.28 to 73.63 ± 0.63 , 6.35 ± 0.08 to 9.41 ± 0.20 and 12.75 ± 0.16 to 18.23 ± 0.17 cm in different sex and age groups, body weights at birth, 3, 6, 12 months and in adults were 2.62 ± 0.01 , 17.92 ± 0.07 , 23.55 ± 0.11 , 29.74 ± 0.28 and 38.88 ± 0.28 kg. The greasy fleece weights in first, second, third and total annual clips were 558, 513, 549 and 1618 g, wool quality parameters, viz. fibre diameter, hetro and hairy fibres, medullation, staple length and crimp were 34.42 ± 0.45 , $28.19 \pm 0.67\%$, $30.94 \pm 1.22\%$, $59.14 \pm 1.37\%$, 6.07 ± 0.013 cm and 0.77 ± 0.03 /cm. Milk production on 7th and 50th day of lactation was 249.21 ± 4.14 and 112.20 ± 11.87 g. Weight at slaughter, weight of skin, length of skin, weight of head, weight of liver, weight of kidney, weight of empty digestive tract, weight of legs, weight of carcass and dressing per cent were 22.73 ± 0.27 kg, 3.30 ± 0.08

kg, 57.03 ± 0.37 cm, 1.44 ± 0.03 kg, 354.00 ± 7.64 g, 75.17 ± 1.69 g, 1.63 ± 0.02 kg, 2.82 ± 0.05 kg, 9.97 ± 0.17 kg and $43.77 \pm 0.45\%$. The reproduction traits, viz. age at first oestrus, oestrus cycle duration, oestrus duration, age at first lambing, gestation length, service period, lambing percentage and lambing interval were 10.15 ± 0.05 month, 15.28 ± 0.05 days, 23.12 ± 0.18 h, 15.47 ± 0.07 month, 153.38 ± 0.45 days, 93.24 ± 0.88 days, $98.12 \pm 4.25\%$ and 283.13 ± 0.95 days, respectively. The breed is significantly contributing to the livelihood of the people due to its good migration capability and overall performance. Therefore, sincere efforts are needed immediately for its improvement and conservation.

0061. Sharma, R.; Pandey, A K; Dinesh Kumar; Alam, S; Ahlawat, S P S (National Bureau of Animal Genetic Resources, Karnal (India)). Genetic variability in Beetal goat breed assessed by microsatellite DNA profiling. Indian Journal of Animal Sciences (India) v.78(5) p.505-509 KEYWORDS: GOATS. GENETIC VARIATION. DNA HYBRIDIZATION. MICROSATELLITES.

Beetal, one of the important goat breeds of northern India, was investigated genetically utilizing microsatellite markers selected on the guidelines of ISAG and FAO & DADIS (Domestic Animal Diversity Information System) MoDAD programme. The allele and genotype frequencies, heterozygosities and gene diversity were estimated. The observed heterozygosity in the population varied from 0.134 ± 0.842 with the mean of 0.469 ± 0.191 , indicating lower genetic variation in this population. Bottleneck was examined assuming all three mutation models and was found to be absent. Population displayed heterozygote deficit to the tune of 22.3%. This is the high time to formulate breeding programmes as well as effective conservation strategies for the precious goat breed.

0062. Tyagi, A.; Das, S.; Singhal, K K; National Dairy Research Institute, Karnal (India). Effect of dietary glucosinolates on nutrient utilization and growth of crossbred calves. Indian Journal of Animal Sciences (India) v.78(5) p.510-514 KEYWORDS: CALVES. GLUCOSINOLATES. GROWTH RATE. OILSEED CAKES. NUTRITION PHYSIOLOGY. Crossbred male calves (18) of similar age (8-9 months) and body weight (110-190 kg) were distributed into 3 groups of 6 each on the basis of their body weight. The calves in control group (G1) were fed on concentrate mixture containing groundnut oilcake as a sole protein supplement, which was replaced by mustard oilcake (*Brassica campestris*) (G2) and taramira oilcake (*Eruca sativa*) (G3), respectively. Wheat straw ad lib. and leguminous fodder (1 kg) was fed to all the calves for 90 days. Gluconapin and glucobrassicin were the major glucosinolates of mustard oilcake, whereas, glucoerucin was the major glucosinolate in taramira oilcake. Total glucosinolates content of concentrate mixtures G1, G2 and G3 was 0, 17.59 and 17.50 mmol/g, respectively. Dry matter intake, nutrient digestibility, nitrogen balance, serum T3 and T4 levels and growth rate of growing calves indicated that protein supplied by groundnut oilcake in the concentrate mixture can be replaced with mustard or taramira oilcakes without affecting the growth performance and nutrient digestibility in crossbred calves. It was concluded that glucosinolates, irrespective of their source, were not harmful at 17.50 mmol/g level in concentrate mixture for the crossbred calves.

0063. Murali, N; Kandasamy, N.S; (Veterinary College and Research Institute, Namakkal (India). Base line sister chromatid exchange frequency in *Bos indicus* and *Bos taurus* × *Bos indicus* crosses. Indian Journal of Animal Sciences (India) v.78(5) p.547-551 KEYWORDS: BIOLOGICAL DIFFERENCES. SIBLINGS. CHROMATIN. CATTLE. Blood samples were collected from indigenous (Kangayam and Red Sindhi; both *Bos indicus*) and crossbred [Jersey × Red Sindhi (F1) and Friesian × Red Sindhi (F1) crosses: both *Bos taurus* × *Bos indicus* crosses] cattle reared under similar environmental conditions to collect the information on base line sister chromatid exchange (SCE) frequency. Leucocyte cultures were set with the incorporation of BrdU ($10 \mu\text{g}$ per ml) after 24h and the sister chromatid differential staining of the slides revealed SCEs. The base line SCE frequencies were not normally distributed in all the 4 genetic groups; but followed Poisson distribution in Red Sindhi and Friesian × Red Sindhi (F1) crosses. Significant differences were observed between Kangayam and Friesian × Red

Sindhi cross, and Red Sindhi and Friesian×Red Sindhi cross. Reasons for the breed differences could not be elucidated, but the differences in base line SC frequency may reflect differing DNA repairing efficiencies.

L20

0064. Maurya, V.P.; Naqvi, S.M.K.; Joshi, Anil; Mittal, J.P. (Central Sheep and Wool Research Institute, Avikanagar (India)). Effect of high temperature stress on physiological responses of Malpura sheep. Indian Journal of Animal Sciences (India) v.77(12) p.1244-1247 KEYWORDS: SHEEP. HEAT STRESS. PHYSIOLOGICAL REGULATION. HEART RATE. HEAT STRESS.

The effect of thermal stress on respiration rate, pulse rate, rectal temperature, sweating rate and blood constituents was evaluated in native Malpura ewes. Adult Malpura ewes (14) were randomly allocated to groups 1 and 2. Group 1(G1) animals were maintained under shed throughout the study while the animals of group 2 (G2) were exposed to thermal stress ($45\pm C$) 6h1day in a hot chamber between 10:00 to 16:00 h and then returned back to the shed. The physiological responses i.e. respiration rate (RR, breath/min), pulse rate (PR, beat/min), rectal temperature (RT, $^{\circ}C$) and sweating rate (SR, $g/m^2/h$) were recorded at weekly interval. The blood samples were also collected at weekly interval and analyzed for packed cell volume (PCV), hemoglobin (Hb, g/dl), glucose (mg/dl), total protein (g/dl) and albumin (g/dl). There was a significant increase in water intake in thermally stressed animals compared with those kept in shade at ambient temperature, but reverse was observed for feed intake. The animals of G1 had significantly lower RR, PR, RT and SR than the G 2 animals. The PCV (31.51) and Hb (9.9) were significantly higher in G1 animals than that of G2 animals (30.22. and 9.12 g/dl), respectively. Although the mean values of glucose, total protein, and albumin were not significantly different for animals of 01 and 02. The results indicated that the physiological responses, PCV, Hb were significantly affected during thermal stress to maintain internal milieu.

L40 Animal Structure

0065. Singh, M.K.; Rai, B.; Singh, S.K.; Singh, N.P. (Central Institute for Research on Goats, Mathura (India)). Morphological and physical attributes of Zalawadi goats. Indian Journal of Animal Sciences (India) v.77(12) p.1334-1337 KEYWORDS: GOATS. LAND RACES. ANIMAL MORPHOLOGY. GENOTYPES. GUJARAT. BREEDING METHODS.

Zalawadi goats are locally known as Tara bakari and native of then Zalawad province of Kathiawad now known as Surendranagar district of Saurashtra (Gujarat). Zalawadi is a large size, tall, well-built and dual-purpose goat with majestic look. The coat colour is black, head is long with relatively wide and bulged forehead, nostrils are broad and comma shaped, profile of face is slightly curved (convex). Horns are spiraled, moving upward laterally, twisted (2-5 folds) and long which gives corkscrew appearance. Ears are long, broad and pendulous with white spots on black base or vice versa. Neck is relatively long and slender, make these goats suitable for browsing. Udder is symmetrical, pendulous and capacious with cylindrical and outward teats with round tips. Credit to maintain purity of these goats goes to traditional goat keepers (Maldharies) on account of its sustainable production under harsh environmental conditions. Adequate availability of unrelated and high potential sires is necessary to increase genetic potential supported by supplementary diet for the improvement of this valuable goat breed of arid region.

0066. Goswami, B.; S. (W.B. University of Animal and Fishery Sciences, Kolkata (India). Faculty of Veterinary and Animal Science. Dept. of Anatomy). Studies on gross anatomical changes in Bursa of fabricius of post hatched Japanese quail (*Coturnix coturnix japonica*). Journal of Interacademia (India) v. 13(3) p.284-291 KEYWORDS: ANIMAL MORPHOLOGY. SEROUS BURSA. QUAILS. BURSA FABRICII.

Gross anatomical structure of the bursa of fabricius of Japanese quail was observed in the present study. The bursa of fabricius was an oval elongated saccular structure and light pinkish in colour from day old to the age of sexual maturity. It was situated at the dorsal aspect of cloaca and opened at the proctodeum. It was blind

sac like structure in all age group. A very small transverse slit like opening was observed where bursa opened to the cloaca. The bursa consisted of a wall surrounding an axial lumen. Some transverse ridge were found on the outer surface of the bursa of fabricius but ridges were more prominent after 21 days of age. The length and breadth of bursa were measured upto 42 days. The weight of the bursa of fabricius were measured which showed a steep increase in weight from 1st day to 41 day.

0067. Hemram, S.; Hirbandh Bankura; Ray, S. (West Bengal University of Animal and Fishery Sciences, Kolkatta (India). Dept of Anatomy and Histology). Comparative anatomical study of tongue in black Bengal goat and garole sheep. Journal of Interacademia (India) v. 13(3) p.311-314 KEYWORDS: ANIMAL MORPHOLOGY. TONGUE. GOATS. SHEEP.

The length of the tongue in case of bengal Goat and Garole sheep was 9.40No.0.183cm and 14.15No.1.107cm respectively and the average breadth was 20.48No.0.140cm respectively. The apex of the tongue was somewhat flattened in goat and pointed in case of sheep Apex of tongue in both the species was clearly demarcated into dorsal and ventral surfaces, which met at borders. Black spot or pigmentation was found on the dorsal surface in case of goat only. Torus lingue was present in both the species. Four type of papillae like filiform, fungiform, lenticular and vallate papillae were found in all the species. The filiform papillae were numerously distributed on the dorsal surface of the tongue of both goat and sheep. Similarly, fungiform papillae were large than filiform papillae. Sheep had more fungiform papillae than goat Gaarloe sheep had more vallate papillae than Bengal goat. likewise, lenticular papillae were also larger than sheep. But foliate papillae were absent on the tongue of both goat and sheep.

0068. Basha, Sabiha Hayath; Ramesh, Geetha (Tamil Nadu Veterinary and Animal Sciences University, Chennai (India). Microanatomical studies on the chromaffin tissue (adrenal medulla) of the adrenal gland in Japanese quail (*Cotunix coturnix japonica*). Indian Journal of Animal Sciences (India) v.77(12) p.1261-1264 KEYWORDS: QUAILS. ANIMAL MORPHOLOGY. ADRENAL GLANDS.

The microanatomy of the chromaffin tissue (adrenal medulla) of the adrenal gland was studied in Japanese quail from day-old immature, mature and senile age groups. The tissues were fixed in neutral buffered formalin, Bouin's fluid, Zenker formol, Orth fluid and Regaud's fixative and processed for routine paraffin embedding. Sections were cut at 5--6 micron thickness and stained by routine H&E and special histological techniques. The adrenal gland with its capsule was enclosed by a pericapsular sheath of CGInnective tissue with ganglion cells, bundles of myelinated nerve fibres and blood vessels. The parenchyma of the adrenal gland constituted of three main components, viz. the interrenal tissue or cortical tissue, chromaffin or medullary tissue and the sinusoids. The chromaffin tissue was less in proportion and was found intermingled with the interrenal tissue and also in the subcapsular area in the form of clusters or islets of cells. They exhibited chromaffin reaction and were metachromatic with toluidine blue. The polygonal cells of the chromaffin tissue were clearly identified into 2 types, viz. Noradrenaline secreting cells and adrenaline secreting cells. Ultrastructurally the 2 medullary cells were differentiated by the size of their granules. The chromaffin tissue did not exhibit any changes in moulting phase while these cells got transformed into ganglion cells in senile birds.

0069. Rani, Ammina Usha; Md. Hafeez (Sri Venkateswara Veterinary Univeristy, Tripura (India). Histochemical and biochemical studies of biliary amphistomosis in buffaloes (*Bubalus Bubalis*). Indian Journal of Animal Sciences (India) v.77(12) p.1265-1267 KEYWORDS: WATER BUFFALOES. GIGANTOCOTYLE. ANIMAL MORPHOLOGY. Histochemical observation of frozen liver tissue sections in buffaloes naturally infected with biliary amphistomosis-alkaline phosphatase and acid phosphatase enzyme activity by Gomori's method was seen in sinusoidal spaces and hepatic cells. Alkaline phosphatase activity was noticed as black colour whereas acid phosphatase activity as brown colour in the stained infected liver tissue frozen sections and correlation with the histological findings of liver necrosis. In an attempt to estimate the biochemical constituents (total protein albumin, globulin, A.G ratio, cholesterol, alkline phosphate) in the serum sample

collected from naturally infected buffaloes, there was a decrease in the total protein, albumin. A/G ratio but slight increase in globulin cholesterol and alkaline phosphatase level.

0070. Sarmai, Kamal; Kalita, S. N.; Kumar, Prabhakar (Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu and Kashmir (India). Anatomy of the humerus of nilgai (*Boselaphus tragocamelus*). Indian Journal of Animal Sciences (India) v.78(1) p.24-27 KEYWORDS: BODY CONFORMATION. LIMB BONES.

This study was conducted on humeri of an adult male nilgai. The shaft of the humerus was bent latero-medially and twisted on appearance. The anterior surface of the shaft-presented longitudinal muscular imprints on its proximal broad part and distal narrow part. The teres tubercle was placed above the middle point of the medial surface and it was very rough. A well developed ridge extended from the teres tubercle to meet the margin of the head of humerus. The musculo spiral groove was well developed and deep. Similarly the deltoid tuberosity was massive and elongated in shape. The round tubercle for insertion of teres minor muscle was less developed. The lateral tuberosity of the proximal extremity was divided into an anterior small tubercular part and a posterior roughly quadrilateral part. The bicipital groove was deep and wide. The medial margin of the radial fossa was erect like and sharp pointed. The lateral margin of the lateral epicondyle was rough and become projected towards the anterior surface. The axial margins of the distal extremity of both the epicondyle were pointed.

0071. Selvan, P Senthamil; Kumary, S Usha; Ramesh, Geetha (Tamil Nadu Veterinary and Animal Sciences University, Chennai (India)). Post hatch development of stomach in guinea fowls: Gross morphological studies. Indian Journal of Animal Sciences (India) v.78(1) p.43-46 KEYWORDS: PROVENTRICULUS. GIZZARD. GUINEA FOWL.

The post-hatch growth pattern and gross morphology of the proventriculus and gizzard in guinea fowl were studied. Apparently healthy guinea fowls, 6 each of day-old, 7, 21, 35, 56 and 84 days of age were used for the study. Gross morphological studies have been discussed here.

0072. Basha, Sabiha H; Venkatesan, S.; Remesh, Geetha (Tamil Nadu Veterinary and Animal Sciences University, Chennai (India). Histochemical reactions of the adrenal gland in Japanese quail (*Coturnix coturnix japonica*). Indian Journal of Animal Sciences (India) v.78(1) p.47-50 KEYWORDS: ADRENAL GLANDS. CARBOHYDRATES. QUAILS. LIPIDS. PROTEINS.

The glandular parenchyma was positive for PAS, basic proteins, tyrosine and sulfhydryl group of proteins. The interrenal cells were positive to glycogen but not for acid mucins while the chromaffin tissue was moderately positive to acid mucins and negative for glycogen. Lipid accumulation was marked in the interrenal cells of the adrenal gland in mature birds in the sexually active period. The interrenal cells of the inner zone showed intense positive reaction to cholesterol while that of the subcapsular zone and chromaffin tissue contained high concentration of ascorbic acid in Japanese quail.

0073. Bhosle, N.S.; Shindatgire, R.K.; Kapadnis, P.J. (MAFSU, College of Veterinary and Animal Sciences, Department of Veterinary Anatomy, Parbani (India). Microscopic anatomy of the bulbourethral gland in cattle. Indian Veterinary Journal (India) v.85 (1) p.64-66 KEYWORDS: BIOLOGISTS. CATTLE. MICROSCOPY. Histological observations on bulbourethral glands in uncastrated and castrated cattle is described.

0074. Tiwari, S.K.; Raju, Sharda; Mishra, U.K. (College of Veterinary Science and A.H., Dept. of Veterinary Physiology, Anjora (India). Intestinal obstruction due to rectolith in a daschund Dog. Indian Veterinary Journal (India) v.85 (1) p.73-74 KEYWORDS: INTESTINES. DOGS.

A rare case of rectolith in a ten year old Daschund male dog and its successful surgical management has been reported.

0075. Das, G.C.; Deori, S.; Das, B.K.; Goswami R.N. (College of Veterinary Science, Khanapara, Dept. of Animal Genetics and Breeding, Guwahati (India). Network Project on Swamp Buffalo) Morphological studies on foetal membranes in swamp buffaloes. Indian Veterinary Journal (India) v.85 (1) p.97-98 KEYWORDS: COTYLEDONS. FOETAL MEMBRANES. WATER BUFFALOES.

Different workers have reported on the expulsion time of foetal membranes, size and number of cotyledons and weight of foetal membranes in buffaloes but such reports are limited in case of swamp type buffaloes of Assam.

0076. V.R. Indu; Chungath, J.J.; Harshan, K.R.; N. Ashok (College of Veterinary and Animal Sciences, Department of Veterinary Anatomy and Histology, Kerala (India)). A study on the plicae of bursa of fabricius in white pekin ducks. Indian Veterinary Journal (India) v.86(3) p.295-296 KEYWORDS: SEROUS BURSA. DUCKS.

A study on the changes in plicae at different stages of growth was undertaken in the bursa collected from 51 White pekin ducks. The number and size of plicae and the follicles in it were maximum at 58 days of age and showed a general decrease thereafter.

0077. Jagapathi, R.; Opinder Singh; Roy, S. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Gross anatomical studies on the thymus of pre- and post-natal buffalo (*Bubalus bubalis*). Indian Journal of Animal Sciences (India) v.78(5) p.461-464 KEYWORDS: WATER BUFFALOES. ANIMAL MORPHOLOGY. THYMUS GLAND.

Thymus of buffalo fetuses consisted of unpaired thoracic and paired cervical and cranial parts. The thoracic part was present in the precardiac mediastinum on the dorsal half of the left side and was irregular quadrilateral in shape. The cervical thymus was the longest part and consisted of right and left limbs. It was V shaped with a point directed towards the thorax. The left limb of the cervical thymus was slightly longer than the right part. The cranial parts consisted of retroglandular and sub-basilar portion. The cervical and thoracic parts were connected by cervico-thoracic isthmus whereas cervical and cranial parts were connected by cranio-cervical isthmus. The maximum weight of thymus in post natal buffalo calves was noted at 3 months of age and thereafter the mean weight of the thymus decreased gradually. At 5 years age whole thymus was replaced by adipose tissue in buffalo.

0078. Brar, P S; Saigal, R P; Ludhiana Sharma, R D; Nanda, A S (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Histology and histochemistry of broad ligaments in buffaloes. Indian Journal of Animal Sciences (India) v.78(5) p.464-467 KEYWORDS: WATER BUFFALOES. LIGAMENTS. HISTOPATHOLOGY.

Broad ligament is the only attachment of uterus with the body of the animal and can play some role in the causation of uterine torsion, a single major cause of maternal deaths in buffaloes. The present study was undertaken to study the histomorphology and histochemistry of broad ligament in buffaloes. The tissue samples for histomorphology were collected from buffalo calves delivered dead to buffaloes suffering from dystocia, multiparous non-pregnant buffaloes, early pregnant buffalo and early pregnant cow. In general the broad ligaments consisted of double serosal folds containing in between them muscles, connective tissue, nerves and blood vessels. In 0 day-old calves the fibroblasts and muscle fibres were still to be organized. The adult non-pregnant buffaloes had well developed musculature in broad ligaments. No difference in the amount of musculature was observed in right and left broad ligament or at iliac and ovarian end of the broad ligaments. However 11% non-pregnant buffaloes had exceptionally less developed muscles. On the pregnant side the broad ligaments had relatively larger muscle fascicles with frequent syncytial appearances of muscle fibres. Moreover pregnant side had relatively larger muscle fascicles. Histochemistry indicated presence of fair amount of vicinal glycol group containing carbohydrates, glycogen and neutral mucopolysaccharides in 0 day old calves, the amount of which increased with increase in age. This study revealed the basic structure of broad ligaments in buffaloes and indicated their possible involvement in causation of uterine torsion.

079. Sathyamoorthy, O R (Madras Veterinary College, Chennai (India) Geetha Ramesh; Madras Veterinary College, Chennai (India)). Histogenesis of heart in pigs (*Sus domesticus*). Indian Journal of Animal Sciences (India) v.78(5) p.472-475 KEYWORDS: SWINE. HISTOCYTOLOGICAL ANALYSIS. HEART.

White Yorkshire pig embryos of 13 different gestational ages from 10 mm (20 day-old) to 270 mm (102 day-old) with 6 embryos in each group were collected from different slaughterhouses situated in and around Chennai from the present study. In 10 mm (20 day-old) pig embryos, the heart was separated from the liver by an incomplete partition, the septum transversum. The atria and ventricles were incompletely partitioned. The endocardial cushions were prominent. In 20 mm (27 day-old) pig embryos all the 3 layers of the heart were well distinguished and the myocardium was more trabecular. In 35 mm (35 day-old) pig embryos the semilunar valves, atrioventricular valves and papillary muscles were well developed. In 40 mm (38 day-old) pig embryos a valvular continuity between the semilunar and atrioventricular valves was noticed. Purkinje fibres were noticed in the ventricular subendocardium. In 55 mm (42 day-old) pig embryos ganglionated and non-ganglionated nerve plexuses were noticed in the epicardium. From 80 mm (48 day-old) pig embryos onwards until 270 mm (102 day-old) the length, thickness and circumference of the heart increased. The further structural development of these age groups of pig embryos resembled the adult pig heart.

0080. Suthakar V P; Ushakumary, S; Geetha Ramesh (Tamil Nadu Veterinary and Animal Sciences University, Chennai (India)). Micro anatomical studies on primary and secondary bronchi in the lung of guinea fowl. Indian Journal of Animal Sciences (India) v.78(5) p.493-496 KEYWORDS: GUINEA FOWL. ANIMAL MORPHOLOGY. LUNGS. BRONCHI.

The epithelium of the mucous folds of the primary and the secondary bronchi was made up of the pseudostratified ciliated columnar epithelium. Goblet cells were found in the surface epithelium of secondary bronchi. The epithelium of primary and secondary bronchi showed moderate reaction for acid and alkaline phosphatases. Lymphoid aggregations were seen in the lamina propria of the secondary bronchi. The layer of circularly arranged smooth muscle fibres in the secondary bronchi was apparently thicker than that of the primary bronchus.

0081. Pyne, S.K.; Sinha, R.D. (Visva-Bharati University, Institute of Agriculture, Department of Animal Science, Sriniketan (India)). Histochemistry of the prostate gland in vasectomized goats. Indian Veterinary Journal (India) v.86(9) p.949-950 KEYWORDS: VASECTOMY. GOATS. PROSTATE.

In the present investigation in histochemical activity was noticed during early stages after vasectomy, but it was restored to normal after a period of one year and above after vasectomy. After vasectomy, PAS and acid mucopolysaccharides reactivity was increased in mucous acini of 3 and 6 months and increased reactivity for DNA by 12 months and above after vasectomy were noticed.

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0082. Nidhi Singh; Singh, J.P (College of Veterinary Science and Animal Husbandry Mhow (India). Department of Veterinary Medicine); Rajput, M.K.S. (Veterinary College, Pantnagar (India). Dept. of EPM.) Hematological alterations in broiler chicks during different seasons supplemented with herbal formulations. Veterinary World (India) v.1(4) p.110-112 KEYWORDS: CHICKS. BROILER CHICKENS. BLOOD. SUPPLEMENTS.

The study was conducted on Vencobb broiler chicks to ascertain the antistress affects of Zist, Zeetress and a combination of Amla and Turmeric during summer, rainy and winter seasons and thereby the haematological changes of birds revealed that during all the three seasons a marked improvement in haemoglobin was encountered in all the three groups where herbal preparations were supplemented. A marked increases in the lymphocyte count occurred during summer and winter seasons in all the experimental groups of bird as compared to the control group. The heterophyl count was decreased with the supplementation of herbal formulations in the feed irrespective of the seasons encountered in the season. This observation proves the hepato-stimulatory, protective and immuno modulating effects of herbal preparations.

0083. Kaple, P.M.; Jagtap, D.G.; Badukale, D.M.; Shatpure, S.K. (Veterinary College, Nagpur(India). Department of Physiology and Biochemistry) Haematological constituents of blood of gaolao cattle. Veterinary World (India) v. 1(4) p. 113-114 KEYWORDS: CATTLE. LAND RACES. BLOOD COMPOSITION. HAEMOGLOBIN.

The hematological studies of Gaolao cattle (10 animals each of calves, heifers and cows) showed that values of hemoglobin, total erythrocyte count, packed cell volume and lymphocytes were low in cows than calves and heifers while low eosinophil per cent in calves and heifers than cow were observed.

0084. Kapale, P.M.; D.G., D.M.; S.K. (Veterinary College, Nagpur(India). Department of Physiology and Biochemistry) Serum total proteins and serum total cholesterol levels in Gaolao cattle. Veterinary World (India) v. 1(4) p. 115-116 KEYWORDS: CATTLE. LAND RACES. BLOOD COMPOSITION. BLOOD PROTEINS.

The healthy female gaolao cattle were selected and divided in three groups of ten animals each with reference to age. The blood samples were processed for clear serum collection and estimation of serum total proteins, albumin, globulin albumin and globulin ratio and serum total cholesterol. It is reported that female calves had low total proteins, albumin and globulin than the adult cows.

0085. Mohan, N.H.; Sarmah, B.C; Tamuli, M.K.; Das, Anubrata; Bujarbaruah, K.M. (NRC on Pig, ICAR, Guwahati (India). Electrophoretic profile of porcine adipose tissue and a method for extraction of soluble protein from fat issue.. Indian Journal of Animal Sciences (India) v.77(12) p.1248-1250 KEYWORDS: SWINE. ADIPOSE TISSUE. ANALYTICAL METHODS. ELECTROPHORESIS.

