

# The Indian Animal Sciences Abstracts

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## C10 Education

001. Ravi Kumar, S. (Indian Veterinary Research Institute, Izatnagar (India). Division of Extension Education); Mahesh Chander (Indian Veterinary Research Institute, Izatnagar (India). Division of Extension Education); Privatization of Veterinary services-Indian Context. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.81-83 KEYWORDS: VETERINARY SERVICES; PRIVATIZATION.

In India, seventy per cent of livestock farmers belong to the category of small marginal farmers and landless labourers and hence, complete privatization of veterinary services is not advisable so as to protect their interests. Instead, implementation of cost recovery measures for selected veterinary services would be a feasible option, which could reduce the financial burden on Government and improve the quality of the veterinary services. Further, while implementing the cost recovery measures, the costs for different services can be fixed taking into consideration the costs of inputs involved in providing those services. For instance, nominal service charge can be collected for services like minor surgical treatment, pregnancy diagnosis, deworming and vaccination, nominal service charge with subsidy on the cost of inputs supplied can be collected for services like artificial insemination, diagnostic services, major surgical, medical gynaecological and obstetrical treatment whereas the extension services like livestock advisory services and supply of publications must be provided free of cost by the Government.

## L01 Animal Husbandry

002. Ahmed, F.A.; Ghosh, M.K.; Pathak, P.K.; Bhattacharya, M. (National Research Centre on Yak (ICAR), Dirang (India)). Carcass quality of vanaraja birds. *Indian Veterinary Journal (India)*. (Dec 2006) v.83(12) p.1315-1316 KEYWORDS: CARCASS; COMPOSITION; BIRDS.

003. Gaur, M.L.; Pathodiya, O.P. (Rajasthan College of Agriculture, Udaipur (India)). Constraints perceived by farmers in goat rearing in Mewar region of southern Rajasthan. *Indian Journal of Animal Sciences (India)*. (Jan 2008) v. 78(1) p. 124-126 KEYWORDS: GOATS; ANIMAL HUSBANDRY.

Constraints perceived by goat rearers were recorded by a random sample survey of 360 goat rearers in districts Udaipur, Rajasamand, Chittorgarh and Bhilwara of Mewar region of Southern Rajasthan in India. Rank based quotient (RBQ) value for each constraint was calculated at district levels. Simultaneously, pooled RBQ values of different constraints were also estimated. The gravity of the constraints was judged through the magnitude of its RBQ value. The lack of grazing area was found to be the most serious constraint faced by goat rearers followed by lack of improved breeding buck, lack of credit facility, lack of knowledge about scientific goat rearing practices and illiteracy.

004. Gokhale, S.B.; Bhagat, R.L.; Singh, P.K. BAIF Development research Foundation, Central Research Station, Pune India; Singh, Gurmej NBAGR, Karnal India; Ahlawat, S.P.S BAIF Development Research Foundation, Central Research Station, Pune India. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 62-65 KEYWORDS: CATTLE; ANIMAL HUSBANDRY METHODS; ANIMAL PERFORMANCE.

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  $40.92 \pm 0.13$  months,  $49.39 \pm 0.13$  months and  $505.59 \pm 1.00$  days, respectively. On an average  $1.43 \pm 0.01$  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  $2.42 \pm 0.02$  litres per day with average fat percentage as  $4.22 \pm 0.04$  for an average lactation length  $189.26 \pm 0.88$  days. On an average  $7.18 \pm 0.02$  h work was taken by farmers per day in breeding tract (ranging from  $6.24 \pm 0.05$  h in Solapur district to  $7.89 \pm 0.04$  h in Satara). For ploughing of one-acre of land, an average time  $9.72 \pm 0.03$  h were required by Khillar bullocks. Khillar bullocks travel a distance up to  $18.33 \pm 0.15$  km in a day with average  $1304.24 \pm 15.33$  kg loads in a cart.

005. Haile, A. (Jimma University, Jimma, (Ethiopia); College of Agriculture;) Joshi, B.K.; Ayaleq, W.; Tegegne, A.; Singh, Avatar; Chakarvarty, A.K. (National Dairy Research Institute, Karnal (India)). Prediction of first lactation milk yield of Boran Cattle and their crosses with Holstein-Friesian in central Ethiopia using multiple regression and principal components analysis. Indian Journal of Animal Sciences (India). (Jan 2008) v. 781 p. 66-69 KEYWORDS: CATTLE; LACTATION; MILK YIELD; STATISTICAL METHODS.

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 ( $R^2=13.6$  percent) in adjusted data. In the Boran-Friesian crosses, Gain 2, BWT, AFS and YWT were significantly associated with FLYD ( $R^2= 15.21$  percent). The first principal component (PC1) out of 4 fitted composite variables was significantly associated with FLYD in Ethiopian Boran breed ( $R^2= 13.29$  percent). The third principal component (PC3) was more related to FLYD in Boran-Friesian crosses ( $R^2= 11.83$  percent) and inclusion of next important principal component PC1 improved accuracy of prediction to 13.76 percent. 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.

006. Haunshi, S.; Sharma, D. (Central Avian Research Institute, Izatnagar (India). Avian Genetics and Breeding Div.). Evaluation of reciprocally developed backcross-1 chicken populations for economic traits.. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.463-465 KEYWORDS: CHICKENS; GENETICS; RECIPROCAL CROSSING; POPULATION STRUCTURE.

007. Joshi, D.K. (Post Graduate Institute of Veterinary and Animal Sciences, Akola (India). Animal Genetics and Breeding Dept.). Effect of strain and method of rearing on part production performance in layers. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1334-1335 KEYWORDS: REARING TECHNIQUES,EGG PRODUCTION; BIRDS; POULTRY.

008. Khosravinia, H. (Lorestan University, Lorestan (Iran). Agriculture Faculty, Technology of Animal Products Dept.). Preferences of broiler chicks for different litter materials.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.445-446 KEYWORDS: BROILER CHICKENS; LITTER FOR ANIMALS; ANIMAL HOUSING.

The study was conducted to evaluate preferences of broiler chicks for four different litter materials.

009. Kor, A.; Keskin, S.; Bingol, M.; Daskiran, I. (Yuzuncu Yil University, Van (Turkey). Agricultural Faculty, Animal Science Dept.) . Udder characteristics of norduz goats.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.413-415 KEYWORDS: MAMMARY GLANDS; GOARTS; DIAMETER; LACTATION DURATION

This study was conducted to determine the udder characteristics of Norduz goat, a hairy goat variety, raised in extensive growing condition. The top height of udder above the ground (THUG), the bottom height of udder above the ground (BHUG), the udder depth (UD), the udder width (UW), the udder circumference (UP). the length of the left teat (LLT). the length of the right teat (LRT). the circumference of the left teat (PLT), the diameter of the left teat (DLT), circumference of the right teat (PRT) and the diameter of the right teal (DRT) were measured in every other week for three months beside the evaluating the milk yield. It was concluded that there were no differences among the udder characteristics of goats based on the age; however, the mentioned characteristics were significantly different (PO.05) for the lactation periods.

010. Murugesan, S.; Balachandran, C.; Punniamurthy, N.; Chandrasekaran, D.; Thangamani, R. (Veterinary College and Research Institute, Namakkal (India)). Furazolidone and cyclopiazonic acid toxicity in the chicken.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1271-1273 KEYWORDS: TOXICITY; CHICKENS; DRUGS; BIRDS.

011. Nawaz, H.; Naseem, M.A.; Yaqoob, M.; Ahmad, F.; Yousaf, M. University of Agricultural, Faisalabad Pakistan. Effect of dry yeast (*Saccharomyces cerevisiae*) on live performance and carcass characteristics of broiler chicks. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 120-123 KEYWORDS: CHICKS; YEAST; CARCASS CHARACTERISTICS; FEED INTAKE; WEIGHT GAIN.

An experiment was conducted to investigate the effect of different levels of dry yeast (*Saccharomyces cerevisiae*) On live performance and carcass characteristics of broiler chicks.

Data on feed intake, body weight gain, feed conversion ratio (FCR), dressing percentage, abdominal fat yield and organs weight were recorded and analyzed. Supplementation of *Saccharomyces cerevisiae* in broiler diets revealed. Non significant difference in feed intake during all the phases. Significantly higher weight gain and better FCR were observed in birds fed diet containing 0.10 percent *Saccharomyces cerevisiae* than those fed the control diet. No significant ( $P < 0.05$ ) differences of dietary treatments were observed on any of the carcass characteristics. From the study, it is obvious that dietary *Saccharomyces cerevisiae* beyond 0.10 percent did not show beneficial effect on live performance and carcass characteristics of broiler chicks.

012. Pathan, A.C.; Moregaonkar, S.D.; Khan, M.A.; Bharkad, G.P.; Phad, V.N. (College of Veterinary and Animal Sciences, MAFSU, Latur (India). Pathology Dept.). Efficacy of bio-bantox against experimental ochratoxycosis in broilers.. *Indian Veterinary Journal (India)*.. (Dec 2006) v.83(12) p.1261-1264 KEYWORDS: OCHRATOXINS; BROILER CHICKENS; DOGS; EXPERIMENTATION.

013. Pundir, 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*. (Jan 2008) v. 781 p. 56-61 KEYWORDS: CATTLE; ANIMAL BREEDS; ANIMAL PERFORMANCE; DRAUGHT ABILITY.

The breeding tract of Red Kandhari cattle breed comprises Latur, Parbhani, 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.

014. Radhika, G.; Pulinikunnathil, R.G.; Simon, S. (Extension Training Centre, Mannuthy, Thrissur (India)).. Study on cattle holding by women in Kerala.. *Indian Veterinary Journal (India)*. (Dec 2006) v.83(12) p.1340-1341 KEYWORDS: CATTLE; ROLE OF WOMEN; KERALA.

015. Rajkhowa, S.; Hazarika, G.C; Sarma, S. (Assam Agricultural University, Guwahati) (India). Effect of different iron preparations on body weight gain of anaemic piglets and iron deficient

anaemic calves. Indian Journal of Animal Sciences (India). (Jan 2008) v. 781 p. 111-113  
KEYWORDS: CALVES; PIGLETS; ANAEMIA; WEIGHT GAIN.

The studies conducted to find out the efficacy of different iron preparations (iron dextran, chelated iron and Ehb) on the body weight gain of iron-deficient anemic piglets and calves revealed significant increase in the body weights of all treated piglets and calves in comparison to their respective iron-deprived groups. The study also showed that the decrease in body weight gain in iron-deprived piglets and calves was associated with the fall in blood hemoglobin levels in both the species.

016. Samanta, A.K.; Bhutia, T.C.; Zeshmarani, S.; Majumder, S.C. (West Bengal University of Animal and Fishery Sciences, Kolkata (India). Animal Production and Management Dept.). Relationship of early expressing traits with lactation yield and life time production in cows.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1277-1279 KEYWORDS: LACTATION; YIELDS; COWS.

017. Simsek, E.; Kilic, I. (University of Uludog, Bursa (Turkey). Agriculture Faculty, Agricultural Engineering Dept.); Balci, F. (University of Uludog, Bursa (Turkey). Veterinary Medicine Faculty, Animal Science Dept.) . Effects of hen age and cage density on hen performance and egg quality in hot weather.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.409-412  
KEYWORDS: HENS; CAGES; DENSITY; PERFORMANCE TESTING; EGGS; QUALITY; WARM SEASON; EGG PRODUCTION; ENVIRONMENTALL TEMPERATURE; GREEN HOUSE EFFECT.  
This study was conducted to examine effects of hen age and cage density on egg production and egg quality characteristics. In this experiment at higher environmental temperatures 25 wk-old Isa Brown hens were placed in 40 x 50 x 40 cm cages at the rate of four and five hens per cage. Eggs were collected once a week in all cages until the end of study to determine characteristics of egg quality. It was determined that hen age had significantly reduced the feed consumption ( $P<0.05$ ), and improved the percentage hen day egg production and feed efficiency ( $P<0.01$ ). Characteristics of egg quality such as shell thickness, albumen index an Haugh unit were significantly affected by age of hen ( $P0.01$ ). Hens at higher cage density level had lower percentage hen-day egg production than hens at lower cage density level ( $P<0.05$ ). Effects of cage density on characteristics of egg quality were non-significant.

018. Yilsay, T.O.; Bayizit, A.A.; Yucel, A. (Uludag Univesity, Bursa (Turkey). Food Engineering Dept.); Turan, M.A. (Uludag University, Bursa (Turkey). Soil Sciences Dept.). Mineral and trace element contents of the edible meat of frozen shellfish.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1298-1299 KEYWORDS: MINERALS; TRACE ELEMENTS; MEAT; FROZEN FISH; SHELLFISH; SODIUM; POTASSIUM; CALCIUM.

