

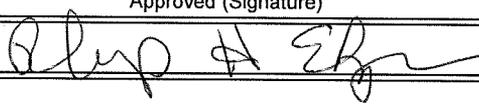
*Animal*

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| U.S. Department of Agriculture<br><b>Accomplishments Report AD-421</b><br>U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                  |                                                           | Date (Month, Day, Year)<br><br>03/22/2012 |
| 1. Accession<br><br>0224441                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Agency Identification No.<br><br>2. NIFA 3. LA.B | 5. Work Unit/Project No.<br><br>LAB94079                  | 6. Status<br><br>Annual Report            |
| 7. Title<br><br>Metabolic Interactions with Reproductive Processes in Horses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                  |                                                           |                                           |
| 12. Investigator Name(s) (Last Name and Initials)<br><br>Thompson, D. L.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |                                                           |                                           |
| 20. Termination Date 09/30/2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                  | 40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011 |                                           |
| Outputs:<br><br>The information generated by this project was disseminated in 2011 in 4 research reports presented at the Equine Science Society symposium in Murfreesboro, Tennessee, in June. The abstracts of these presentations were published in the Journal of Equine Veterinary Science, which has wide readership amongst equine veterinarians as well as scientists in the equine area. The significance and impact of the research was also discussed with peer researchers and members of the horse industry at the symposium.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |                                                           |                                           |
| Outcomes/Impacts:<br><br>Completed research on the current phase of this project has provided further information on a hyperinsulinemic and hyperleptinemic condition in mares first described in 2003. Experiments completed in 2011 included the application of a newly established method of assessing insulin sensitivity in horses via direct injection of insulin. The efficacy of 2 compounds known to improve insulin sensitivity in humans was tested in horses to determine if either might be a useful method for improving insulin sensitivity in horses. Neither cinnamon extract nor fish oil, a source of omega-3 fatty acids, altered the insulin sensitivity of horses previously determined to be insulin insensitive, thus horse owners and producers are advised to avoid such products. Factors that could potentially affect the results of tests for insulin sensitivity by means of direct insulin injections were studied, and it is advised that overnight feed deprivation provides the most reliable and consistent results for the test. These results have potentially provided improvements to the technology for the identification of insulin insensitive horses, which has on-farm significance due to the tendency of these horses for laminitis and predisposition to lameness. Early detection will allow owners to manage these horses in a manner appropriate for their condition. |                                                  |                                                           |                                           |
| Publications:<br><br>Earl, L.R., D.L. Thompson, Jr., and P.B. Mitcham. 2011. Factors affecting the glucose response to insulin injection in mares: Epinephrine and supplementation with cinnamon extract or fish oil. J. Equine Vet. Sci. 31:249-250.<br><br>Lestelle, J.D., L.R. Earl, D.L. Thompson, Jr., R.C. Hebert, and P.B. Mitcham. 2011. Insulin-glucose dose response curves in insulin sensitive and insensitive mares and effect of overnight and long-term feeding regimen. J. Equine Vet. Sci. 31:285-286.<br><br>Hebert, R.C., D.L. Thompson, Jr., P.B. Mitcham, R.M. Gilley, and P.J. Burns. 2011. Stimulation of prolactin after estradiol pretreatment: Comparison of polymer formulations for domperidone and sulpiride and oral administration of sulpiride in horses. J. Equine Vet. Sci. 31:313.<br><br>Thompson, D. L., Jr., S. E. Clavier, P. B. Mitcham, and L. R. Earl. 2011. Estradiol stimulation of prolactin secretion in horses: Interaction with type of secretagogue. J. Equine Vet. Sci. 31:308.<br><br>Earl, L. R. 2011. Intravenous injection of insulin for measuring insulin sensitivity in horses: Effects of epinephrine, feeding regimen, and supplementation with cinnamon or fish oil. Master of Science Thesis, Louisiana State University, Baton Rouge, Louisiana.                                                                                                            |                                                  |                                                           |                                           |
| Participants:<br><br>D.L. Thompson, Jr. (PI), K.R. Bondioli, M. Garcia, B. Mitcham, R.C. Hebert, L.R. Earl, J. Lestelle, LSU AgCenter; P.J. Burns, Burns BioSolutions, Lexington, KY.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                  |                                                           |                                           |
| Target Audiences:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                  |                                                           |                                           |

Target audiences for the results of this project include personnel in the equine industry, such as farm managers and horse owners, as well as veterinarians and research scientists in the area of equine reproduction, endocrinology, and physiology.

Project Modifications:

Nothing significant to report during this reporting period.

| Approved (Signature)                                                              | Title | Date    |
|-----------------------------------------------------------------------------------|-------|---------|
|  |       | 3-23-12 |