Adipose tissue plays critical role in energy homeostasis, secreting adipokines and immunity of the animal. In the present study, a rapid technique for extraction of adipose tissue proteins and electrophoretical analysis of proteins isolated from various fat depots is described. A total of 23, 21, 17 and 16 protein bands were observed in subcutaneous, perirenal, pericardiac and mesenteric adipose tissues respectively during elctrophoresis. Thirty-six distinct protein bands could be identified and the proteins having molecular weight of 50, 34, 28, 26 and 16kDa were common to all the aqipose tissue depots. The precise mechanisms and importance of depot specific differences between adipose tissues is presently unknown and requires further studies to functionally characterize adipose tissue proteins.

0086. Sodhi, R.; Rajput, Y. S. (National Dairy Research Institute, Kamal (India)). Differentiation and de-differentiation of buffalo adipose tissue. Indian Journal of Animal Sciences (India) v.78(1) p.28-32 KEYWORDS: WATER BUFFALOES. ADIPOSE TISSUE.

Differentiation and de-differentiation processes in buffalo adipose were studied under in vitro conditions using pre adipocytes and adipocytes respectively. In culture medium comprising DMEM medium, 15. FCS, 100 I/g/ml streptomycin, and 100 IU/ml penicillin, pre-adipocytes at 37±C and 5. CO₂ level converted into fibroblast like structures. Prolong culturing of these cells resulted in coalescing of small size droplets into large size droplets. The process of differentiation leading to synthesis of lipid was induced by methylisobutyxanthine, tri-iodothyronine and insulin. Dedifferentiation was studied in isolated adipocytes. Culturing of these cells in presence of insulin and triiodothyronine resluted in appearance of small-size lipid droplets in cytoplasm and formation of new protrusions also filled with lipid droplets. The results suggested that buffffalo adipose tissue under in vitro culture conditions can undergo process of differentiation and de-differentiation. The developed culture system for buffalo adipose tissue can be exploited for understanding the role of various factors in differentiation and dedifferentiation process.

0087. Rajkhowa, S.; Hazarika, G.C.; Sarma, S. (Assam Agricultural University, Assam (India). Effect of different iron preparations on some blood biochemical constituents of anaemic piglets and iron deficient anaemic calves. Indian Journal of Animal Sciences (India) v.78(1) p.114-117 KEYWORDS: CALVES. IRON. DEFICIENCY DISEASES. ANAEMIA. PIGLETS. COBALT. COPPER. ZINC. BLOOD DISORDERS.

The present study revealed that there was no significant effect of either oral or parenteral iron preparations on serum copper and zinc levels of anaemic piglets and serum copper, cobalt and zinc levels of iron-deficient anaemic calves. Significant increase in the serum levels of copper, cobalt and zinc with the increase in age of the calves of both iron- 'I' supplemented and iron~deprived groups was also noticed in the study.

0088. Uppal, Varinder; Bansal, Neelam (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)). Histoenzymic studies on thyroid gland of neonatal buffalo calves. Indian Journal of Animal Sciences (India) v.78(2) p.154-155 KEYWORDS: WATER BUFFALOES. THYROID GLAND. CALVES.

The present study was conducted on thyroid glands of 4 buffalo calves below 1 month of age to study the histoenzymic localization in thyroid glands. The cryostat sections of 10-20 μ m thickness from fresh unfixed thyroid tissues were cut at $-20\pm C$ and incubated with different substrates to demonstrate the histochemical localization of various phosphatases, oxidoreductases and esterase. The study revealed a moderate to strong localization of acid phosphatase in the follicular cells whereas alkaline phosphatase and adenosine triphosphatase were localized in the blood vessels. The activity of dehydrogenases (succinate dehydrogenase, lactate dehydrogenase and glucose-6-phosphate dehydrogenase) was moderate to strong and of diaphoreses (NADH and NADPH) was strong to intense in the follicular and parafollicular cells. The 17 β hydroxy steroid dehydrogenase, monoamine oxidase and cytochrome oxidase were weakly localized whereas acetyl cholinesterase was only localized in the nerve endings. The moderate to strong activity of these enzymes reflects the physiological activity of the follicular and parafollicular cells of the thyroid gland during neonatal period.

0090. Patra, B.; Orissa University of Agriculture and Technology, Bhubaneswar (India) Das, S. K.; Orissa University of Agriculture and Technology, Bhubaneswar (India) Mishra, P. K.; Orissa University of Agriculture and Technology, Bhubaneswar (India) Mishra, S. K.; Orissa University of Agriculture and Technology, Bhubaneswar (India) Panda, N; Orissa University of Agriculture and Technology, Bhubaneswar (India). Evaluation of physio-biochemical traits of growing turkeys in hot and humid climate of Orissa. Indian Journal of Animal Sciences (India) v.78(2) p.203-206 KEYWORDS: HUMID CLIMATE. TURKEYS. ORISSA.

Studies on evaluation of physiobiochemical traits of growing turkeys in hot and humid climate of Orissa revealed that there was progressive increase in haemoglobin concentration along with increase in age. Similar observations were also recorded for PCV, ESR, TEC and TLC values. The MCV values during the entire period did not show significant changes. The MCH values were in the decreasing order along with increase in age of turkeys. The MCHC values differed significantly age-wise. The values for total serum protein, serum cholesterol, blood glucose, blood urea, blood urea nitrogen, serum calcium and serum phosphorus showed progressive increase along with increase in age and changes were significantly different between different periods and between male and female turkeys. Blood enzyme estimations during different periods of growth showed significant changes between different periods and also between male and female turkeys, The values of ALAT, ASAT and ACP showed increasing trend along with increase in age of the birds whereas the values for ALP showed decreasing trend.

0091. Nath, R.; College of Veterinary Science, Department of Animal Physiology and Biochemistry, Lakhimpur (India). Changes in the serum enzymes during experimental aflatoxicosis in broiler chicken. Indian Veterinary Journal (India) v.85 (1) p.10-12 KEYWORDS: POISONING. BROILER CHICKENS. AFLATOXINS. ASPERGILLUS PARASITICUS. ASPERGILLUS.

Feeding aflatoxin at the rate of 2ppm to day old chicks till 60 days, increased the activities of AST, ALT, ALP and LDH significantly ($P < 0.05$) at all the age groups. ACP activity was significant only on the 15th day while AchE activity did not increase significantly. It is concluded that estimation of enzyme activity may help in the early diagnosis of aflatoxicosis in birds.

0092. R. Raja; Veterinary College and Research Institute, Department of Livestock Production and Management, Namakkal (India) Jagatheesan, P.N. Richard; Veterinary College and Research Institute, Department of Livestock Production and Management, Namakkal (India) Sivakumar, K.; Veterinary College and Research Institute, Department of Livestock Production and Management, Namakkal (India) Saravanakumar, V. Ramesh; Veterinary College and Research Institute, Department of Livestock Production and Management, Namakkal (India). Effect of heat ameliorative measures on blood biochemical profile in broiler Rabbits. Indian Veterinary Journal (India) v.85 (1) p.50-53 KEYWORDS: ENZYME ACTIVITY. RABBITS. SEMIARID ZONES. PRODUCTION POSSIBILITIES. BLOOD SAMPLING.

An experiment was conducted with 24 weaned rabbits each in White Giant (WG) and Soviet Chinchilla (SC) breeds of rabbits consisting of four treatment groups having six animals in each breed namely control, provision of cool drinking water, electrolyte supplementation and water spraying to record the influence of heat ameliorative measures on blood biochemical profile. The higher values of most of the blood metabolites namely total protein, albumin, globulin due to heat ameliorative measures adopted in T3 and T4 group rabbits indicated that electrolyte supplementation and water spraying had improved the blood biochemical profile in WG and SC rabbits.

0093. Farhoomand, P.; Urmia University, Faculty of Agriculture, Department of Animal Science, Urmia (Iran) Izadi, W.; Urmia University, Faculty of Agriculture, Department of Animal Science, Urmia (Iran). Effects of phytase feeding on dressing yield and digestive organs size in broilers. Indian Veterinary Journal (India) v.85 (1) p.58-60 KEYWORDS: PHYTATES. YIELDS. DIGESTIBILITY. BROILER CHICKENS.

In a completely randomized design with four treatments (0, 0.3, 0.6 and 0.9) the effect of graded levels of phytase on performance dressing yield and digestive organs size of broilers were investigated. The addition of phytase significantly affected performance, dressing percentage and digestive organs size of experimental chicks. The 0.9 g/kg. phytase treatment had the best FCR, highest live weight and dressing percentage and control had the worst FCR and lowest live weight and dressing percentage. These results showed that supplemented Phytase improved BWG, FCR and dressing yield. Increased phytase level from 0.3 g/kg to 0.9 g/kg diet will provide an additional benefit.

0094. Gokce, Halil Ibrahim; The University of Kafkas, Faculty of Veterinary Medicine, Department of Internal Medicine, Kars (Turkey) Akca, Atila; The University of Kafkas, Faculty of Veterinary Medicine, Department of Parasitology, Kars (Turkey). Biochemical parameters In levamisole poisoned Dogs. Indian Veterinary Journal (India) v.85 (1) p.99-100 KEYWORDS: NITRATES. ANTHELMINTICS. DOGS. LIVER. KIDNEYS.

A significant increase in the serum concentration of urea and in the activity of ALT and AP was noticed in dogs poisoned by levamisole. A high concentration of nitrate in sera was also observed in the study which indicates the possible production of nitric oxide in vivo and it may play a role in the severity of inflammation in the organ.

0095. Jayathangaraj, M.G.; Madras Veterinary College, Dept. of Wildlife Science, Chennai (India) Senthilkumar, A.; Madras Veterinary College, Dept. of Wildlife Science, Chennai (India) Subramanian, K.S.; Madras Veterinary College, Dept. of Wildlife Science, Chennai (India) S. Ramesh; Madras Veterinary College, Dept. of Wildlife Science, Chennai (India) Bhakyalakshmi, V.; Madras Veterinary College, Dept. of Wildlife Science, Chennai (India). Chemical immobilization of common langur. Indian Veterinary Journal (India) v.85 (1) p.107-107 KEYWORDS: IMMOBILIZATION. PRIMATES. KETAMINE. XYLAZINE.

Immobilization of non-human primates is to be carried out with much care and caution, for the purpose of routine clinical examination and blood collection.

0096. Cinar, Ali; University of Yuzuncu Yil, Faculty of Veterinary Medicine, Department of Physiology and Department of Surgery, Van (Turkey) Beige, Ferda; University of Yuzuncu Yil, Faculty of Veterinary Medicine, Department of Physiology and Department of Surgery, Van (Turkey) Tas, Abuzer; University of Yuzuncu Yil,

Faculty of Veterinary Medicine, Department of Physiology and Department of Surgery, Van (Turkey). Effect Of Vitamin C Treatment On Biochemical Parameters In Acth Stressed Chickens. Indian Veterinary Journal (India) v.86(3) p.262-264 KEYWORDS: ASCORBIC ACID. CHICKENS. GLUCOSE. STRESS. CORTICOTROPIN. The study was conducted to examine the effects of vitamin C on plasma glucose, cholesterol, vitamin C and total protein in chickens stressed by adrenocorticotropin (ACTH). Three hours after ACTH application although the levels of glucose, cholesterol and total protein increased, the levels of vitamin C decreased with respect to mean initial values in control group after ACTH treatment ($P < 0.05$). It was concluded that intramuscularly administered vitamin C facilitated an adaptation against stress decreased negative effects of stress chickens.

0097. Dutta, B.; Assam Agricultural University, College of Veterinary Science, Department of Surgery and Radiology, Guwahati (India) Lekharu, J.C.; Assam Agricultural University, College of Veterinary Science, Department of Surgery and Radiology, Guwahati (India)Sarma, B.; Assam Agricultural University, College of Veterinary Science, Department of Surgery and Radiology, Guwahati (India). Effect of omentoplasty in revitalizing ischaemic wound. Indian Veterinary Journal (India) v.86(9) p.900-902 KEYWORDS: WOUNDS. ISCHAEMIA. BULLS. FOG. COLLAGEN.

The effect of pedicle omental graft (POG), free omental allograft graft (FOG) on ischaemic wound healing was studied in bull calves. Lower value of alkaline phosphatase and zinc and higher values of protein, collagen, elastin, iron, copper and magnesium were recorded in POG followed by FOG than that of control indicated lesser tissue damage and revitalization of the wound.

0098. Patra, M.K.; Indian Veterinary Research Institute, Division of Animal Reproduction. Izatnagar (India)Kumar, H.; Indian Veterinary Research Institute, Division of Animal Reproduction. Izatnagar (India)Yadav, M.C.; Indian Veterinary Research Institute, Division of Animal Reproduction. Izatnagar (India)Meur, S.K.; Indian Veterinary Research Institute, Division of Animal Reproduction, Izatnagar (India)Mahmood, S.; Indian Veterinary Research Institute, Division of Animal Reproduction. Izatnagar (India). Volatile chemical compounds in Bovine urine. Indian Veterinary Journal (India) v.86(9) p.912-914 KEYWORDS: VOLATILE COMPOUNDS. BOVINAE. URINE.

Urinary compounds were identified in cows during estrus and diestrus and of breeding bulls by chemical extraction followed by gas chromatography - mass spectrometry (GC-MS). The estrus cow urine was specified by two compounds viz., octane and 3-hexanol 2,2-dimethyl, whereas, only one compound (decahe, 6-ethyl, 2-methyl) was identified from urine of cows at diestrus stage. The bull urine was distinguished by the presence of three specific compounds namely, nonacosane; 1,2-benzenedicarboxylic acid-dihexyl ester and heptacosane. Therefore these specific compound in urine may be applicable as a sex or estrus specific marker.

L51 Animal Physiology - Nutrition

0099. Vidyarthi, V.K.; Nagaland University, Medziphema (India). Dept. of A.P.M.Tripathi, N.K.; M.G.C.G.V., Chitrakoot (India). Dept. Animal Science. Nutrient availability to lactating Goats under field condition in Faziabad district of Uttar Pradesh.. Journal of Interacademia (India) v. 13(3) p.297-302 KEYWORDS: ANIMAL PHYSIOLOGY. NUTRITION PHYSIOLOGY. GOAT MILK. UTTAR PRADESH.

A survey conducted in Faizabad district of Uttar Pradesh with 180 farmers having 284 lactating goats revealed that goat statistics on the basis of milk production capacity of goat per household, categorized as no milk (group 1), up to 250 g (group 2), 251 to 500 g (group 3) and above 500 g (group 4) were non significant of variation in the milk production levels. Average milk yield household was significantly ($P < 0.05$) higher in group 3 followed by groups 4, 2 and there was no milk production in group 1. Average milk yield per goat was significantly ($P < 0.05$) higher in group 4 followed by group 3,2 and there was no milk production in group 1. The values of dry matter intake (DMI) shared by roughages and concentrates ranged from 61.09 to 63.20 vs. 36.80

to 38.91 per cent, respectively and the average DMI was significantly ($P < 0.05$) higher in group 4 followed by groups 3, 2 and the lowest in group 1. The values of digestible crude protein intake (DCPI) shared by roughages and concentrates ranged from 42.24 to 45.9 vs. 54.05 to 57.14 percent, respectively; however, the values for average DCPI were non-significant amongst the four groups. The values of total digestible nutrients intake (TDNI) shared by roughages and concentrates ranged from 41.76 to 43.94 vs. 56.06 to 58.24 percent, respectively and the mean values for TDNI were significantly ($P < 0.05$) highest in group 4 followed by group 3, 2 and the lowest in group 1. The supply of all the nutrients, i.e. DM, DCP and TDN were deficit in all the four groups and was significantly ($P < 0.05$) the lowest in group 1 followed by groups 3, 4 and the highest in group 2.

0100. Singh, Opinder; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Roy, K.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Kumar, Anoop; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Kumar, Raman; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India).. Histoenzymic distribution of oxidoreductases in rumen during prenatal development in buffalo. Indian Journal of Animal Sciences (India) v.77(12) p.1280-1282 KEYWORDS: WATER BUFFALOES. FOETUS. SUMMER. OXIDOREDUCTASES. PERINATAL PERIOD.

Histoenzymic distribution of oxidoreductases was studied in rumen of buffalo fetuses ranging from 5 cm to 62 cm crown rump length (CRL). The succinic dehydrogenase (SDH), lactic dehydrogenase (LDH), reduced nicotinamide adenine dinucleotide diaphorase (NADH-diaphorase), reduced nicotinamide adenine dinucleotide phosphate diaphorase (NADPH-diaphorase) exhibited moderate to strong activity in basal layer of epithelium which may be attributed to increased functional activity of basal layer since the rest of epithelium is derived from it. The tunica muscularis showed better activity than other layers indicating early maturity as compared to other layers. The propria submucosa and tunica serosa were weak positive for various enzymes.

0101. Patra, A. K.; Indian Veterinary Research Institute, Izatnagar, (India) Kamra, D. N.; Indian Veterinary Research Institute, Izatnagar, (India) Agarwal, Neeta; Indian Veterinary Research Institute, Izatnagar, (India). Effect of leaf extracts on in vitro fermentation of feed and methanogenesis with rumen liquor of buffalo. Indian Journal of Animal Sciences (India) v.78(1) p.91-96 KEYWORDS: CORIANDRUM SATIVUM. METHANOGENS. MORINGA OLEIFERA. OCIMUM. PLANT EXTRACTS. PROTOZOA. QUERCUS INCANA. QUERCUS. POPULUS DELTOIDES. PROTOZOA. RUMEN DIGESTION. PROTOZOA.

The leaves of *Coriandrum sativum* (coriander) *Quercus incana* (oak), *Populus deltoides* (poplar), *Ocimum sanctum* (tulsi) and *Moringa oleifera* (drumstick) extracted in 3 solvents (ethanol, methanol and water) at 3 levels (0, 0.25 and 0.5 ml/130 ml of incubation medium) were tested in 60x3 factorial design for their effect on fermentation of feed and methanogenesis in in vitro gas production test. The extracts of *C. sativum* and *M. oleifera* enhanced gas production significantly as compared to control and other leaf extracts. Methanol extract of the leaves of *P. deltoides* caused a significant depression in methanogenesis, whereas, none of the other leaf extracts had any effect. The specific activities of carboxymethylcellulase, xylanase and acetyl esterase were increased by addition of leaf extracts in the medium. The concentration of total volatile fatty acids was similar among the extracts of 5 leaves, but there was significant decrease in acetate to propionate ratio on inclusion of 0.5 ml methanol extract of *P. deltoides* in the medium. None of the 5 leaf extracts had any effect on in vitro degradability of dry matter or organic matter. The numbers of total protozoa, large and small spirotrichs and holotrichs were not affected by any of the leaf extracts. The results indicated that the methanol extract of *P. deltoides* leaves inhibited rumen methanogenesis without adversely affecting other fermentation characteristics.

0102. Singh, Gurpreet; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Kulkarni, Shrikant; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Singh, Rajvir; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India).. Effect of *Saccharomyces cerevisiae* (Yea Sacc 1026) supplementation on rumen profile in buffaloes. Indian Journal of Animal Sciences (India)

v.78(2) p.172-174 KEYWORDS: WATER BUFFALOES. CALVES. SACCHAROMYCES CEREVISIAE. RUMEN. Effect of supplementation of *Saccharomyces cerevisiae* on microbial population of buffalo calves, was studied. The treated animals were given Yea Sacc 1026 one bolus (consisting 25 billion live yeast cells)/animal/day for 21 days. The oral supplementation improved the digestive efficiency of ruminants.

0103. Ghosh M.K.; National Research Centre on Yak, Dirang (India) Konwar P.; National Research Centre on Yak, Dirang (India) Basumatary R.; National Research Centre on Yak, Dirang (India) Bandyopadhyay S.; National Research Centre on Yak, Dirang (India) Sarkar, M.; National Research Centre on Yak, Dirang (India) Bhattacharya, M.; National Research Centre on Yak, Dirang (India). Mineral profile of local tree fodders and grasses of Meghalaya. *Indian Veterinary Journal (India)* v.85 (1) p.105-106 KEYWORDS: MINERALS. GRASSES. FORAGE. Tree leaves and grasses of Jayantia hills contained comparatively less amount of Cu, Mg, Mn and Zn. The above deficient minerals should be supplemented for better animal production and reproduction. Moreover, Co content of all and K content of some of the fodder samples could not be detected. Hence, these should also be provided as supplement along with the feeds to the livestock particularly to the ruminants.

0104. Ghosh M.K.; National Research Centre on Yak, Dirang (India) Konwar P.; National Research Centre on Yak, Dirang (India) Basumatary R.; National Research Centre on Yak, Dirang (India) Bandyopadhyay S.; National Research Centre on Yak, Dirang (India) Sarkar, M.; National Research Centre on Yak, Dirang (India) Bhattacharya, M.; National Research Centre on Yak, Dirang (India). Mineral profile of local tree fodders and grasses of Meghalaya. *Indian Veterinary Journal (India)* v.85 (1) p.105-106 KEYWORDS: MINERALS. GRASSES. FORAGE. tree leaves and grasses of Jayantia hills contained comparatively less amount of Cu, Mg, Mn and Zn. The above deficient minerals should be supplemented for better animal production and reproduction. Moreover, Co content of all and K content of some of the fodder samples could not be detected. Hence, these should also be provided as supplement along with the feeds to the livestock particularly to the ruminants.

0105. Sharma, A.K.; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India) Shahi, Apra; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India) Kumar, Naveen; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India) Maiti, S.K.; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India). Romifidine as maintenance agent in thiopental sodium anaesthetized Dogs. *Indian Veterinary Journal (India)* v.86(3) p.270-272 KEYWORDS: THIOPENTAL. SODIUM. DOGS. ANAESTHESIA.

The results of the present study revealed that romifidine 40 µg/kg i.v. can safely be used after thiopental sodium induction to increase the duration of anaesthesia without adversely affecting the different vital organs of the body in dogs.

0106. Vasan, P.; Central Avian Research Institute, Indian Veterinary Research Institute, Avian Nutrition and Feed Technology Division, Izatnagar (India) Mandai, A.B.; Central Avian Research Institute, Indian Veterinary Research Institute, Avian Nutrition and Feed Technology Division, Izatnagar (India) Kadam, Mukund M.; Central Avian Research Institute, Indian Veterinary Research Institute, Avian Nutrition and Feed Technology Division, Izatnagar (India). Nutritive value of pearl millet fed to adult white leghorn cockerels. *Indian Veterinary Journal (India)* v.86(3) p.278-280 KEYWORDS: NUTRITIVE VALUE. PENNISETUM GLAUCUM. PENNISETUM. COCKERELS. ENERGY VALUE. DIGESTIBILITY.

The aim of the present study was to evaluate the nutritive value of pearl millet in adult cockeries. The apparent dry matter metabolizability was significantly increased by 5.10% due to grinding of pearl millet. However, the apparent crude protein digestibility was significantly lower in ground grain by 8.80%. There was no significant effect of grinding on the true DMM and protein digestibility. On the contrary, the AMEn, TME and TME_n values of pearl millet were increased by 4.90, 8.29 and 8.60 percent respectively due to

grinding. The present study revealed that grinding of pearl millet grain improves its nutritive value for poultry.

0107. Srivastava, Vikas; College of Veterinary Science, Department of Animal Nutrition, Kumarganj (India)Niranjan, P.S.; College of Veterinary Science, Department of Animal Nutrition, Kumarganj (India) Udeybir; College of Veterinary Science, Department of Animal Nutrition, Kumarganj (India)Singh, Jaswant; College of Veterinary Science, Department of Animal Nutrition, Kumarganj (India). Effect of grainless diet on growth performance and feed conversion efficiency in murrah buffalo calves. Indian Veterinary Journal (India) v.86(3) p.281-283 KEYWORDS: CALVES. NUTRITION PHYSIOLOGY. BLOOD. FEED CONVERSION EFFICIENCY. It is concluded that grains can be completely replaced with rice polish and wheat bran in the concentrate mixture of buffalo calves with out any adverse effect on their feed intake, growth performance, feed conversion efficiency and haematobiochemical parameters except serum glucose in deoiled rice polish and SGPT in rice polish fed group.

0108. Chaudhary, L C; Indian Veterinary Research Institute, Izatnagar (India)Sahoo, A; Indian Veterinary Research Institute, Izatnagar (India)Agarwal, Neeta; Indian Veterinary Research Institute, Izatnagar (India)Kamra, D N; Indian Veterinary Research Institute, Izatnagar (India)Pathak N N; Indian Veterinary Research Institute, Izatnagar (India). Effect of direct fed microbials on nutrient utilization, rumen fermentation, immune and growth response in crossbred cattle calves. Indian Journal of Animal Sciences (India) v.78(5) p.515-521 KEYWORDS: PROBIOTICS. CROSSBREDS. CALVES. LACTIC ACID BACTERIA. BRAN. NUTRITION PHYSIOLOGY. RUMEN DIGESTION. IMMUNE RESPONSE. GROWTH RATE. The study was conducted to test efficacy of direct fed microbials (DFM) for the improvement of performance of crossbred cattle calves reared on the diet devoid of cereal grains. Day-old calves (32) with average body weight of 23 kg, were divided into 4 groups and fed on concentrate mixture to meet 50. dry matter requirement and green fodder ad lib. Group 1 served as control. The 100 ml DFM culture was fed to group 2 (curd, 108 cfu/ml), group 3 (*Saccharomyces cerevisiae* 49, 106 cfu/ml) and group 4 (*Lactobacillus acidophilus* 15, 108 cfu/ml). The experiment lasted 52 weeks. The dry matter intake and feed conversion efficiency were not affected due to supplementation of any of the DFM. Improved body weight gain in calves by supplementation of all the 3 microbial additives was observed. The digestibility of nutrients and plane of nutrition were similar in all the 4 groups at 14 weeks and 52 weeks except a significant increase in the digestibility of ether extract and acid detergent fibres in *S. cerevisiae* fed group at 14 weeks and 52 weeks, respectively. There was no difference among the groups in the levels of lactic acid, NH₃-N, total and molar proportion of volatile fatty acids, ciliate protozoa count and activities of filter paper degrading enzyme, caroxymethylcellulase, xylanase, α -amylase, β -xylosidase, β -glucosidase, α -glucosidase and protease at 52 weeks of age. However, microcrystalline cellulase activity was significantly higher in *L. acidophilus* fed group. The blood biochemical characteristics (plasma glucose, serum protein, albumin and globulin) and immunological status of the calves of all the groups were similar at 52 weeks of age. It is concluded from the study that long term (from birth to one year of age) feeding of DFM improved the growth performance of crossbred cattle calves fed diet devoid of cereal grains.