019. Bhatt,Y.C.; Verma,R.N. ;Sharma, A. K. ; Tiwari, G. (College of Technology and Engineering, Maharana Pratap University of Agriculture and Technology, Udaipur (India)) Draughtability assessment of Indian donkey through fatigue analysis. Indian Journal of Animal Research 2005, v. 39 (1)

Donkeys have been a source of draught power in many parts of the world from time immemorial. Three donkeys of different body weights were tested at six draught levels (16-34% of body weight) for 3 hours duration under sustained working to assess their draught capacity by measurement of physiological parameters and physical responses. A fatigue scorecard was developed to make optimum use of the donkey. This fatigue scorecard was analysed using dimensional analysis approach to develop a fatigue number as a function of draught, duration of work, speed and mass of donkey to assess the draught ability and fatigue of donkey under sustained working.

020. Singh, A. Somarendro; Singh, O. Nirmalkumar (Central Agricultural University, Imphal (India.)) Studies on sustainable rabbit production and economically viable feeding in North eastern hilly regions of India. *Indian Journal of Animal Research* 2005, v. 39 (1)

A feeding experiment on 18 weaned crossbred rabbits, aged between six and seven weeks has conducted. The animals were distributed into 2 groups based on their sex, group-1 male and group-2 female. Both the male and female groups were fed locally available green roughage and concentrate in the ratio of 23.59:76.41 and 23.14:27.86 respectively to supply the energy, protein, mineral and vitamin requirement for production. The roughage and concentrate fed in animals contained 10.98% and 15.99% CP, 23.73% and 6.87% CF, and 11.52% and 7.71% TA respectively, on air-dry basis. The experimental feeding was carried out for 12 weeks. In the early stage of age, growth rates in male rabbits were higher (6 to 15 weeks of age) than that of female group, which coped up in the later stage, at about 16 – 17 weeks of age, by female group. Average daily voluntary, feed consumption and live weight gain for male and female rabbits were comparable and found  $83.17 \pm 8.14$  g and  $9.88 \pm 1.97$  g, and  $82.62 \pm 7.96$  and  $10.00 \pm 1.93$  g respectively. There were non-significant ( $P > 0.05$ ) differences for feed consumption and live weight gain in between the groups. From the results, it was concluded that a combination of easily available green roughage with concentrate (23: 77) can provide reasonable growth and effective in the cost of rabbit production without regarding of sex.

021. Sakthivel, K.M.; Rajkamal, P.J. (Department of Extension, College of Veterinary and Animal Sciences, Mannuthy (India)) Analysis of the clinical tasks performed by the veterinary surgeons of Kerala. *Indian Journal of Animal Research* 2005, v. 39 (1)

The study was conducted with the objectives of analyzing in detail the clinical tasks performed by the veterinary surgeons from three perspectives such as frequency of performance, level of importance and performance difficulty and to prioritize the tasks to facilitate curriculum development under Continuing Veterinary Education (CVE) programme. The data were obtained by using questionnaires from the 130 veterinary surgeons out of 764 veterinary surgeons working in Kerala. It was found that top priority was assigned to the tasks management of mastitis, udder and teat surgery and artificial insemination respectively under medical, surgical and gynecological tasks. However, 18 tasks each under medical and gynecology and 32 tasks under surgery were ranked according to priorities assigned by the respondents. The ranks assigned to these tasks can be the yardstick for incorporating them in the curriculum of CVE programme.

022. Naskar, S.; Banik, S.; Tomar, S.S. (Dairy Cattle Breeding Division, National Dairy Research Institute, Karnal (India.)) Total determination of calving interval by path analysis in Sahiwal cattle. Indian Journal of Animal Research 2005, v. 39 (1)

Based on 1068 observations of Sahiwal cattle for a period of 23 years (1980–2002) maintained at National Dairy Research Institute, Karnal, the calving interval was found to be  $408.20 \pm 3.68$  days with service period of  $123.73 \pm 3.64$  days, gestation period of  $285.64 \pm 0.44$  days, lactation length of  $254.25 \pm 3.79$  days and dry period of  $133.58 \pm 4.22$  days based on all lactations. The path analysis of calving interval by taking reproductive components revealed that service period (99.5%) explained the maximum variability, whereas the effect of gestation period was almost nil. The total effect of service period was almost completely due to its direct effect. By taking the productive components of calving interval, the dry period was found to have more effect than lactation length. The total effects of dry period and lactation length were 28.78 and 13.68 per cent, respectively, for all lactations. Both the traits contributed mainly by their direct effects.

023. Panda, K.K.; Mehla, R.K.; Das, B.C. (Division of Dairy, Cattle Breeding, National Dairy Research Institute, Karnal (India)) Prediction of 305 days milk yield based on most frequent daily milk yield of a month in Sahiwal cows. Indian Journal of Animal Research 2005, v. 39 (1)

Two hundred nineteen records (up to 5<sup>th</sup> parity) of 115 Sahiwal cows (calved during 1983 to 2000) having lactation length of more than 100 days and lactation yield of 500 kg maintained at the National Dairy Research Institute, Karnal over a period of 18 years were studied to find out the relationship between 305 days milk yield (305 DMY) with most frequent daily milk yield (MFDMY) and to predict the 305 DMY based on MFDMY of a month in Sahiwal cows. It was found that there was very good association between MFDMY with 305 DMY from 3<sup>rd</sup> to 7<sup>th</sup> month with highest value in 6<sup>th</sup> (0.914), 5<sup>th</sup> (0.902), 4<sup>th</sup> (0.922), 6<sup>th</sup> (0.926) and 5<sup>th</sup> (0.903) month for 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> lactation, respectively. It was concluded that 305 DMY could be predicted on the basis of MFDMY with higher degree of accuracy from 3<sup>rd</sup> to 7<sup>th</sup> month in Sahiwal cows.

024. Kujur, N.; Prasad, C.M.; Singh, A.K.; Singh, S.K. (Department of Animal Production, Ranchi College of Veterinary Science and Animal Husbandry, Birsa Agricultural University, Ranchi (India.)) Economic analysis of integrated pig-cum-fish farming in Jharkhand. Indian Journal of Animal Research 2005, v. 39 (1)

The economy of pig farming for a period of 6 months and pig-cum fish farming for 4 months indicated a net return on per rupee of investment to be Rs. 1.10, 2.26 and 1.13 on pig alone, fish alone and pig-cum fish, respectively under college farm condition. The corresponding values under village conditions were Rs. 1.67, 1.82 and 1.70 respectively

025. Bobde, S.D.; Barbind, R.P.; Hanmante, A.A.; Gujar, B.V. (Department of Animal Husbandry and Dairying, College of Agriculture, Marathwada Agricultural University, Parbhani (India)) Study on mortality in Beetal × Osmanabadi kids. Indian Journal of Animal Research 2005, v. 39 (1)

The data on 238 Beetal × Osmanabadi kids died during the period 1985 to 1999 indicated that the season and year had significant influence on kids mortality, whereas, the sex and type of birth had no significant effect. The interaction between season and sex was significant however, sex and type was non-significant.

## **L02 Animal Feeding**

026. Baswade, S.V. (Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and Dairying));Barbind, R.P. (Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and Dairying));Mule, R.S. (Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and Dairying));Adangale, S.B. (Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and Dairying));A.A. (Marathwada Agricultural University, Parbhani (India). Department of Animal Husbandry and Dairying);. Response of weaned Osmanabadi kids to various combinations of soybean and Bajra straw on body weight gain and linear body measurements. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.73-74 KEYWORDS: KIDS; GOATS; LAND RACES; ANIMAL FEEDING; SOYBEANS; STRAW; BARLEY STRAW; WEIGHT GAIN; BODY MEASUREMENTS.

It can be concluded that the inclusion of soybean straw on DM basis in growing kids was found to be palatable and superior in increasing the body weights of the kids comparative with bajra straw.

027. Chatterjee, R.N.; Rai, R.B.; Kundu, A.; Senani, S.; Sunder, J. (Central Agricultural Research Institute, Port Blair (India). Animal Science Div.). Restricted feeding in Nicobari fowl.. *Indian Veterinary Journal (India)*.. (Dec 2006) v.83(12) p.1289-1291 KEYWORDS: RESTRICTED FEEDING; CHICKS; EXPERIMENTATION; UNRESTRICTED FEEDING; FEED CONVERSION; EFFICIENCY; BODY WEIGHT; AGE.

028. Ghosh, Monoj; Bandyopadhyay, Samiran (National Research Centre on Yak, Dirang, (India)). Effect of feeding regimes on growth performance and nutrient digestibility of Indian yaks under semi-intensive system. *Indian Journal of Animal Sciences India*. (Jan 2008) v. 781 p. 117-119 KEYWORDS: YAKS; FEEDING SYSTEMS; ANIMAL PERFORMANCE; NUTRIENT UTILIZATION.

An experiment was conducted to study the effects of different dietary components on growth performance, feed intake and nutrient utilization in growing yaks (*Poephagus grunniens* L.) under semi-intensive system. The trial was carried out for 12 months. The average daily dry matter (DM) and organic matter (OM) intakes were  $60.68 \pm 1.23$  g and  $55.85 \pm 1.16$  g/kg W<sup>0.75</sup> and  $56.09 \pm 1.96$  and  $52.11 \pm 1.81$  g/kg W<sup>0.75</sup> in T<sub>1</sub> and T<sub>2</sub> groups, respectively. Apparent nutrient digestibility was higher in T<sub>2</sub> than T<sub>1</sub> and significantly differed in CP, CF and OM digestibility. Mean final body weight and monthly body weight gain was recorded to be significantly higher in T<sub>2</sub> ( $221.3 \pm 9.15$ ;  $7.76 \pm 1.02$ ) than T<sub>1</sub> ( $194.4 \pm 13.77$ ;  $5.15 \pm 0.9$ ). Thus, the study justifies the usefulness of scientific feeding over traditional system in respect of growth performance and nutrient utilization of yaks.



029. Demirel, G.; Pekel, A. (Istanbul University, Istanbul (Turkey). Veterinary Medicine Faculty, Animal Nutrition of Nutritional Disease Dept.); Ercag, E.; Uzer, A. (Istanbul University, Istanbul (Turkey). Engineering Faculty, Chemistry Dept.). . Cadmium and lead levels in relation to feed and breed in lambs.. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.402-404  
KEYWORDS: CADMIUM; LEAD; FEEDS; BREEDS; LAMBS; LIVER; KIDNEY; FORAGE.

Highly toxic elements (Pb, Cd) appeared in liver and kidney of lamb fed different forage to concentrate ratio and lamb from different breeds in amounts not exceeding the EU and Turkish standard although the feed supplied from industrialised region.

030. Dey, A.; Dutta, N.; Sharma, K.; Pattanaik, A.K. (Indian Veterinary Research Institute, Izatnagar, (India). Effect of dietary inclusion of Ficus infectoria leaves on the performance of lambs. Indian Journal of Animal Sciences (India). (Jan 2008) v. 781 p. 102-106  
KEYWORDS: LAMBS; LEAVES; FEEDING; FICUS INFECTORIA.

Effect of dietary inclusion of Ficus infectoria leaves as an organic protectant of proteins on the performance of lambs was ascertained. Lambs (n=24) were randomly divided into 4 groups and allocated into 4 dietary treatments CT-0, CT-1.0, CT-1.5 and CT-2.0 containing 0, 1.0, 1.5 and 2.0 percent condensed tannins (CT), respectively, from dried and ground leaves of F. infectoria. Animals were offered a basal diet of wheat straw ad lib. with required amount of supplements to meet their requirements. CT up to 1.5 percent in the supplement did not interfere with the nutrient intake or digestibility, however, a negative effect was seen on DM, OM and ADF digestibility at 2.0 percent CT level. Feeding of CT containing diets particularly at 1.5 and 2.0 percent levels significantly improved N utilization. DCP and TDN values of the composite diets were comparable, except for significantly lower TDN ( percent) in CT-2.0 than the control. Intake of DCP and TDN was comparable irrespective of dietary treatments, except for significantly lower intake of lambs under CT2.0 as compared to CT-1.0. Average daily gain and wool growth for 180 d were significantly increased by the supplementation of CT at 1.5 percent level. Blood-biochemical profile were similar among the dietary treatments except for a significant reduction in serum urea level in lambs fed 1.5 and 2.0 percent CT in the supplement. It may be concluded that CT from F. infectoria leaves at 1.5 percent in supplement could be used as an organic protectant of proteins for improving the performance of lambs.

032. Guler, T.; Ciftci, M.; Ertas, O.N.; Cerci, I.H. (University of Firat, Elazig (Turkey). Veterinary Faculty, Animal Nutrition Dept.). Use of Unmarketable cracked eggs as protein source in lambs.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.461-462  
KEYWORDS: EGGS; PROTEIN QUALITY.

033. Sacakli, P.; Selcuk, Z.; Ergun, A.; Sehu, A.; Yildiz, G. (Ankara University, Ankara (Turkey). Animal Nutrition Dept. Veterinary Medicine Faculty).. Phase feeding of amino acids in broilers.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1286-1288  
KEYWORDS: FEEDING; AMINOACIDS; BROILER CHICKEN; MALES; EXPERIMENTATION; CARCASS COMPOSITION.

