EFFECT OF OVULATORY FOLLICLE SIZE ON STEROIDOGENIC CAPACITY, MOLECULAR MARKERS OF OOCYTE COMPETENCE AND BOVINE PREGNANCY ASSOCIATED GLYCOPROTEINS IN BEEF COWS

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ABSTRACT

Artificial insemination (AI) and estrus synchronization (ES) are effective tools for the genetic advancement of cattle. Gonadotropin-releasing hormone (GnRH) is used at the beginning of ES protocols to induce ovulation and start a new follicular wave, and(or) at the end of a protocol to induce ovulation in combination with insemination. However, GnRH-induced ovulation of physiologically immature follicles negatively affected pregnancy rates in beef heifers and postpartum cows and increased late embryonic/early fetal loss. Mechanisms associated with reduced pregnancy rates and late embryonic/fetal survival are not clear, but may be due to inadequate oocyte competence and(or) a compromised uterine environment. Therefore, two studies were conducted to determine the effect of ovulatory follicle size on oocyte competence (experiment 1) and placental function (experiment 2-4). Based on the above experiments, ovulatory follicle diameter was positively associated with serum and intrafollicular estradiol; however, the relationship between ovulatory follicle size and markers of oocyte competence was not conclusive (experiment 1). Furthermore, there was no relationship between bovine pregnancy associated glycoproteins (bPAGs; marker of placental function) and ovulatory follicle size, stage of embryonic development, or embryo quality; however, cows that lost an embryo after d 28 of gestation had lower concentrations of bPAGs on d 28 compared to cows that maintained pregnancy (experiment 2-4).