0109. Chaudhary, L C; Indian Veterinary Research Institute, Izatnagar (India)Sahoo, A; Indian Veterinary Research Institute, Izatnagar (India)Agarwal, Neeta; Indian Veterinary Research Institute, Izatnagar (India)Kamra, D N; Indian Veterinary Research Institute, Izatnagar (India)Pathak N N; Indian Veterinary Research Institute, Izatnagar (India). Effect of direct fed microbials on nutrient utilization, rumen fermentation, immune and growth response in crossbred cattle calves. Indian Journal of Animal Sciences (India) v.78(5) p.515-521 KEYWORDS: PROBIOTICS. CROSSBREDS. CALVES. LACTIC ACID BACTERIA. BRAN. NUTRITION PHYSIOLOGY. RUMEN DIGESTION. IMMUNE RESPONSE. GROWTH RATE. The study was conducted to test efficacy of direct fed microbials (DFM) for the improvement of performance of crossbred cattle calves reared on the diet devoid of cereal grains. Day-old calves (32) with average body

weight of 23 kg, were divided into 4 groups and fed on concentrate mixture to meet 50. dry matter requirement and green fodder ad lib. Group 1 served as control. The 100 ml DFM culture was fed to group 2 (curd, 108 cfu/ml), group 3 (*Saccharomyces cerevisiae* 49, 106 cfu/ml) and group 4 (*Lactobacillus acidophilus* 15, 108 cfu/ml). The experiment lasted 52 weeks. The dry matter intake and feed conversion efficiency were not affected due to supplementation of any of the DFM. Improved body weight gain in calves by supplementation of all the 3 microbial additives was observed. The digestibility of nutrients and plane of nutrition were similar in all the 4 groups at 14 weeks and 52 weeks except a significant increase in the digestibility of ether extract and acid detergent fibres in *S. cerevisiae* fed group at 14 weeks and 52 weeks, respectively. There was no difference among the groups in the levels of lactic acid, NH₃-N, total and molar proportion of volatile fatty acids, ciliate protozoa count and activities of filter paper degrading enzyme, carboxymethylcellulase, xylanase, α -amylase, β -xylosidase, β -glucosidase, α -glucosidase and protease at 52 weeks of age. However, microcrystalline cellulase activity was significantly higher in *L. acidophilus* fed group. The blood biochemical characteristics (plasma glucose, serum protein, albumin and globulin) and immunological status of the calves of all the groups were similar at 52 weeks of age. It is concluded from the study that long term (from birth to one year of age) feeding of DFM improved the growth performance of crossbred cattle calves fed diet devoid of cereal grains.

L52 Animal physiology - Growth and development

0110. Lucy, K.M.; Kerala Agricultural University, Kerala (India) Harshan, K.R.; Kerala Agricultural University, Kerala (India) Chungath, J.J.; Kerala Agricultural University, Kerala (India) Ashok, N.; Kerala Agricultural University, Kerala (India). Morphogenesis of basal nuclei in goat fetuses.. *Indian Journal of Animal Sciences* (India) v.77(12) p.1251-1253 KEYWORDS: GOATS. FOETUS. MORPHOGENESIS.

Prenatal development of basal nuclei in goats was studied using 46 goat fetuses ranging from 2.5 cm CRL (40 days of gestation) to 41.5 cm CRL (full term). Basal nuclei appeared as a gray mass in the floor of cerebrum near the thalamus at 40 days of gestation. The internal capsule separated the caudate nucleus from the rest of the gray substance in the sixth week. The lenticular nucleus and the external capsule appeared during seventh week. By 62 days (8.6 cm CRL), 2 divisions of the lenticular nucleus, viz. the globus pallidus and the putamen started differentiating. During the third month, vascularity of the basal nuclei increased considerably. Largest among the vessels were seen in the caudate nucleus. The claustrum was demarcated from the insular cortex by the extreme capsule at 101 days (20.0 cm CRL). During fifth month, it showed a thin dorsal part and a slightly thicker ventral part. The amygdaloid body appeared as a distinct entity during the fifth month. All parts of the basal nuclei were fully developed in the full term goat foetus, which can be considered as one of the reason for the fact that the kids can walk within an hour after birth.

0111. L. Lesile Leo Prince; Corresponding Author Kumar, Sushil; Central Sheep and Wool Research Institute, Division of Animal Genetics and Breeding, Rajasthan (India) Mishra, A.K.; Central Sheep and Wool Research Institute, Division of Animal Genetics and Breeding, Rajasthan (India) Arora, A.L.; Central Sheep and Wool Research Institute, Division of Animal Genetics and Breeding, Rajasthan (India). Growth performance of chokla sheep under semi-arid conditions of Rajasthan. *Indian Veterinary Journal* (India) v.85 (1) p.41-43 KEYWORDS: SHEEP. GROWTH. ARID ZONES. RAJASTHAN.

Data on growth performance of 808 Chokla lambs born during years 2000 to 2003 maintained under semi-arid condition were utilised for the present study. Overall least squares means of body weights at birth, weaning, six, nine and twelve months of age, average daily gains during pre-weaning, post-weaning (3-6 and 6-12 month) were 2.74, 10.94, 17.80, 20.52 and 24.23 kg, 91 g, (75 and 32 g), respectively. Body weight from birth to yearlings and average daily gains were significantly influenced by lambing year and sex of the lamb. Ewe's weight at lambing significantly influenced birth, weaning and six months weights. It is evident from the results that there is enough possibility of improving body weights of Chokla sheep by minimising year to year environmental variation.

0112. Ghosh, M.K.; National Dairy Research Institute, Division of Dairy Cattle Division, Karnal (India)Atreja, P.; National Dairy Research Institute, Division of Dairy Cattle Division, Karnal (India)Bandyopadhyay, S.; NRC - Yak, ICAR, Dirang (India). Effect of leucaena leaf meal feeding in karan fries crossbred calves. Indian Veterinary Journal (India) v.85 (1) p.44-46 KEYWORDS: CATTLE. FEEDING. BODY WEIGHT. THYROID HORMONES. ASPARTATE AMINOTRANSFERASE.

Three one year old Karan Fries crossbred (Holstein Friesian X Tharparkar) calves were fed increasing Dry Matter (DM) levels i.e. 25, 50, 75 and 100% through Leucaena leaf meal (LLM) starting in week 1, 2, 3 and 6 respectively. The mimosine, content in LLM was measured through High Performance Liquid Chromatography (HPLC). DM intake was 2.29, 2.14, 1.83, 1.51, 1.46 and 0.71% of live weight through 1st to 6th weeks respectively. Feeding of LLM resulted in drastic reduction of T3 and T4 and significant elevation of serum AST and ALT activities within a week. The adverse effects of LLM feeding were attributed to mimosine and DHP which is also accountable for reduction in body weight.

0113. Konwar, P.; Assam Agricultural University, College of Veterinary Science, Khanapara (India)Konwar, B. K.; Assam Agricultural University, College of Veterinary Science, Khanapara (India)Ahmed, H.F.; Assam Agricultural University, College of Veterinary Science, Khanapara (India)Nath, N.C.; National Research Centre on Yak, Dirang (India)Ghosh, M.K.; National Research Centre on Yak, Dirang (India). Effect of feeding silkworm pupae meal with enzyme supplementation on growth performance of broilers. Indian Veterinary Journal (India) v.85 (1) p.47-49 KEYWORDS: FEEDING. SILKWORMS. PUPAE. ENZYMES. BROILER CHICKENS.

Incorporation of enzyme along with the silkworm pupae meal in the ration improves growth performance and reduces feed consumption in broilers. Hence, it can be suggested that silkworm pupae meal, with or without enzyme supplementation, can be incorporated in the diet of commercial broiler replacing fish meal upto 100% (10 Kg/ 100Kg) level without any adverse affect. However, broiler fed equal proportion of silkworm pupae meal and fish meal (50:50) with enzyme supplementation had better performance.

L53 Animal physiology – Reproduction

0114. Hedao, M.K; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India). Department of Animal Reproduction and Gynaecology)Khilare, K.P.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India). Department of Animal Reproduction and Gynaecology)Meshram, M.D.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India). Department of Animal Reproduction and Gynaecology)Sahatpure, S.K.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India). Department of Animal Reproduction and Gynaecology)Patil, M.G.; Post Graduate Institute of Veterinary and Animal Sciences, Akola (India). Department of Animal Reproduction and Gynaecology). Comparative studies of certain bio-chemical constituents of normal cyclic and anoestrus surti buffaloes. Veterinary World (India) v.1(4) p.105-106 KEYWORDS: WATER BUFFALOES. OESTROUS CYCLE. OVULATION. BLOOD COMPOSITION.

0661. Bhooshan, Neeru; U.P. Council of Agricultural Research, Lucknow (India)Kumar, Puneet; Central Institute for Research on Goats, Makhdoom (India). Profile of ovarian and hybride hormones, alkaline phosphate and cholesterol at oestrous cysle, gestation and early lactation in blood plasma of marwari. Indian Journal of Animal Sciences (India) v.77(12) p.1233-1237 KEYWORDS: GOATS. LAND RACES. THYROID HORMONES. OESTROGENS. PROGESTERONE. ALKALINE PHOSPHATASE. CHOLESTEROL. PREGNANCY. LACTATION.

Estrogen, progesterone, triiodothyronine (T3)' thyroxine (T4), alkaline phosphatase and cholesterol were studied in blood plasma of 6 pluriparous, cyclic Marwari does during oestrous cycle, gestation period, day of kidding and lactation period. Estrogen, Progesterone, T3 and T4 hormones level varied significantly between different phases of oestrous cycle. T3, T4 and Estrogen hormones attained significantly high level on the day of estrus. Progesterone concentration was significantly high on days 9 and 13. There was significant (P<0.01) difference in estrogen, progesterone, T3 and T4 concentrations during gestation and lactation periods. Progesterone attained significantly low (P<0.05) level just before kidding and remained at basal level up to

one month of lactation. Estrogen attained significantly ($P < 0.01$) high level just before kidding, then fell abruptly after kidding and remained low during one month of lactation. Estrogen concentration was negatively correlated with progesterone concentration

0115. Kalleshwarappa, G. M.; Indian Veterinary Research Institute, Izatnagar (India)Malakar, D.; Indian Veterinary Research Institute, Izatnagar (India)Chauhan, M. S.; Indian Veterinary Research Institute, Izatnagar (India)Majumdar, A. C.; Indian Veterinary Research Institute, Izatnagar (India). Isolation, identification and immunogenic characterization of secretory proteins of embryos and in blood circulation during estrus and in early pregnant buffalo. Indian Journal of Animal Sciences (India) v.79(8) p.764-772 KEYWORDS: ISOLATION. IDENTIFICATION. IMMUNOLOGICAL TECHNIQUES. INPUT OUTPUT ANALYSIS. BLOOD CIRCULATION. WATER BUFFALOES.

The aim of the study was to probe possibility of using that early secretory proteins from oocytes and embryos as a biomarker for detection/diagnosis of pregnancy in buffalo. The present study was conducted to analyze and characterize the secretory proteins of oocytes and IVF embryos of buffalo and search for these proteins in blood circulation of estrus and early pregnant buffalo. Oocytes were collected from ovaries of slaughtered buffalo and matured in vitro in maturation medium for 24 h. Fertilization was performed in BO medium with 24 h matured oocytes and capacitated spermatozoa. Cleaved oocytes were washed and cultured in mSOF till embryos developed to morula. The average 42.3% cleavage and 42.1% morula stage embryos were obtained. Morula stage embryos and 18 h matured oocytes were cultured in PVA medium without serum and BSA for its secretory proteins. Antisera were raised in rabbits against the secretory proteins of oocytes and embryos. Nine secretory proteins 97, 97, 75, 66, 43, 30, 29, 27 and 20 kDa on SDS-PAGE were found in both oocytes and embryos when stained with silver nitrate. Three proteins of oocytes and embryos, viz. 66, 43 and 29 kDa were found in western blot using oocytes antisera without pre-treatment with non-pregnant serum and one protein 29 kDa with pre-treatment of oocyte antisera with non-pregnant serum. Similarly, 4 protein bands of embryos, viz. 75, 66, 43, and 29 kDa and 3 protein bands of oocytes, viz. 66, 43 and 27 kDa were found in Western blot using embryos antisera without pre-treatment with non-pregnant serum and 2 proteins bands 75 and 29 kDa of embryos and 1 protein 29 kDa of oocytes with pre-treatment of embryos antisera with non-pregnant serum. These 2 proteins of 75 and 29 kDa were also observed in estrus and pregnant serum and their absence in non-pregnant serum of buffalo. It could be concluded that 9 secretory proteins of oocyte and embryo approximately MW 97, 97, 75, 66, 43, 30, 29, 27 and 20 kDa were obtained in buffalo. Two of these proteins 75 and 29 kDa have pregnancy specificity as they were also present in blood circulation of estrus and pregnant buffaloes. These two proteins could be used as a biomarker for prediction/ diagnosis of pregnancy of buffaloes in future. To our knowledge, there has been no report to date that has evaluated of secretory proteins of oocytes and IVF embryos in buffalo.

0116. Singh, Jagir; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)Ghuman, S P S; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India)Honparkhe, M; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Singh, N; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Investigations on dominant follicle development, estrus response, ovulation time and fertility in PRID-treated anestrus buffalo heifers. Indian Journal of Animal Sciences (India) v.79(8) p.773-777 KEYWORDS: FSH. OVULATION. FERTILITY. PROGESTOGENS. HEIFERS. WATER BUFFALOES.

In this study, the aim of progesterone releasing intravaginal device (PRID) insertion in anestrus buffalo heifers was to induce estrus, to see ovulation time subsequent to PRID removal, and to find out reason(s) for poor fertility in PRID-treated buffalo heifers by investigating dominant follicle development during and after PRID period and post-ovulation luteal profile. True anestrus buffalo heifers (6) during summer were inserted PRID (containing 1.55 g progesterone but capsule of estradiol removed) for 15 days. Subsequent to PRID removal onset of estrus was confirmed and heifers were inseminated at 24 h interval till ovulation. During PRID period, rectal ultrasonography and jugular vein blood sampling was done on every alternate day. After

PRID removal, these procedures were carried out at 24 h interval till the day of ovulation and thereafter, on days 5, 10, 15, 21 and 42 post-ovulation. Compared to initial concentrations, all treated heifers had high ($P<0.05$) plasma progesterone during the period of PRID placement. All the heifers exhibited estrus which persisted for 48 or 72 h subsequent to PRID removal. All the heifers ovulated by 48 ($n=4$) or 72 h ($n=2$) after PRID removal. Fertility (FSCR) after PRID treatment observed in this study was dependent upon the life span of ovulatory follicle. Heifers ($n=3$) only with short life span of ovulatory follicle became pregnant. Compared to ovulatory follicle of long life span, the one with short life span produced better post-ovulation luteal profile (CL size and plasma progesterone). In conclusion, ovulatory estrus can be successfully induced following PRID treatment of anestrus buffalo heifers and heifers can be bred at 48 h and 72 h (if dominant follicle present) subsequent to PRID removal. Fertility depends upon the life span of ovulatory follicle during and post-PRID period.

0117. Honparkhe, M; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Ghuman, S. P. S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Dadarwal, D; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Singh, Jagir; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Dhaliwal, G. S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Embryonic mortality and luteal profile in buffaloes administered GnRH at the onset of estrus or hCG 5 days after AI. Indian Journal of Animal Sciences (India) v.79(8) p.778-780 KEYWORDS: FOETAL DEATH. MORTALITY. GNRH. HCH. WATER BUFFALOES. The aim of the present trial was to test the effects of 2 treatments in buffaloes, in an attempt to sustain the plasma progesterone and hence possibly reduce the embryonic mortality rates. Treatment 1 consisted of a GnRH i.m. injection (buserelin, 0.02 mg) at the onset of estrus and treatment 2 consisted of a 3000 IU hCG i.m. injection at day 5 after artificial insemination (AI). A set of 27 Murrah buffaloes from the same herd were assigned in different groups as: controls, GnRH and hCG. Buffaloes were inseminated 8-10 h after the onset of estrus and thereafter AI was repeated once or twice at 24 h interval based upon the occurrence of ovulation. Pregnancy status was assessed by transrectal ultrasonography at day 42 post-AI. Compared to controls, data of hCG group showed stimulation of luteal function without any reduction of the embryonic mortality rates, whereas data of GnRH group show less embryonic mortality rate without any stimulation of luteal functions.

0118. Das, Hiramoni; Assam Agricultural University, Khanapara (India) Dutta, D.J; Assam Agricultural University, Khanapara (India) Sarmah, B.C.; Assam Agricultural University, Khanapara (India) Bhattacharaya, B.N.; Assam Agricultural University, Khanapara (India) Deka, B.C.; Assam Agricultural University, Khanapara (India). Serum concentration of certain macro nutrients in mineral supplemented prepubertal heifers. Indian Journal of Animal Sciences (India) v.78(1) p.51-53 KEYWORDS: MINERAL NUTRIENTS. SUPPLEMENTS. HEIFERS. OESTROUS CYCLE.

All the heifers in the treated group exhibited pubertal oestrus following supplemented strategic minerals while control (untreated) heifers failed to show. The mean serum calcium (Ca) and magnesium (Mg) concentrations in both treated and control group of prepubertal heifers showed no significant differences among different days of mineral supplementation except on day 150 of supplementation for serum Ca between treated and control group. A significant difference was observed in the mean serum inorganic phosphorus (Pi) concentrations among different days of mineral supplementation in treated group of heifers and they overcome the critical level of serum inorganic phosphorus after day 90 of supplementation. A significantly higher value of serum Ca and Pi were recorded on day of pubertal oestrus as compared to prior to oestrus and day 9 post oestrus. The serum Mg concentration on day of oestrus was also higher with no significant variation when compared.

0119. Tandle, M.K.; KVAFSU, Veterinary College, Department of Animal Reproduction, Gynecology and Obstetrics, Bidar (India) Honnappagol, S.S.; KVAFSU, Veterinary College, Department of Animal Reproduction,

Gynecology and Obstetrics, Bidar (India) Ramachandra, S. G.; Indian Institute of Science, Bangalore (India) Nadoor, Prakash; KVAFSU, Veterinary College, Department of Pharmacology and Toxicology, Bidar (India). Effect of hcg supplementation on progesterone level and fertility in deccani sheep. Indian Veterinary Journal (India) v.85 (1) p.26-27 KEYWORDS: HCH. PROGESTERONE. FERTILITY. SHEEP.

Twelve ewes of Deccani breed in 1-3 parity were randomly divided into treatment and control groups (6 each). The ewes of treatment group received hCG on day 12 following natural breeding. The pregnant ewes of treatment group exhibited higher level of progesterone on the days 11, 13 and 23 of the cycle in relation to the animals of the same group that did not conceive. The mean plasma progesterone levels on the day of estrus in the ewes of control group was 0.45 ± 0.11 ng / ml which gradually went on increasing with the advancement of cycle and the peak level of 1.38 ± 0.07 ng/ml was encountered on day 23 of the cycle. The ewes of treatment group that received hCG registered considerably higher lambing percentage of 66.67 while the none of the ewe of the control group conceived.

0120. Katakataware, M.A.; National Research Centre on Yak, Dirang (India) Pourouchottamane, R.; National Research Centre on Yak, Dirang (India) Borah, B.K.D.; National Research Centre on Yak, Dirang (India) Saikia, P.; National Research Centre on Yak, Dirang (India) Borah, S.; National Research Centre on Yak, Dirang (India) Deka, B.C. Sarkar, M.; National Research Centre on Yak, Dirang (India). Sexual behavior of Yak Bulls. Indian Veterinary Journal (India) v.85 (1) p.95-96 KEYWORDS: SEXUAL BEHAVIOUR. YAKS. SEMEN COLLECTION.

Several factors like age, season, sex of dummy, handling of bull etc. affects the sexual behaviour of the bulls. The results obtained in the present study can be considered as a baseline reference for selection of yak bulls for semen collection.

0121. Krishnamoorthy, P.; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India) Sakthivelan S.M.; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India) Balachandran, C.; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India) B. Murali Manohar; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India). Serum copper and zinc concentrations in Dogs. Indian Veterinary Journal (India) v.85 (1) p.101-102 KEYWORDS: COPPER. ZINC. DOGS.

Copper is an essential mineral present in the blood stream which is vital for growth, host defense mechanisms, bone strength, red and white cell maturation, ion transport, cholesterol and glucose metabolisms, myocardial contractility and brain development. Zinc is an important cofactor and modulator of many critical biological functions. One obvious factor that will affect copper and zinc concentrations in serum is the dietary intake and alterations caused by stress, starvation and various drugs (Fisher, 1977). Another important factor, which affects serum copper and zinc in dogs, is the age of the subject (Butrimovitz and Purdy, 1979). Hence, a study was carried out to determine the serum copper and zinc concentrations in dogs.

0122. Ghosh, M.K.; National Research Centre on Yak, Dirang (India) Konwar P.; National Research Centre on Yak, Dirang (India) Bandyopadhyay, S.; National Research Centre on Yak, Dirang (India) Das, H.K.; National Research Centre on Yak, Dirang (India) Sarkar, M.; National Research Centre on Yak, Dirang (India) F.A. Ahmed; National Research Centre on Yak, Dirang (India) Bhattacharya, M.; National Research Centre on Yak, Dirang (India). Micromineral and tocopherol profiles during gestation and postpartum in Yak. Indian Veterinary Journal (India) v.86(3) p.265-267 KEYWORDS: LIVESTOCK. YAKS. FERMENTATION. TOCOPHEROLS. PREGNANCY. PERINATAL PERIOD.

The study on yaks revealed that serum Cu level was invariably low both in pregnancy and postpartum period. However serum Zn profile was significantly low during most of the gestation period than that of postpartum. Serum Fe level was also lower pregnancy than the postpartum period. It also revealed that there was significant rise of tocopherol level in pregnant yaks than the postpartum yarks.

0123. Perveen, Shagutta; Bihar Veterinary College, Department of Veterinary Physiology, Patna (India)Singh, C.; Bihar Veterinary College, Department of Veterinary Physiology, Patna (India)Hoda, M.Z.; Bihar Veterinary College, Department of Veterinary Physiology, Patna (India). Effect of hypophyseal and gonadal hormones on anoestrus buffaloes. Indian Veterinary Journal (India) v.86(3) p.268-269 KEYWORDS: PITUITARY HORMONES. SEX PHEROMONES. OESTROUS CYCLE. PERINATAL PERIOD. WATER BUFFALOES.

The observations recorded during the present experiment revealed that the anestrus buffalo cows can be brought into fertile estrus through combined treatment of prostaglandin and progesterone on 0 and 5th or 10th day respectively. The administration of GnRH in progesterone primed different size of follicles and the large size buffaloes 5days later brought the anestrus buffaloes to fertile estrus within 2 to 5 days.

0124. Nema, S.P.; SDAU, College of Veterinary Science and Animal Husbandry, Dept. of Animal Reproduction, Gynaecology and Obstetrics, Gujarat (India)Dhami, A.J.; SDAU, College of Veterinary Science and Animal Husbandry, Dept. of Animal Reproduction, Gynaecology and Obstetrics, Gujarat (India)Kavani, F.S.; SDAU, College of Veterinary Science and Animal Husbandry, Dept. of Animal Reproduction, Gynaecology and Obstetrics, Gujarat (India). Effect Of Thawing Regime On Post-Thaw Quality Of Ram Semen Frozen In Tris, Citrate And Phosphate Based Diluents. Indian Veterinary Journal (India) v.86(5) p.478-480 KEYWORDS: THAWING. CITRATES. PHOSPHATES. RAMS. SPERMATOZOA.

To study the optimum thawing protocol for freezing of ram semen, a factorial experiment was carried out using 3 buffers (viz, tris fructose citric acid egg yolk glycerol - TFCEG, phosphate buffer glucose fructose sodium citrate potassium chloride egg yolk glycerol - a synthetic phosphate medium - phos, and sodium citrate glucose egg yolk glycerol - SCGEG), 3 thawing temperatures ($37\pm$, $40\pm$ and $50\pm$ C) and 2 thawing periods (8 and 15 sec) for freezing and thawing of semen of 5 Patanwadi rams. Irrespective of diluents used, the optimum - thawing regime was $40\pm$ C temperature for 8 seconds in terms of post thaw motility and acrosome score for French medium straws. Among the 3 diluents used, TFCEG appeared the best for cryopreservation of ram semen.

0125. Bansal, R.S.; College of Veterinary and Animal Science, Department of Animal Reproduction, Gynaecology and Obstetrics, Rajasthan (India)Pal, Yash; College of Veterinary and Animal Science, Department of Animal Reproduction, Gynaecology and Obstetrics, Rajasthan (India)Pareek, P.K.; College of Veterinary and Animal Science, Department of Animal Reproduction, Gynaecology and Obstetrics, Rajasthan (India)Gupta, A.K.; College of Veterinary and Animal Science, Department of Animal Reproduction, Gynaecology and Obstetrics, Rajasthan (India). Progesterone profile during various physiological stages in mares. Indian Veterinary Journal (India) v.86(5) p.481-483 KEYWORDS: PROGESTERONE. PHYSIOLOGICAL FUNCTIONS. MARES. OESTROUS CYCLE. PREGNANCY. FOALS. Progesterone profile during estrous cycle, pregnancy and foal heat were studied in Thoroughbred and Indigenous mares. The mean progesterone level on the day of ovulation was 0.33 and 0.37 ng/ml in Thoroughbreds and Indigenous mares, respectively and reached to highest level of 9.12 and 9.58 ng/ml on day 10 of estrous cycle, respectively. Progesterone levels ranged between 1.06 to 15.60 and 1.17 to 16.07 ng/ml upto 90 days of gestation and then decreased during rest of gestation in ' Thoroughbreds and Indigenous mares, respectively. The progesterone levels were high on the day of foaling and decreased to the level of 0.30 to 0.32 ng/ml on day 9 post-foaling. The pattern of progesterone change during various physiological conditions was similar in both the breeds of horses.

0126. Ramayya, P. Jagapathi; GADVASU, College of Veterinary Science, Department of Anatomy and Histology, Ludhiana (India)Singh, Opinder; GADVASU, College of Veterinary Science, Department of Anatomy and Histology, Ludhiana (India)Roy, K.S.; GADVASU, College of Veterinary Science, Department of Anatomy and Histology, Ludhiana (India). Histo enzymic distribution of oxidoreductases in thymus of prenatal buffalo. Indian Veterinary Journal (India) v.86(5) p.503-505 KEYWORDS: LYMPHOCYTES. THYMUS GLAND. PERINATAL PERIOD. ENZYMES. WATER BUFFALOES. FOETUS. OXIDOREDUCTASES.

The distribution of oxidoreductases was studied in thymus of prenatal buffaloes. Succinic dehydrogenase (SDH), lactic dehydrogenase (LDH), malic dehydrogenase (MDH), glucose 6 - phosphate dehydrogenase (G-6-PD), reduced nicotinamide adenine dinucleotide phosphate diaphorase activity (NADPH - diaphorase) was strong in cortex, intense in medulla and Hassall's corpuscles of thymus in all three groups (26 - 254 days of age) under study. Cytochrome oxidase (CYO) activity was strong in cortex and intense in medulla, whereas Hassall's corpuscles showed weak CYO activity in prenatal life.

0127. Mohan, N.H.; National Research Centre on Pigs, Guwahati (India) Sarmah, B.C; National Research Centre on Pigs, Guwahati (India) Tamuli, M.K.; National Research Centre on Pigs, Guwahati (India) Das, Anubrata; National Research Centre on Pigs, Guwahati (India) Bujarbaruah, K.M.; National Research Centre on Pigs, Guwahati (India) Change in electrophoretic profile of porcine spermatozoal proteins during epididymal transit. Indian Journal of Animal Sciences (India) v.78(5) p.446-448 KEYWORDS: TESTES. SPERMATOZOA. GOATS.

Mammalian spermatozoa acquire their motility and ability to fertilize during their transit through epididymis and are characterized with functional changes in sperm membrane proteins. The present study was undertaken to electrophoretically characterize proteins in epididymal and testicular sperms and cauda epididymal fluid to understand spermatozoal maturation process in porcine testes. The number of protein bands in testicular, epididymal spermatozoa and epididymal fluid were 22, 17 and 17 respectively. The proteins having molecular weight (MW) of 105, 97, 89, 79, 73, 64, 32, 29, 24, 22, 20 and 18 kilodaltons, which were present in the testicular spermatozoa could not be identified in the epididymal sperms. On the other hand, the epididymal spermatozoa expressed proteins having MW of 102, 93, 82, 66, 62, 55, 28 and 21 kilodaltons, which were absent in testicular spermatozoa. The epididymal fluid shared proteins having MW of 55, 52, 42 and 39 kilodaltons with testicular and epididymal spermatozoa. The elucidation of physiological events related to protein modification, appearance and masking require further studies.