034. Kabir, J.; Islam, M.A.; Ahammad, M.U.; Howlider, M.A.R. (Department of Poultry Science, Faculty of Animal Husbandry, Bangladesh Agricultural University, Mymensingh (Bangladesh)) Use of duckweed (*Lemna minor*) in the diet of broiler. *Indian Journal of Animal Research* 2005, v. 39 (1)

One hundred and twenty eight 8 days-old Vencobb broiler chicks were fed ad libitum on either of 4 iso-nitrogenous and iso-caloric diets containing 0, 4, 8, and 12% duckweed meal (DWM) up to 42 days of age to see the effect on growth performance and profitability. Body weight, feed intake, feed efficiency, protein efficiency, energy efficiency and profitability linearly declined as the proportion of DWM increased in the diet. Duckweed did not affect on livability ( $P > 0.05$ ). From the above findings it can be concluded that the inclusion of DWM in the broiler diet is not recommended. However, further study is needed to give final recommendation to use duckweed (*Lemna minor*) meal at a low level as an unconventional feed ingredient for broilers.

### **L51 Animal Physiology - Nutrition**

035. Ravichandiran, S. Sharma, K.; Dutta, N.; Pattanaik, A.K.; Chauhan, J.S.; Agnihotri, Abha; Kumar, Arvind (Indian Veterinary Research Institute, Izatnagar, (India)). Performance of crossbred calves on supplements containing soybean meal or rapeseed-mustard cake with varying glucosinolate levels. *Indian Journal of Animal Sciences India*. (Jan 2008) v. 781 p. 85-90  
KEYWORDS: CALVES; FEEDING; SOYBEAN MEAL; OILSEED CAKES; SUPPLEMENTATION.  
Growing crossbred calves (18) weighing  $62.9 \pm 3.8$  kg were given a basal diet of wheat straw, and randomly allocated to 3 dietary supplements OG, LG and HG containing soybean meal, rapeseed-mustard cake (RMC) from canola quality *B. napus* genotype [TERI-Uttam-Jawahar (TUJ) having glucosinolate (20 mmol/g)] and RMC from a mix of genotypes of *B. juncea* (Pusa Bold, Rohini and RH-30) with high glucosinolate (100 mmol/g), respectively, as major protein source. Though daily intake of dry matter, organic matter and wheat straw did not differ significantly among the dietary treatments, intake (g/kg w 0.75) of concentrate moiety was significantly lower in animals given HG relative to calves given either OG or LG supplement. Nutrient digestibility and density (digestible crude protein and total digestible nutrient) and balances of nitrogen, Ca and P by calves did not differ significantly irrespective of dietary supplement. Average daily gain (g/day) was significantly lower in calves on HG supplement as compared to their counter parts given either OG or LG concentrate. Feed conversion ratio (kg feed DM/kg gain) was significantly more in calves fed supplement (HG) with high glucosinolate levels while comparable performance was observed in calves given supplement DO and LG All the blood biochemical parameters like haemoglobin, glucose, total protein, creatinine, aspartate transaminase, alanine transaminase and triiodothyronine (T3) remained within the normal range; however, thyroxine (T4) was significantly lower in HG group relative to calves of DO group. It may be concluded that incorporation of RMC from genotypes of *B. juncea* with high glucosinolate levels in supplements reduces their palatability and consequently growth rate in crossbred calves while costlier cakes like SBM can be replaced completely by canola quality rapeseed (*B. napus*, TUJ) without compromising the overall performance of the crossbred calves.

036. Rastogi, A ;Dutta, N.; Sharma, K. (Indian Veterinary Research Institute, Izatnagar, (India)). Effect of strategic feed supplementation during pregnancy on the performance of goats. Indian Journal of Animal Sciences (India). (Jan 2008) v. 781 p. 97-101 KEYWORDS: GOATS; FEEDS; SUPPLEMENTATION; PREGNANCY.

Gravid does (18) were randomly divided into 3 groups, fed wheat straw ad lib. and supplemented with concentrate mixture 20g/kgWO.75 throughout the experimental period to study the effect of strategically supplemented pregnancy allowance on the reproductive performance of goats. Additional 20g concentrate mixture/k.gWo.75 was given as pregnancy allowance to gravid does from 61 days post-mating (DPM) to term, 61-90 DPM and 121 DPM to term to HH (high-high), HL (high-low) and LH (low-high) group, respectively. Mean daily dry-matter (DM) intake (g/kg gWo.75) increased significantly during first 90 days of gestation and then became stable. Intake and digestibility of DM by does during metabolism trial (after 135 DPM) was significantly lower in treatment HL in comparison to comparable values of HH and LH treatments, whereas crude protein digestibility was significantly higher for treatment LH followed by HH and HL, respectively. Live weight changes, foetal growth and reproductive performance of goats on treatment HH and LH were statistically similar and significantly better relative to does on HL. Results indicated that last month of gestation is the period of most rapid foetal growth necessitating supplementation of pregnancy allowance to economize production and minimize reproductive losses in goats.

037. Sharma, V.K.; Singh, Rajvinder; Chauhan, J.S. (CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India)). Nutrient utilization and economic of feeding different types of UMMB in calves. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 80-84 KEYWORDS: CALVES; UMMB; NUTRIENT UTILIZATION.

The study was undertaken to asses the nutrient utilization and economics of feeding different types of urea molasses mineral brics (UMMB) in calves. UMMB was prepared by hot and cold methods. The UMMB of the both treatments were having molasses, urea, common salt, oilseed cakes (groundnut cake, sunflower cake, soyflakes and mustard cake 2.5 percent each), deoiled rice bran and mineral mixture 30, 10, 10, 10, 10 and 15 percent respectively. In addition to this, hot processed bricks were having 15 percent maida, whereas cold processed bricks were having maida, calcium oxide, sodium bentonite, phosphoric acid and sodium thiosulphate 6, 3, 3, 2 and 1 percent respectively. The 3 iso-nitrogenous diets were formulated. At the end of growth period of 90 days, a digestibility-cum-metabolic trial was conducted in 6-7 month-old calves. Control group (T3) was offered calf grower ration, wheat straw and setaria silage, whereas about 33 percent protein was replaced by hot process urea molasses mineral Bricks (T1) and cold process UMMB (T2) groups, respectively. The daily dry matter intake 100 kg body weight was significantly higher in T3 followed by T2 and T1. The digestibility coefficient in T3 followed by T2 and T1. The digestibility coefficient of CP, CF, EE and NFE was also higher in cold processed brick fed group (T2) as compared to hot processed UMMB fed group (T1). The DCP was significantly higher in T2 followed by T1 and T3. The nitrogen balance (g1d) was higher in T2 as compared to T1 and T3 groups. The cost of cold processed bricks fed group T2 was lowest (Rs 467.95/100 kg) followed by hot processed bricks fed group T1 (Rs 471.5/100 g) and minimum in starter concentrate fed group T1 (Rs 480.25/100 kg). The

cost of weight (Re) was 0.08, 0.06 and 0.07 in respect to T1, T2 and T3 groups, respectively, that is the feeding of UMMB manufactured with cold process to calves was more beneficial as compared to other 2 groups.

## **L10 Animal Genetics and Breeding**

038. Harshan, Hiron M. (Indian Veterinary Research Institute, Izatnagar (India).);Anees C. (Indian Veterinary Research Institute, Izatnagar (India).);. Artificial insemination in non-domestic birds. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.89-91 KEYWORDS: BIRDS; WATERFOWL; EAGLES; OSTRICHES; ARTIFICIAL INSEMINATION.

039. Kumarasamy, P.; Sivaselvam, S.N.; Thara, S.; Thangaraju, P.; Nainar, A.M. (Madras Veterinary College, Tamilnadu Veterinary and Animal Sciences University, Chennai (India). Animal Genetics and Breeding Dept.). Karyological studies on ongole cattle.. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.392-394 KEYWORDS: CATTLE; CHROMOSOME NUMBER; CHROMOSOMES.

The modal diploid chromosome number in Ongole cattle was found to be  $2n=60$ , comprising of 29 pairs of autosomes and a pair of sex chromosome. All the autosomes were acrocentric in nature. The X-chromosome was submetacentric, second largest chromosome in the complement. The Y-chromosome was small acrocentric, which resembled 26th pair of chromosomes. The morphometric characteristics of chromosomes were studied and an idiogram was prepared. The per cent relative length of autosomes ranged from 5.59 to 1.65. The relative length of X-chromosome was 5.33 and Y-chromosome was 1.94 per cent. The arm ratio and centromeric index of X-chromosome were 2.28 and 0.304 respectively. The prometaphase chromosomal spreads were G-banded by using trypsin to identify individual chromosomes. .

040. Das, D. (College of Veterinary Science, Assam Agricultural University, Guwahati (India)).. Economic traits of swamp buffalo of Assam.. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.450-451 KEYWORDS: WATER BUFFALOES; ECONOMIC ANALYSIS; ASSAM.

The present study was made to asses the production potential of swamp buffalo of Assam.

041. Prasad, R.M.V.; Jayalaxmi, P.; Reddy, G.V.K. (NTR College of Veterinary Science, Gannavaram (India). LLivestock Production and Management Dept.). Performance of large white yorkshire pigs in Andhra Pradesh.. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.454-455 KEYWORDS: SWINE; ANDHRA PRADESH; PERFORMANCE TESTING

042. Ramesh, V. (Veterinary College and Research Institute, Namakkal (India); Sivakumar, T. (Livestock Research Station, Kttupakkam (India)); Arunachalam, S. (Madras Veterinary College, Chennai (India). Livestock Production and Management Dept.). Influence of supplementation of antioxidants on the reproductive performance of gilts under intensive system.. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.456-458 KEYWORDS: SUPPLEMENTS; ANTIOXIDANTS; REPRODUCTIVE PERFORMANCE; SOWS.

043. Ceylan, A.; Serin, I. (University of Adnan Menderes, Aydin (Turkey). Reproduction and Artificial Insemination Dept, Veterinary Medicine Faculty).. Effect of different extenders on motility viability and acrosomal integrity of frozen dog semen.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1283-1285 KEYWORDS: MOVEMENT; VIABILITY; SEMEN; DOGS; FROZEN STORAGE; THAWING; SPERMATOZOA.

044. Banik, S.; Tomar, S.S. (N.D.R.I., Karnal (India). Dairy Cattle Breeding Div.). Determination of longevity by path analysis in Murrah buffaloes.. Indian Veterinary Journal (India).(Dec 2006) v.83(12) p.1313-1314 KEYWORDS: LONGEVITY; WATER BUFFALOES; STATISTICAL METHODS.

045. Tozluca, A. (Selcuk University, Konya (Turkey). Animal Science Dept., Agricultural Faculty); Yildiz, M.A.; Ozbeyaz, C. (Ankara University, Ankara (Turkey). Animal Science Dept., Agricultural Faculty).. Genetic diversity of two holstein cattle herds in Turkey.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1336-1337 KEYWORDS: BIODIVERSITY; GENETICS; CATTLE; HERDS; TURKEY.

046. 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 cross in semi-arid region. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 70-74 KEYWORDS: SHEEP; REPRODUCTIVE PERFORMANCE. 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 percent more lamb weight over G and 11.09 percent more over M. At 6 months of age the corresponding figures were 65.83 and 14.18 percent, 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 percent at birth to 31.22 percent 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 percent, respectively. The increase in GM over Malpura was 53.13 and 36.56 percent, 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.

047. Chatterjee, R.N; Niranjana, M.; Panda, A.K.; Reddy, B.L.; Bhanja, 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. (Jan

2008) v. 781 p. 75-79 KEYWORDS: BROILER CHICKENS; ECONOMIC TRAITS GENETIC INHERITANCE.

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.

048. Kumar, S.; Singh, Y.P; Kumar, D. ( 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. (Jan 2008) v. 781 p. 107-110 KEYWORDS: CATTLE; ANIMAL PERFORMANCE; GENETICS.

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 Friesian x Sahiwal halberds. The least squares means estimated were  $26.92 \pm 0.18$  kg,  $206.70 \pm 1.05$  kg,  $329.73 \pm 1079$  kg,  $381.41 \pm 1.67$ kg,  $962.13 \pm 6.34$  days,  $313.34 \pm 2.21$ days and  $2871.11 \pm 32.64$  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  $0.216 \pm 0.092$ ,  $0.344 \pm 0.11$ ,  $0.596 \pm 0.143$ ,  $0.373 \pm 0.150$ ,  $278 \pm 0.101$ ,  $0.041 \pm 0.064$  and  $0.353 \pm 0.112$  for birth wt, weight at 12 and 24 months of age, weight at first calving, age at first calving, first lactation length and first lactation milk yield, respectively. The phenotypic and genetic correlation between the traits ranged from very low to very high in magnitudes. The season effect was observed non significant 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.

