SAS

U.S. Department of Agriculture **Accomplishments Report AD-421** U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions			Date (Month, Day, Year) 01/09/2013
1. Accession 0212731	Agency Identification No. 2. CSREES 3. LAB	5. Work Unit/Project No. **LAB93875**	6. Status **Final Report**

POSTED

7. Title

Leptin and Reproductive Performance in Domesticated Livestock

12. Investigator Name(s) (Last Name and Initials)

Gentry, G. T.

20. Termination Date 09/30/2012	40. Period Covered (mo/da/year): 10/01/2007 TO 09/30/2012

Outputs:

Over the course of the project, two publications and one peer reviewed abstract presented at international meetings were generated. Research from this project has provided incremental knowledge in the effect of monensin on circulating leptin concentrations in beef cattle and the effect of leptin on developmental rates in bovine in vitro produced embryos.

Outcomes/Impacts:

Circulating leptin levels appear to be the gatekeeper of reproduction processes in most mammals. We found that heifers that became pregnant to FTAI had higher concentrations of leptin during the synchronization protocol compared with heifers not becoming pregnant to FTAI. Similarly, heifers that received a single FSH injection during the synchronization protocol exhibited a higher pregnancy rate than control heifers. There was no difference in leptin levels of heifers receiving FSH treatment compared with control heifers. It was found that feeding sodium monensin at 200 mg/hd/day for 50 days prior to the breeding system to yearling heifers did not increase circulating levels of leptin compared with controls. Pregnancy rates tended to be higher for heifers receiving monensin supplementation compared with control heifers. There was no difference in fetal age across treatment groups indicating that monensin did not induce females to cycle earlier in the breeding season. Also, we found that the addition of leptin to the culture medium of in vitro produced bovine embryos does not influence development to the blastocyst stage, but can negatively influence cell proliferation in the inner cell mass, trophoblast and total cell numbers of the bovine embryo. Also, the addition of leptin to the culture medium of in vitro produced embryos did not influence the mRED score (characterizes both stage and quality grade of the embryo). It is apparent that more studies should be conducted to determine if different pathways are utilized by leptin in the cow compared with other more studied species such as the human and mouse.

Publications:

No Publications Reported

Participants:

G. Gentry (PI), L. Gentry, K. Bondioli, R. Godke, LSU AgCenter.

Target Audiences:

Reproduction biologists, veterinary endocrinologists, and domestic livestock researchers.

Project Modifications:

Not relevant to this project.

Approved (Signature)	Title	Date

		1-15-2013