0128. Kharche, S.D.; Indian Veterinary Research Institute, Izatnagar (India) Majumdar, A.C.; Indian Veterinary Research Institute, Izatnagar (India) Agarwal, S.K.; Indian Veterinary Research Institute, Izatnagar (India) Sharma, G.T.; Indian Veterinary Research Institute, Izatnagar (India). Ovarian and endocrine response following pretreatment with human chorionic gonadotrophin and estradiol valerate in PMSG treated crossbred cows. Indian Journal of Animal Sciences (India) v.78(5) p.449-452 KEYWORDS: SUPEROVULATION. PMSG. ANIMAL EMBRYOS.

The effect of hCG and estradiol valerate on endocrine profiles and superovulatory response of crossbred cows treated with PMSG was studied. Cyclic crossbred cows (22) were treated with a single i/m administration of prostaglandin F₂ (2 ml prosolvin). The 18 animals that exhibited estrus within 72-96 h prostaglandin F₂ administration were selected for the superovulatory treatments. In treatment 1, cattle (10) were administered 250 IU hCG i/m on day 9 (day 0 = estrus), 2 mg estradiol valerate on day 10, and 2000 IU PMSG on day 11 of the estrous cycle. Treatment 2 animals (8) were not pre-treated and were administered 2000 IU PMSG on day 11. Both groups were treated with PG F₂ a 48 h after PMSG treatment. The animals were exposed to a teaser bull in the morning and evening to aid detection of estrus. The interval from prostaglandin treatment to estrus was 43.5 ± 2.05 h for treatment 1 and 52.8 ± 4.22 h for treatment 2. The crossbred cows were inseminated 3 times at 12 h intervals during estrus and embryos collected non-surgically at day 8 of the superovulatory estrus. The pretreatment of hCG and estradiol valerate in a PMSG treated crossbred cows resulted in a significantly higher levels of progesterone and estradiol 24 h after administration of hCG and estradiol valerate. Treatment 1 crossbred cows also showed an increase in the number of corpora lutea, total ova and transferable embryos recovered as compared to treatment 2. The results indicated that the pretreatment with hCG and estradiol valerate in a PMSG treated crossbred cows showed a significant increase in plasma level of progesterone and estradiol and an improvement in the yield of transferable embryos from cycling crossbred cows.

0129. Talukdar, S R; Assam Agricultural University, Guwahati (India) Bhattacharya, M; Assam Agricultural University, Guwahati (India) Sarmah, B C; Assam Agricultural University, Guwahati (India). Histoenzymic study on cervix in prepubertal and induced pubertal local Assam she goat. Indian Journal of Animal Sciences (India) v.78(5) p.489-492 KEYWORDS: GOATS. ADOLESCENCE (ANIMALS). SEXUAL MATURITY. ENZYME ACTIVITY.

The study was conducted on cervix from 21 Assam local she goats in prepubertal and exogenous hormonally induced pubertal groups. The prepubertal animals meant for induction were administered PMSG after priming, and HCG just after the onset of estrus. Cervical tissues were collected on day 3 following behavioral estrous exhibition by the animals. The histochemical reaction for Malate dehydrogenase, lactic dehydrogenase, glucose-6-phosphate dehydrogenase D5-3-hydroxysteroid dehydrogenase, 17-hydroxysteroid dehydrogenase and cytochrome oxidase were observed significantly in the cervical epithelium of all goats with minor variation in location of enzymes between age groups. The reaction for succinic dehydrogenase in cervical epithelia was not well pronounced in all animals. The presence of these enzymes were not well marked in lamina propria, tunica sub mucosa and tunica serosa; however, tunica muscularis exhibited weak to strong intensity of reaction at different ages.

0130. Meenambigai, T.V.; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India)Veenavardhini, S. Vishnu; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India)Palaniswamy A.; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India)Brindha, K.; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India)Satheshkumar, S.; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India)Rangasamy, S.; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India)Kumanan, K.; Madras Veterinary College, Centralized Embryo Biotechnology Unit, Department of Animal Biotechnology, Chennai (India). Expression of gap junctional protein - connexin 43 in buffalo cumulus oocyte complexes. Indian Veterinary Journal (India) v.86(9) p.890-891 KEYWORDS: PROTEINS. WATER BUFFALOES. OVARIES. OVA. PCR. RNA.

Buffalo ovaries collected from slaughter house were used for the retrieval of oocytes. The retrieved oocytes were graded and cultured for maturation in synthetic oviductal medium (SOF) for 24 h. Only A and B grade oocytes were used for maturation. As a result of maturation there was expansion of 5-6 layers of cumulus cells around the oocytes. The expression of gap junctional protein - connexin 43 in matured cumulus oocytes complexes using gene specific primers by reverse transcriptase polymerase chain reaction (RT-PCR) is reported.

0131. Sagar, P. Vidya; NTR College of Veterinary Science, Department of Veterinary Surgery and Radiology, Gannavaram (India)Srenu, Makkena; NTR College of Veterinary Science, Department of Veterinary Surgery and Radiology, Gannavaram (India)Kumar, R.V. Suresh; NTR College of Veterinary Science, Department of Veterinary Surgery and Radiology, Gannavaram (India)Ch. Srilatha; NTR College of Veterinary Science, Department of Veterinary Surgery and Radiology, Gannavaram (India). Management of uterine torsion in murrah buffaloes. Indian Veterinary Journal (India) v.86(9) p.903-905 KEYWORDS: UTERINE TORSION. WATER BUFFALOES. ANTIOXIDANTS. CAESAREAN SECTION.

Three different sites for caesarean section to treat uterine torsion in buffaloes were compared. Right paramedian was found to be the best for its merits over others like midventral and right lower flank. Administration of fluids, antibodies and oxytocin hastened the recovery. Supplementation of vitamin E and selenium showed good recoveries following caesarean section in operated animals. 1183. Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar, (India)Mohindroo, J.; Indian Veterinary Research Institute, Izatnagar, (India)Aithal, H.P.; Indian Veterinary Research Institute, Izatnagar, (India). Physiological, urological

changes and surgical management of urethral obstruction in bovine. Indian Veterinary Journal (India) v.86(9) p.906-908 KEYWORDS: UROLITHIASIS. BOVINAЕ.

Surgical management of urethral obstruction was carried out in 12 clinical cases (9 buffalo calves, 2 bovine calves and 1 bullock). The calves aged 2 to 7 months presented soft concretions in almost entire length of the urethral passage. In 4 animals the catheter was dislodged within 72 hours of operation. Four animals did not respond to the treatment favourably and died within 4-5 days. Whereas, 8 animals recovered uneventfully.

0132. Ghuman, S.P.S.; Guru Angad Dev Veterinary and Animal Sciences University, Department of Animal Reproduction, Gynaecology and Obstetrics, Ludhiana (India) Dadarwal, D.; Guru Angad Dev Veterinary and Animal Sciences University, Department of Animal Reproduction, Gynaecology and Obstetrics, Ludhiana (India) Honparkhe, M.; Guru Angad Dev Veterinary and Animal Sciences University, Department of Animal Reproduction, Gynaecology and Obstetrics, Ludhiana (India) Singh, Jagir; Guru Angad Dev Veterinary and Animal Sciences University, Department of Animal Reproduction, Gynaecology and Obstetrics, Ludhiana (India) Dhaliwal, G.S.; Guru Angad Dev Veterinary and Animal Sciences University, Department of Animal Reproduction, Gynaecology and Obstetrics, Ludhiana (India). Production of polyclonal antiserum against progesterone for radioimmunoassay. Indian Veterinary Journal (India) v.86(9) p.909-911 KEYWORDS: POLYCLONAL ANTIBODIES. IMMUNE SERUM. PROGESTERONE. RADIOIMMUNOASSAY. RABBITS. ANTIBODIES.

The aim of this study was to develop a sensitive and specific progesterone antiserum for use in progesterone radioimmunoassay. Antigen conjugate progesterone - 11 alpha - OH - hemisuccinate - BSA was injected intradermally into flanks of seven Chinchilla male rabbits. To each rabbit, 150 ug antigen conjugate diluted in 600 μ l of complete or incomplete Freund's adjuvant was administered for initial or for booster immunizations, respectively. Four booster doses were administered at 20 day intervals. Blood was drawn from rabbits and tested for antibody generation. After characterizing the raised progesterone antiserum, it was concluded that owing to acceptable sensitivity and specificity, this antiserum can be successfully used in progesterone radioimmunoassay.

0133. Rao, M. Mutha; S. V. Veterinary University, Livestock Research Station. Andhra Pradesh (India) Naidu, K. Venugopal; S. V. Veterinary University, Livestock Research Station. Andhra Pradesh (India) Y. Umamahesh; S. V. Veterinary University, Livestock Research Station. Andhra Pradesh (India) Rao, K. Babu; S. V. Veterinary University, Livestock Research Station. Andhra Pradesh (India). Influence of extrinsic factors on superovulatory response in Ongole cows. Indian Veterinary Journal (India) v.86(9) p.915-917 KEYWORDS: COWS. SUPEROVULATION. ANIMAL EMBRYOS.

The objective of the present study was to evaluate the effect of some extrinsic factors on ovarian responses in Ongole cows. 55 cyclic, parous cows were subjected to embryo collection on day 7 of superovulatory estrus induced by using follitropin - V, 200 mg in graded dose over 4 days. Age/parity did not affect the superovulatory response. The total ova / embryo recovery was lower in winter compared to summer and rainy seasons. Stress of lactation was evident as the ovulation rate; total ova/embryo recovery and viable embryo production were significantly higher in dry cows.

0134. Pal, Yash; National Research Centre on Equines, Equine Production Campus, Bikaner (India) Legha, R.A.; National Research Centre on Equines, Equine Production Campus, Bikaner (India). Seminal characteristics of Marwari stallions. Indian Veterinary Journal (India) v.86(9) p.918-920 KEYWORDS: SEMEN. STALLIONS. HORSES. PH. SPERMATOZOA.

The baseline information on physical, morphological and biochemical parameters of Marwari stallions semen is presented and discussed.

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0135. Fani, F.A.; Maharashtra Animal and Fishery Science University, Nagpur (India). Post Graduate Institute of Veterinary and Animal Science, Akola Department of Veterinary Surgery and Radiology Mehesare, S.P.; Maharashtra Animal and Fishery Science University, Nagpur (India). Post Graduate Institute of Veterinary and Animal Science, Akola Department of Veterinary Surgery and Radiology Pawshe, D.B.; Maharashtra Animal and Fishery Science University, Nagpur (India). Post Graduate Institute of Veterinary and Animal Science, Akola Department of Veterinary Surgery and Radiology Khan, K.M.; Maharashtra Animal and Fishery Science University, Nagpur (India). Post Graduate Institute of Veterinary and Animal Science, Akola Department of Veterinary Surgery and Radiology Jadhav, N.D.; Maharashtra Animal and Fishery Science University, Nagpur (India). Post Graduate Institute of Veterinary and Animal Science, Akola Department of Veterinary Surgery and Radiology. Haematological and biochemical changes during epidural xylazine hydrochloride anaesthesia in dogs. *Veterinary World (India)* v.1(6) p. 175-177 KEYWORDS: DOGS. ANAESTHESIA. XYLAZINE. ANALGESICS. BLOOD. BIOCHEMISTRY.

Atropine sulphate was given 0.04 mg/kg body weight 1/M 15 minutes prior to the xylazine HCL anaesthesia 0.75 mg/kg b.wt at the lumbosacral epidural space and haematological and biochemical parameters were evaluated. A significant decrease in haematological parameters viz. TEC, PCV, Hb and non-significant decrease in TLC and platelet count whereas significant increase in ESR was observed. A significant increase in serum glucose value was recorded while the other biochemical parameters like SGOT, SGPT, and BUN significantly altered whereas no change in serum creatinine value was also recorded.

0136. Manjulkar, G.P.; Pet Clinic and Care Centre, Akola (India). Zade, P.R.; Pet Clinic and Care Centre, Akola (India). Pathak, V.P.; Pet Clinic and Care Centre, Akola (India). Use of PVC sheet for repair of fracture in eagle. *Veterinary World (India)* v. 1(4) p. 119 KEYWORDS: EAGLES. FRACTURES. FRACTURE FIXATION. POLYVINYL CHLORIDE.

0137. Vihan, V.S.; Central Institute for Research on Goat, Mathura (India) Kumar, Ashok; Central Institute for Research on Goat, Mathura (India) Arora, Niddhi; G.B Pant University of Agricultural & Technology, Pantnagar (India). College of Animal & Veterinary Sciences. In Vitro larvicidal activity of various ethanomedicinal plants extract on *Haemonchus contortus*. *Indian Journal of Animal Sciences (India)* v.77(12) p.1219-1223 KEYWORDS: IN VITRO. HAEMONCHUS CONTORTUS. DRUG PLANTS. AZADIRACHTA INDICA. CINNAMOMUM CAMPHORA. ANTHELMINTICS.

In vitro studies were conducted to determine possible direct larvicidal effect against *Haemonchus contortus* of various extracts of ethanomedicinal plants. A larval mortality/paralytic assay was used to investigate in vitro activity. The Lc50 values of various plant extracts were calculated. The extracts were evaluated at 3 concentrations (2, 4 and 8 mg/ml). There was highly significant difference ($p < 0.01$) in larvicidal activity between concentrations of all the extracts except aqueous extract of *Mallotus philippinensis*. Chloroform extract of *Butea frondosa* and ethanol extract of *Tagetes patula* had also showed highly significant difference in larvicidal activity within various time intervals (24, 48 and 72h). Plant extract of *M. philippinensis* (chloroform), *B. frondosa* (chloroform), *Bauhinia tomentosa* (aqueous, ethanol) and *Thuja sinensis* (ethanol) have showed highest larvicidal activity (50-60%) as their Lc50 values were lower compared to other plant extracts. Results indicated that some plant extracts showed promising anthelmintic activity (in vitro) and can be used in vivo as anthelmintic in goats.

0138. Vohra, S.; College of Veterinary Science, Jammu (India). Dept. of Parasitology. Agrawal, M.C.; Jawarharlal Nehru Krishi Vishwa Vidyala, Jabalpur (India). Evaluation of two post mortem techniques for diagnosis of hepatic schistosomiasis. *Indian Journal of Animal Sciences (India)* v.77(12) p.1228-1232 KEYWORDS: SHEEP. DIAGNOSIS. POSTMORTEM EXAMINATION.

Hepatic schistosomosis was underestimated due to faulty procedures in diagnosing it both in living and dead animals hence 2 simple methods were tested in dead sheep and goats for schistosomosis. In the first method, whole mesentery was chopped into small pieces for keeping in normal saline for 6-8 h at $37\pm C$; saline was later examined for presence of blood flukes. This method revealed 68 (34.) mesenteries of 200 goats being positive for *Schistosoma spindale*, *S.indicum* or *S.incognitum* flukes with recovery varying from 1-28 flukes/mesentery with higher concentration in heterologous infection. Of 50 sheep, 22(44) mesenteries contained *S.spindale* and/or *S.indicum* flukes with a range of 1-20 flukes per mesentery with higher concentration in heterologous infection. The other method was examination of intestinal scrapings which revealed 113 (66.5.) goats and 38 (76.) sheep positive for blood fluke eggs. Black streaks grossly present on mucosal surface of large intestine were full of blood fluke eggs hence were specially examined. Comparatively small intestine detected lower number of positives with lower egg concentration whereas ileocaecal junction and caecum provided maximum positives with highest egg concentration; *S.indicum* eggs were more in comparison to *S. spindale* eggs.

0138. Dumka, Vinod Kumar; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Sandhu, Harpal Singh; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Rajput, Neetu; College of Veterinary Science and Animal Husbandry, Jabalpur (India). Dept. of Pharmacology and Toxicology.. Effect of gatifloxacin on the pharmacokinetics of meloxicam in buffalo calves. Indian Journal of Animal Sciences (India) v.77(12) p.1270-1272 KEYWORDS: CALVES. MEDICINAL PROPERTIES. IMMUNOSUPPRESSION.

Pharmacokinetics and dosage regimen of meloxicam were determined in buffalo calves after its single subcutaneous administration of 0.5 mg.kg^{-1} followed by intravenous injection of gatifloxacin (4 mg.kg^{-1}). The concentration of meloxicam in plasma was estimated spectrophotometrically and the pharmacokinetic parameters were calculated by applying one-compartment open model. The peak plasma drug concentration was attained at 4 h and minimum therapeutic plasma concentration was maintained 0.5 to 14 h post administration. Slow absorption and limited tissue distribution was evident by the low values of absorption rate constant ($0.846\pm 0.1 \text{ h}^{-1}$) and V_d area ($0.069\pm 0.004 \text{ L.kg}^{-1}$). The elimination half-life and total body clearance were $10.5\pm 0.25 \text{ h}$ and $4.57\pm 0.25 \text{ ml.kg}^{-1}.\text{h}^{-1}$, respectively. A suitable subcutaneous dosage regimen for desired minimum therapeutic concentration of meloxicam was calculated to be 0.58 mg.kg^{-1} followed by 0.46 mg.kg^{-1} at 24 h intervals when prescribed with gatifloxacin in buffalo calves. The results of present study revealed that pharmacokinetics of meloxicam was significantly altered by concurrent administration of gatifloxacin in buffalo calves.

0139. Maiti, S.K.; Indian Veterinary Research Institute, Uttar Pradesh (India). Sharma, A.; Indian Veterinary Research Institute, Uttar Pradesh (India). Kumar, N.; Indian Veterinary Research Institute, Uttar Pradesh (India). Gupta, O.P.; Indian Veterinary Research Institute, Uttar Pradesh (India). Sharma, A.K.; Indian Veterinary Research Institute, Uttar Pradesh (India).. Effect of ultrasound and interferential therapies on hindquarter weakness in dogs. Indian Journal of Animal Sciences (India) v.77(12) p.1273-1276 KEYWORDS: DOGS. ULTRASONICS. INTERFERONS. INFLAMMATION.

Ultrasound and interferential therapy on hindquarter weakness was studied in 15 adult dogs of either sex divided equally into 3 groups. In the group 1, pulsed ultrasound therapy was applied 2 watt/cm^2 for 10 min/day thrice in a week, whereas, in group 2, interferential therapy was given at the base frequency of 100Hz, spectrum frequency-50 for 10 min thrice in a week along with conventional therapy. In control group (3) only conventional therapy (neurostimulant and analgesia) was given. Maximum recovery was observed in the group 2, followed by group 1 and then group 3.

0140. Bedi, J.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Sharma, J.K.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Gill, J.P.S; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Aulakh, R.S.; Guru Angad Dev Veterinary and Animal Science

University, Ludhiana (India). Sharma, C.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Gupta, V.K.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Seroepidemiological survey of Brucella agglutinis in animal handlers in Punjab, India. Indian Journal of Animal Sciences (India) v.77(12) p.1283-1285 KEYWORDS: BRUCELLOSIS. ZONOSE. VETERINARIANS. DISEASE SURVEILLANCE. PUNJAB.

The study aimed at determining the seroprevalence of human brucellosis by serological tests in a region on Punjab where domestic animal farming and agriculture is main occupation. Human blood samples (905) from animal handlers were screened for brucellosis; and 96 (10.6%) showed presence of Brucella abortus by RBPT and STAT test. In STAT test 67 out of 96 positive individual were termed as positive cases. In the study 6.25% veterinary doctors, 7.9% veterinary pharmacist and 8.8% of class IV employees were found positive for brucella antibodies. In the present study disease symptoms were highly significantly associated with disease prevalence.

0141. Singh, R; Indian Veterinary Research Institute, Izatnagar (India) Pandey, A. B.; Indian Veterinary Research Institute, Izatnagar (India) Chandra, D; Indian Veterinary Research Institute, Izatnagar (India) Singh, K. P.; Indian Veterinary Research Institute, Izatnagar (India) Mehrotra, M. L.; Indian Veterinary Research Institute, Izatnagar (India). Epidemiology of malignant form of foot-and-mouth disease in susceptible cattle and buffalo population of Punjab and Uttar Pradesh. Indian Journal of Animal Sciences (India) v.78(1) p.3-7 KEYWORDS: FOOT AND MOUTH DISEASE. CATTLE. WATER BUFFALOES. PUNJAB. UTTAR PRADESH. INFECTION. DOMESTIC ANIMALS. WILD ANIMALS. EPIDEMIOLOGY.

The unusual heavy mortality in cattle and buffaloes involving 140 villages in 4 blocks of Moga district, 25 villages under Zira subdivision (Ferozpur), several others in Ludhiana and Faridkot of Punjab, and more than 17 villages in Bagpat (7 villages), Meerut (8 villages), Muzaffarnagar (1 village) and Ghaziabad (1 village) of Uttar Pradesh were investigated during February and March 1998. Altogether 3,663 cattle and buffaloes died and more than 6,000 others got affected in Moga (Dattiwala village), Ferozpur (Rainwala village), Faridkot, and Ludhiana (Shah Bucker and Mohie villages) districts. In UP, 104/12150 cattle and buffaloes had died in Basuli (Baghpat), 60/12500 in Bhamori (Meerut) and 60/6000 in Kharad (Muzaffarnagar) villages. The affected animals showed high fever (104-105±F), anorexia, dullness, dehydration, stomatitis, frothy/ropy salivation and lameness. The buccal mucosa, tongue, rumen and the skin of hooves were hyperemic and had intact/ruptured or healed vesicles. Few animals also showed vesicles on their teat orifices. In majority of the cases, necrotizing non-suppurative myocarditis (tigroid heart) was recorded in association with presence of serosanguinous fluid in the intestinal lumen. Sudden death, severe congestion of intestines and lungs were confused with pasteurellosis. The immunocapture ELISA assays in tissues from both the states detected FMD type O virus. However, no other pathogenic bacteria/virus could be isolated on culture examination. The affected pigs, that migrated through Dattiwala village (Punjab), were the suspects for FMD virus spread, while a Murrah buffalo translocated from affected area of Punjab was the source of FMD outbreaks in Basuli (Baghpat, Uttar Pradesh). The reasons for wide spread transmission and high mortality (mostly in suckling/weaned, younger and highly productive animals) in cattle and buffaloes at both the places were attributed to conducive cold-foggy weather, rapid trading and mobility of animals, presence of large number of susceptible livestock (pure/crossbred) and involvement of FMD type 'O' virus.

0142. Tripathi, A.K.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India) Rajora, V.S.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India) Gupta, D.K.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India) Shukla, S.K.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Immunomodulatory activity of Ocimum sanctum and its influence on cyclophosphamide induced immunosuppression. Indian Journal of Animal Sciences (India) v.78(1) p. 33-36 KEYWORDS: CYCLOPHOSPHAMIDE. IMMUNOSUPPRESSION. OCIMUM. RATS.

The present investigation communicates the immunomodulatory effects of Ocimum sanctum on cyclophosphamide-induced immunosuppression in rats. The result showed that Ocimum sanctum produced significant

increase in total leukocyte count, per cent lymphocyte count, phocyte count, total proteins, globulins and total immunoglobulin concentrations. However, neutrophils, monocytes, serum albumin and albumin: globulin ratio decreased in treated groups as compared to normal and immunosuppressed rats. Lymphocyte stimulation test revealed significant increase in lymphocyte proliferation in rats administered with extract of the plant.

0143. Sarma, D.K.; Assam Agricultural University, Khanapara (India) Mishra, N.; Assam Agricultural University, Khanapara (India)Rajkumar, K.; Assam Agricultural University, Khanapara (India)Sarma, S.; Assam Agricultural University, Khanapara (India)Singh, N.K.; Assam Agricultural University, Khanapara (India). Isolation and characterization of classical swine fever virus from pigs in Assam. Indian Journal of Animal Sciences (India) v.78(1) p.37-39 KEYWORDS: SWINE FEVER VIRUS. SWINE. ASSAM. SWINE FEVER.

Classical swine fever (CSF) virus in tissue samples of pigs slaughtered for human consumption and from a diseased pig in Assam was isolated and characterized. The virus antigen was detected in tissue samples by sandwich-ELISA. Seven of the 10 ELISA positive tissue samples reacted with bovine viral diarrhoea virus monoclonal antibodies. CSF virus was isolated from 5 of the ELISA positive tissue samples in PK-15 cell line. In RT-PCR amplicons of expected size 288bp could be generated from the ELISA positive samples. Sequence analysis of two samples one each from the slaughtered and diseased pigs confirm the presence of CSF viral RNA.

0144. Abraham, John; College of Veterinary and Animal Sciences, Kerala, (India). Development of a simple electrocautery for field veterinarians. Indian Journal of Animal Sciences (India) v.78(1) p.54-55 KEYWORDS: CASTRATION. RESECTION.

A simple electrocautery instrument was designed and fabricated as advancement in surgical techniques for routine field application. The instrument consists of a 65 watt 230 volt soldering iron with its tip carved to resemble like a Bard parker handle. The use of the instrument resulted in advantages consisting of savings in surgical preparation, suturing and bloodless surgery. Besides, it eliminates the use of post operative antibiotics and could be easily replicated in field conditions economically.

0145. Tamuly, Shantanu; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Saxena, M.K.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Sonal; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Ambwani, T.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Lakhchaura, D.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Multiple drug resistance and plasmid profiling in Salmonella Galiema, Salmonella Typhimurium, Salmonella Virchow and Salmonella Heidelberg. Indian Journal of Animal Sciences (India) v.78(2) p.156-158 KEYWORDS: DRUG RESISTANCE. SALMONELLA. SALMONELLA TYPHIMURIUM. PLASMIDS.

In the study reported here, 30 isolates of Salmonella enterica (6 Galiema, 9 Virchow, 6 Typhimurium and 9 Heidelberg) obtained from poultry fecal and egg samples were analyzed for plasmid pattern and susceptibility to a panel of antimicrobial agents namely carbenicillin, aztreonam, ampicillin, fosfomycin, cefprozic, piperacillin, meropenem, ticarcillin, levofloxacin, cefepime, cefpodoxime, cefdinir, cefixime, chloremphanicol and gentamicin. Intermediated sensitivity was found in 1 isolate of Salmonella Galiema against levofloxacin and in 2 isolates of Salmonella Typhimurium against fosfomycin. While the rest 28 isolates were resistant against all the 15 antibiotics. On plasmid profiling, 85 kb plasmid was common in all the isolates. While this plasmid was absent in the 4 control Salmonella isolates of Salmonella Gallinarum with known sensitivity against all the tested antibiotics. From our preliminary study we have concluded that this plasmid in the Salmonella carries the genes that resulted in multiple drug resistance.

0146. Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar (India)Shahi, Apra; Indian Veterinary Research Institute, Izatnagar (India)Kumar, Naveen; Indian Veterinary Research Institute, Izatnagar

(India)Maiti, S.K.; Indian Veterinary Research Institute, Izatnagar (India). Romifidine alone and in combination with ketamine in sheep. Indian Journal of Animal Sciences (India) v.78(2) p.163-167 KEYWORDS: KETAMINE. SHEEP.