049. Deokar, D.K.; Pachpute, S.T.; Lawar, V.S.; Naikare, B.D. (Department of Animal Science and Dairy Science, Mahatma Phule Krishi Vidyapeeth, Rahuri (India.)) Studies on factors

affecting calving interval in two and three breed Gir crosses. Indian Journal of Animal Research 2005, v. 39 (1)

A data on 2040 records of halfbreds (FG and JG) and three breed (FJG, JFG and BFG) Gir crosses were collected and analysed by least-squares method. The genetic group, period and season of calving, parity, age and weight at first calving were considered as sources of variation. The overall least-squares means for calving interval of first five lactations and their pooled were  $419.60 \pm 4.38$ ,  $401.89 \pm 7.02$ ,  $401.32 \pm 5.82$ ,  $400.62 \pm 8.16$ ,  $387.33 \pm 12.58$  and  $403.45 \pm 3.45$  days, respectively. The calving interval of first five lactations were non-significantly affected by all the sources of variation except genetic group effect ( $P < 0.05$ ) on first calving interval. The genetic group, lactation order ( $P < 0.05$ ) and period of calving ( $P < 0.01$ ) had significant effect on the pooled calving interval.

## **L20 Animal Ecology**

050. Narayan, U.; Singh, D.V.; Rastogi, S.K. (G.B.P.U.A.T., Pantnagar (India). Livestock Production and Management Dept., College of Veterinary and Animal Sciences). Haematological response to various treatments for heat stress in crossbred cows.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1294-1297 KEYWORDS: HEAT STRESS; COWS; CROSSBREDS; BLOOD; FEEDING; SODIUM BICARBONATE.

## **L40 Animal Structure**

051. Erdost, H.; Cavusoglu, I.; Yakisik, M.; Ozfiliz, N.; Zik, B. (University of Uludag, Bursa (Turkey). Veterinary Medicine Faculty, Histology and Embryology Dept.). Ultrastructural changes in the gonadotrophs of the chicken fed red hot pepper.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.419-423 KEYWORDS: ULTRASTRUCTURE; CYTOLOGY; MICROSCOPY; GONADOTROPINS; SEX HORMONES; SUPEROVULATIN; CHICKENS; CHILLIES; DISTAILS; POULTRY; BREADER.

The ultrastructural changes in the gonadotrophs of the pars distalis of the pituitary gland during the developing period of the cocks and hens, fed with a diet containing red hot pepper for five months indicated that there was an increase in the quantity of the organelles within the gonadotropic cells. The synthetic activity was increased in the gonadotrophic cells of the pituitary gland of the chicken fed from one day old to the puberty which stimulated early development of the gonads. The poultry breeder stands to gain by feeding red hot pepper.

052. Gupta, S.K.; Praksah, A.; Raja Ram (College of Veterinary Science and A.H, U.P. Pt Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwaavidyalaya Evam Go Anusandahan Sansthan, Mathura (India). Anatomy Dept.). Histoarchitectural studies on the primordial follicles in goat.. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.428-430 KEYWORDS: GOATS; OVARIAN CYSTS.

The histology and histometry of primordial follicles in goats of different age groups is presented and discussed.

053. Kunj, V.; Singh, A.P. (Bihar Veterinary College, Patna (India). Animal Reproduction, Gynaecology and Obstetrics Dept.). Blood biochemical constituents in subestrus cows.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.459-460 KEYWORDS: ESTROUS CYCLE; BLOOD COMPOSITION; BIOCHEMISTRY.

054. Ladukar, N.O.; Ladukar, O.N.; Khanvilkar, A.V.; Kulkarni, M.D. (Krantisingh Nana Paatil College of Veterinary Sciences, Shriwal (India)). Histomorphological observations on kidneys of black bear.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1300-1301 KEYWORDS: KIDNEYS; URSIDAE; DOGS; CATS.

055. Sarma, Kamal; Sher-e-Kashmir University of Agricultural Sciences and Technology, R S Pura India; Kalita, S.A.; Assam Agricultural University, Kanapara India; Dept. of Anatomy and History College of Veterinary Science; Kumar, Prabhakar; Sher-e-Kashmir University of Agricultural Sciences and Technology, R.S Pura India. Anatomy of the humerus of nilgai (*Boselaphus tragocamalus*). Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 24-27 KEYWORDS: ANIMAL MORPHOLOGY; LIMB BONES; CATTLE.

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 its 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 module 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.

056. Selvan, P. Senthamil Kerala Agricultural College, Kerala India; Veterinary Collge; Kumary, S. Usha Tamil Nadu Veterinary and Animals Sciences University, Chennai India; 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. (Jan 2008) v. 781 p. 43-46 KEYWORDS: FOWLS; ANIMAL MORPHOLOGY; STOMACH.

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. 3420. Basha, Sabiha H.; Venkatesan, S.; Remesh, Geetha; Tamil Nadu Veterinary and Animal Science University, Chennai India. Histochemical reactions of the adrenal gland in Japanese quail (*Coturnix coturnix japonica*). Indian Journal of Animal Sciences India . (Jan 2008) v. 781 p. 47-50 KEYWORDS: QUAILS; ANIMAL MORPHOLOGY; ADRENAL GLAND.



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.

057. Zade, B.A. (Nagpur Veterinary College, Nagpur (India). Department of Anatomy, Histology and Embryology); Mainde, U.P. (Nagpur Veterinary College, Nagpur (India). Department of Anatomy, Histology and Embryology); Gaykee, D.E. (Nagpur Veterinary College, Nagpur (India). Department of Anatomy, Histology and Embryology); Dalvi, R.s. (Nagpur Veterinary College, Nagpur (India). Department of Anatomy, Histology and Embryology);. Histomorphology of kidney of panther (*Panthera pardus*). Veterinary World (India). (Nov 2007) v.6 (3) p.75-76 KEYWORDS: PANTHERS; ANIMAL MORPHOLOGY; KIDNEYS.

The kidney of the panther had an investment had an investment of loose textured capsule, chiefly made up of collagen fibers with abundant fat (capsula adiposa). The renal parenchyma consisted of a renal cortex and medulla. the cortical zone presented numerous malpighian corpuscles distributed as prominent oval masses. The afferent and efferent arterioles were separated from the Bowman's capsule by potential uniform space. the capsular epithelium was simple flat type. The tubular epithelium was varying from simple cuboidal to simple columnar type. (Dellmann and Eurell, 1998).

058. Zengingul, A.I.; Nigiz, R. (University of Dicle, Diyarbakir (Turkey). Prostodontics Dept.); Dag, A. (University of Dicle, Diyarbakir (Turkey). Dentistry Faculty, Periodontology Dept.); Ketani, S. (University of Dicle, Diyarbakir (Turkey). Education Faculty, Biology Dept.). Effect of unilateral molar teeth less condition on the mandibular condyle of rats. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.424-427 KEYWORDS: TEETH; RAT; LABORATORY EQUIPMENT; ANAESTHESIA; KETAMINE; FEEDING.

In this study, the effects of unilateral molar teeth less condition on the mandibular condyle of rats was examined by light microscope. Fourteen adult Wistar albino rats were used. The rats were divided randomly into two groups: Control (n:7) and experimental groups (n:7). In experiment group rats, 1, 2 and 3rd left molar teeth were extracted under Ketamine HCl anaesthesia. After 30 days recovery period, control and experimental group's rats were sacrificed under pentobarbital anaesthesia. Mandibular condyles were examined by light microscope. Histological evaluation revealed normal mandibular condyle in the normal right side while histological changes were observed in the left mandibular condyle of experimental groups. It is concluded prosthetic treatment must be taken in unilateral molar teeth less condition to overcome chewing and feeding problems and to prevent the joint problems.

059. Muralidharan, M.R.; Ramesh, V. (Tamil Nadu Veterinary and Animal Sciences University, Chennai (India.)) Histological and biochemical studies of the skin of cattle and buffalo. Indian Journal of Animal Research 2005, v. 39 (1)

The study of histological structure of the skin of native, exotic and crossbred cattle was undertaken to throw light for assessing the breed for the production of skin quality requirements of the leather industry. The thickness of the epidermis, papillary and reticular layers of the dermis were superior in exotic breeds over the indigenous breeds, whereas, it reflected intermediate values in Jersey × Sindhi cross. Among buffaloes, the papillary and reticular layer of the Murrah buffaloes measured  $1.18 \pm 0.06$  mm,  $4.91 \pm 0.06$  mm, respectively as against  $1.15 \pm 0.03$  mm,  $3.74 \pm 0.06$  mm, respectively for Graded Murrah buffaloes. The Collagen Content was found to be highest in the Jersey breed ( $63.78 \pm 0.68$  mg per cent). The Collagen content in the reticular layer and thickness of papillary and reticular layers assume significance as these parameters determine the surface pattern, and firmness and thickness of the skin.

060. Kapadnis, P.J.; Bhosle, N.S.; Mamade, C.S. (College of Veterinary and Animal Sciences, Parbhani (India.)) Study on connective tissue fibre in neck skin of goat. Indian Journal of Animal Research 2005, v. 39 (1)

Dermis of skin of experimental animal consisted of felt work of collagen, elastic, reticular fibers, sweat glands, sebaceous glands, hair follicles and arrector pili muscles. The collagen fibres were fine, loosely arranged and irregularly distributed in the papillary layer and were thick and densely arranged in reticular layer elastic fiber were rare and finely branched in the papillary layer and arranged perpendicular to skin surface. The reticular fibers were abundant in the dermo-epidermal junction, around the sweat glands, sebaceous glands and walls of the blood vessels and in the capsule of hair follicle.

## **L50 Animal Physiology and Biochemistry**

061. Kadad, Y. (Post Graduate Inst. of Veterinary and Animal Sciences, Akola (India). Dept. of Veterinary Medicine); Waghmare, S.P. (Post Graduate Inst. of Veterinary and Animal Sciences, Akola (India). Dept. of Veterinary Medicine); Mode, S.G. (Post Graduate Inst. of Veterinary and Animal Sciences, Akola (India). Dept. of Veterinary Medicine); Kolte, A.Y. (Post Graduate Inst. of Veterinary and Animal Sciences, Akola (India). Dept. of Veterinary Medicine); Pundekar, R.D. (Post Graduate Inst. of Veterinary and Animal Sciences, Akola (India). Dept. of Veterinary Medicine); Sukare, P.G. (Post Graduate Inst. of Veterinary and Animal Sciences, Akola (India). Dept. of Veterinary Medicine) Study of anaemia in Haemonchus infested sheep. Veterinary World (India). (Nov 2007) v.6 (3) p.71-72 KEYWORDS: SHEEP; HAEMONCHUS; INFESTATION; ANAEMIA.

The present investigation was undertaken to study anemia in Haemonchus infested sheep. The study revealed lower level of Hb, PCV, TEC, serum iron and serum copper as compared to normal healthy sheep indicated anemia as a normocytic and normochromic in nature.

062. Shkhar, P. (Ranchi Veterinary College, Kanke, Ranchi (India). Department of Veterinary Biochemistry)); Mahto, D. (Ranchi Veterinary College, Kanke, Ranchi (India). Department of Veterinary Biochemistry)); Munda, V. (Ranchi Veterinary College, Kanke, Ranchi (India). Department of Veterinary Biochemistry)); Adil, A. (Ranchi Veterinary College, Kanke, Ranchi (India). Department of Veterinary Biochemistry));. Urea poisoning in non-descript Bullock-A case report . Veterinary World (India). (Nov 2007) v.6 (3) p.79 KEYWORDS: BULLOCKS; POISONING; UREA.

063. Kataria, N. (College of Veterinary and Animal Science, Bikaner (India). Veterinary Physiology Dept.); Puri, G.; Bhatia, J.S. (Apollo College of Veterinary Medicine, Jaipur (India). Veterinary Physiology Dept.). Excretion of phenosulphonaphthalein dye in the urine of goats during water deprivation and rehydration.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.379-381 KEYWORDS: EXCRETION; CYES; URINE; GOATS; WATER; REHYDRATION; DEHYDRATION; WATER METABOLISM; EXPERIMENTATION.

Six apparently healthy female Marwari goats ageing 5-6 years were used to assess the renal efficiency during control, water deprivation and rehydration phases. Per cent of PSP dye excreted in urine was determined at different time interval, post infusion in each phase of experiment. The results showed that rate of PSP; dye excretion was low during water deprivation and the water deprivation depressed the normal renal functioning of goats.

064. Das, D.; Deka, D. (Nodal Centre for Wild Life Health, Disease Diagnosis and Conservation, College of Veterinary Science, Assam Agricultural University, Guwahati (India); Das, B.J. (Veterinary Officer, Green Guard Nature Organization, Nagaon. (India)). . Haematobiochemical profile of greater adjutant stork.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.449 KEYWORDS: BLOOD; STORKS. Haematobiochemical profile of greater adjutant stork was studied.

065. Sodhi, R.; Rajput, Y.S. (National Dairy Research Institute, Karnal (India)). Differentiation and de-differentiation of buffalo adipose tissue. Indian Journal of Animal Sciences (India). (Jan 2008) v. 781 p. 28-32 KEYWORDS: WATER BUFFALOES; ADIPOSE TISSUES.

Differentiation and de-differentiation processes in buffalo adipose were studied under in vitro conditions using preadipocytes and adipocytes respectively. In culture medium comprising DMEM medium, 15 percent FCS, 100 µg/ml streptomycin, and 100 IU/ml penicillin, pre-adipocytes at 37°C and 5 percent CO<sub>2</sub> 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 methylisobutyanthine, tri-iodothyronine and insulin. Dedifferentiation was studied in isolated adipocytes. Culturing of these cells in presence of insulin and triiodothyronine resulted in appearance of small-size lipid droplets in cytoplasm and formation of new protrusions also filled with lipid droplets. The results suggested that buffalo 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.

