

caused by *S. aureus* and isolates likely express receptors for matrix proteins such as collagen and fibronectin. This encourages the development of new strategies to prevent mastitis, based on antagonist ligands able to interact with surface adhesions and block its specific binding with matrix proteins.

Key Words: *Staphylococcus aureus*, adhesin genes, mastitis, sheep

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Seasonal and ecological variations in the serum steroid hormone concentrations of one-humped male camel in Pakistan

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One-humped camel is a seasonal breeder, showing sexual activity during winter and early spring season in Pakistan. This study was conducted during four seasons of the year to establish the baseline reference values during the year and to evaluate the ecological and seasonal changes in the serum steroid hormones. A total of 24 adult sexually mature male one-humped camels from three districts of Punjab, Pakistan, namely Faisalabad (FSD, n = 12), Bhakkar (BKRR, n = 6) and Attock (ATTK, n = 6), were used. The blood samples were collected at regular monthly intervals. After centrifugation at 15 000 g for 10 min, serum samples were analyzed for the hormones by Radioimmunoassay (RIA) using commercially available kits. Means were compared by two-way ANOVA, Significance was calculated by Duncan's multiple range (DMR) test and Correlation was estimated by Pearson Correlation. The correlation between calculated parameters and climatic data was evaluated by linear regression correlation by using STATISICA 6.0 for windows. Mean (\pm SEM) serum testosterone concentration (ng/ml), was higher ($p < 0.01$) during the winter season at all ecological zones (FSD: 8.29 ± 0.54 , ATTK: 13.49 ± 1.37 & BKRR: 15.51 ± 1.15) and started to decrease during spring (FSD: 2.10 ± 0.28 , ATTK: 6.19 ± 0.65 & BKRR: 6.58 ± 0.74) and reached baseline during summer (FSD: 0.66 ± 0.15 , ATTK: 1.58 ± 0.30 & BKRR: 1.48 ± 0.29), maintained almost same during autumn at Faisalabad zone (0.66 ± 0.05 ng/ml); however increased again in autumn at Attock (8.03 ± 1.57 ng/ml) and Bhakkar (4.14 ± 1.03 ng/ml). Serum estradiol concentration (pg/ml) was higher ($p < 0.01$) during the cooler months including January (FSD: 183.89 ± 15.24 , ATTK: 165.17 ± 14.04 & BKRR: 133.00 ± 26.36), February (FSD: 184.62 ± 16.33 , ATTK: 154.17 ± 19.41 & BKRR: 132.12 ± 41.21), it started to decline in the month of March (FSD: 136.42 ± 8.35 , ATTK: 150.50 ± 24.80 & BKRR: 141.58 ± 28.01), April (FSD: 116.83 ± 6.74 , ATTK: 108.63 ± 17.86 & BKRR: 112.67 ± 6.80) and May (FSD: 114.92 ± 4.59 , ATTK: 95.67 ± 12.81 & BKRR: 86.50 ± 5.60), a slight increase was observed in the month of June but again decreased in July and remained on baseline in the months of August (FSD: 78.33 ± 9.42 , ATTK: 74.00 ± 7.40 & BKRR: 93.33 ± 2.79), September (FSD: 54.50 ± 5.47 , ATTK: 66.67 ± 9.99 & BKRR: 66.00 ± 5.60), October (FSD: 61.83 ± 5.53 , ATTK: 77.33 ± 6.74 & BKRR: 56.05 ± 14.72) and November (FSD: 60.50 ± 8.75 , ATTK: 63.24 ± 13.21 & BKRR: 96.47 ± 15.76). This study revealed positive correlation between serum testosterone (T) and estradiol17- β (E) ($r = 0.454$). These hormones were negatively correlated with the average environmental temperature (T; FSD: $R^2 = 0.6883$, ATTK: $R^2 = 0.946$ & BKRR: $R^2 = 0.7487$, E; FSD: $R^2 = 0.2565$, ATTK: $R^2 = 0.3238$ & BKRR: $R^2 = 0.0782$) and rainfall (T; FSD: $R^2 = 0.0972$, ATTK: $R^2 = 0.336$ & BKRR: $R^2 = 0.1742$, E; FSD: $R^2 = 0.0328$, ATTK: $R^2 = 0.0178$ & BKRR: $R^2 = 0.0033$) however testosterone was positively correlated with the relative humidity (FSD:

$R^2 = 0.0524$, ATTK: $R^2 = 0.0165$ & BKRR: $R^2 = 0.0457$) and vice versa for estradiol (FSD: $R^2 = 0.0328$, ATTK: $R^2 = 0.0178$ & BKRR: $R^2 = 0.0033$). In conclusion, this study provided baseline reference values during the year and to evaluate the ecological and seasonal changes in the serum steroid hormones for one humped camel.

Key Words: Steroid hormones, serum, seasonal breeder, camel

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Sperm factors influencing sow insemination outcomes

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Pregnancy loss, in which male factors are increasingly implicated, is an economic constraint to the pork industry. To further understand some of the factors involved, mating records (8309 sow artificial inseminations (A.I.) over 2 years from a commercial Australian unit were analysed. Of these, 1205 inseminations were conducted with extended, chilled semen concurrently assessed for a number of traits including arrival temperature, pH; CASA parameters - sperm motility, velocity, beat cross frequency, concentration; % live/dead (eosin-nigrosin), morphology (DIC @1000 \times), DNA integrity (DiffQuik) and relative bacterial load. Sow insemination outcomes (excluding abortion) included total piglets born (PBT), born alive (PBA) and stillbirths (PSB) and days to return to estrus (DRE). Statistical analyses utilised GLM procedures. Overall, average farrowing rate was 74% and all inseminated sows except the 1% which aborted were included in the analyses. Percent normal sperm was positively linked with PBT and PBA (both $p < 0.05$). In turn, PBT was negatively associated with % retained distal cytoplasmic droplets ($p < 0.01$) and % abnormal sperm heads ($p < 0.05$), whereas PBS was negatively linked with DNA integrity ($p < 0.01$). DRE was negatively associated with % abnormal sperm heads and % abnormal acrosomes (both $p < 0.01$). In conclusion, certain sperm traits (i.e. percent normal morphology, retained distal droplets and DNA integrity) were significantly linked with litter size, days to return to estrus and neonate viability. This indicates that considerable progress in pig reproduction can occur via increased attention to boar A.I. semen QC, particularly in relation to sperm morphology. The challenge is to improve boar semen quality control and quality assurance in a cost effective manner while retaining production efficiencies. References: Flowers, W. L. 2008. Genetic and phenotypic variation in reproductive traits of A.I. boars. Theriogenology 70:1297-1303. Safranski, T. J. 2008. Genetic selection of boars. Theriogenology 70:1310-1316. This work was funded by the Pork CRC Australia

Key Words: Sperm morphology, sperm traits, semen, return to estrus, insemination outcomes

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Administration of 4-vinyl-1-cyclohexene 1,2-epoxide diminishes ovarian follicles in dogs

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4-Vinylcyclohexene, an industrial chemical, is metabolised to epoxide derivatives in the body. These metabolites cause atrophy of the ovaries and reduce the number of pre-antral follicles. The aim of this study was to determine the effect of a single dose of 4-Vinyl-1-cyclohexene 1,2-epoxide (VCE) on the ovarian follicles. In present study 18 mongrel bitches (age 6–15 month and bw 9–15 kg) were randomly allocated into three groups. The VCE was injected intraperitoneally (160 mg/kg) to group 1 (n = 6) and group 2 (n = 6), and group 3 (n = 6) was left as untreated control group. Ovaries were collected by ovario-hysterectomy from group 1 and group 2 on fifth and eighth days after the treatment, respectively. The ovaries were evaluated histologically for