Healthy sheep (10) were divided into equal groups 1 and 2. The onset of action of after administration of romifidine (10 µg kg⁻¹) occurred within 1.5 min. It induced sedation (mild to moderate), analgesia (mild) and motor incoordination, which was sufficient to perform non-invasive procedures in sheep. In group 2, romifidine-ketamine combination produced anaesthesia of 17.25:4.60 min. Muscle relaxation and analgesia was excellent during peak effect. Bradycardia was recorded in both groups which was significant up to 20 min in group 1. Rapid, shallow and apneustic breathing pattern was observed during maximum effect of drugs. Changes in hemato-biochemical parameters were transient. Initial significant increase in mean arterial pressure and central venous pressure was seen in both groups. Electrocardiograms revealed sino atrial block in 3 sheep (3060 min), II degree AV block, sinus arrhythmia (90-120 min), increase PR interval and increase QT interval. Recovery was smooth and uncomplicated in both groups.

0147. A. Topal; Uludag University, Faculty of Veterinary Medicine, Department of Anaesthesia, Bursa (Turkey). Evaluation of sevoflurane and isoflurane anaesthesia in rabbits. Indian Veterinary Journal (India) v.85 (1) p.16-18 KEYWORDS: ANAESTHESIA. RABBITS. HALOTHANE.

Sixteen healthy rabbits were randomly assigned to receive either rapid mask induction and maintenance sevoflurane or isoflurane anaesthesia. Inhaled induction of anaesthesia with sevoflurane was rapid (3 ± 1 min to loss of consciousness) and without any untoward haemodynamic changes or episodes of laryngospasm and struggling. During induction bradycardia, respiration depression and hypoxemia occurred in two groups, but were less severe with sevoflurane than with isoflurane.

0148. Ahmadi, M.R.; Shiraz University, School of Veterinary Medicine, Department of Clinical Sciences, Shiraz, (Iran)Aghil, A.K.; Shiraz University, School of Veterinary Medicine, Department of Clinical Sciences, Shiraz, (Iran). Comparison of three estrus detection methods in cross bred darashuri mares. Indian Veterinary Journal (India) v.85 (1) p.23-25 KEYWORDS: ESTUARIES. MARES.

The objective of the present study was to evaluate the efficiency of three methods of teasing, progesterone levels and rectal palpation in order to detect estrus in mares. Six healthy mares with normal estrous cycle were selected. The estrus of the mares was monitored by RIA progesterone assay, observation of estrus signs near the stallion (teasing) and rectal palpation of cervix, uterus and ovaries in second half of spring. The mean (\pm SD) interval of ovulation to next estrus was measured by three methods mentioned above were 15.25 ± 1.71 , 15.75 ± 2.22 and 16.58 ± 1.77 days, respectively. The mean (\pm SD) interval from initiation of estrus to ovulation for progesterone level was 5.25 ± 2.26 days, 4.66 ± 2.53 days for teasing and 3.83 ± 2.21 days for rectal palpation. There was one dominant follicle bigger than 3 cm in each mare on first day of estrus and there was single ovulation 24 h to 48h before end of estrus signs. Determination of interval from ovulation to next estrus in this study showed that estrus signs could be detected effectively by progesterone assay, teasing and rectal palpation respectively.

0149. K. Anilkumar; Dept. of Animal Breeding and Genetics, College of Veterinary Science, Pookot, Wayanad, Kerala.Raghunandan, K.V.; Kerala Agricultural University, College of Veterinary and Animal Sciences, Centre for Advanced Studies in Animal Genetics and Breeding, Kerala (India)Aravindakshan, T.V.; Kerala Agricultural University, College of Veterinary and Animal Sciences, Centre for Advanced Studies in Animal Genetics and Breeding, Kerala (India). Rapid markers in parentage determination in cattle. Indian Veterinary Journal (India) v.85 (1) p.28-30 KEYWORDS: POLYMORPHISM. GENETIC POLYMORPHISM. CATTLE. SIRE EVALUATION. Twelve RAPD primers were used to study the offspring, dam and sire combinations of crossbred cattle population of Kerala. Three of these primers namely OPA 14, PRG 1 and ILO 526 did not produce any non parent bands in offspring. But the percentage of non parent bands in offspring from 2 to 13.6 for the other

nine primers. It was concluded that RAPD - PCR technique cannot be the method of choice for parentage verification because of presence of non parent bands in offspring.

0150. Eroksuz, Y.; University of Firat, Faculty of Veterinary Medicine, Department of Surgery, Elazig (Turkey)Canpolat, I.; University of Firat, Faculty of Veterinary Medicine, Department of Surgery, Elazig (Turkey). Comparison of propolis to silver sulfadiazine on healing of skin wounds in Rabbits. Indian Veterinary Journal (India) v.86(3) p.273-274 KEYWORDS: PROPOLIS. WOUNDS. HEALING. HISTOPATHOLOGY.

The present study showed the propolis has higher healing performance on experimental full thickness wounds in rabbits compared to silver sulphadiazine and bepanthane cream. 0977. Gosal, Navjot S.; Guru Angad Dev. Veterinary and Animal Science University, College of Veterinary Science, Department of Pharmacology and Toxicology, Punjab (India)Rampal, Satyavan; Guru Angad Dev. Veterinary and Animal Science University, College of Veterinary Science, Department of Pharmacology and Toxicology, Punjab (India) Goyal, Saloni; Guru Angad Dev. Veterinary and Animal Science University, College of Veterinary Science, Department of Pharmacology and Toxicology, Punjab (India)Chaudhary, Rakesh K.; Guru Angad Dev. Veterinary and Animal Science University, College of Veterinary Science, Department of Pharmacology and Toxicology, Punjab (India). Effect of paracetamol on the pharmacokinetics of danofloxacin in buffalo calves. Indian Veterinary Journal (India) v.86(5) p.466-468 KEYWORDS: ANTIBIOTICS. CALVES. INJECTION. MEDICINAL PROPERTIES. The pharmacokinetics of danofloxacin on concurrent administration with paracetamol was investigated in buffalo calves. Danofloxacin and paracetamol were given as single intramuscular dose at a rate of 1.25 and 50 mg/kg body weight, respectively. The dosage regimen of danofloxacin when administered with paracetamol was calculated to be 1.73 mg/kg body weight, followed by 1.60 mg/kg repeated at 12h interval. Based on the present results, it is concluded that paracetamol did not significantly affect the pharmacokinetics and dosage regimen of danofloxacin in buffalo calves.

0151. Murmu, S.; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Dept. of Veterinary Surgery and Radiology, Jharkhand (India)Dass, L.L.; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Dept. of Veterinary Surgery and Radiology, Jharkhand (India)Sharma, A.K.; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Dept. of Veterinary Surgery and Radiology, Jharkhand (India). Anaesthetic Evaluation Of Plain And Hyperbaric Bupivacaine As Epidural Anaesthesia In Dogs. Indian Veterinary Journal (India) v.86(5) p.472-474 KEYWORDS: ANAESTHETICS. DOGS.

Plain bupivacaine hydrochloride and 8. glucose combination (Hyperbaric) was epidurally given in canine and the effects on the basis of various reflexes were studied. It was concluded that 8. glucose bupivacaine solution could be safely used for epidural anaesthesia with better anaesthetic effect.

0152. Lonare, M.K.; College of Veterinary and Animal Sciences, Department of Veterinary Pharmacology and Toxicology, Palampur (India)Varshneya, C.; College of Veterinary and Animal Sciences, Department of Veterinary Pharmacology and Toxicology, Palampur (India)Kurade, N.P.; College of Veterinary and Animal Sciences, Department of Veterinary Pharmacology and Toxicology, Palampur (India)M. Sharma; College of Veterinary and Animal Sciences, Department of Veterinary Pharmacology and Toxicology, Palampur (India)Ramteke, V.D.; College of Veterinary and Animal Sciences, Department of Veterinary Pharmacology and Toxicology, Palampur (India). Evaluation of cell mediated immune response of hippophae rhamnoides in poultry. Indian Veterinary Journal (India) v.86(3) p.247-249 KEYWORDS: CELL MEDIATED IMMUNITY. HIPPOPHAE. POULTRY.

The present study undertaken to study the cellular immune response in seabuckthorn fed White Leghorn broiler chickens which was evaluated by DTH reaction. Both the SBT fed groups showed higher DTH reaction recorded at 24 hr post challenge as compared to control group. Histopathological investigation revealed higher degree of lymphofollicular reaction in the challenged skin of birds from both SBT fed groups.

0153. Malik, V.; UP. Pt. Deen Dayal Upadhyay Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India) Singh, B.; UP. Pt. Deen Dayal Upadhyay Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India). Effects of midazolam supplementation on ketamine anaesthesia in butorphanol + xylazine premedicated horses. Indian Journal of Animal Sciences (India) v.78(5) p.486-488 KEYWORDS: ANAESTHESIA. HORSES. XYLAZINE.

Clinically healthy horses (6) were utilized to evaluate the effect of midazolam supplementation on ketamine anaesthesia in horses premedicated with butorphanol and xylazine. Midazolam supplementation resulted in to slight increase in duration of anaesthesia and a significant improvement in the quality of analgesia, muscular relaxation and depth of anaesthesia with out producing any adverse effect on cardiorespiratory system.

0154. A. Ramesh; Tamil Nadu Veterinary and Animal Sciences University, Centre for Animal Health Studies, Vaccine Research Centre, Viral Vaccines, Chennai (India) Vadivoo, V.S.; Tamil Nadu Veterinary and Animal Sciences University, Centre for Animal Health Studies, Vaccine Research Centre, Viral Vaccines, Chennai (India) Babu, S.Suresh; Tamil Nadu Veterinary and Animal Sciences University, Centre for Animal Health Studies, Vaccine Research Centre, Viral Vaccines, Chennai (India) Saravanabava, K.; Tamil Nadu Veterinary and Animal Sciences University, Centre for Animal Health Studies, Vaccine Research Centre, Viral Vaccines, Chennai (India). Fidelity of the polymerase chain reaction in the detection of sheep pox virus. Indian Veterinary Journal (India) v.86(9) p.886-889 KEYWORDS: PCR. VIRUSES. CAPRIPOXVIRUS. VACCINES. CELL CULTURE. DNA. ELECTROPHORESIS.

The usefulness of a polymerase chain reaction (PCR) assay for the detection of sheep pox virus (SPV) from both clinical samples and infected cell culture was assessed. The assay was used to detect SPV from the clinical samples obtained from suspected sheep pox outbreaks and also from SPV infected cell culture fluid. The PCR assay was sensitive enough to detect a minimum total DNA concentration of 5 ng from SPV scab samples and 40 ng of total DNA from Vero cells infected with SPV and also the assay assured a diagnostic sensitivity of 95.12% and diagnostic specificity of 100%.

0155. Tuteja, F.C.; National Research Centre on Camel, Bikaner (India) Dixit, S.K.; National Research Centre on Camel, Bikaner (India) Pathak, K.M.L.; National Research Centre on Camel, Bikaner (India). In vitro antibacterial activity of medicinal plants. Indian Veterinary Journal (India) v.86(9) p.898-899 KEYWORDS: IN VITRO. ANTIBIOTICS. DRUG PLANTS. CAMELS.

Fresh leaves juices of five traditionally used medicinal plants viz Pee pal (ficus religiosa). Tulsi (Ocimum sanctum), Anar (Punica granatum), Ashwagandha (Withania somnifera), Datura (Datura metel) were tested for antibacterial activity by the agar gel diffusion method. Overall maximum sensitivity was exhibited by Punica granatum and Datura metel (97.7% each) followed by Withania somnifera (88.8%), ficus religiosa (73.3%) and Ocimum sanctum (72.2%).

0156. Maiti, S.K.; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India) Kumar, N.; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India) Sharma, A.K.; Indian Veterinary Research Institute, Division of Surgery, Izatnagar (India). Laparoscopic diagnosis and surgical management of intestinal intussusception in a dog. Indian Veterinary Journal (India) v.86(9) p.953-954 KEYWORDS: ABDOMEN. ABDOMEN. SURGICAL OPERATIONS. INTESTINAL DISEASES. DOGS.

Accurate and confirmative diagnosis of intestinal intussusception by ultrasonography and laproscopy and successful surgical management in a dog is described and discussed.

0157. Suryawanshi, R.V.; Post Graduate Institute of Veterinary and Animal Science, Department of Veterinary Surgery and Radiology, Akola (India) Pawshe, D.B.; Post Graduate Institute of Veterinary and Animal Science, Department of Veterinary Surgery and Radiology, Akola (India) Utage, S.G.; Post Graduate Institute of Veterinary and Animal Science, Department of Veterinary Surgery and Radiology, Akola (India). Papillary

adenocarcinoma of mammary gland in two dogs. Indian Veterinary Journal (India) v.86(9) p.955-956

KEYWORDS: MAMMARY GLANDS. DOGS. SURGICAL OPERATIONS.

Papillary adenocarcinoma of mammary gland and its surgical removal along with cyclophosphamide chemotherapy in dogs was presented and discussed.

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0158. Gadre, A.S.; Nagpur Veterinary College, MAFSU, Nagpur (India). Department of Parasitology)Maske, D.K.; Nagpur Veterinary College, MAFSU, Nagpur (India). Department of Parasitology)Panchbhai, C.G.; Nagpur Veterinary College, MAFSU, Nagpur (India). Department of Parasitology)Gawande, T.R.; Nagpur Veterinary College, MAFSU, Nagpur (India). Department of Parasitology)Kolte, S.W.; Nagpur Veterinary College, MAFSU, Nagpur (India). Department of Parasitology)Sirothia, A.R.; Nagpur Veterinary College, MAFSU, Nagpur (India). Department of Parasitology). Efficacy of Doramectin and Fendendazole against naturally infected dairy animals with parasites at central zone of vidarbha region of Maharashtra state. Veterinary World (India) v.1(4) p.101-102 KEYWORDS: DAIRY CATTLE. HELMINTHOSES. INFECTION. ANTHELMINTICS. MAHARASHTRA.

Comparative efficacy of doramectin and fenbendazole was studied against naturally infected dairy animals with helminth parasites showing clinical symptoms such as rough body coat, emaciation, diarrhoea and weakness etc. Based on the number of days taken for clinico-parasitological cure and the mean reduction EPg, doramectin was found to be superior to fenbendazole.

0159. Mritunjay Kumar; Ranchi Veterinary College, Kanke (India). Department of Veterinary MedicinePallav Shekhar; Ranchi Veterinary College, Kanke (India). Department of Veterinary MedicineHaque, S.; Ranchi Veterinary College, Kanke (India). Department of Veterinary MedicineMahto, D.; Ranchi Veterinary College, Kanke (India). Department of Veterinary Medicine. Feline babesiosis. Veterinary World (India) v. 1(4) p. 120-121 KEYWORDS: BABESIOSIS. AETIOLOGY. EPIDEMIOLOGY. CHEMOPROPHYLAXIS. 0667. Singh, K.P.;

Indian Veterinary Research Institute, Uttar Pradesh (India).Chandra, D.; Indian Veterinary Research Institute, Uttar Pradesh (India).Nayal, Lalit M.; Musk Deer Farm, Bageshwar (India).Chauhan, R.S.; Indian Veterinary Research Institute, Uttar Pradesh (India).. Hepatic fasciolosis and verminous pneumonia in captive musk deer (*Moschus moschus chryogaster*). Indian Journal of Animal Sciences (India) v.77(12) p.1258-1260 KEYWORDS: CERVIDAE. FASCIOLASIS. HELMINTHOSES. PNEUMONIA. POSTMORTEM EXAMINATION.

Deaths due to fasciolosis and verminous pneumonia were reported in 3 adult (5 to 10 years) musk deer (*Moschus moschus chryogaster*) under captivity in Uttarakhand. On Postmortem examinations, livers showed haemorrhagic tracts and covered with gray fibrous plaque. Lung of the one deer were found congested with variable-sized atelectatic and emphysematous areas. Microscopically, liver sections showed necrosis and wide spread haemorrhages with cut sections of flukes and mononuclear cell reaction in parenchyma. In one deer, lesions of verminous pneumonia with cut sections of parasites and their ova in alveolar lumen and bronchioles and associated inflammatory reactions were observed.

0160. Vatsya, Stuti; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Yadav, C.L.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Kumar, Rajeev Ranjan; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India)Garg, Rajat; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Prevalence of ixodid ticks on bovines in foothills of Uttarakhand state: A preliminary report. Indian Journal of Animal Sciences (India) v.78(1) p.40-42 KEYWORDS: WATER BUFFALOES. CATTLE. EPIDEMIOLOGY. IXODIDAE. BOVINAE.

A survey was carried out from January 2004 to December 2004 to study the tick fauna in foothills of Uttarakhand state on cattle and buffaloes. Out of 4089 animals examined, 1463 (35.78%) were found tick infested (37.32% cattle and 33.04% buffaloes). The animals were infested with ticks throughout the year with maximum being in rainy season (53.01 %), followed by summer (43.25%) and the least in winter (7.15%). Five species of ticks belonging to 3 genera were recorded. *Boophilus microplus* was the most common and

predominant tick (96.44%) followed by *Rhipicephalus sanguineus* (1.98%), *R. haemaphysaloides* (1.96%), while *Hyalomma anatolicum anatolicum* (0.002%) and *H. marginatum isaaci* (0.001%) were rarely encountered.

0161. Saravanan, B.C.; National Research Centre on Yak, Dirang, Arunachal Pradesh (India)Bandyopadhyay, S.; National Research Centre on Yak, Dirang, Arunachal Pradesh (India)Pourouchottamane, R.; National Research Centre on Yak, Dirang, Arunachal Pradesh (India) Katakataware, M.A.; National Research Centre on Yak, Dirang, Arunachal Pradesh (India)Ramesh, K.P.; National Research Centre on Yak, Dirang, Arunachal Pradesh (India)Sarkar M.; National Research Centre on Yak, Dirang, Arunachal Pradesh (India). Incidence of ixodid ticks infesting on yak (*Poephagus grunniens* L.) and its hybrid in Arunachal Pradesh and Sikkim. Indian Journal of Animal Sciences (India) v.78(2) p.159-160 KEYWORDS: YAKS. METASTIGMATA. IXODIDAE. ARUNACHAL PRADESH. SIKKIM.

The overall incidence of ticks in organized farm, in field condition of Arunachal Pradesh and Sikkim was 7.31, 28.93 and 18.26% respectively. The incidence of tick infestation was more in yak hybrids than that in yaks. The ticks infesting yaks and its hybrids were identified as *Boophilus*, *Ixodes*, *Haemaphysalis*, *Rhipicephalus*, *Amblyomma* and *Dermacentor*. The incidence of tick infestation was less in organized farm which could be attribute to better management practices.

0162. Yadav, N.K.; Central Institute for Research on Goats, Mathura (India)Mandal, Ajoy; Central Institute for Research on Goats, Mathura (India)Sharma, D.K.; Central Institute for Research on Goats, Mathura (India)Rout, P.K.; Central Institute for Research on Goats, Mathura (India)Roy, R.; Central Institute for Research on Goats, Mathura (India). Influence of reproductive stages on gastrointestinal nematodes of sheep. Indian Journal of Animal Sciences (India) v.78(2) p.161-162 KEYWORDS: GASTROINTESTINAL AGENTS. REPRODUCTION. SHEEP.

The study revealed that Muzaffarnagari ewes in lactating stages are more susceptible to parasitic infection as compared to dry and pregnant ewes. The significant variation in faecal egg count also exists between dry and pregnant animals. The lactating ewes had lower packed cell volume than dry and pregnant ewes during the infection stage.

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0163. Zunita, Z.; Universiti Putra Malaysia, Serdang, Selangor (Malaysia). Faculty of Veterinary MedicineBashir, A.; Universiti Putra Malaysia, Serdang, Selangor (Malaysia). Faculty of Veterinary Medicine Hafizal, A.; Universiti Putra Malaysia, Serdang, Selangor (Malaysia). Faculty of Veterinary Medicine. Occurrence of multidrug resistant staphylococcus aureus in horses in Malaysia. Veterinary World (India) v.1(6). p. 165-167 KEYWORDS: HORSES. STAPHYLOCOCCUS AUREUS. DRUG RESISTANCE. ANTIBIOTICS.

A total of 22 staphylococcus aureus were isolated from 50 samples from 8 stable horses. They are positive in the catalase and coagulase tests. Upon testing the cultures with SLIDEX test kit all formed agglutination within a few seconds, confirming they are of *S.aureus*. When cultured onto MSA all isolates formed yellow colonies. However, none of the isolates produced blue colonies on ORSAB indicating that there were no MRSA among the *S.aureus*. There were 13 isolates which were multiresistant. Eleven are resistant to eight out of ten antibiotics tested. All these isolates were found to originate from stable. G. One isolate is resistant to 5 antibiotics while another one isolate is resistant to 3 antibiotics. the rest of the isolates are not multiresistant to the antibiotics tested.

0164. Mohan, M.; Veterinary Dispensary, Puducherry (India).Fernandez, T.F.; Veterinary Dispensary, Puducherry (India). A case report of pigeon pox-histopathologic diagnosis. Veterinary World (India) v. 1(4) p. 117-118 KEYWORDS: PIGEONS. DIAGNOSIS. AVIPOXVIRUS.

0165. Keraki, K.; Central Veterinary Laboratory, Tripureswor, Kathmandu (Nepal). Parasitology Unit. A laboratory epidemiological outbreak investigation of Kumri(cerebrospinal nematodiasis) and use of diethylcarbamazine in treatment of goat in Banke district of mid-western region of Nepal. *Veterinary World (India)* v. 1(6) p. 168-170 KEYWORDS: GOATS. LESIONS. MORBIDITY. EPIDEMIOLOGY. PARALYSIS. NERVOUS SYSTEM DISEASES. SETARIA (HELMINTH).

Seasonal occurrence (mainly in October-November) of a disease syndrome locally called Kumri meaning weak back was observed in goats in Banke and other districts of western terai in the last few years. Traumatic injury to the lumbar region, nutritional deficiencies and parasitism in the spinal cord were the likely causes considered. Based on the epidemiological pattern viz; seasonal occurrence, clinical symptoms, afebrile condition and local nature of infection, and non response to supplementation of vitamins and minerals, the disease was provisionally diagnosed as cerebrospinal nematodiasis. This has been further substantiated through laboratory of *Setaria* spp in cattle in this region, detection of microfilaria in affected goat and treatment response of affected goats with diethylcarbamazine. As adult *Setaria* spp in cattle, Buffalo and microfilaria from blood smears of affected goat confirmed the cerebrospinal nematodisease in goat in Nepal.

0166. Mahajan, S.; College of Veterinary Sciences and Animal Husbandry, Mhow (India). Department of Veterinary Microbiology Chhabra, Daljeet; College of Veterinary Sciences and Animal Husbandry, Mhow (India). Department of Veterinary Microbiology. Leptospirosis: a re-emerging disease. *Veterinary World (India)* v. 1(6) p. 182-185 KEYWORDS: LIVESTOCK. CATTLE. DOGS. HORSES. SWINE. SHEEP. GOATS. DIAGNOSIS. LEPTOSPIROSIS.

0167. Mohan, M.; Acharya N.G. Ranga Agricultural University, Hyderabad (India). College of Veterinary Science Fernandez, Trevor Francis; Acharya N.G. Ranga Agricultural University, Hyderabad (India). College of Veterinary Science Feroz Mohammed, M.S.; Acharya N.G. Ranga Agricultural University, Hyderabad (India). College of Veterinary Science. Avian influenza infection in human. *Veterinary World (India)* v. 1(4) p. 122-125 KEYWORDS: AVIAN INFLUENZAVIRUS. MANKIND. PATHOGENICITY.

0168. Dey, M.; University of Animal and Fishery Sciences, Kolkata (India). Faculty of Veterinary and Animal Sciences. Dept. of Veterinary Parasitology. Pradhan, P.C.; University of Animal and Fishery Sciences, Kolkata (India). Faculty of Veterinary and Animal Sciences. Dept. of Veterinary Parasitology. Baidya, S; University of Animal and Fishery Sciences, Kolkata (India). Faculty of Veterinary and Animal Sciences. Dept. of Veterinary Parasitology. Pradhan, S.; University of Animal and Fishery Sciences, Kolkata (India). Faculty of Veterinary and Animal Sciences. Dept. of Veterinary Parasitology. Sasmal, N.K.; University of Animal and Fishery Sciences, Kolkata (India). Faculty of Veterinary and Animal Sciences. Dept. of Veterinary Parasitology. Efficacy of isometamidium chloride against *Trypanosoma evansi* infection in pups (*Canis domesticus*). *Journal of Interacademia (India)* v. 13(2) p.184-192 KEYWORDS: TRYPANOSOMA EVANSI. PARASITOLOGY. ANIMAL DISEASES.

The efficacies of different doses of isometamidium chloride against *trypanosoma evansi* infection in pups (*Canis domesticus*) were studied. Experimentally infected pups were showing clinical signs and symptoms like normal temperature, lacrimation, abnormal gait, weakness, emaciation, anorexia and anaemia. In this experiment, haematological and biochemical changes of blood of pups were studied. The experimentally infected pups were treated with 1 mg., 0.5 mg and 0.25 mg./kg body weight, respectively. Out of these doses of isometamidium chloride 1 mg/kg is better than 0.5 mg/kg and 0.25 mg/kg body weight.

0169. Kumar, Rajesh; Krishi Vigyan Kendra, Phek (India). SMS (Vet. Science) Singh, R.K.; Krishi Vigyan Kendra, Phek (India). SMS (Extension) Singh, J.B; Raja Dinesh Singh Krishi Vigyan Kendra, Kalakankar (India). Programme coordinator.. Control of Haemorrhagic septicaemia after its outbreak. *Journal of Interacademia (India)* v. 13(2) p.198-200 KEYWORDS: HAEMORRHAGIC SEPTICAEMIA. BACTERIOSES. ANIMAL DISEASES. WATER BUFFALOES. CATTLE. EPIDEMICS. DISEASE CONTROL.

A clinical trial was conducted at field level to know the therapeutic efficiency of Meriquine (Enrofloxacin) and Intaceftazo (Ceftriaxone+Tazobactam) in Haemorrhagic septicaemia of bovine. Total 20 cases were selected & divided into 2 groups namely, acute & less acute. Under first treatment, out of 7 acute cases 6 animals responded well by Intaceftazo along with other supportive treatment. But under second treatment out of seven acute cases only 4 animals responded by Meriquine along with other supportive treatment. However all the 3 animals responded well by Intaseftizo and Meriquine along with other supportive treatment under less acute cases.

0170. Ali, I.; West Bengal University of Animal and Fishery Sciences, Kolkatta (India). Dept. of Veterinary Pathology; Niyogi, D.; C.V.Sc &A.H., N.D.U.A.T, Kumarganj (India).Dept. of Veterinary Pathology. Mukhopadhyay, S.K.; West Bengal University of Animal and Fishery Sciences, Kolkatta (India). Dept. of Veterinary Pathology.Kumar, D.; West Bengal University of Animal and Fishery Sciences, Kolkatta (India). Dept. of Veterinary Pathology.Kumar, Upendra; West Bengal University of Animal and Fishery Sciences, Kolkatta (India). Dept. of Vateriaary Parasitology. Study of pathomorphological changes in Japanese Quail due to Colibacillosis and Salmonellosis.. Journal of Interacademia (India) v. 13(3) p.292-296 KEYWORDS: ANIMAL MORPHOLOGY. ANIMAL DISEASES. COLIBACILLOSIS. SALMONELLOSIS. QUAILS.

A study was conducted to observed the pathological changes due to Escherichia coli and Salmonella infection in Japanese quails (*Coturnix coturnix japonica*). 38.98. positive to E. coli and 3.20. positive to salmonella were present in the clected sample from naturally dead quails after post mortem examination. Liver, heart and gall bladder showed 45.97., 28.6. and 22.2 E coli infection respectively and in contrast, liver and heart revealed 1.6. salmonella infection each. Grossly, liver showed pale discolouration, pin point hemorrhages with necrotic foci in E coli infection and dark colouration with enlargement of liver was present in Salmonellosis. Histopathologically, congestion of liver, intestine, blood vessels of lungs and hemorrhages between myocardial fibers were seen in E. coli infected cases. Extensive fatty changes with focal area of necrosis were present. Villi of intensine showed hemorrhages with mononuclear cell infiltration and desquamation, sub mucosa was markedly edematous and sub mucosal gland was infiltrated with heterophils. Whereas congestion of liver, lungs, heart with haemorrhagic enteritis were evident in Salmonella infection.