066. Rajkhowa, S.; Hazarika, G.C.; Sarma, S. Assam Agricultural University, Guwahati 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. (Jan 2008) v. 781 p. 114-116 KEYWORDS: CALVES; PIGLETS; ANAEMIA; IRON SUPPLEMENTATION; BLOOD COMPOSITION.

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-supplemented and iron-deprived groups was also noticed in the study.

### **L51 Animal physiology – Nutrition**

067. Patra, A.K.; Kamra, D.N.; Agarwal, Neeta Indian Veterinary Research Institute, Uttar Pradesh India. Effect of leaf extracts on in vitro fermentation of feed and methanogenesis with rumen liquor of buffalo. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 91-96 KEYWORDS: WATER BUFFALOES; RUMEN FERMENTATION; IN VITRO FERMENTATION; PLANT EXTRACTS.

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/30 ml of incubation medium) were tested in 6x3x3 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.

068. Mehla, O.P.; Yadav, R.S.; Kumar, Naresh (Department of Livestock Production and Management, CCS Haryana Agricultural University, Hisar (India.)) Effect of source of protein and feeding frequency on nutrients and water intake of Murrah buffalo calves. Indian Journal of Animal Research 2005, v. 39 (1)

Twenty female Murrah buffalo calves (8–10 months) were divided in four homogeneous groups according to age and body weight. The four groups were allotted randomly two sources of protein and feeding frequency viz., calves were fed concentrate with mustard cake

(M.C.) and roughage once daily (T<sub>1</sub>) with M.C. and roughage twice daily (T<sub>2</sub>) with cotton seed cake (CSC) and roughage once daily (T<sub>3</sub>, with CSC and roughage twice daily (T<sub>4</sub>). The average DMI, DCP and TDN intake of buffalo calves did not differ significantly due to source of protein and frequency of feeding. Similar results were obtained for feed conversion efficiency. Body weight, wt. gain were significantly (P<0.05) higher in M.C. group as compared to CSC. But the frequency of feeding did not affect significantly. Average daily voluntary water intake was not significantly influenced by feeding two sources of protein. However, average daily water intake was significantly (P<0.05) influenced by the frequency of feeding.

### **L52 Animal physiology - Growth and development**

069. Thirunavukkarasu, M. (Veterinary Assistant Surgeon, Veterinary Dispensary, Coimbatore (India); Balagopal, R.; Rajaraman,, S.; Krishnakumar, S.; Chandrasekaran, D.; Selvavinayagi, S. (Tamilnadu Agricultural University , Coimbatore (India). Animal Husbandry Dept.) . Palatoschisis in a calf. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.435-436  
KEYWORDS: CALVES.

A case of palatoschisis in a calf is reported and discussed.

070. Guclu, B.K. (Erciyes University, Kayseri (Turkey). Animal Nutrition and Nutritional Diseases Dept., Veterinary Faculty); Iscan, K.M. (Erciyes University, Kayseri (Turkey).Zootechnic Dept., Veterinary Faculty). Probiotic and mannan oligosaccharide on growth and biochemical parameters in turkey. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1324-1326  
KEYWORDS: PROBIOTICS; OLIGOSACCHARIDES; GROWTH; BIOCHEMISTRY; TURKEY.

071. Srinivas, M.; Sreenu, M. (NTR College of Veterinary Science, Ganavaram (India)). Hydroallantois with foetal ascites in a buffalo. . Indian Veterinary Journal (India).(Dec 2006) v.83(12) p.1342-1343  
KEYWORDS: ALLANTOIN; FOETUS; ASCITES; WATER BUFFALOES.

### **L53 Animal physiology – Reproduction**

072. Bhakat, C (Camel Management Unit, National Research Centre on Camel, Bikaner (India)). Calving pattern and neonatal behaviour in Indian Dromedary camel. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.416-418  
KEYWORDS: DROMEDARIES; CAMELS; CALVESS; PARTURITION; BEHAVIOUR; LABOUR.

In 19 healthy camels detailed observation on signs of labour, calving and neonatal behaviour were made and various parameters were quantified and presented.

073. Shanmugasundaram, N. (Embryo Biotechnology Laboratory, College of Veterinary Science, Tirupati (India); Devanathan, T.G. (Assisted Reproductive Technology Laboratory, Madras Veterinary College, Chennai (India)). Animal Reproduction, Gynaecology and Obstetrics Dept.). Effect of cumulus cells and cysteamine on in vitro development of ovine

embryos. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.368-370 KEYWORDS: THIOLS; CELLS; BRUCELLOSIS; EMBRYONIC DEVELOPMENT; MATURATION; OVA; IN VITRO CULTURE; IN VITRO FERTILIZATION.

The effect of cumulus cells and cysteamine on in vitro development of ovine embryos was studied using ovaries collected from a local slaughterhouse. The retrieved oocytes were subjected to various treatments during their in vitro maturation, fertilization and culture. The cleavage and embryo development rate of the experimental groups were recorded. The morula percentage of the experimental groups, viz. cumulus oocyte complexes (COCs), COCs with cysteamine, denuded oocytes (DOs), DOs with cysteamine, were  $17.28 \pm 2.00$ ,  $25.02 \pm 2.74$ ,  $00.00$  and  $7.27 \pm 1.16$ , respectively. The embryo development rate was significantly ( $P < 0.01$ ) higher in COCs than DOs. In the presence of cysteamine, embryo development rate was increased both in COCs and DOs. However, the highest embryo development rate was observed in COCs with cysteamine. This suggests the synergistic effect of cumulus cells and cysteamine on embryo development.

074. Narayanan, K.; Rajendiran, A.S.; Sanwal, P.C.; Bisht, G.S. (Indian Veterinary Research Institute, Izatnagar (India)). Effect of retention of fetal membranes on reproductive performance in crossbred dairy cows.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.468-469 KEYWORDS: FOETAL MEMBRANES; REPRODUCTIVE PERFORMANCE.

075. Pradeep, S.V.; Chandolia, R.K. (CCS, Haryana Agricultural University, Hisar (India). Animal Reproduction, Gynaecology and Obstetrics); Singh, K. (CCS, Haryana Agricultural University, Hisar (India). Veterinary Surgery and Radiology Dept.). Ultrasonographic detection of early pregnancy and foetal resorption in canines.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1307-1308 KEYWORDS: ULTRASONICS; PREGNANCY; FOETAL DEATH; CANIDAE; DOGS; FEMALES.

076. Ahmed, F.A.; Baishya, N.; Bujarbarua, K.M. (College of Veterinary Science, Khanapara, Guwahati (India). Veterinary Gynaecology, Oabstetrics and Artificial Insemination Dept.). Reproductive characteristics in female mithun.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1317-1318 KEYWORDS: FEMALES; BOS (BOVINAЕ); REPRODUCTIVE PERFORMANCE.

077. Suri, S.; Kalita, A.; Taggar, R.K.; Zama, M.M.S. (SKUAST-J, R.S. Pura, Jammu (India). Anatomy and Histology Div., Faculty of Veterinary Sciences and A.H.). Ovarian follicular and oocyte ratio in prepubertal, Pubertal and senile Gaddi goats.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1330 KEYWORDS: OVARIES; OVA; SEXUAL MATURITY; GOATS.

078. Das, Hiramoni; Dutta, D.J; Sarmah, B.C.; Bhattacharya, B.N.; 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). (Jan 2008) v. 781 p. 51-53 KEYWORDS: HEIFERS; MINERAL SUPPLEMENTATION; BLOOD COMPOSITION.

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 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.

079. Chauhan, J.K.; Singh, B.; Singh, S.P.; Singh, U.B.; Singh B.P. (Central Avian Research Institute, Izatnagar (India). Hatching observation in *ex-vivo* embryo culture system and normally incubated eggs Indian Journal of Poultry Science, 2007, v. 42 (2)

The study was conducted on a sample size of 233 fertile eggs of IC-3, medium body size broiler populations aged between 32 to 35 weeks, obtained through natural mating with the purpose of improving efficiency of 'Double Window *Ex-vivo* Chick Embryo Culture System at Phase II and III. Consequently, 134 eggs from the same strain were used as control. Out of 233 eggs set, 97 chicks were hatched out and out of 134 control eggs, 112 chicks came out on 22<sup>nd</sup> day. Hatching observations were done in both the groups. Hatching observation with respect to yolk sac, allantoic fluid, urates, beak, orientation of embryo, feet-leg visibility, membrane penetration, breathing and activity of embryos in *ex-vivo* embryo culture system were recorded. The observations were studied in terms of Pipped (pipped but could not hatch), Hatched (total number of hatch out) and Navel (connected/detached) in control group. The results concluded that for successful hatching of embryos in culture system, the orientation of embryos should be on left position, visibility of right feet/legs, horizontal position of beak, chorioallantoic membrane and yolk sac are becoming attached, climax activity and dry allantoic fluid. These optimum conditions with relation of position of embryo in embryo culture system should be maximized through suitable modifications in the procedure for healthy hatching.

### **L70 Veterinary Science and Hygiene**

080. Rajput, A.B. (Maharashtra Agricultural and Fishery Science University, Nagpur (India). Nagpur Veterinary College, Department of Poultry Science.); Shisodiya, J.M. (Maharashtra Agricultural and Fishery Science University, Nagpur (India). Nagpur Veterinary College, Department of Poultry Science.); Chandankhede, J.M. (Maharashtra Agricultural and Fishery Science University, Nagpur (India). Nagpur Veterinary College, Department of Poultry Science.); Kolte, B.R. (Maharashtra Agricultural and Fishery Science University, Nagpur (India). Nagpur Veterinary College, Department of Poultry Science.); The avian Immune system. Veterinary World (India) . (Nov 2007) v.6(3) p.84-85 KEYWORDS: CHICKENS; IMMUNITY; DISEASE RESISTANCE.

The immune system of the chicken is very useful in preventing diseases and helping to insure maximum productive potential is realized. We must learn how to take advantage of all parts of the system when designing health programs.

081. Sadhukhan, T.K.; Chakraborty, D.; Chakraborty, G.C. (Institute of Animal Health and Veterinary Biologicals, Kolkata (India)). Duck cholera outbreak in West Bengal.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.374-375 KEYWORDS: DUCKS; CHOERA; VIBRIO CHOLERA; WEST BENGAL; MORTALITY; PASTEURELLA MULTOCIDA; INFECTION; EPIDEMICS. An outbreak of duck cholera occurred in an organised farm of West Bengal causing mortality rate of 63 percent and the mortality continued for 18 days. Pasteurella multocida was isolated and characterised on the basis of morphological, cultural and biochemical reaction. Treatment with enrofloxacin (10 percent) dramatically stopped the mortality. The infection was most probably contracted through free flying birds which had previous contact with the diseased flock. Pathogenicity of the duck cholera disease is discussed.

082. Ahmed, F.A.; Saud, N.; Chatterjee, A.; Bhattacharya, M. (National Research Centre on Yak (ICAR). Dirang (India); Pourouchottamane, R. (NRC on Yak (ICAR), Dirang (India); Barua, C.C. (Assam Agricultural University, Guwahati (India). Pharmacology and Toxicology Dept.). Pharmacokinetics of enrofloxacin in Yak.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.382-384 KEYWORDS: MEDICINAL PROPERTIES; YAKS; INJECTION; ANTIMICROBIALS.

The present study was undertaken to find out the pharmacokinetic disposition of enrofloxacin in yaks after intramuscular administration at the dose rate of 7.5 mg.kg<sup>-1</sup> body weight. The various pharmacokinetic parameters of enrofloxacin were calculated as t<sub>1/2kaw</sub>, 2.535±0.491 h; AUC. 7.79±1.046 µg.h.ml<sup>-1</sup>; AUMC. 32.933±8.627 µg.h<sup>2</sup>.ml<sup>-1</sup>; MRT, 4.056±0.649 h; K, 0.163±0.05 h<sup>-1</sup>, C<sub>max</sub> 2.432±0.175 µg.ml<sup>-1</sup>; t<sub>max</sub> .0.75 h; Cl<sub>a</sub>, 0.005±15647 ml.h<sup>-1</sup>.kg<sup>-1</sup>; and V<sub>d</sub> 3.172±0.538 L. kg<sup>-1</sup> The result suggested that intramuscular route is suitable for administration of enrofloxacin in yaks.

083. Gogoi, J.; Dutta, B.; Lekharu, J.C. (College of Veterinary Science, Assam Agricultural University, Guwahati (India). Surgery and Radiology Dept.). Effect of canisep cream and free omental allograft on wound healing in bovine calves.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.385-388 KEYWORDS: WOUNDS; HEALING; BOVINA; CALVES; CENTELLA ASIATICA.

The effect of canisep cream Centella asiatica ointment and free omental allograft on wound healing was studied in bovine calves by evaluating their macroscopic and biochemical aspect. Macroscopically, the animals treated with C. asiatica ointment and Canisep cream healed completely on day 24<sup>th</sup> post treatment. Lower values of alkaline phosphatase and zinc and higher values of proteins, collagen, elastin, iron, copper and magnesium were recorded in C. asiatica ointment treated, Canisep cream treated and free omental allografted wounds on day 24<sup>th</sup> post treatment. There was no significant difference in respect of clinical and biochemical observations among the C. asiatica treated and canisep cream treated wounds.

