Vaccine Protocol Influences Immune Phenotype of Weaned Beef Calves. Cassidy C. Reddout¹, Janeen L. Salak-Johnson¹, Paul A. Beck¹, Frank White¹, ¹Oklahoma State University

Abstract: Vaccination is one mechanism used as a preventative measure to decrease morbidity and mortality due to bovine respiratory disease (BRD), but vaccination efficacy is inconsistent. Therefore, the objective of this study was to compare the effect of inactivated (INA) vs. modified live (MLV) viral vaccines on the immune phenotype of weaned beef calves. Mixed-sexed pens with equal numbers of heifers and steers were randomly assigned to receive either INA (Vira Shield 6) or MLV (Titanium 5) treatments at d 0 (initial) and a booster (28 d). A subpopulation of heifers (n = 28) and steers (n = 18) were identified from these treatment pens and balanced for treatment. Samples were obtained prior to vaccination and 14 and 28 d post-initial vaccination and again at 14 and 28 d post-booster. All animals were weighed on collection days. Data were analyzed using either GLM or MIXED procedures of SAS with repeated measures. A treatment × day interaction occurred on cortisol at 14 d post-initial vaccination; the MLV calves had greater (P = 0.05) cortisol than INA calves. At 28 d post-initial and 14 d post-booster, MLV calves had greater (P < 0.05) total IgG and isotypes IgG1 and IgG2. MLV had greater (P < 0.05) cytokine concentrations associated with either humoral or cell-mediated immune responses. Conversely, serum neutralizing antibodies for antigens associated with the vaccine were significantly greater in INA calves than in MLV (P < 0.05). Calves receiving MLV were heavier (P < 0.05) at the end of the study. These data imply that vaccination protocol resulted in differential immune phenotypes. More specifically, calves receiving the MLV vaccine phenotype indicated stimulation of both the humoral and cell-mediated response. In contrast, the INA phenotype was indicative of a bias towards a humoral response. Further research should be done to determine the protective value of these phenotypes.

Keywords: cattle, immune, vaccination

Effects of Dietary Supplementation with Lespedeza on the Semen Quality and Fertility of Male Goats. Rania Heikal¹, Jayla Hicks¹, Bryanna Holmes¹, Jalani Brown¹, Gregory Dykes¹, Lauren Wartley¹, Nallely Mendez¹, Ayesha Neha¹, Arshad Shaik¹, Sai Chandan Chelkapally¹, Davia Brown¹, Jeslyn Crumpler¹, Niki C. C. Whitley¹, Andres a. Pech-Cervantes¹, Tiffany Reese¹, Moges Woldemeskel², Thomas H. Terrill¹, Adel R. Moawad¹, ²Fort Valley State University.

Abstract: Infertility is a major cause of economic losses in livestock production systems. Parasitic infections are a significant cause of infertility in small ruminants. Sericea lespedeza (SL; Lespedeza cuneata) is a potent anthelmintic in sheep and goats. Positive impacts of lespedeza on male fertility have been reported in rats and rabbits; however, no studies have been conducted on goats. Here, we investigated the effects of feeding male goats with SL or annual lespedeza (AL; Kummerowia stiulacea) on their semen quality and fertility. Forty-nine mature intact Spanish bucks were randomly assigned into three groups and fed diets of 60% hay and 40% concentrate in an 8-week pen study. The treatment havs were SL (n=16), AL (n=17), and bermudagrass (Cynodon dactylon) as a control (n=16). At the end of the trial, scrotum circumferences (SC) were measured and the animals were transported to a processing facility for slaughtering. Testicles and epididymides were collected after slaughter for measuring their weights and lengths. Epididymal spermatozoa were retrieved and evaluated for their motility, concentration, viability, abnormalities, and membrane integrities. Sections from testicles and epididymides were also prepared for histopathological examination. Results showed that SC was higher (P≤ 0.05) in SL than AL groups. Testicular and epididymal weights were comparable (P > 0.05) among the three groups. Sperm motility, concentration, viability, and membrane integrities were higher (P≤ 0.05) in SL compared with the AL and control groups. Sperm abnormalities were higher (P≤ 0.05) in control and AL groups than in the SL group. Histopathological examination revealed mild focally extensive seminiferous tubular degeneration and necrosis in AL group. These results suggest that feeding of male goats on SL enhances their sperm quality and fertility parameters.

Keywords: lespedeza, goat, sperm