0171. Niyogi, D.; NDUAT Kumarganj, Faizabad (India). College of VeterinaryScience and Animal Husbandry.Mohan, N.H.; NRC on Pigs Guwahati, Assam (India)Singh, H.N.; NDUAT Kumarganj, Faizabad (India). College of VeterinaryScience and Animal Husbandry.Joshi, R.K.; NDUAT Kumarganj, Faizabad (India). College of VeterinaryScience and Animal Husbandry.Pramanik, P.S.; NDUAT Kumarganj, Faizabad (India). College of VeterinaryScience and Animal Husbandry. Mukhopadhyay, S.K.; West Bengal University of Animal Science and Fishery Science, Kolkata (India). Faculty of Veterinary and Animal Sciences.Shukla, V.K; NDUAT Kumarganj, Faizabad (India). College of Veterinary Science and Animal Husbandry. Pyelonephritis in a Tharparkar heifer: A pathological Study.. Journal of Interacademia (India) v. 13(3) p.376-377 KEYWORDS: KIDNEY DISEASES. INFECTIOUS DISEASES. HEIFERS. CORYNEBACTERIUM. PATHOLOGY.

The pathological finding of a Tharparkar heifer died due to Pyelonephrities are presented. Grossly, there were presence of excess fluid in the peritoneal cavity, enlarged kidney, haemorrhage and abscess formation in the renal cortex, pelvis an ureters on post mortem examination. Urinary bladder contained pus and blood mixed urine. Grayish white necrotic foci were found on the cortical surface of kidney. Histological examination showed suppurative inflammation of the kidney parenchyma and renal pelvis with the infiltration of massive number of neutrophils and a few lymphocytes in the interstitium. Mucosa of the urinary bladder and ureters was thickened, haemorrhagic and oedematous. Impression smears from the kidney lesions after gram staining showed numerous gram positive, plemorphic, coccoid to bacillary form of bacteria suggesting Corynebacterium infection.

0172. Verma, Harshit; Dr G C Negi College of Veterinary Sciences, Palampur (India). Pneumonia: An important factor for calf mortality.. Indian Farming (India) v.58(12) p.34-36 KEYWORDS: PNEUMONIA. CALVES. DIAGNOSIS.

Pneumonia is caused by a number of microorganisms resulting into mortality with a loss in productivity of milch animal. The management alone can help in reducing the occurrence of pneumonia. However, early detection of pneumonia and its treatment may save number of calves. The five C's reported by workers may be managing the young dairy calf. These include Colostrum, Cleanlines, Comfort, Calories and Consistency. Havoc of pneumonia in calves may be overcome by judicious application of husbandry practices.

0173. Bannaliker, A.S; K.N.P. College of Veterinary Science, Shirval (India).Verma, Rishendra; Indian Veterinary Research Institute, Uttar Pradesh (India). PCR-RFLP Analysis (PRA) of non tuberculous mycobacteria (NTM) isolated from animal specimens and environment using hsp65 and rpoB genes.. Indian Journal of Animal Sciences (India) v.77(12) p.1211-1218 KEYWORDS: PCR. RFLP. GENETICS. ENGINEERING. BIOCHEMICAL ENGINEERING. CATTLE. CATTLE SHEDS. SOIL. SAMPLING. WATER.

Non tuberculous mycobacteria (99) comprising 34 isolates from animal specimens, 57 soil and 8 water samples from animal dwellings were identified on the basis of growth rate, pigmentation, colony morphology and biochemical reactions. Of the 8 species recovered from animal specimens 4 (*M. fortuitum*, *M. smegmatis*, *M. chelonae* and *M. abscessus*) were prevalent in soil while only 2 of these species (*M. fortuitum* and *M. smegmatis*) prevailed in water samples. These isolates along with 13 reference strains of mycobacteria were subjected to polymerase chain reaction-restriction fragment length polymorphism analysis (PRA) of hsp65 and rpoB genes. All the isolates generated products of 439 bp and 360 bp in PCR of hsp65 and rpoB genes respectively. Restriction digestion of the product of hsp65 with *Bst*Ell and *Hae*III and that of rpoB with *Msp*I and *Hae*III in separate reactions and analysis of digests by agarose gel electrophoresis revealed RFLP patterns characteristic for most of the species tested. Out of the 16-mycobacterial species evaluated, 13 produced a single PRA pattern, while 3 species generated 2 patterns in both the PRA methods. *M. abscessus* and *M. chelonae* were distinguishable from each other. *M. fortuitum* isolates were differentiated into *M. fortuitum* I and *M. fortuitum* II, *M. avium* complex isolates into *M. intracellulare* and *M. avium*, *M. kansasii* isolates into *M. kansasii* I and *M. kansasii* V and *M. gordonae* into *M. gordonae* II and *M. gordonae* (new type) by both the methods. Both the PRA methods could not make a distinction between *M. tuberculosis* and *M. bovis* however, PRA with hsp65 was found better since it yielded relatively large sized and distinct band.

0174. Bhure, S K; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India)Lakshmisha, K. V.; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India)Patil, S. S.; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India)Shome, B. R.; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India) Shome, Rajeswari; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India)Gangadhar, N. L.; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India)Gajendragad, M. R.; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India)Prabhudas, K; Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru (India). Rapid polymerase chain reaction (PCR) for detection of pathogenic leptospires in biological samples. Indian Journal of Animal Sciences (India) v.79(8) p.781-783 KEYWORDS: PCR. PATHOGENS. ZOONOSES. LEPTOSPIRA.

The technique could detect serovars of *Listeria interrogans*, *L. borgpetersenii* serovar *hardjobovis*, and *L. inadai*. The higher sensitivity, specificity and rapidity of the assay to detect leptospira genome by routine agarose gel electrophoresis make this assay an alternative of Real Time PCR. This rapid PCR assay will be a valuable tool for early diagnosis of leptospirosis across the species and in all possible clinical samples. Further the assay can be automated for Real Time PCR due to high annealing temperature of the pair of primers used.

0175. Singh, K. P.; Indian Veterinary Research Institute, Izatnagar (India)Channakeshava, S. U.; Indian Veterinary Research Institute, Izatnagar (India)K. A. Ahmed; Indian Veterinary Research Institute, Izatnagar

(India) Pandey, A B; Indian Veterinary Research Institute, Izatnagar (India). Haematological and biochemical responses in native sheep experimentally infected with bluetongue virus serotype-23. Indian Journal of Animal Sciences (India) v.78(1) p.8-12 KEYWORDS: SHEEP. BLUETONGUE VIRUS. EXPERIMENTAL INFECTION. SEROTYPES.

Haematological and sero-biochemical responses of sero-negative native sheep to bluetongue virus serotype-23 were studied and compared with the control group. Two test groups, each containing 8 animals were inoculated with $6 \times 10^{5.5}$ TCID₅₀ of BTV-23 serotype separately by intravenous (GrN) and intradermal (GrID) routes. The blood and serum samples were analyzed at 0, 3, 7, 11, 15 and 20 days post-infection (DPI). Significant changes were observed in all the hematological and biochemical parameters studied. Marked leucopenia was observed on 3 DPI in GrID while leucocytosis in GrN group. Significant leucocytosis was observed during 11 to 15 DPI in both the infected groups. Significant thrombocytopenia was observed during 3 to 15 DPI whereas significantly low PCV and Hb values were observed between 3 and 11 DPI in both test groups. Differential leucocytes count revealed significantly low lymphocyte percentage on day 3 and high on day 15 in both the infected groups. Under enzyme biochemical studies, ALT registered significantly high values during 7 to 20 DPI in both the test groups, AST during 11 DPI in GrN and 7 to 11 DPI in GrID, ALP during 3 to 11 DPI in GrN and 7 DPI in GrID, and CK during 7 to 15 DPI in both the test groups. These findings indicated the damage to various soft tissue organs and muscles as a sequel to vascular endothelial damage and subsequent inflammatory changes with associated ischemia and necrosis.

0176. Banumathi, N; High Security Animal Disease Laboratory, Bhopal (India) Sood, R.; High Security Animal Disease Laboratory, Bhopal (India) Pativ, S. S.; High Security Animal Disease Laboratory, Bhopal (India) Subramanlan, M.; High Security Animal Disease Laboratory, Bhopal (India) Pradhaw, H. K.; High Security Animal Disease Laboratory, Bhopal (India). Genomic detection of ovine herpesvirus-2 in South Indian sheep and goat. Indian Journal of Animal Sciences (India) v.78(1) p.13-16 KEYWORDS: GENOMES. HERPESVIRIDAE. SHEEP. GOATS. PCR.

The ovine herpes virus-Z (OHV-2), that causes malignant catarrhal fever in ruminants, is an important pathogen in areas where clinically susceptible ruminants share the same environment. Malignant catarrhal fever has been listed by OIE in risk group B and up to January 2007 it was considered as exotic for the country. Rapid diagnosis of exotic pathogens that cause similar clinical diseases is important for containment of epidemics. This investigation on 612 clinical specimens from 600 sheep and goats in south Indian states revealed the presence of OHV-2 specific genomic sequences in 17 samples of infected animals from clinics that were diagnosed for acute respiratory syndrome, as well as acute fever, and sudden onset of blindness.

0177. Ghosh, S.; Indian Veterinary Research Institute, Izatnagar (India) Azhahianambi, P.; Indian Veterinary Research Institute, Izatnagar (India) Ray, D. D.; Indian Veterinary Research Institute, Izatnagar (India) Gupta, S. C.; Indian Veterinary Research Institute, Izatnagar (India) Bansav, G. C.; Indian Veterinary Research Institute, Izatnagar (India) Choudhury, Pallab; Indian Veterinary Research Institute, Izatnagar (India). Anti-tick effects of 34kDa glycoprotein of *Hyalomma anatolicum anatolicum* in combination with saponin as adjuvant. Indian Journal of Animal Sciences (India) v.78(1) p.17-23 KEYWORDS: METASTIGMATA. CATTLE. GLYCOPROTEINS. HYALOMMA ANATOLICUM. HYALOMMA. SAPONINS.

Immunization of *Bos taurus* x *B. indicus* calves by 34 kDa glycoprotein combined with surfactant adjuvant, saponin, against *Hyalomma anatolicum anatolicum* conferred significant protection against homologous challenge infestations of larvae and adults. The per cent reduction of challenged larvae (DT), % reduction in moulting of engorged larvae (MO) and efficacy per cent of the antigen against challenged larvae (E) were calculated as 32, 35 and 56, respectively. In adults, the per cent reduction of challenged adults (rtr), the per cent reduction in mean weight of eggs of tick fed on immunized and control animals (DO), the per cent reduction of mean weight of adult females dropped from immunized and control animals (DR) and efficacy per cent of the antigen against challenged adults (E) were calculated as 42, 12.15, 17.6 and 52.44 per cent, respectively. A significantly higher level of E% obtained after repeated challenge infestations proved the

additive effect of 34 kDa antigen and antigens of salivary glands. A direct correlation between antibody response against 34kDa glycoprotein and protection against infestations was observed. Significantly high level of variation in the entomological data of ticks fed on immunized and control animals was recorded. The effect of the 34 kDa antigen in combination with saponin in limiting the *H.a. anatolicum* infestation boosted the level of protection.

0178. Dhar, P; Indian Veterinary Research Institute, Izatnagar, (India) Rai, A; Indian Veterinary Research Institute, Izatnagar, (India) Verma, Rishendra; Indian Veterinary Research Institute, Izatnagar, (India). Adaptation of classical swine fever virus (lapinized strain) in PK-15 cells and confirmation by reverse transcription-polymerase chain reaction (RT-PCR) and fluorescent antibody technique (FAT). Indian Journal of Animal Sciences (India) v.78(2) p.135-137 KEYWORDS: SWINE FEVER. CELL CULTURE. PCR. SWINE. IMMUNE SERUM. REVERSE TRANSCRIPTION.

The lapinized swine fever vaccine was adapted to grow in a porcine kidney cell line (PK-15). An RT-PCR was developed for detection of viral RNA in infected cells. FAT was also standardized for detection of infected foci in the infected cells cultured in vitro. Adaptation of the virus in the PK-15 cells was confirmed by detection of viral infection in infected cells by RT-PCR and FAT. Titre of the virus in PK-15 cells was found to be $10^{7.1}$ TCID₅₀/ml as determined by FAT. The cell adapted classical swine fever virus developed in the present study provides a scope to undertake further research on swine fever virus in India towards development of cell culture vaccine for use in the country.

0179. Ulutas, Pinar Alkim; Adnan Menderes University, Faculty of Veterinary Medicine, Department of Biochemistry, Aydin (Turkey) Ulutas, Bulent; Adnan Menderes University, Faculty of Veterinary Medicine, Department of Biochemistry, Aydin (Turkey) Tan, Tolga; Adnan Menderes University, Faculty of Veterinary Medicine, Department of Biochemistry, Aydin (Turkey). Serum trace elements and ceruloplasmin levels in cattle infected with bovine viral diarrhoea virus. Indian Veterinary Journal (India) v.85 (1) p.13-15 KEYWORDS: VIROSES. FERROXIDASE. CATTLE.

The purpose of this investigation was to evaluate serum concentrations of ceruloplasmin, iron (Fe), copper (Cu) and zinc (Zn) in persistently infected cattle with BVDV. Ceruloplasmin, Fe, Cu and Zn concentrations were measured in serum samples from persistently infected cattle with BVDV in comparison with those in healthy cattle. While serum concentrations of Fe and Zn in persistently infected cattle with BVDV were significantly ($P < 0.001$) lower; serum ceruloplasmin and Cu concentrations were significantly higher than the control group. The results of this study indicated that serum concentrations of ceruloplasmin, Fe, Cu and Zn changed in cattle with persistently infected BVDV. Such changes in serum concentrations could be indicator of probable persistent infection with BVDV while screening herds for general health.

0180. Ceylan, Ahmet; Adnan Menderes University, Faculty of Veterinary Medicine, Department of Reproduction and Artificial Insemination, Aydin, (Turkey) Tan, Mehmet Tolga; Adnan Menderes University, Faculty of Veterinary Medicine. Department of Virology, Aydin, (Turkey) Karaoglu, Taner; Ankara University, Aydin, (Turkey) Serin, Ilker; Adnan Menderes University, Faculty of Veterinary Medicine, Department of Reproduction and Artificial Insemination, Aydin, (Turkey). Effect of persistent bvdv infection on some reproductive parameters of dairy cows. Indian Veterinary Journal (India) v.85 (1) p.19-20 KEYWORDS: VIROSES. DAIRY COWS. REPRODUCTIVE PERFORMANCE.

The prevalence of persistently infected animals due to bovine viral diarrhoea virus (BVDV) and the effect of persistent bovine viral diarrhoea virus infection on some reproductive parameters of 228 cows in four herds in Aydin province were studied. The overall prevalence of persistently infected cattle with BVDV was 3.9% (0.9 - 7.4). The average age at first calving, calving interval and the number of artificial inseminations per cow for the persistently infected animals were 933 ± 88 days, 448 ± 35 days and 1.9 the same parameters for the remaining cows of the herds were 841 ± 72 days, 397 ± 31 days and 1.8 respectively. The data obtained support the view that BVD virus has a negative effect on the reproductive parameters.

0181. Singh, R.S.; Guru Angad Dev Veterinary and Animal Science University, Department of Veterinary Services Complex, Ludhiana, (India)Chand N.; Guru Angad Dev Veterinary and Animal Science University, Dept. of Clinical Veterinary Medicine ethics and Jurisprudence, Ludhiana, (India)Sidhu, S.S.; Guru Angad Dev Veterinary and Animal Science University, Department of Veterinary Services Complex, Ludhiana, (India). Cholecystitis in a Dog. Indian Veterinary Journal (India) v.85 (1) p.77-78 KEYWORDS: LIVER DISEASES. DOGS. THERAPY. Cholecystitis in a dog and its successful treatment is reported and discussed. 0904. Mahesh, V.; KVAFSU, Veterinary College, Department of Surgery and Radiology, Bangalore (India)Vasanth, M.S.; KVAFSU, Veterinary College, Department of Surgery and Radiology, Bangalore (India). Evaluation of lensectomy with and without limbal sutures for cataract in dogs. Indian Veterinary Journal (India) v.85 (1) p.79-81 KEYWORDS: CATARACT. EYE DISEASES. DOGS.

Extraction of cataractous lens by limbal approach was studied with and without suturing. The Non-suturing of the Limbal incision was found to provide good clinical results as compared to suturing the limbus after extraction of cataract lens in dogs.

0182. Manya, Priti; Bihar Veterinary College, Department of Veterinary Parasitology, Patna (India)Sinha, S.R.P.; Bihar Veterinary College, Department of Veterinary Parasitology, Patna (India)Sinha, Sucheta; Bihar Veterinary College, Department of Veterinary Parasitology, Patna (India)Sharma, S.K.; Bihar Veterinary College, Department of Veterinary Parasitology, Patna (India)Sadarao, Bharat L.; Bihar Veterinary College, Department of Veterinary Parasitology, Patna (India)Verma, S.B.; Bihar Veterinary College, Department of Veterinary Parasitology, Patna (India). Therapeutic efficacy of coximar and fazole against bovine coccidiosis. Indian Veterinary Journal (India) v.85 (1) p.82-83 KEYWORDS: BOVINAЕ. CALVES. DRUG THERAPY. DRUG RESISTANCE. COCCIDIOSIS.

Therapeutic efficacies of two drugs Coximar 100 mg/kg b.wt for 7 days and Fazole 1 bolus / 50 kg b.wt. b.i.d. for 5 days was evaluated in naturally infected calves with clinical coccidiosis. There was no significant difference between these two drugs on OPG on different periods studied. Both these drugs were observed to be quite efficacious for the treatment of clinical bovine coccidiosis. 0910. Vijayanand, V.; Veterinary University Peripheral Hospital, Chennai (India)Prasad, Arun; Veterinary University Peripheral Hospital, Chennai (India)Rajasundaram R.C.; Veterinary University Peripheral Hospital, Chennai (India). Tetanus in a Pup. Indian Veterinary Journal (India) v.85 (1) p.92-92 KEYWORDS: TETANUS. BACTERIOSES. NERVOUS SYSTEM. CLOSTRIDIUM TETANI. CLOSTRIDIUM. PUPAE. Tetanus is caused by the action of a potent neurotoxin produced in the host by Clostridium tetani, an anaerobic gram positive bacteria. A case of tetanus in a six month old Dobermann pup is reported.

0183. Gupta, Kuldeep; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Singh, Prahlad; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Singh, Amarjit; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Singla, V.K.; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Sood, Neeraj; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Goyal, Dimple; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Bineesh, P.P.; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India)Sood, N.K.; Guru Angad Dev. Veterinary Animal Sciences University, College of Veterinary Science, Department of Veterinary Pathology, Ludhiana (India). Leiomyoma of the vagina with recurrent vaginal prolapse in a cow. Indian Veterinary Journal (India) v.85 (1) p.93--94 KEYWORDS: VAGINA. RECURRENT SELECTION. COWS. VAGINAL DISEASES.

Leiomyomas are the common tumors of tubular genitalia of bitches (Jones et al., 1997), but occur rather occasionally in the genital tract of other species including cattle (Haibel et al., 1990, Jubb et al., 1993). These tumors have at times been associated with obstetrical complications like dystocia and torsion of uterus in cows (Bemmann, 1982).

0184. Gonul, Remzi; Istanbul University, Faculty of Veterinary Medicine, Department of Internal Medicine, Istanbul (Turkey)Kayar, Abdullah; Istanbul University, Faculty of Veterinary Medicine, Department of Internal Medicine, Istanbul (Turkey)Koenhems, Iora; Istanbul University, Faculty of Veterinary Medicine, Department of Internal Medicine, Istanbul (Turkey)Ozkan, Surcak; Istanbul University, Faculty of Veterinary Medicine, Department of Internal Medicine, Istanbul (Turkey)M. Erman Or; Istanbul University, Faculty of Veterinary Medicine, Department of Internal Medicine, Istanbul (Turkey). Cardiac problems observed in dogs with hepatic and renal insufficiency. Indian Veterinary Journal (India) v.86(3) p.303-305 KEYWORDS: HEART DISEASES. KIDNEYS. DIAGNOSIS.

In the present study, blood pressure changes were determined osciloscopically and the effects of these changes on cardiac performance were observed electrocardiographically in 14 dogs with hepatic insufficiency and 28 dogs with renal insufficiency. Cardiac performance is significantly affected as a result of hepatic and renal insufficiency in dogs, and that the blood pressure in 50% of the patients with structural abnormalities, rhythm disorders, and especially with renal insufficiency, showed an increase. Hence, it would be important to preserve and support cardiac performance during the treatment of renal and hepatic insufficiency.

0185. Sreenu, Makkena; NTR College of Veterinary Science, Dept of Veterinary Surgery and Radiology, Gannavaram (India)Suryawanshi, R.V.; NTR College of Veterinary Science, Dept of Veterinary Surgery and Radiology, Gannavaram (India)Vidysagar, P.; NTR College of Veterinary Science, Dept of Veterinary Surgery and Radiology, Gannavaram (India). Management of Mandibular fractures in Dogs. Indian Veterinary Journal (India) v.86(3) p.301-302 KEYWORDS: FRACTURES. DOGS. MANAGEMENT.

Surgical management of two cases of mandibular fractures in dogs was discussed.

0186. Ponnuswamy, K.K.; Madras Veterinary College, Centre of Advanced Studies in Veterinary Clinical Medicine, Ethics and Jurisprudence, Chennai (India)Prathaban, S.; Madras Veterinary College, Centre of Advanced Studies in Veterinary Clinical Medicine, Ethics and Jurisprudence, Chennai (India)Dhanapalan, P.; Madras Veterinary College, Centre of Advanced Studies in Veterinary Clinical Medicine, Ethics and Jurisprudence, Chennai (India). Endoscopic evaluation of upper gastrointestinal tract in canine renal failure. Indian Veterinary Journal (India) v.86(3) p.310-311 KEYWORDS: MORBIDITY. EPIDEMIOLOGY. HEALTH PROTECTION. DOGS. ENDOSCOPY. KIDNEY DISEASES.

Reports regarding the number of animals that exhibit gastrointestinal signs in renal failure is meagre whereas 40% of people with renal failure reportedly have gastrointestinal mucosal abnormalities on endoscopic evaluation (Krawiec, 1996). In this study upper gastrointestinal endoscopy was used in identifying the nature and severity of uremic gastropathy at different levels of azotemia in dogs.

0187. Kumar, N. Vinod; Animal Husbandry Polytechnic, Palamaner (India)Reddy, Y. Ravindra; Animal Husbandry Polytechnic, Palamaner (India)Reddy, A.R. Mohan; Animal Husbandry Polytechnic, Palamaner (India). Acute Hepatopulmonary Fascioliasis in Sheep. Indian Veterinary Journal (India) v.86(3) p.308-309 KEYWORDS: EPIDEMICS. SHEEP. THERAPY. ACUTE COURSE.

Acute form of hepatopulmonary fascioliasis and its treatment with closentel in sheep is described and discussed.

0188. Tiwari, S.K.; College of Veterinary Science and A.H., Department of Veterinary Surgery and Radiology. Anjora (India)Jain, Sanjay; College of Veterinary Science and A.H., Department of Veterinary Surgery and Radiology. Anjora (India)Nath, Kashi; College of Veterinary Science and A.H., Department of Veterinary

Surgery and Radiology. Anjora (India)Garg, Sumeet; College of Veterinary Science and A.H., Department of Veterinary Surgery and Radiology. Anjora (India). Surgical Management of unilateral Cystadenocarcinoma in a Bitch. Indian Veterinary Journal (India) v.86(3) p.303-307 KEYWORDS: FEMALES. OVARIES. CYTOKINES. A case of unilateral cystadenocarcinoma of ovary in a 6 years old bitch and its surgical treatment has been reported.

0189. Kenar, B.; Afyonkarahisar Kocatepe University, Faculty of Veterinary Medicine, Department of Microbiology, Afyonkarahisar (Turkey)Akkaya, L.; Afyonkarahisar Kocatepe University, Faculty of Veterinary Medicine, Dept. of Food Hygiene and Technology, Afyonkarahisar (Turkey)Centinkaya, Z.; Yuzuncu Til University, Faculty of Veterinary Medicine, Dept. of Food Hygiene and Technology, Van (Turkey)Alisarli, M.; Yuzuncu Til University, Faculty of Veterinary Medicine, Dept. of Food Hygiene and Technology, Van (Turkey). The prevalence of Verocytotoxigenic Escherichia Coli 0157: H7 in Drug of Cattle. Indian Veterinary Journal (India) v.86(3) p.227-228 KEYWORDS: ESCHERICHIA COLI. BACTERIA. VIROSES. HAEMORRHAGE. MICROORGANISMS. FARMYARD MANURE. CATTLE.

Studies were made on cattle from four different private slaughterhouse located in the center of Afyonkarahisar Province in Turkey. The presence of E. coli 0157:H7 in the dung sample from 300 cattle collected under aseptic conditions after slaughter was determined by of the Immuno magnetic separation (IMS) method. Verotoxin 1 (VT 1) and 2 (VT 2) production of the isolated E. coli 0157:H7 strains were also confirmed using Glisa Duopath Verotoxin test kit. Four (1.33%) of the 300 dung sample from cattle collected from 4 different slaughterhouses were positive for E. coli 0157:H7.

0190. Anil Kumar Mishra,; Indian Veterinary Research Institute, Division of Biological Standardization, Izatnagar (India)Rawat, Mayank; Indian Veterinary Research Institute, Division of Biological Standardization, Izatnagar (India)Verma, Rishendra; Indian Veterinary Research Institute, Division of Biological Standardization, Izatnagar (India). Characterization of Immunogenic Outer Membrane Proteins From Pasteurella Multocida P52 By Immunoaffinity Chromatography. Indian Veterinary Journal (India) v.86(5) p.443-446 KEYWORDS: IMMUNOGLOBULINS. MEMBRANES. PASTEURELLA PISCICIDA. VACCINATION. HAEMORRHAGIC SEPTICAEMIA.

Dominant outer membrane proteins (OMPs) of Pasteurella mu/tocida P52 were purified by immunoaffinity chromatograph (IAC) using Igs obtained from pooled serum from vaccine protected, non-protected, hyperimmune (15th DPC) and unimmunized control animals. It was found that the Igs from protected and HI serum reacted with 3 cell wall proteins. The proteins induced protective response in rabbits against direct challenge. Igs from pooled serum of vaccinated, non-protected animals, reacted only with 2 polypeptides which did not induce a protective response in rabbits. Based on striking differences in the reactivity of the sera recovered from various groups, a simple test based on IAC can be developed for the purpose of in vitro potency testing of HS vaccines.

0191. Lalitha, N.; Veterinary College and Research Institute, Department of Veterinary Microbiology, Tamil Nadu (India)Kalaimathj, R.; Madras Veterinary college. Chennai (India)Dorairajan, N.; Veterinary College and Research Institute, Department of Veterinary Microbiology, Tamil Nadu (India). Pathogenic assessment of chicken embryo fibroblast cell culture adapted infectious bronchitis virus vaccine. Indian Veterinary Journal (India) v.86(5) p.447-450 KEYWORDS: PATHOGENICITY. CHICKENS. IN VITRO CULTURE. SEROTYPES. VACCINES. FIBROBLASTS.