084. Anand, V.V.; Nagarajan, B.; Vasu, K. (Centre of Advanced Studies in Clinical Medicine and Therapeutics, Madras Veterinary College, Chennai (India)). Ultrasonographic evaluation of



biliary obstruction in experimental dogs.. Indian Veterinary Journal (India). . (Apr 2006) v. 83(4) p.389-391 KEYWORDS: ECHOGRAPHY; ULTRASONICS; EVALUATION; DOGS; BILE DUCTS  
Right transverse oblique and left transverse oblique views were useful in identifying the cystic duct by 24 hours post ligation. Right lateral transverse view appreciated the common bile duct by 7th day post ligation whereas ventral transverse view was not useful in identifying both the ducts.

085. Kumar, P.; Srivastava, S.K. (Indian Veterinary Research Institute, Izatnagar (India)).. Respnse of certain immunomodulatory therapies on uterine infection and microminerals in post-partum buffaloes.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.395-397 KEYWORDS: UTERINE DISEASES; INFECTION; PERINATAL PERIOD; BUFFALOES; COPPER; ZINC; TINOSPORA CORDIFOLIA.

Copper and Zinc level was studied in 15 buffaloes having uterine infection. These were randomly divided into three groups. Buffaloes in group I and group II were treated with aqueous extract of *Tinospora cordifolia* (3000 mg, total dose) and autologous plasma (150ml) i.u. Group III buffaloes were given phosphate buffered saline (150 ml), at oestrus, and served as control. It was observed that there was no change in copper level between pre and post treatment in any of the two groups, whereas zinc level was non significantly higher in both group I and group II during post-treatment. Thus the immunomodulatory therapies did not have any significant effect on the serum level of micro minerals.

086. Devecioglu, Y.; Guzel, O.; Aktas, M.; Duzgun, O.; Akbas, M. (Istanbul University, Istanbul (Turkey). Veterinary Medicine Faculty, Surgery Dept.). Comparision of iohexol and iopamidol in cysternal myelography of dogs.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.398-401 KEYWORDS: DOGS; COLLUMNA VERTABRALIS.

Iohexol and iopamidol myelography were conducted by in 12 dogs. Anesthesia was induced by 6 mg/kg dose of propafol. Following intubation, anesthesia was maintained by isoflurane. Time of cysternal puncture was counted as 0 min. Pulse-oxymer data were recorded at 1, 5, 10, 15, 30, and 45 min. intervals. Following cysternal puncture, laterolateral and ventrodorsal radiographs of the columna vertabralis of the dogs were taken at 5, 10, and 120 min. Differences between radiographs were evaluated. Results indicated that iohexol resulted in higher image quality than iopamidol, although both contrast compounds had similar effects on cardiopulmonary system. .

087. Jana, D.; Ghosh, M. (Additional Block Animal Health Centre, Bankura (India)).. Prepuical prolapse in an indigenus bullock.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.433-434 KEYWORDS: BULLOCKS; BULLS; SURGICAL OPERATIONS; THERAPY.

Prepuical prolapse in a local indigenus bullock with surgical treatment is described.

088. Kumar, A. (Punjab Agricultural University, Ludhiana (India). Veterinary Surgery and Radiology Dept.). Chemical restraint of wild felids in captivity. Indian Veterinary Journal (India). (Apr 2006) v. 83(4) p.441-442 KEYWORDS: VETERINARY MEDICINE; WILD ANIMALS; CAPTIVITY; DOMESTICATION; BEHAVIOUR.

Present study describes the procedure of chemical restraint or very sick wild felines for fluid therapy.

089. Atyabi, N.; Gharagozlu, F.; Yazdi, H.S. (University of Tehran (Iran). Clinical Science Dept.). Biochemical estimation of colostral immunity in newborn calves.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1265-1267 KEYWORDS: COLOSTRUM; NEWBORN ANIMALS; CALVES; IMMUNITY; GLOBULINS; ABSORPTION.

090. Saha, T.; Guha, C.; Biswas, U.; Chakraborty, D. (West Bengal University of Animal and Fishery Sciences, Kolkata (India). Veterinary Epidemiology and Preventive Medicine Dept.). Therapeutic efficacy of some drugs on respiratory diseases in broiler birds.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1292-1293 KEYWORDS: DRUGS; RESPIRATORY DISEASES; BROILER CHICKEN; EXPERIMENTATION.

091. Mohindroo, J.; Kumar, A.; Raghunath, M. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science, surgery and Radiology Dept.); Singh, N. (Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Veterinary Animal Husbandry and Extension Dept.). Surgical management of bilateral femur fracture in dog.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1302-1304 KEYWORDS: SURGICAL OPERATIONS; LIMB BONES; FRACTURES; DOGS. 3

092. Tripathi, A.K.; Rajora, V.S.; Gupta, D.K.; Shukla, S.K. (Govind Ballabh Pant University of Agricultural And Technology, Pantnagar (India)). Immunomodulatory activity of *Ocimum sanctum* and its influence on cyclophosphamide induced immunosuppression. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 33-36 KEYWORDS: OCIMUM SANCTUM; IMMUNOMODULATION; IMMUNOSUPPRESSION. Present investigation communicates the modulatory effects of *Ocimum sanctum* on cyclophosphamide-induced immunosuppression in rats. The findings revealed that *Ocimum sanctum* produced significant increase in total leukocyte count, per cent lymphocyte count, absolute lymphocyte 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 immunosuppressed rats. Lymphocyte stimulation revealed significant increase in lymphocyte proliferation in rats administered with extract of the plant.

093. Sarma, D.K.; Mishra, N.; Rajkumar, K.; Sarma, S.; 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. Jan 2008 v. 781 p. 37-39 KEYWORDS: SWINE; SWINE FEVER VIRUS.

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 cellline. In RT-PCR amplicons of expected size 288bp could be generated from the ELISA positive samples. Sequence analysis of

two samples one each from slaughtered and diseased pigs confirm the presence of SF viral RNA.

094. Abraham, John (College of Veterinary and Animal Sciences, Pookot (India)). Development of a simple electrocautery for field veterinarians. *Indian Journal of Animal Sciences India*. (Jan 2008) v. 781 p. 54-55 KEYWORDS: SURGICAL INSTRUMENTS; VETERINARY DOCTORS.

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.

### **L72 Pests of Animals**

095. Khan, K.M. (Animal Help Foundation At Post giaspur, Distt. Ahmedabad (India)); Raghorte, S.D. (Animal Help Foundation At Post giaspur, Distt. Ahmedabad (India)); Panchbuddahe, A.N. (Animal Help Foundation At Post giaspur, Distt. Ahmedabad (India)); Khan, L.A. (Animal Help Foundation At Post giaspur, Distt. Ahmedabad (India));. Trypanosomiasis in a dog - a case report. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.77 KEYWORDS: DOGS; TRYPANOSOMIASIS; DIAGNOSIS; DRUG THERAPY.

096. Parsani, H.R. (S.D.Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and Animal Husbandry, Department of Parasitology)); Momin, R.R. (S.D.Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and Animal Husbandry, Department of Parasitology)); Sahu, R.K. (S.D.Agricultural University, Sardarkrushinagar (India). College of Veterinary Science and Animal Husbandry, Department of Parasitology));. Encephalitis in pigeons of Kankaria zoo. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.80 KEYWORDS: PIGEONS; ENCEPHALITIS; MORTALITY; GUJARAT.

Mortality in pigeon was reported in Kankaria zoo, Gujarat, India. Death was preceded by nervous signs viz. incoordination, circling movement, torticollis and prostration. On post-mortem examination, infestation of *Ascaridia* spp. and *Raillietina* spp. were observed in the intestine of all dead birds. Histologically microsection of brain revealed lesions suggestive of encephalitis and in one of five birds a cut section of ascarid larvae and migration tracts alongwith inflammatory changes were noticed.

0212. Verma, Vinay (Indian Veterinary Research Institute, Izatnagar (India). Animal Nutrition Division, Feed and Fodder Technology Laboratory.);. Fish disease (Parasites), diagnosis and treatment. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.92 KEYWORDS: FISH DISEASES; PARASITES; PARASITOSSES; DIAGNOSIS; DISEASE CONTROL.

097. Yadav, A. (SKUAST, Jammu (India). Veterinary Sciences and Animal Husbandry Faculty, Veterinary Parasitology Div.); Khajuria, J.K.; Devi, J. (SKUAST, Jammu (India). Veterinary Sciences and Animal Husbandry Faculty, Veterinary Physiology Div.). Cat flea infestation in

goats.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.439-440 KEYWORDS: SIPHONAPTERA; INFESTATION; PESTS; GOATS.

Cat flea infestation in goats is presented and discussed.

098. Soundararajan, C. (Livestock Research Station, Kattupakkam (India).; Rajavelu, G. (Tamil Nadu Veterinary and Animal Sciences University, Chennai (India). Madras Veterinary College, Parasitology Dept.). Prevalence of haemoprotozoan among cattle and buffaloes.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1258-1260 KEYWORDS: PARASITES; CATTLE; WATER BUFFALOES; BLOOD; THEILERIA; ANAPLASMA.

099. Saravanan, B.C.; Yadav, S.C.; Borkataki, S.; Pourouchottamane, R. (National Research Centre on Yak (ICAR), Dirang (India).. Lice infestation in Yak.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1321 KEYWORDS: PHTHIRAPTERA; INFESTATION; YAKS.

100. Yazar, S.; Mercan, U. (Erciyes University, Kayseri (Turkey). Parasitology Dept., Faculty of Science); Kilic, E. (Erciyes University, Kayseri (Turkey). Biochemistry Dept., Faculty of Science); Saraymen, R. (Erciyes University, Kayseri (Turkey). Biology Dept., Faculty of Science). Essential elements levels in fasciola hepatica and dicrocoelium dendriticum.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1322-1323 KEYWORDS: ELEMENTS; FASCIOLA HEPATICA; DICROCOELIM DENDRITICUM.

101. Halmandge, S.C.; Kumar, S.P.; Shettar, V.B.; Murugeppa, A.; Sudhindra (Veterinary College, Nandinagar, Bidar (India). Veterinary Epidemiology and Preventive Medicine Dept.). Influence of meteorological factors on the prevalence of ascariasis of buffalo calves.. Indian Veterinary Journal (India). . (Dec 2006) v.83(12) p.1327-1329 KEYWORDS: METEOROLOGICAL FACTORS; WATER BUFFALOES; CALVES; ASCARIASIS; PARASITES.

102. Vatsya, Stuti; Yadav, C.L; Kumar, Rajeev Ranjan; Garg, Rajat (Govind Ballabh Pant University of Agricultural and Technology, Pantnagar (India)). Prevalence of ixodid ticks on bovines in foothills of Uttarkhand state: A preliminary report. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 40-42 KEYWORDS: BOVINES; TICKS; EPIDEMICS.

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 percent) were found tick infested (37.32 percent cattle and 33.04 percent buffaloes). The animals were infested with ticks throughout the year with maximum being in rainy season (53.01 percent), followed by summer (43.25 percent) and the least in winter ~ (7.15 percent). Five species of ticks belonging to 3 genera were recorded. Boophilus microplus was the most common and predominant tick (96.44 percent) followed by Rhipicephalus sanguineus (1.98 percent), R. haemaphysaloides (1.96 percent), while Hyalomma anatolicum anatolicum (0.002 percent) and H. marginatum isaaci (0.001 percent) were rarely encountered.

### L73 Animal Diseases

103. Tomar A.; Saxena, V.K. Indian Veterinary Research Institute, Tumor Immunology Laboratory/Virus Laboratory Izatnagar (India) Avian leukosis/sarcoma virus infections - status and socio-economic impact revisited Indian Journal of Poultry Science , 2007, v. 42, (3)

Avian leukosis/sarcoma viruses (AL/SV) infect large segments of modern poultry industry, hence are also present in commercial chickens and eggs that widely expose humans on a consistent basis. Horizontal/contact transmission pattern maintains a rate of vertical/congenital transmission of exogenous (infectious) virus from one generation to next, giving rise to avian leukosis virus (ALV) or group specific antigen (gsAg) shedding chickens (shedders); thus, a permanent source of infection at the farm. Genetically transmitted endogenous (majorly non-infectious sequences) virus may or may not be expressed; and believed to be not shed or shed at low levels. Final outcome of AL/SV infections depends on interaction of exogenous viruses with that of endogenous viruses or their sequences in a chicken host. AL/SV infections include a variety of transmissible benign and malignant neoplastic conditions, nonneoplastic conditions, and subclinical infections. Avian leukosis, a list C disease, is the most common disease seen in field flocks; recently though, myeloid leukosis has become more prevalent. Economic losses due to ALV tumor mortality and reduced productivity due to subclinical infections are estimated to be millions of US dollars each year. Shedder hens are characteristically lower, than gsAg non-shedding hens, in fitness traits, reproductive traits and performance traits. Diagnostic procedures consist of both direct and indirect biological, molecular and serological assays. Direct assay of viral major gsAg or p27 by an enzyme linked immunosorbent assay (ELISA) is the most common biological assay to determine presence of AL/SV, but p27 is shared by both exogenous and endogenous viruses, hence can not be used to differentiate between the two groups of viruses. Additionally, most of the biological assays are cumbersome and time- consuming; and even the most sensitive biological assay may not identify all the infected dams. Molecular assays are costly and unsuitable for field conditions; and serological assays only help identification of viral envelope subgroups. Therefore, an urgent need is felt for development of an alternate antigen for convenient, precise and early diagnosis of AL/SV infections in poultry flocks with objective to reduce incidence of ALV infection in general. Current programs for control and eradication of AL/SV infections in chicken breeder flocks are based on selective breeding and elimination of dams that test positive for the virus, breaking vertical transmission of the virus from dam to progeny and early detection and removal of virus shedding birds to reduce spread of congenital and contact infections in other birds. Recent reports of public health significance of AL/SV infections with regard to consumption of chicken origin products, contamination of chicken origin live virus vaccines of humans and animals and emergence of new viruses from “parent” AL/SV have been alarming and need immediate attention.

104. Girish, V.R. (Intervet India Pvt. Ltd., Intervet House, No. 33, Pune-Nagar Road, Pune (India)); Venkatesha, M.D. (Institute of Animal Health and Veterinary Biologicals, Hebbal, Bangalore (India)); Hegde, Raveendra (Institute of Animal Health and Veterinary Biologicals, Hebbal, Bangalore (India)); Prasad, C.R. (Institute of Animal Health and Veterinary Biologicals,

Hebbal, Bangalore (India));. Incidence of Haemorrhagic Septicaemia in foot and mouth disease affected cattle and buffalo. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.69-70 KEYWORDS: CATTLE; WATER BUFFALOES; HAEMORRHAGIC SEPTICAEMIA; FOOT AND MOUTH DISEASE; MORBIDITY.

Incidence of Hemorrhagic septicemia (HS) has been recorded in foot and mouth disease (FMD) affected/convalescent cattle and buffaloes and deaths have also been recorded. The FMD affected animals exhibited clinical signs of high fever, severe respiratory distress, submandibular edema and sudden deaths. The dead animals on postmortem revealed characteristic lesions suggestive of HS. From the affected animals blood in EDTA and from the dead animals Heart blood samples and the long bones were collected. These samples were subjected to bacteriological isolation and identification and confirmed by PCR and animal inoculation tests. *Pasteurella* organisms were isolated, identified and characterized which were found pathogenic to mice and rabbits.

105. Patil, R.D. (Indian Veterinary Research Institute, Izatnagar (India).);Sharma, Rinku (Indian Veterinary Research Institute, Izatnagar (India).);Puneet Kumar (Indian Veterinary Research Institute, Izatnagar (India).). A critical disease: Bovine Tuberculosis. *Veterinary World (India)*. (Nov 2007) v.6 (3) p.86-88 KEYWORDS: BOVINAЕ; TUBERCULOSIS; TUBERCULIN; DISEASE CONTROL.

106. Yadav, M.M.; Sharda, R. (College of Veterinary Science and Animal Husbandry, Mhow (India). *Veterinary Microbiology Dept.*). Antibiogram and drug resistance of *Escherichia coli* isolated from mutton.. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.365-367 KEYWORDS: ESCHERICHIA COLI; MUTTON; SHEEP; COLI BACILLOSIS; DRUG RESISTANCE; DRUGS; RESISTANCE TO CHEMICALS; IN VITRO; CHLORAMPHENICOL.

Forty nine strains of *E. coli* belonging to 12 serotypes were isolated from 100 samples of mutton. In vitro susceptibility tests to 11 antibiotics revealed highest sensitivity to Chloramphenicol (95.92 percent), followed by colistin (89.80 percent), ceftriaxone (75.51 percent), amikacin (69.39 percent), ciprofloxacin (67.35 percent), gentamicin (67.35 percent), tetracycline (59.18 percent), nalidixic acid (48.98 percent). cotrimoxazole (46.94 percent), cefuroxime (34.69 percent) and ampicillin (8.16 percent). Multiple drug resistance against 2 to 8 antibiotics was observed in 95.92 percent isolates. Thirty six antibiotypes were recognized.

107. Elitok, B. (University of Afyon Kocatepe, Afyon (Turkey). *Veterinary Medicine Faculty, Internal Medicine, Dept.*). Influence of subcutaneously administered colostrum serum in treatment of coccidiosis in dairy calves. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.371-373 KEYWORDS: DAIRY COWS; COCCIDIOSIS; ANTICOCCIDIALS; COCCIDIA; COLOSTRUM; ZYGOTES; BODY WEIGHT; CALVES.

An experiment was conducted to evaluate the effects of subcutaneously administered colostrum serum against naturally occurring coccidiosis in calves. Forty calves naturally infected with coccidiosis were used in this study. In treated group (n=30), calves with coccidiosis were infused with colostrum serum obtained from colostrum pool. Non-medicated ten calves with coccidiosis served as control. Calves were weighed weekly and faeces collected for estimation of oocyst shedding. At the end of the study, it was observed

that calves in control group shed oocysts at a higher than medicated calves (P0.05). Furthermore, there was significant (P0.05) advantage in body weight gain and performance when calves with coccidiosis were medicated with colostrum serum. .

108. Dutta, B.; Rahman, T. (College of Veterinary Science, Assam Agricultural University, Guwahati (India). Pathology Dept.). Epidemiological studies on the preweaning mortality of piglets in the organised farms of Assam.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.376-378 KEYWORDS: DISEASE SURVEYS; PREWEANING PERIOD; WEANING; ANIMAL FEEDING; MORTALITY; PIGLETS; FARMS; ASSAM; LESIONS; SEASONS; EPIDEMIOLOGY.

Out of the 957 piglets born, 293 (30.62 percent) died. The incidence of piglet mortality was found to be highest (20.80 percent) in the piglets of 2-3 weeks of age. Death due to traumatic injury and inanition was found to be highest in the first week of age. Breedwise, highest incidence of mortality was recorded in 75 percent Hampshire (47.84 percent), followed by 50 percent Hampshire (46.70 percent), local (30.77 percent), large black (28.75 percent), saddle black (13.85 percent) and Hampshire (9.31 percent). Mortality was highest in the male (56.31 percent) than the female (48.69 percent). Highest mortality was recorded in premonsoon (72.01 percent) followed by winter (14.68 percent), post-monsoon (9.22 percent) and monsoon (4.10 percent). The highest (37.27 percent) mortality was recorded in the litter group comprising of 10-12 (37.27 percent) piglets followed by litter group comprising of 1-3 piglets (36.36 percent). Litter size of 7-9 piglets had better survivability. Inanition and traumatic injury were high in the litter size of 10-12 piglets.

109. Govindarjan, R.; Meenambigai, T.V.; Jayakumar, V.; Ramprabhu, R.; Rajeswarm J.J.; Bruce, M.S.; Koteeswaran, A. (Leptospirosis Research Laboratory, Centre for Animal Health Studies, Chennai (India)). Leptospirosis in an Indian elephant.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.437-438 KEYWORDS: LEPTOSPIROSIS; ELEPHANTS; DIAGNOSIS. A case of Leptospirosis in an elephant is presented. Clinical diagnosis and treatment were described and discussed.

110. Sivaseelan, S. (Farmers Training Centre, Theni (India)); Balachandran, C. (Centralized Clinical Laboratory, Madras Veterinary College, Chennai (India)); Umarani, R.; Kathiresan, D. (Veterinary University Training and Research Centre, Madurai (India)). Pathology of Combined infection of infectious bursal disease and inclusion body hepatitis in chicken.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.447-448 KEYWORDS: INFECTIOUS BURSAL DISEASE VIRUS; HEPATITIS; CHICKENS.

This paper deals with pathology of Combined infection of infectious bursal disease and inclusion body hepatitis in chicken.

111. Hemalatha, S.; Govindarajan, R.; Purushothaman (Central University Laboratory, Directorate of Centre for Animal Health Studies, Tamilnadu Veterinary and Animal Sciences University, Chennai (India)); Manohar, B.M. (Madras Veterinary College, Chennai (India)); Vengadabady, N. (University Training and Research Centre, Thalavivasal (India)). Omphalitis in ostrich chicks.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.452-453 KEYWORDS: OSTRICHES; DISEASE SURVEY.

Yolk sac retention and infection, Omphalitis, in ostrich chicks is presented

112. Pazhanivel, N.; Roy, P.; Hemlatha, S.; Govindarajan, R.; Sundar, N.; Purushothaman, V.; Koteeswaran, A. (Central University Laboratory, Centre for Animal Health Studies, Tamilnadu Veterinary and Animal Sciences University, Chennai (India)). Outbreak of pasteurellosis in sheep.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.466-467 KEYWORDS: PASTEURILLOSIS; SHEEP.

113. Meenambigai, T.V.; Govindarajan, R.; Jayakumar, V.; Koteeswaran, A. (Centre for Animal Health Studies, Chennai (India). Leptospirosis Research Laboratory). Detection of serogroups of pathogenic species of leptospira interrogans by polymerase chain reaction. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1249-1250 KEYWORDS: LEPTOSPIRA; PCR; LEPTOSPIROSIS; RNA; DNA.

114. Praveena, P.E.; Manohar, B.M.; Balachandra, C.; Rao, V.N.A. (Madras Veterinary College, Chennai (India). Veterinary Pathology Dept.). Study on occurrence of rabies.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1251-1252 KEYWORDS: RABIES; PATHOLOGY; DOGS; IMMUNIZATION.

115. Willayat, M.M.; Sheikh, G.N.; Ahmed, R.; Das, G. (Div. of Veterinary Public Health, Faculty of Veterinary Sciences and Animal Husbandry, Srinagar (India)). Isolation of salmonella serotypes from fresh and frozen chicken. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1253-1255 KEYWORDS: SALMONELLA; FROZEN MEAT; CHICKEN MEAT; FRESH MEAT; SAMPLING; POULTRY; SHOPS; FOOD CONTAMINATION.

116. Senthilvelan, A.; Balachandran, C.; Sundar, N. (Madras Veterinary College, Chennai (India). Centralised Clinical Laboratory) . Isolation and identification of Candida albicans from mastitis in cows.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1256-1257 KEYWORDS: CANDIDA ALBICANS; MASTITIS; COWS; ISOLATION; SAMPLING; AGAR; BOVINAE; ANTIBIOTIC; FUNGAL SPORES.

117. Udayasree, V.J.; Pillai, U.N.; Baby, P.G. (College of Veterinary and Animal Sciences, Mannuthy, Thrissur (India). Clinical Medicine Dept.). Canine pyoderma and its management with cynodon dactylon.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1274-1276 KEYWORDS: CYNADON DACTYLON; DRUGS; CANIDAE.

118. Karaca, M.; Tutuncu, M.; Akkan, H.A.; Yuksel, H.; Keles, I.; Agaoglu, Z. (Yuzuncu Yil University, Van (Turkey). Internal Medicine and Pathology Dept., Faculty of Veterinary Medicine). Dermatitis solaris and its treatment in van cats.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1309-1310 KEYWORDS: DERMATITIS; CATS.

119. Mital, A.K.; Khanna, A.K. (Civil Veterinary Hospital, Shimla (India)). Clinical management of paraphimosis and balanoposthitis in a dog.. Indian Veterinary Journal (India).. (Dec 2006)



v.83(12) p.1311-1312 KEYWORDS: DOGS; PARAPHIMOSIS; BLANOPOSTHITIS; SURGICAL OPERATION.

120. Murugan, B.; Villi, R.A.; Chandrasekaran, D.; Dorairajan, N.; Thangamani, R. (Veterinary College and Research Institute, Namakkal (India). Dairy Science Dept.). Incidence and characterization of Bacillus species isolated from raw milk.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1319-1320 KEYWORDS: BACILLUS; MILK; CONTAMINATION.

121. Chhabra, D.; Arora, S. (College of Veterinary Science and Animal Husbandry, Mhow (India). Microbiology Dept.). Antibioqram of Staphylococcus aureus isolated from bovine mastitis.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1333 KEYWORDS: STAPHYLOCOCCUS AUREUS; BOVINE MASTITIS.

122. Balachandran, C.; Pazhanivel, N.; Manohar, B.M. (Madras Veterinary College, Chennai (India). Veterinary Pathology Dept.). Acute lymphoblastic leukaemia in a dog.. Indian Veterinary Journal (India). (Dec 2006) v.83(12) p.1338-1339 KEYWORDS: LEUKEMIA; DOGS; ACUTE COURSE.