Adaptation of prevailing embryonated chicken egg (ECE) adapted infectious bronchitis mass serotype vaccine viruses in chicken embryo fibroblast cell culture (CEFCC) was attempted. Presence of virus was assessed qualitatively (observation of specific lesions in ECEs and specific cytopathic effect in active passage levels) and effect on pathogenicity was assessed quantitatively (titration in ECE and microtitration in CEFCC system). In addition, presence of virus was confirmed by micro haemagglutination (HA) and rapid plate HA tests. However, the high protective titres of the corresponding ”startup” viruses could not be

achieved. Hence, few more passages in TC system may be advocated, thus enabling to achieve an effective pentavalent vaccine, against IB.

0192. Quintoil, M. Nithya; West Bengal University of Animal and Fishery Sciences, Department of Veterinary Public Health, Kolkata (India)Porteen, K.; Indian Veterinary Research Institute, Dept of Veterinary Public Health. Izatnagar (India)Ruban, S.Wilfred; Indian Veterinary Research Institute, Dept of Livestock Products Technology, Bangalore (India)Abraham, T.J.; West Bengal University of Animal and Fishery Sciences, Dept of Fishery Microbiology. Kolkata (India) Pramanik, A.K.; West Bengal University of Animal and Fishery Sciences, Department of Veterinary Public Health, Kolkata (India). Chloramphenicol Induced Mutation Frequency Of *Vibrio Parahaemolyticus* Strains Isolated From Freshwater Fishes. Indian Veterinary Journal (India) v.86(5) p.451-453 KEYWORDS: CHLORAMPHENICOL. FRESHWATER FISHES. VIBRIO PARAHAEMOLYTICUS. VIBRIO. GASTROENTERITIS. MUTAGENICITY.

Systematic examination of 42 freshwater fish and 30 human stool samples resulted in the isolation of *V. parahaemolyticus* from 14.28% and 13.33% of the samples, respectively. The mutation of frequency to chloramphenicol of *V. parahaemolyticus* strain resistant to oxytetracycline was found to be very high (1.005×10^{-9} , compared to the strain sensitive to both oxytetracycline and chloramphenicol ($2.39 \times 10^{-1\pm}$), which poses potential risk for public health.

0193. Dayananda, T.S.; KVAFSU, Veterinary College, Department of Veterinary Pathology, Bangalore (India)Rao, Suguna; KVAFSU, Veterinary College, Department of Veterinary Pathology, Bangalore (India)Byregowda, S.M.; KVAFSU, Veterinary College, Department of Veterinary Pathology, Bangalore (India)Satyanarayana, M.L.; KVAFSU, Veterinary College, Department of Veterinary Pathology, Bangalore (India)Jayachandra, K.C.; KVAFSU, Veterinary College, Department of Veterinary Pathology, Bangalore (India)V.T. Shilpa; KVAFSU, Veterinary College, Department of Veterinary Pathology, Bangalore (India). Proliferation Index In Hemangioma And Hemangiosarcoma Of Dogs. Indian Veterinary Journal (India) v.86(5) p.454-456 KEYWORDS: TISSUE PROLIFERATION. MALE GENITAL DISEASES. NEOPLASMS. DOGS.

In the present investigation, proliferation index of six hemangiomas and five hemangiosarcomas were studied. Statistically significant difference in the AgNOR index and Ki 67 index ($P < 0.05$) was observed between hemangioma and hemangiosarcoma. The AgNOR index and Ki 67 index of hemangioma and hemangiosarcomas were positively correlated to each other (a

0194. Banu, S. Saira; TANUVAS, Madras Veterinary College, Department of Veterinary Parasitology, Chennai (India)Lalitha John; TANUVAS, Madras Veterinary College, Department of Veterinary Parasitology, Chennai (India)Basith, S. Abdul; TANUVAS, Madras Veterinary College, Department of Veterinary Parasitology, Chennai (India)G. Dhinakar raj; TANUVAS, Madras Veterinary College, Department of Veterinary Parasitology, Chennai (India). Detection Of Subclinical Canine Ehrlichiosis By Nested PCR. Indian Veterinary Journal (India) v.86(5) p.457-459 KEYWORDS: LATENT INFECTIONS. PCR. DOGS. EHRLICHIA CANIS.

Whole blood sample from 80 dogs suspected of ehrlichiosis with fever and tick infestation were subjected to blood smear examination and Nested PCR (NPCR) for detection of *Ehrlichia canis*. Of these, NPCR revealed 47.5 percent (38 out of 80) positive cases as against 1.25 per cent (one out of 80) by blood smear examination. As NPCR is a highly sensitive assay, it could be employed for diagnosis of early and subclinical infection of *E. canis*.

0195. Sengupta, P.P.; National Research Centre on Equines, Hisar (India)Dey, S.; National Research Centre on Equines, Hisar (India). Strongylid helminthes in Indian Wild Asses. Indian Veterinary Journal (India) v.86(5) p.460-462 KEYWORDS: WILD ANIMALS. ASSES. STRONGYLIDAE. HELMINTHOSES.

A study on the record of strongylid nematode infections in Indian wild ass (*Equus hemionus khur*) - an endangered species, was carried out. The faecal samples were collected from four flocks of the asses. A total of 84 samples were collected and studied for worm infection. Egg per gram (epg) in faeces was determined

and was found a range of 100 to 2800. The coproculture of the faecal samples revealed the infection of *Strongylus vulgaris*, *S. edentatus*, *S. equinus*, *Gyalocephalus Sp.*, *Oesophagodontus sp.*, *Poteriostomum sp.*, *Triodontophorus sp.*, *Cyathostomum sp.*, *Trichostrongylus sp.*, and *Strongyloides sp.* at the rate of 19.65%, 26.19%, 10.71%, 15.48%, 14.29, 5.95%, 2.38%, 3.57%, 18.47% and 40.48%, respectively.

0196. Pardeshi, G.D.; KVAFSU, Veterinary College, Department of Veterinary Surgery and Radiology, Bangalore (India)Ranganath, L.; KVAFSU, Veterinary College, Department of Veterinary Surgery and Radiology, Bangalore (India). Haemato - Biochemical Changes Following External Skeletal Fixation For Tibial Fracture In Dogs. Indian Veterinary Journal (India) v.86(5) p.469-471 KEYWORDS: BONES. FRACTURES. MUSCIDAE. DOGS.

Hamato-biochemical parameters viz. total erythrocyte count, differential leucocyte count, serum Alkaline phosphatase, Serum aspartate aminotransferase were moderately influenced by external skeletal fixation application in both the groups of dogs.

0197. Nagarajan, L.; Madras Veterinary College, Department of Veterinary Surgery and Radiology, Chennai (India)Sureshkumar, R.; Madras Veterinary College, Department of Veterinary Surgery and Radiology, Chennai (India)Ramani, C.; Madras Veterinary College, Department of Veterinary Surgery and Radiology, Chennai (India) Ameerjan, K.; Madras Veterinary College, Department of Veterinary Surgery and Radiology, Chennai (India). Two Stage Surgical Management Of Gastric Dilatation And Volvulus In Dogs. Indian Veterinary Journal (India) v.86(5) p.475-477 KEYWORDS: SURGICAL OPERATIONS. ACUTE COURSE. DOGS. DIGESTIVE JUICES.

A successful two stage surgical management of Gastric Dilatation Volvulus complications encountered are reported and discussed. The first stage decompression of the stomach proved to be very helpful in successful II stage gastropexy. The stabilization period of 6 hours was also found to be optimum since no cardiac arrhythmias were encountered during surgery and both animals were ambulatory at the end of the stabilization period.

0198. Pillai, Usha Narayana; College of Veterinary and Animal Sciences, Department of Clinical Medicine,Thrissur (India)Jabina, M.P.; College of Veterinary and Animal Sciences, Department of Clinical Medicine,Thrissur (India)Pandian, S.J.V.; College of Veterinary and Animal Sciences, Department of Clinical Medicine,Thrissur (India)Premni, E.; College of Veterinary and Animal Sciences, Department of Clinical Medicine,Thrissur (India)P .G. Baby; College of Veterinary and Animal Sciences, Department of Clinical Medicine,Thrissur (India). Ursodeoxycholic acid treatment of cholangiohepatitis in a dog. Indian Veterinary Journal (India) v.86(5) p.506-507 KEYWORDS: LIVER DISEASES. BILE. GALL BLADDER. INFLAMMATION. DIAGNOSIS. DOGS.

Use of ursodeoxycholic acid in the management of cholangiohepatitis in an eight -year-old male dog is reported.

0199. Pillai, Usha Narayana; College of Veterinary and Animal Sciences, Department of Clinical Medicine, Kerala, (India)A. Renju; College of Veterinary and Animal Sciences, Department of Clinical Medicine, Kerala, (India)Pandian, S.J.V.; College of Veterinary and Animal Sciences, Department of Clinical Medicine, Kerala, (India)P.G. Baby; College of Veterinary and Animal Sciences, Department of Clinical Medicine, Kerala, (India). Lymphosarcoma in a German shepherded Dog. Indian Veterinary Journal (India) v.86(5) p.508-509 KEYWORDS: LYMPHOSARCOMA. HEALTH PROTECTION. THERAPY. HISTOPATHOLOGY. DOGS.

A case of lymphosarcoma in an eight-year old German shepherded dog is placed on record.

0200. S. Anoop; College of Veterinary and Animal Sciences, Department of Surgery and Radiology, Kerala (India)Sundaram, K. Shanmugha; College of Veterinary and Animal Sciences, Department of Surgery and

Radiology, Kerala (India). Mammary papillary adenocarcinoma in a bitch.. Indian Veterinary Journal (India) v.86(5) p.510-511 KEYWORDS: ADENOMA. MAMMARY GLAND DISEASES. NEOPLASMS. DOGS. FEMALES. Mammary adenocarcinoma in a bitch and its successful surgical management is presented and discussed.

0201. Tiwari, S.K.; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India)R. Sharda; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India)Nath, Kashi; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India)Jain, Padam; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India)Kalim, M. Osamah; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India)Garg, Sumeet; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India)Desai, Jayaram; College of Veterinary Science and A.H, Department of Veterinary Surgery and Radiology, Anjora (India). Intestinal Intussusception in a labrador pup. Indian Veterinary Journal (India) v.86(5) p.541-515 KEYWORDS: DIGESTIVE SYSTEM DISEASES. INTESTINAL DISEASES. PUPPIES. SURGICAL OPERATIONS.

A case of intestinal intussusception in a 2 month old laborador pup and its surgical treatment has been reported.

0202. Kujur, Rajni Flora; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India)Balachandran, C.; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India)Rao, G.V. Sudhakar; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India)B. Murali Manohar; Madras Veterinary College, Department of Veterinary Pathology, Chennai (India). Incidence of skin tumours in Dogs. Indian Veterinary Journal (India) v.86(5) p.518-519 KEYWORDS: SKIN DISEASES. CYTOKINES. DOGS.

A case of occurrence of skin tumours in dogs.

0203. Mishra S.S.; Central Inland Fisheries Research Institute, Barrackpore (India)Brahmane, M.P.; Central Inland Fisheries Research Institute, Barrackpore (India)Mishra, S.K.; Central Inland Fisheries Research Institute, Barrackpore (India). PCR detection and DNA restriction profile analysis of vibrio parahaemolyticus isolates. Indian Veterinary Journal (India) v.86(3) p.229-233 KEYWORDS: PCR. DNA. AETIOLOGY. DIARRHOEA. GASTROENTERITIS. ELECTROPHORESIS. VIBRIO PARAHAEMOLYTICUS.

V. parahaemolyticus isolates from fish and shrimp *P. monodon* were screened using p_eR and 623 bp products could be visualized in positive cases. The selected isolates were further characterized using protein profile analysis on 11 % SOS-PAGE and DNA restriction profile analysis. Variable protein bands on SOS-PAGE indicated antigenic variation among v. parahaemolyticus isolates. EcoRI, BamHI and HaeIII were found unsuitable for ONAARE analysis but Hind III digestion revealed numerous ONA fragments in the range of 15.0 kb to 0.5 kb with variation among isolates.

0204. Keerti Meena; College of Veterinary Science, Department of Veterinary Microbiology, Rajendranagar (India)Sarma, B. Janakirama; College of Veterinary Science, Department of Veterinary Microbiology, Rajendranagar (India)Reddy, Y. Narasimha; College of Veterinary Science, Department of Veterinary Microbiology, Rajendranagar (India). Development and application of latex agglutination test for detection of PPR virus. Indian Veterinary Journal (India) v.86(3) p.234-237 KEYWORDS: MORBILLIVIRUS. AGGLUTINATION TESTS. VIROSES. SHEEP. GOATS. FEVER. DIARRHOEA.

LAT for detection of PPR virus in the cell culture fluid and clinical samples was developed. The standardized LAT could detect 58.82% of total clinical samples. The latex reagent was found to be stable for 2 weeks at room temperature and 7 weeks at 4±C. LAT so developed was compared with the IC-ELISA and the sensitivity and specificity of it was found to be 90.4% and 92.3% respectively with respect to IC-ELISA as reference method.

0205. Tajpara M.M.; G.A. V., Veterinary College, Dept. of Veterinary Microbiology, Anand (India) Jhala, M.K.; G.A. V., Veterinary College, Dept. of Veterinary Microbiology, Anand (India) Rank, D.N.; G.A. V., Veterinary College, Dept. of Veterinary Microbiology, Anand (India) Joshi, C.G.; G.A. V., Veterinary College, Dept. of Veterinary Microbiology, Anand (India). Incidence of canine parvovirus in diarrhoeic dogs by polymerase chain reaction. Indian Veterinary Journal (India) v.86(3) p.238-241 KEYWORDS: CANINE PARVOVIRUS. DOGS. PCR. COLIFORM BACTERIA.

A total of 65 faecal samples from diarrhoeic dogs of different breeds, age, sex and vaccination status were collected in different seasons and screened for the presence of CPV. Of these, 15 (23.07%) samples were positive for CPV infection by pER. The incidence of CPV infection was marginally higher in local breeds (27.33%) than exotic breeds viz., Doberman (26.66%) and Alsatian (25.00%) and significantly higher than Pomeranian (11.76%). The incidence rate was higher in dogs below six months (30.30%) than those above one year age (15.60%). Sexwise, incidence was higher in male dogs (25.60%) than female dogs (19.23%). Unvaccinated dogs showed significantly higher incidence (31.40%) than the vaccinated dogs (13.33%). The incidences of CPV infection were found to occur more in summer months (27.77%) than in winter months (17.24%).

0206. Dey, Avijit; Uttar Banga Krishi Viswavidyalaya, Malda Krishi Vigyan Kendra, Malda (India) Kundu, Panchanan; Uttar Banga Krishi Viswavidyalaya, Malda Krishi Vigyan Kendra, Malda (India). Outbreak of contagious ecthyma in Goats. Indian Veterinary Journal (India) v.86(3) p.242-243 KEYWORDS: INFECTIOUS DISEASES. CONTAGIOUS ECTHYMA VIRUS. SHEEP. GOATS. EPIDEMICS.

An outbreak of contagious ecthyma (CE) was investigated in Black Bengal goats (n=227) maintained in on farm sector of different villages of Maida district of West Bengal. The goats of all ages and sexes were infected. Although the morbidity was high (70.3 per cent), the mortality was only 3.7 per cent. The line of treatment is explained.

0207. Kavitha, K.L.; College of Veterinary Science, Department of Microbiology, Tirupati (India) Rao, V.D.P.; College of Veterinary Science, Department of Microbiology, Tirupati (India) Suryanarayan, V.V.S.; College of Veterinary Science, Department of Microbiology, Tirupati (India). Fibre and pVIII proteins encoded by 2kb BamHI fragment of egg drop Syndrome-76 virus genome. Indian Veterinary Journal (India) v.86(3) p.244-246 KEYWORDS: EGG DROP SYNDROME. GENOMES. AVIADENOVIRUS.

The Indian isolate (VN1) of egg drop syndrome 1976 virus was cultivated in embryonated duck eggs and purified by sucrose density gradient centrifugation. The viral DNA was extracted and digested with Bam H 1, Bam H 1 digestion yielded 16, 11, 4 and 2kb fragments. The 2kb fragment was cloned into pBKS + vector and sequenced partially. An unambiguous sequence of 616 nts upon BLAST search showed 98 per cent homology with fibre protein and 100 per cent homology with PVIII protein of EDS-76 virus strain 127 and low homology with other aviadenoviruses. The studies confirmed that the fibre protein gene has conserved regions at its tail and shaft regions, that aids in the tropism of the virus hence, the Bam H 1 2kb fragment was used for the development of molecular diagnostic tools.

0208. Kusumakar, A L; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India) Savita; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India) Malik, Y P S; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). Occurrence of mammalian group A rotavirus in swine population of central India. Indian Journal of Animal Sciences (India) v.78(5) p.475-477 KEYWORDS: SWINE. PORCINE ROTAVIRUS. MORBIDITY. RNA.

This study reports distribution of porcine rotavirus and existence of genomic diversity among isolates of porcine rotavirus in central region of India. RNA electrophoresis (RNA-PAGE) results revealed presence of porcine rotavirus with a typical migration pattern of 4: 2: 3: 2, indicative of group A rotavirus. All the porcine rotavirus isolates obtained during the study from different areas showed the same type of long electrophoretic migration pattern based on the relative migration of 10th and 11th genome segments. Incidence of PRV in swine population was 25.71. (9/35). The results of age-wise incidence showed that

piglets were more commonly infected during early period of life with the highest incidence between 4 and 8 weeks of age (50.), whereas it reduced with age, as piglets above 3 months of age showed incidence of only 7.69. The results of present study clearly indicate circulation of single strain of porcine rotavirus in this region of the country which can be targeted to make a suitable vaccine. However more data with detailed studies are required on this infection in pigs from central India as well as other parts of the country.

0209. Savita; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Kusumakar, A L; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Malik, Y P S; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). Co-occurrence of avian rotavirus and bacterial pathogens in diarrheic poultry.. Indian Journal of Animal Sciences (India) v.78(5) p.478-479 KEYWORDS: DIARRHOEA. POULTRY. SALMONELLA. SEROTYPES. CHEMOPROPHYLAXIS.

Association of avian rotavirus, E. coli and Salmonella were studied in the present study. Results indicated that 11.68% samples obtained from 7 different farms had mixed etiology for diarrhea, which included 5.19% (4 samples) of both E. coli and Salmonella and 6.49% (5 samples) of E. coli and avian rotavirus infections. Therefore, proper investigation should be made to know the causative agent of disease and only then treatment would be effective. Study emphasized the implementation of hygienic conditions on poultry farms as antimicrobial agents are not effective in the prevention of viral diseases.

0210. Senthilkumar, T.M.A.; Madras Veterinary College, Chennai (India)Subathra, M.; Madras Veterinary College, Chennai (India) Ramadass, P; Madras Veterinary College, Chennai (India). Serodiagnosis of leptospiral infections using recombinant LipL32 antigen bound carboxyl-modified latex beads. Indian Journal of Animal Sciences (India) v.78(5) p.480-482 KEYWORDS: AGGLUTINATION TESTS. LEPTOSPIROSIS. RECOMBINANT PROTEINS.

The recombinant outer membrane protein antigen based LAT was evaluated with suspected cattle and dog sera. The rLipL32 was specific for pathogenic serovars of Leptospira. Relative sensitivity and specificity of LAT was 94.84% and 96.55% for dog sera and 93.68% and 98.3% for bovine sera, respectively. The test was simple, rapid and cost effective for large scale screening of bovine and dog sera against leptospiral antibodies.

0211. Sahni, Y P; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Gautam, V.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India)Shukla, D.; Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (India). Evaluation of herbal extracts for antibacterial activity against Staphylococcus aureus and Klebsiella pneumoniae micro-organisms. Indian Journal of Animal Sciences (India) v.78(5) p.483-485 KEYWORDS: DRUG PLANTS. ANTIMICROBIAL PROPERTIES. WITHANIA SOMNIFERA. KLEBSIELLA PNEUMONIAE. STAPHYLOCOCCUS AUREUS.

The MIC of aqueous extract of Boerhaavi diffusa, Eclipta alba and Withania somnifera was recorded as 100, 62.5 and 50 mg, respectively, against Staphylococcus aureus bacteria. The alcoholic extracts of Boerhaavia diffusa, Eclipta alba and Withania somnifera were more effective against S. aureus with MIC of 50, 12.5, 21.87 mg, respectively. However, aqueous and alcoholic extracts of Boerhaavia diffusa, Eclipta alba and Withania somnifera were resistant against Klebsiella pneumoniae.

0212. N.K. Rajeev; KVAFSU, Veterinary College, Department of Microbiology, Bangalore (India)S. Isloor; KVAFSU, Veterinary College, Department of Microbiology, Bangalore (India)Rathnamma, D.; KVAFSU, Veterinary College, Department of Microbiology, Bangalore (India) Shridhar, N.S.; KVAFSU, Veterinary College, Department of Microbiology, Bangalore (India). Characterization of staphylococcus aureus and E. Coli of bovine mastitis. Indian Veterinary Journal (India) v.86(9) p.883-885 KEYWORDS: STAPHYLOCOCCUS AUREUS. BOVINE MASTITIS. BACTERIA. CROSSBREEDING. COWS. MILK.

S. aureus followed by E. coli were found to be the predominant pathogens causing both clinical and subclinical mastitis. The prevalence of S. aureus was high in subclinical mastitis (24.36 per cent) when compared to clinical mastitis (13.95 percent), whereas prevalence of E. coli was marginally high in clinical

mastitis (15.70 per cent) when compared to subclinical mastitis (14.09 per cent). The study emphasizes the importance of both *S. aureus* and *E. coli* in causing bovine mastitis.

0213. Tewari, A.K.; Indian Veterinary Research Institute, Division of Parasitology, Izatnagar (India)Rao, J.R.; Indian Veterinary Research Institute, Division of Parasitology, Izatnagar (India)Mishra, A.K.; Indian Veterinary Research Institute, Division of Parasitology, Izatnagar (India). Protective potentiality of killed *Trypanosoma evansi* in mice. Indian Veterinary Journal (India) v.86(9) p.892-893 KEYWORDS: TRYPANOSOMA EVANSI. MICE. FORMALDEHYDE. PATHOGENICITY.

Treatment with a concentration equal to or greater than 0.05% formalin resulted in total inactivation of *Trypanosoma evansi*. Protection against homologous challenge was complete when inactivated 2×10^6 T. evansi were used for immunization.

0214. Tiwari, S.K.; College of Veterinary Science, Department of Veterinary Surgery and Radiology, Anjora, (India)Nath, Kashi; College of Veterinary Science, Department of Veterinary Surgery and Radiology, Anjora, (India)Raju Sharda; College of Veterinary Science, Department of Veterinary Surgery and Radiology, Anjora, (India)Kalim, Md. Osamah; College of Veterinary Science, Department of Veterinary Surgery and Radiology, Anjora, (India)Jain, Padam; College of Veterinary Science, Department of Veterinary Surgery and Radiology, Anjora, (India)Garg, Sumeet; College of Veterinary Science, Department of Veterinary Surgery and Radiology, Anjora, (India). Surgical management of recurrent rectal prolapse in she buffaloes. Indian Veterinary Journal (India) v.86(9) p.951-952 KEYWORDS: DIGESTIVE SYSTEM DISEASES. WATER BUFFALOES. SURGICAL OPERATIONS.

Successful surgical management of rectal prolapse in four she buffaloes is reported and discussed.

L74 Miscellaneous Animal Disorders

0215. Karki, Kedar; Manandhar, Poornima (Central Veterinary Laboratory, Tripureswor, Kathmandu (Nepal)). Clinical-Epidemiological Investigation of Moldy corn poisoning due to *Penicillium* spp in mules at Udayapur district, Nepal. Veterinary World (India) v.1(4) p.107-109 KEYWORDS: MULES. ANIMAL FEEDING. MAIZE. BIOLOGICAL CONTAMINATION. MOULDS. PENICILLIUM

A clinical epidemiological investigation of Acute sudden death syndrome due to which 31 mules from a herd of 900 died within the period of 12.07.2006 to 21.10.2006 in Udayapur District Nepal. These animals were being used for good transportaion work in hilly region of Nepal. On rout these animals were being fed only whole maize and gram. Normally healthy looking animals started dying suddenly. Initially suspected for acute bacterial disease and treated with broad-spectrum antibiotics and vaccinated with bacterial vaccine. On close observation of herd their feed stuff revealed grains fed to these animal during rainy season was found 20% moldy in appearance. On Postmortem examination acute severe congestion and hemorrhages in liver, lung, spleen heart, intestinal mucosa were found. Histopathological examination of tissue from these organs revealed infiltration of mononuclear cell in tissue indicative of chronic nature of condition. Continuous use of apparently 15-20% moldy grain (maize, gram) was used as feed. On laboratory analysis of sample of same grain was found to be containing $6-10-110-10$ CFU/gm of *Penicillium* spp of fungus. When remaining herd still using same feed treated with toxin binder (toxicurb, varishta), liver tonic like biolive, digevet, mineral mixture promin and immunocare controlled the mortality may be indicative of the disease syndrome being caused by moldy corn poisoning similar to condition Equine Encephalomalacia. Laboratory findings and response of treatment indicates that during rainy season and immediately after rainy season feeding of stored grains are going to be detrimental to equine species. During this period care should be taken to feeding grains to this animal if treated with any toxin binder as well as herbal immunomodulater is going to reduce the chances of occurring this syndrome.

0216. Gangwar, Pritee; College of Veterinary and Animal Sciences, Pantnagar (India). Department of Epidemiology and Preventive Veterinary Medicine. Upadhyay, A.K.; College of Veterinary and Animal Sciences, Pantnagar (India). Department of Epidemiology and Preventive Veterinary Medicine. Gangwar, N.K.; College of Veterinary and Animal Sciences, Pantnagar (India). Department of Epidemiology and Preventive Veterinary Medicine. Rajput, M.K.S.; College of Veterinary and Animal Sciences, Pantnagar (India). Department of Epidemiology and Preventive Veterinary Medicine.. Relationship of mineral and vitamin supplementation with mastitis. *Veterinary World (India)* v.1(4) p.103-104 KEYWORDS: WATER BUFFALOES. MASTITIS. SUPPLEMENTS. MINERAL NUTRIENTS. IMMUNITY. VITAMIN E. Fifty lactating buffaloes were divided into five groups viz., four treated and one control group. The treated groups received Ashwagandha, Vitamin E, Selenium, Copper and Zinc in different combinations. Animals of group IV (provided with 50 gm of Ashwagandha and 500 IU Vitamin E, 800 mg zinc methionine, 250 mg copper sulphate and 5 mg of selenium) showed highest recovery (80.00%) with an average post treatment CMT score point 1.53+0.75, as compared to rest of the treated groups. Supplementation of trace minerals is only required at low levels to improve immune functions such as decreasing the incidence of mastitis.

0217. Bodkhe, A.M.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Khan, L.A.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Raut, P.A.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Chavhan, P.B.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Nakade, M.K.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Pawshe, M.D.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Vyavanare, S.S.; Maharashtra Animal and Fishery Sciences, University, Nagpur (India). Nagpur Veterinary College. Department of Veterinary Clinical Medicine. Parturient Paresis in crossbred cow. *Veterinary World (India)* v. 1(6) p. 181 KEYWORDS: COWS. CROSSBREDS. DRUG THERAPY. PARTURIENT PARESIS.