123. Singh, R.; Panday, A.B.; Chandra, D.; Singh, K.P.; 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. (Jan 2008) v. 78(1) p. 3-7 KEYWORDS: FOOT-AND-MOUTH DISEASE; CATTLE; WATER BUFFALOES; EPIDEMIOLOGY. The unusual heavy mortality in cattle and buffaloes involving 140 villages in 4 blocks of Moga district, 25 villages under Zira subdivision (Firozpur), several others in Ludhiana and Faridkot of Punjab, and more than 17 villages in Bagpat (7 villages), Meerut (8 villages), Muzzafarnagar (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), Firozpur (Rainwala village), Faridkot, and Ludhiana (Shah Bucker and Mohie villages) districts. In UP, 104/2150 cattle and buffaloes had died in Basuli (Baghpat), 60/2500 in Bhamori (Meerut) and 60/6000 in Kharad (Muzaffemagar) 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.

124. Singh, K.P.; Channakeshava, S.U.; Ahmed, K.A; Pamday, 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. (Jan 2008) v. 781 p. 8-12 KEYWORDS: SHEEP; BLUETONGUE VIRUS; BLOOD COMPOSITION.

Hematological 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  $6 \times 10^{5.5}$  TCID<sub>50</sub> of BTV-23 serotype separately by intravenous (GrIV) 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 GrIV 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 GrIV and 7 to 11 DPI in GrID, ALP during 3 to 11 DPI in GrIV 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.

125. Banumathi, N; Sood, R.; Patil, S.S.; Subramanian, M.; Pradhan, 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. (Jan 2008) v. 781 p. 13-16 KEYWORDS: SHEEP; GOATS; OVINE HERPESVIRUS.

The ovine herpes virus-2 (OHV-2), that causes malignant catarrhal fever in ruminants, is an important pathogen in areas where clinically susceptible ruminants share pastureland. 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 specimen 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.

126. Ghosh, S.; Azhahianamb, P.; Ray, D.D.; Gupta, S.C.; Bansal, G.C.; Choudhury, P. (Indian Veterinary Research Institute, Izatnagar (India)). Anti-tick effect of 34kDa glycoprotein of Hyalomma anatolicum anatolicum in combination with saponin as adjuvant. Indian Journal of Animal Sciences India. (Jan 2008) v. 781 p. 17-23 KEYWORDS: CATTLE; HYALOMMA ANATOLOCUM ANATOLICUM.

Immunization of *Bos taurus* x *B. indicus* calves by 34 k Da 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), percent 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 (DT), 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 percent 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 34 kDa 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.

127. Gautam,R.K; Gupta,S.K.; Yadav, A. (Department of Veterinary Parasitology, CCS Haryana Agricultural University, Hisar (India)) Comparative pathogenicity of *Eimeria tenella* field isolates. Indian Journal of Animal Research 2005, v. 39 (1)

Four *Eimeria tenella* field isolates from Karnal (3 isolates) and Jind (1 isolate) districts of Haryana (North India) were studied in a battery test for evaluating their comparative pathogenicity. Broiler birds (Ross Strain) were infected with  $10^5$  sporulated oocysts each at the end of third week. The comparative pathogenicity of different isolates was assessed by calculating hematological values, oocyst index, lesion score and mortality. Haematological studies included estimation of haemoglobin, packed cell volume and total erythrocyte count. All the field isolates of *E. tenella* produced varying degree of pathogenicity. Infection with Karnal isolate - III and I resulted in maximum fall in all the parameters studied and Karnal isolate - III was found to be the most pathogenic as mortality was also recorded in this group. The degree of pathogenicity in Karnal isolate-II and Jind isolate was more or less the same

128. Saha Satyajit; Nandini; Venkatesha, M.D.; Gowda, R.N. Srinivasa (Institute of Animal Health and Veterinary Biologicals, Hebbal, Bangalore (India.)) Cloning of leptospira Canicola serovar gene in *E. coli* and using as a probe in slot blot hybridization. Indian Journal of Animal Research 2005, v. 39 (1)

Gene fragment of *Leptospira* serovar *Canicola* was cloned in *E. coli* cells using pUC18 plasmid as a vector. The recombinant cells were selected on LB agar medium, which contained ampicillin, X-gal and IPTG. From the recombinant white colonies, plasmid was extracted and the leptospiral DNA insert was collected after digestion with *EcoR* I and used as probe in hybridization experiments

Ishaque, Nandini, Venkatesha, M.D.; Gowda, R.N. Sreenivasa (Institute of Animal Health and Veterinary Biologicals, Hebbal, Bangalore (India.)) Identiation of *Leptospira* by random amplified polymorphic DNA (RAPD) assay. Indian Journal of Animal Research 2005, v. 39 (1) Random Amplified Polymorphic DNA fingerprinting assays can be used to discriminate between the serovars of *Leptospira*. Comparative analysis of the fingerprints obtained from the representative strains of reference serovars of *Leptospira interrogans* has revealed specific DNA fragments. It was shown to be a useful approach for rapid diagnosis and identification of the *L. interrogans* and for rapid serovar determination of Leptospirae without need for prior DNA sequence.

#### **L74 Miscellaneous Animal Disorders**

129. Manjunath, S.M. (Veterinary Hospital, Gangavath, Koppal Dist. (India). Department of Animal Husbandry and Veterinary and Veterinary Services); Desai, A.R. (Veterinary Hospital, Gangavath, Koppal Dist. (India). Department of Animal Husbandry and Veterinary and Veterinary Services);. Horn cancer in a Gir cow. Veterinary World (India). (Nov 2007) v.6 (3) p.78 KEYWORDS: DAIRY COWS; HORNS; NEOPLASMS; BREEDS (ANIMALS); SURGICAL OPERATIONS.

In the present study the cow had been treated with antibiotics, analgesics, steroids and local applications with providone-iodine ointment without permanent cure. To give permanent relief to the animal dehorning with autovaccine was carried out.

130. Khan, M.H.; Choudhury, K.B.D.; Naskar, S.; Bardolaci, R.K.; Das, A. (ICAR Research Complex for NEH Region, Umiam (India). Animal Production Div.). Rectal prolapse in a piglet.. Indian Veterinary Journal (India).. (Apr 2006) v. 83(4) p.431-432 KEYWORDS: DIGESTIVE SYSTEM DISEASES; PIGLETS.

A case of ano-rectal prolapse in a piglet and its successful correction is reported.

131. Sreenu, M.; Kumar, N.R. (NTR College of Veterinary Science, Gannavaram (India). Teaching Veterinary Clinical Service Complex). Foreign bodies in dogs and a cat.. Indian Veterinary Journal (India). . (Dec 2006) v.83(12) p.1305-1306 KEYWORDS: FOREIGN BODIES; DOGS; CATS.

132. Prabhakaran, S.; Naidu, K.S.; Naidu, K.V.; Sreenu, M. (NTR College of Veterinary Science, Gannavaram (India). Animal Reproduction, Gynaecology and Obstetrics Dept.). Changes in haematological and bio-chemical constituents in buffaloes suffering from dystocia.. Indian Veterinary Journal (India).. (Dec 2006) v.83(12) p.1331-1332 KEYWORDS: BLOOD; BIOCHEMISTRY; WATER BUFFALOES; DYSTOCIA.

133. Kinjavdekar, P.; Amarpal; Aithal, H.P.; Pawde, A.M.; Pratap, K.; Singh, T.; Singh, K. (Division of Surgery, Indian Veterinary Research Institute, Izatnagar (India.)) Management of urolithiasis

in goats (*Capra hircus*): A retrospective study of 25 cases. *Indian Journal of Animal Research* 2005, v. 39 (1)

The cases of urolithiasis in caprines presented at the Polyclinic, of IVRI, Izatnagar from September, 2001 to April, 2002 were managed surgically. A brief history about the clinical cases, their clinical examination, urinalysis, haematobiochemical profile and acid base status was studied. The cases were surgically managed by performing excision of urethral process, urethrotomy followed by fixation of polyethylene catheter in the urethra and cystorrhaphy as per the clinical situation. The postoperative management of the cases has been discussed.

### **M01 Fisheries and aquaculture - General aspects**

134. Sahinoz, E.; Dogu, Z. (Harran University Bozova, Sanliurfa (Turkey). Fisheries Dept.); Aral, F. (Harran University, Yenisehir, Sanliurfa (Turkey). Reproduction and Artificial Insemination, Faculty of Veterinary Medicine.). Relationship between blood parameters and spermatological properties in rainbow trouts.. *Indian Veterinary Journal (India)*.. (Dec 2006) v.83(12) p.1268-1270 KEYWORDS: BLOOD SAMPLING; ONCORHYNCHUS MYKISS; SEMEN; OVIPOSITION.

135. Sasi, H. (Mugla University, Mugla (Turkey). Freshwater Biology Dept. Fisheries Faculty). Reproduction biology of Prussian carp in Turkey.. *Indian Veterinary Journal (India)*.. (Dec 2006) v.83(12) p.1280-1282 KEYWORDS: CARP; REPRODUCTION; BIOLOGY; TURKEY; FEMALES; MALES OVIPOSITION; FERTILITY; EGG PRODUCTION; MEASUREMENT.

### **Q01 Food Science and Technology**

136. Coskun, H. (College of Engineering and Architecture , Abant Izzet Baysal University, Bolu (Turkey). Food Engineering Dept.); Tuncturk, Y; Ondul, E; Yarimbatman, S. (Yuzuncu Yil University, Van (Turkey). Food Engineering Dept.). Development of lipolysis in homogenised culture added Kashar cheeses.. *Indian Veterinary Journal (India)*.. (Apr 2006) v. 83(4) p.405-408 KEYWORDS: LIPOLYSIS; HOMOGENIZATION; CHEESE; LACTOBACILLUS THERMOPHILUS. In this study, it was aimed to determine the effect of homogenisation of lactic cultures on the development of lipolysis in Kashar cheeses. Starter cultures used in the study were *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *cemoris*, *Lactobacillus delbrueckii* subsp. *bulgaricus*, *Streptococcus thermophilus* and *Lactobacillus helveticus*. Homogenisation of the cultures was done at 30 MPa for 5 cycles at 40°C. Results showed that homogenisation of the cultures increased the degree of lipolysis in Kashar cheeses (P<0.05). Q03 1905.

Siriken, B. (University of Ondokuz Mayıs, Samsun (Turkey). Veterinary Medicine Faculty, Food Hygiene and Technology Dept.); Pamuk, S. (University of Afyon Kocatepe, Afyon (Turkey)).. Incidence of *E. Coli* and *L. Monocytogenes* in ground beef.. *Indian Veterinary Journal (India)*..(Apr 2006) v. 83(4) p.443-444 KEYWORDS: LISTERIA MONOCYTOGENES; BEEF; BACTERIA.

This study was undertaken to determine the incidence of *E. Coli* and *L. Monocytogenes* in ground beef.

137. Kumar, M.; Sharma, B.D.; Sushil Kumar; Sharma, R.B (Division of Livestock Products Technology, Indian Veterinary Research Institute, Izatnagar (India)) Shelf life of low-fat ground pork patties formulated with texturized soy protein. Indian Journal of Animal Research 2005, v. 39 (1)

Shelf life studies of low-fat ground pork patties incorporated with 4 per cent 1:3 hydrated texturized soy protein (TSP) under aerobic and vacuum packaging conditions at refrigeration temperature  $4\pm 1^{\circ}\text{C}$  for 21 and 35 days respectively were evaluated for physico-chemical (pH, TBA), microbiological (Total Plate Count, Psychrophilic count, Coliform count, Anaerobic Plate Count, Lactic Acid Bacteria count) as well as sensory characteristics and compared with high-fat control. Thio-barbituric Acid (TBA) value was significantly ( $P<0.05$ ) higher in the high-fat than the low-fat patties and it increased steadily during storage irrespective of packaging condition and fat content. Total Plate count followed significant ( $P<0.05$ ) linear increasing trend during storage. Psychrophiles were not detected up to 14<sup>th</sup> day during aerobic and 21<sup>st</sup> day during vacuum storage. Coliforms were not detected throughout the study. Lactic Acid Bacteria and Anaerobes were first detected in low-fat and control patties on 28<sup>th</sup> day of vacuum storage. The sensory qualities of patties were better maintained in low-fat patties than high-fat traditional pork patties.

## **Q02 Food Processing and Preservation**

138. Sangwan, R.; Khanna, N.(Department of Animal Products Technology, CCS Haryana Agricultural University, Hisar (India)) Studies on the physico-chemical and microbiological quality of immersion chilled broiler cut up parts treated with certain additives. Indian Journal of Animal Research 2005, v. 39 (1)

A study was conducted to improve the quality of broiler leg and breast cuts during immersion chilling. Treatment of cuts with tetra sodium pyrophosphate and sodium chloride ( $T_1$ ) in chill water significantly ( $P<0.05$ ) improved WHC and shear force value when compared to the cuts treated with lactic acid and potassium sorbate ( $T_2$ ) and control group. Moisture per cent was significantly higher ( $P<0.05$ ) in  $T_1$  group in both the cuts when compared to  $T_2$  and control group. The ash per cent was higher in  $T_1$  group than that of control group. The protein and fat per cent did not vary among the samples of different groups. Both  $T_2$  and  $T_1$  groups showed improved microbiological status and extended the shelf life by 5 and 2 days, respectively when held at  $4\pm 1^{\circ}\text{C}$  in comparison to the control group.