0218. Dhonde, S.N.; Maharashtra Animal and Fishery Science University, parbhani (India). College of Veterinary and Animal Sciences. Teaching Veterinary Clinical Service Complex. Rasal, T.D.; Maharashtra Animal and Fishery Science University, parbhani (India). College of Veterinary and Animal Science. Chavan, V.V.; Maharashtra Animal and Fishery Science University, parbhani (India). College of Veterinary and Animal Science. Digraskar, S.U.; Maharashtra Animal and Fishery Science University, parbhani (India). College of Veterinary and Animal Science. Londhe, S.V.; Maharashtra Animal and Fishery Science University, parbhani (India). College of Veterinary and Animal Science. Clinico-therapeutic management of dimethoate-30 (Rogor) poisoning in a non-descript bullock. *Veterinary World (India)* v. 1(6) p. 178-179 KEYWORDS: BULLOCKS. POISONING. DRUG THERAPY. DEXAMETHASONE. DIMETHOATE.

A non-descript bullock suffering from dimethoate-30% (Rotor) poisoning was treated using Inj. Dexamethasone, Inj-2PAM, Inj. B-complex and Sodium Bicarbonate along with fluid therapy, the bullock responded well to the therapy and survived.

0219. Pradhan, M.S.; Maharashtra Animal and fishery Science University, nagpur (India). Nagpur Veterinary College. Department of Veterinary Medicine. Waghaye, U.G.; Maharashtra Animal and fishery Science University, nagpur (India). Nagpur Veterinary College. Department of Veterinary Medicine. Jadhav, S.C.; Maharashtra Animal and fishery Science University, nagpur (India). Nagpur Veterinary College. Department of Veterinary Medicine. Paralytic ileus in a cattle. *Veterinary World (India)* v. 1(6) p. 180 KEYWORDS: CATTLE. INTESTINES. DRUG THERAPY. DIGESTIVE DISORDERS.

0220. Dadarwal, Dinesh; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India)Singh, Jagir; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India)Honparkhe, M.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India) Dhaliwal, G.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India)Cheede, G.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Field efficacy of E. coli lipopolysaccharide intrauterine infusion in treating endometritis in crossbred cows.. Indian Journal of Animal Sciences (India) v.77(12) p.1224-1227 KEYWORDS: ENDOMETRITIS. UTERINE DISEASES. ESCHERICHIA COLI. DAIRY COWS. LIPOPOLYSACCHARIDES.

Bacterial endometritis is a key cause of infertility in dairy cows and had been conventionally treated with antibiotics. The present study aims at utilizing Escherichia coli lipopolysaccharide (LPS) to treat endometritis in cows under the field conditions where the isolation of bacteria and blood sampling are remote possibilities and vaginal mucus score is the sole criteria of diagnosing endometritis. Endometritic cows (350) were given single intrauterine infusion of LPS (100 /lg) at estrus and inseminated at next estrus if the vaginal mucus was clear. Out of these, 21 cows (group Ia) with endometritis were subjected to repeated rectal palpation and blood sampling for progesterone and compared with those of 6 cows with clear vaginal mucus at estrus (group C). The remaining 329 cows (group Ib) with endometritis were not subjected to repeated examination and sampling. The clearance percentage, FSCR, OCR in group Ia were 85.71 %, 47.62% and 43.3%, respectively, while the respective values for group Ib were 78.11%, 30.4% and 34%, respectively. The present study evident potential use of E. coli LPS in improving fertility in cows with endometritis under field conditions.

0221. Ratre, H.; Indira Gandhi Krishi Vishwavidhalaya, Raipur (India) Roy, S.; Indira Gandhi Krishi Vishwavidhalaya, Raipur (India)Roy, M.; Indira Gandhi Krishi Vishwavidhalaya, Raipur (India). Selenium as the causative factor of tail gangrene syndrome in chhattisgarh. Indian Journal of Animal Sciences (India) v.77(12) p.1268-1269 KEYWORDS: CATTLE. WATER BUFFALOES. NECROSIS. SOIL TOXICITY. SELENIUM.

For identification of etiology factors of tail gangrene syndrome in buffaloes, feed, fodder, soil and water samples from study area, and blood sample from affected animals were collected. Toxic level of selenium was found in feed, fodder, soil and blood sample, suggesting possible etiology of the disease.

0222. Jas, R.; West Bengal University of Animal and Fishery Sciences, Kolkata (India)Ghosh, J. D.; West Bengal University of Animal and Fishery Sciences, Kolkata (India). Economic impact of gastrointestinal nematodosis in sheep: Enhanced meat production by anthelmintic treatment. Indian Journal of Animal Sciences (India) v.79(8) p.761-763 KEYWORDS: DIGESTIVE SYSTEM DISEASES. ANTHELMINTICS. ECONOMICS. IMPACT ASSESSMENT. SHEEP. MEAT PRODUCTION.

A field study involving 4 to 10-month-old sheep (40) of either sex, naturally infected with gastrointestinal nematodes (EPG 300) was conducted for estimating the economic loss, in terms of meat production, due to gastrointestinal nematodosis. The selected sheep were divided into 2 equal groups with a comparable initial mean body weight and they were maintained according to the farmers practices. One group was maintained free from gastrointestinal nematodes (negative on quantitative faecal examination) with tactical subcutaneous dosing of ivermectin 200 µg/ kg body weight. The other group was left untreated allowing them to harbour the naturally acquired infection. Body weight and quantitative faecal examination of all the sheep under study were recorded at monthly interval for 12 months. The net loss due to reduced meat production in terms of rupees was derived from the final difference in mean body weight between the infected and parasite free groups. The calculation took into account the standard dressing percentage of sheep (50%), cost of treatment per sheep during the entire course of the study and the average rate per kilogram of mutton (Rs 130.00) in the state of West Bengal, India. The mean loss of body weight due to gastrointestinal nematodosis, as recorded, was 3.225 kg with a net per capita loss of 1.613 kg meat production in the infected group during the entire period of the study. The cost of treatment during the entire study period was Rs 14.36/sheep and the resulting net economic loss due to gastrointestinal nematodosis in terms of rupees was Rs 195.33.

0223. Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India)Gupta, O.P.; Indian Veterinary Research Institute, Izatnagar (India)Singh, G.R.; Indian Veterinary Research Institute, Izatnagar (India)Kinjavdekar, P.; Indian Veterinary Research Institute, Izatnagar (India)Aithal, H.P.; Indian Veterinary Research Institute, Izatnagar (India)Amarpal; Indian Veterinary Research Institute, Izatnagar (India). Haematological and serum electrolyte changes in arthritic buffalo calves treatment with electro acupuncture. Indian Journal of Animal Sciences (India) v.78(2) p.168-169 KEYWORDS: ARTHRITIS. BLOOD DISORDERS. ACUPUNCTURE. WATER BUFFALOES.

The study was conducted to evaluate the efficacy of acupuncture in the treatment of aseptic arthritis in buffalo calves. Male buffalo calves (24) were divided in 4 groups of 6 animals each. Animals of group A were kept as control. Electrostimulation of acupoints was done using electroacupuncturoscope. The different groups were compared on the basis of haematological and serum electrolyte change. In treated groups early improvement in electrolyte levels was observed.

0224. Roy, S.; W.B.U.A.F.Sc., Dept. of Veterinary Surgery and Radiology.Ghosh, G.L.; Veterinary Officer, ARD department, West BengalMoulik, N.; W.B.U.A.F.Sc., Department of Veterinary Gynaecology and Obstetrics,Datta, U.; W.B.U.A.F.Sc., Department of Veterinary Gynaecology and Obstetrics,. Surgical management of intestinal obstruction in a dog. Indian Veterinary Journal (India) v.85 (1) p.75-76 KEYWORDS: DOGS. DIGESTIVE DISORDERS.

Successful surgical management of distal intestinal obstruction in a Golden Retriever dog is presented and discussed.

0225. Gupta, Neelu; College of Veterinary Science and A.H., Department of Pathology, Anjora (India)Katiyar, A.K.; College of Veterinary Science and A.H., Department of Pathology, Anjora (India) Swamy, Madhu; College of Veterinary Science and A.H., Department of Pathology, Anjora (India). Vascular response to staphylococcus epidermidis induced inflammation in buffalo. Indian Veterinary Journal (India) v.85 (1) p.88-89 KEYWORDS: STAPHYLOCOCCUS. STAPHYLOCOCCUS EPIDERMIDIS. INFLAMMATION. WATER BUFFALOES.

Various type of local injury in permeability response which differ in the time of their appearance, their duration and their susceptibility to pharmacological agents. The vascular response to experimentally induced inflammation in the buffalo.

0226. Selvaraju, M.; Veterinary College and Research Institute, Department of Clinics, Tamil Nadu (India)Palaniswamy, M.; Veterinary College and Research Institute, Department of Clinics, Tamil Nadu (India)Kumaresan, A.; Veterinary College and Research Institute, Department of Clinics, Tamil Nadu (India)Napotean, R. Ezakial; Veterinary College and Research Institute, Department of Clinics, Tamil Nadu (India)Chandrasahsan, C.; Veterinary College and Research Institute, Department of Clinics, Tamil Nadu (India). Dystocia due to arthrogryposis fetus in a crossbred cow. Indian Veterinary Journal (India) v.86(3) p.299-300 KEYWORDS: DYSTOCIA. JOINT DISEASES. FOETUS. COWS.

A successful delivery of arthrogryposis calf in a crossbred cow through cesarean section is reported. 0993. Sharma, Arvind; Veterinary Polyclinic, HP (India). Upward fixation of patella in e. Indian Veterinary Journal (India) v.86(5) p.512-513 KEYWORDS: LIMB BONES. HORSES. BOVINAЕ. Successful surgical intervention of upward fixation of patella in two mares and six mules is described and discussed.

0227. Gupta, V.K.; Central Institute for Research on Goats, Makhdoom (India)Sharma, S.D.; Central Institute for Research on Goats, Makhdoom (India)Vihan ,V.S.; Central Institute for Research on Goats, Makhdoom (India)Ashok Kumar; Central Institute for Research on Goats, Makhdoom (India). Prevalence and changes in haemogram in sub-clinical ketosis in sheep reared under organized farming system. Indian Journal of Animal Sciences (India) v.78(5) p.453-456 KEYWORDS: KETOSIS. METABOLIC DISORDERS. SHEEP. DISEASE SURVEILLANCE. DISORDERS.

Sheep (74) of Muzzafarnagri breed were screened in advance stage of pregnancy and early stage of lactation for prevalence of ketosis. The prevalence rate in relation to type of birth, birth weight, dam's weight, age and breed, lactation number, feeding status, environmental stress, transportation and management variations was studied in organized farming system. The prevalence rate of sub-clinical ketosis was 14.86% in pregnancy, and 13.51% in lactation stage. The prevalence rate of sub-clinical ketosis was 13.89% in sheep giving birth to single lamb and it increased with increasing lamb's birth weight. The prevalence rate was positively correlated with dam's weight in both pregnancy and lactation. Similarly, age-wise distribution of data revealed that 3-4 years age group was the most susceptible for sub-clinical ketosis in pregnancy as well as during lactation periods. The prevalence rate in pregnant ewes was 50.00% and it increased with the increase in parity numbers in sheep. No clinical case was found in either goats or sheep based on overt signs of ketosis, but sub-clinical ketotic cases were identified on the basis of hypoglycemia (30 mg%) and ketonemia. In normal physiological states (dry, pregnancy and lactation), erythrocytic indices (TEC, Hb and PCV) showed a declining trend on the values of these parameters during pregnancy and lactation states, which showed the state of anemia particularly in the last month of pregnancy. TLC levels increased in both pregnancy and lactation as compared to dry period. TEC, Hb, PCV and MCV did not show any significant changes in sub-clinical ketotic cases in either species of animals under study compared to healthy group animals. The value of TEC, Hb and PCV were 8.26 ± 0.61 and $6.81 \pm 0.34 \times 10^6/\mu\text{l}$, 6.70 ± 0.20 and 6.28 ± 0.33 g% and 25.20 ± 0.70 and $25.38 \pm 0.38\%$ in pregnancy and lactation in ketotic sheep respectively.

0228. Maity, S.; West Bengal University of Animal and Fishery Sciences, Ethics and Jurisprudence, Department of Veterinary Medicine, Kolkata (India) Sarkar, S.; West Bengal University of Animal and Fishery Sciences, Ethics and Jurisprudence, Department of Veterinary Medicine, Kolkata (India) Saha, T.; West Bengal University of Animal and Fishery Sciences, Ethics and Jurisprudence, Department of Veterinary Medicine, Kolkata (India). Bacteriology and antibiogram of canine pyometra. Indian Veterinary Journal (India) v.86(9) p.896-897
KEYWORDS: BACTERIOLOGY. PYOMETRA. SEROTYPES. PATHOGENICITY.

From 43 canine pyometra cases screened in veterinary clinics it was found that Staphylococcus sp. was the predominant one (44.19%) followed by Proteus spp., E. coli, and Klebsiella sp. and three cases were found to be negative. All the isolates were highly sensitive to enrofloxacin, ciprofloxacin, gentamicin and ceftriaxone but were generally resistant to lincomycin and oxytetracycline.

0229. Singh, Balvir; College of Veterinary Science, Department of Genetics and Animal Breeding, Uttarakhand (India) Kumar D.; College of Veterinary Science, Department of Genetics and Animal Breeding, Uttarakhand (India) Ghosh, A.K.; College of Veterinary Science, Department of Genetics and Animal Breeding, Uttarakhand (India) Singh, S.P.; College of Veterinary Science, Department of Genetics and Animal Breeding, Uttarakhand (India). Evidence Of Polygenic Nature Of Abnormal Birth And Sex Ratio In Dairy Cattle. Indian Veterinary Journal (India) v.86(9) p.921-923
KEYWORDS: FUNCTIONAL DISORDERS. PARTURITION. SEX. DAIRY CATTLE.

The per cent incidence of abnormal parturitions among the progeny of different sires ranged beyond the normal range of 30-70% in a study on 3484 calving records of Jersey, crossbred and Haryana cows. Coefficient of skewness was significant for abnormal birth in Jersey cattle and for pre-mature birth in all the genetic groups whereas the coefficient of kurtosis was significant only for pre-mature birth in Jersey cattle. The skewness and kurtosis was absent for the traits for which the coefficients were non-significant and their frequency curve had normal distribution indicating their polygenic nature of inheritance.

0230. Peer, F.U.; Faculty of Veterinary Sciences and Animal Husbandry, Teaching Veterinary Clinical Complex, Srinagar (India) Bhattacharya, H.K.; Faculty of Veterinary Sciences and Animal Husbandry, Teaching Veterinary Clinical Complex, Srinagar (India). Efficacy of antimicrobials in the treatment of mastitis. Indian Veterinary Journal (India) v.86(9) p.959-959
KEYWORDS: MASTITIS. ANTIMICROBIALS.

The result of the present study revealed that gentamycin was the best choice among antibiotics tested for treating bovine mastitis.

M11 Fisheries Production

0231. Das, Debabrata; Central Inland Fisheries Research Institute (ICAR), Barrackpore (India)Pal, Satyabrata; Bidhan Chandra Krishi Viswavidyalaya, Mohanpur (India).Bhaumik, Utpal; Central Inland Fisheries Research Institute (ICAR), Barrackpore (India)Paria, Tapas; Central Inland Fisheries Research Institute (ICAR), Barrackpore (India)Mazumdar, Debasis; Bidhan Chandra Krishi Viswavidyalaya, Mohanpur (India).Pal, Subhabaha; Calcutta University, Kolkata (India). PG student.. Modeling fish catch in presence of lunar periodicity. Journal of Interacademia (India) v. 13(2) p.206-215 KEYWORDS: ESTUARIES. MOON PHASES. FISHING METHODS. SHELLFISH. FRESHWATER FISHES. SALTWATER FISHES.

The study was made to explore the existence of any kind of relationship between the fish catch i.e., the fish abundance within net zone in estuary river system and lunar periodicity. Based on the data of consecutive four year on fish catch under lunar periodicity it was revealed that during the period comprising full moon to new moon there exists one peak of maximum fish catch and also there exists another peak of maximum fish abundance during the period comprising new moon to full moon. The findings emanated from the study unambiguously reveal that the fish abundance (fish catch) is dependent on lunar periodicity; the fish include fin fish and prawn. The reason behind this functional relationship can be ascribed to the fact that there always exist a vertical movement of fish and prawn in the river under the influence of moon. However, the study negates the existence of any such variation or trend in shrimp catch in presence of lunar periodicity.

M12 Aquaculture Production and Management

0232. Sharma, Rupam; Central Agricultural University, College of Fisheries, Tripura (India). Chromosomal studies on two endangered catfishes-Ompok bimaculatus (Bloch) and Ompok pabda (Hamilton-Buchanan). Indian Journal of Animal Sciences (India) v.78(2) p.264-236 KEYWORDS: OMPOK BIMACULATUS. OMPOK PABDA. CHROMOSOME MANIPULATION. Chromosomal studies are the basic requisite for genetic improvement program and for conservation of wild gene pool. The catfishes Ompok bimaculatus and Ompok pabda are being endangered due to the habitat destruction and lack of proper management of the stock. For the present karyotypic study on these 2 freshwater endangered catfishes, 25 samples of each species were examined and 307 and 330 chromosome spreads of O. bimaculatus and O. pabda, respectively, were screened. The study revealed the presence of diploid chromosome number as 42 with the chromosome formula of 12 metacentric, 14 submetacentric and 16 subtelocentric and telocentric in both the species. The karyotype is characterized by the fundamental arm number (NF) of 68.

N10

0233. Thiruvankadan, A.K.; Mecheri Sheep Research Station, Tamil Nadu (India) Karunanithi, K.; Mecheri Sheep Research Station, Tamil Nadu (India) Babu, R. Narendra; Mecheri Sheep Research Station, Tamil Nadu (India) Arunachalam, K.; Mecheri Sheep Research Station, Tamil Nadu (India). Effect of housing system on growth performance of tellicherry goats. Indian Veterinary Journal (India) v.86(5) p.500-502 KEYWORDS: ANIMAL HOUSING. GROWTH. GOATS. ECONOMICS. GROWTH RATE. BODY WEIGHT. This study was conducted to investigate the effect of different housing systems on growth rate of Tellicherry goats under intensive system of management. The total body weight gain of Tellicherry goats from three to 18 months of age was 13.17 ± 2.01 and 13.40 ± 1.98 kg respectively under mud and slotted floor housing systems. The physiological parameters like respiration and pulse rates, temperature, PCV and haemoglobin level were not significantly different between two housing systems. It is concluded that the housing systems do not have any significant effect on growth rate, physiological parameters and faecal egg count.

Q02 Food Processing and Preservation

0234. Malek, M.A.; Bangladesh Agricultural University, Mymensingh (Bangladesh)Khan, M.J.; Bangladesh Agricultural University, Mymensingh (Bangladesh)Islam, M.S.; Bangladesh Agricultural University, Mymensingh (Bangladesh). Nutritive value of rice straw as affected by ensiling with urea and urease sources at various moisture levels. Indian Journal of Animal Sciences (India) v.78(2) p.182-185 KEYWORDS: COWPEAS. SILAGE MAKING. SOYBEANS. STRAW.

An experiment was conducted to study the effect of urease sources on proximate composition, NH₃-N production, energy value, in situ disappearance of dry matter (DM), crude protein (CP) and digestibility of organic matter of urea ensiled rice straw. Rice straw (RS) was ensiled with the combination of urea, soybean seed meal (SSM), cowpea seed meal (CSM) and morden soil (MS) at different moisture levels. Ensiling with urease sources resulted in improvement of CP, organic matter (OM), ether extract (EE), and decrease in crude fiber (CF) and ash. All the treatments had significantly higher CP than untreated straw. Similarly, OM and EE content for urease treated straws were higher over untreated. In sacco disappearance of DM and CP were also higher in treated group than untreated straw. But all the treatments were lower in CF and ash contents than control. The interaction between additive sources and moisture levels were significant for OM, CP, CF and NFE (nitrogen free extract) content but nonsignificant for ash. It may be concluded that nutritive value of rice straw can be improved by adding 5% urea and 5% urease containing plant sources like SSM, CSM and preserved for at least 4 days under anaerobic condition at 40% moisture level.

Q04 Food composition

0235. Kundu, S.S; NDRI, Karnal (India). Dairy Cattle Nutrition Division.Kushwaha, B.P.; Indian Grassland and Fodder Research Institute, Jhansi (India)Maity, S.B.; Indian Grassland and Fodder Research Institute, Jhansi (India)Singh, Sultan; Indian Grassland and Fodder Research Institute, Jhansi (India)Kumar, Anil; Indian Grassland and Fodder Research Institute, Jhansi (India). Milk composition of Bhadawari buffaloes. Indian Journal of Animal Sciences (India) v.77(12) p.1330-1333 KEYWORDS: WATER BUFFALOES. LAND RACES. MILK FAT. BUFFALO MILK.

Bhadawari buffaloes are famous for higher milk fat content. They are well adapted to the harsh conditions of the ravines and can thrive well on grazing alone. Present investigation was undertaken to study the effect of various factors, viz. lactation order, stage of lactation, season and time of sampling etc. on milk composition. Average fat, solid not fat (SNF) and total solids (TS) were 7.53 ± 0.04 , 10.52 ± 0.06 and $18.18 \pm 0.08\%$, respectively. Effect of parity, stage of lactation, time of sampling and season had a significant effect on fat and total solid contents. The effect of parity and stage of lactation was nonsignificant on SNF. Regression effect of milk yield was significant on fat and total solid and nonsignificant on SNF. Highly significant and positive correlation was between fat and total solid content and a negative but nonsignificant correlation was observed between fat and SNF. Average milk fat, SNF and TS in Bhadawari buffaloes were comparatively higher than the most of the other Indian breeds of buffaloes.

S01 Human nutrition - General aspects

0236. Nahar, Savita; Punjab Agricultural University, Department of Food and Nutrition. Ludhiana (India)Grover, Kiran; Punjab Agricultural University, Department of Food and Nutrition. Ludhiana (India)Chawla, Paramjit; Punjab Agricultural University, Department of Food and Nutrition. Ludhiana (India). Nutritional status of rural school children in central zone of Punjab. Journal of Research Punjab Agricultural University (India) v.46(1-2) p.94-98 KEYWORDS: BIOMETRY. NUTRITIVE VALUE. NUTRITIONAL STATUS. PUNJAB.

A sample of 120 school children in the age group of 7-9 year was selected from rural areas of two districts namely Jalandhar and Kapurthala of central zone of Punjab. General information, food and nutrient intake and anthropometric measurements of rural school children were recorded to assess their nutritional status. The data on dietary adequacy revealed lower intake of cereals, pulses, milk and milk products and green leafy vegetables. The per cent adequacy of energy and protein intake was found to be nearly half (50 & 54%) of the Recommended Dietary Allowances. The intake of vitamins and minerals - β -carotene, thiamine, riboflavin, niacin, vitamin B12, vitamin C, calcium and iron was also lower. The mean height of children was comparable with national and international standards of Indian Council of Medical Research (ICMR) and National Centre for Health and Statistics (NCHS), USA. However, the mean weight was lower than these standards. Twenty two per cent of rural school children were underweight. The percentage of underweight girls (24.6) was found to be higher than boys (17.7). Low purchasing power and ignorance were mainly responsible for dietary inadequacy. Hence, empowering the mothers in terms of nutritional knowledge and skill can go a long way to improve the nutritional status of the children.

0237. Agarwal, Vyoma; Punjab Agricultural University, Department of Food and Nutrition. Ludhiana (India) Kochhar, Anita; Punjab Agricultural University, Department of Food and Nutrition. Ludhiana (India) Sangha, Jaswinder; Punjab Agricultural University, Department of Food and Nutrition. Ludhiana (India). Impact of nutrition counselling regarding stevia on non-insulin dependent diabetics. Journal of Research Punjab Agricultural University (India) v.46(1-2) p.99-103 KEYWORDS: HUMAN BEHAVIOUR. BLOOD PROTEIN CONCENTRATE.

Fifty Non-Insulin Dependent Diabetic subjects, 25 males and 25 females were selected from posh areas of Ludhiana city to study the impact of nutrition counseling regarding Stevia, on its usage and consequent knowledge, attitude, practices and blood profile of diabetics. Nutrition education related to etiology, complications, management of diabetes, health benefits of stevia, its cooking qualities and knowledge regarding recipes developed using stevia was imparted to the diabetic subjects for a period of 3 months. Pre and post testing of knowledge, attitude and practices of subject was done using questionnaire technique. The blood parameters of the subjects were also recorded after imparting nutrition counseling. The finding indicated that stevia as sweetener was used only by 4 per cent subjects before nutrition counseling which increased to 64 per cent in males and 68 per cent in females after nutrition counseling. The percent decrease in fasting blood glucose level and post prandial blood glucose level in males was 8.56 per cent and 6.51 per cent and in females it was 7.09 per cent and 5.29 per cent after nutrition counseling. The percent decrease in total cholesterol and triglyceride in case of male subjects was 2.34 per cent and 2.48 per cent and in females was 2.76 per cent and 2.09 per cent after nutrition counseling. The percent gain in knowledge, attitude and practices scores of the subject was 101.33 per cent, 59.43 per cent and 84.32 per cent respectively, while the overall gain in knowledge, attitude and practices score of the subject was 84.69 per cent after nutrition counseling. It was concluded that diabetics should be encouraged to use stevia as it is natural, safe and has other therapeutic benefits.

U10 Mathematical and Statistical Methods

0238. Kiran, P. Sandhya; Indian Agricultural Statistics Research Institute, New Delhi (India) Bhattia, V.K.; Indian Agricultural Statistics Research Institute, New Delhi (India) Paul, Amrit Kumar; Indian Agricultural Statistics Research Institute, New Delhi (India). Estimation of heritability by robust method in half-sib. Indian Journal of Animal Sciences (India) v.77(12) p.1301-1306 KEYWORDS: STATISTICAL METHODS. HERITABILITY. GENETIC INHERITANCE.

In robust elementwise estimation approach, the variance components are expressed as functions of variances and covariances of sample covariance matrices in half-sib data structures. These variances and covariances were replaced by robust variances and covariances that were estimated in an elementwise manner. From the robust covariance matrices, we get robust estimates of variance components and heritability. Among the non-

iterative robust estimators, biweight estimator with $c=10$ showed superior performance as compared to others. In the presence of outliers none of the classical methods give the reliable estimate, but the robust methods behave better than the classical estimators in terms of bias and MSE. Even in the presence of scale contamination, the estimates obtained by this method were close to parametric values.

0239. Singh, N. Okendro; Indian Agricultural Research Institute, New Delhi (India). Paul, Amrit Kumar; National Research Centre on coldwater Fisheries (ICAR), Bhimtal Nainital (India). MD. Wasi Alam; National Research Centre on coldwater Fisheries (ICAR), Bhimtal Nainital (India).. Non-linear models to describe growth pattern of *Tor putitora* (Hamilton) under monoculture and polyculture system.. Indian Journal of Animal Sciences (India) v.77(12) p.1346-1347 KEYWORDS: STATISTICAL METHODS. TOR PUTITORA. GROWTH RATE. POLYCULTURE (AQUACULTURE).

The size of the fish is of prime importance in fish stock assessment. Growth pattern of the fish species itself is an important factor of the fish size and stock at a particular point of time. In the present scenario, it may be worthy to know the growth pattern of this fish species so that we can achieve proper management of mahseer stocks. The present paper is thus dedicated to describe growth pattern of *Tor putitora* in monoculture and polyculture systems. Three different nonlinear growth models were tried to explain the data sets considered. The Von-Bertalanffy model was found to be the best suitable model to describe the growth pattern of *Tor putitora*. Further, it seems that Von-Bertalanffy model explains the growth pattern of early stages of this fish species more efficiently.

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