

Public Abstract

First Name:Erika

Middle Name:Lynn

Last Name:Berg

Adviser's First Name:Duane

Adviser's Last Name:Keisler

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Obesity in horses is associated with a number of maladies including insulin resistance and laminitis; therefore studies investigating the metabolic physiology of equine were done. In our first study, we characterized the profiles of leptin, insulin-like growth factor-1, and thyroid stimulating hormone in mares and foals in the period leading up to and after birth. The highest concentration of all hormones was found in the first milk sample, which is in agreement with other equine research. This study provided the first data on leptin concentrations in the neonatal foal and offers a starting point for the investigation of appetite regulation in newborn equine.

In our second study, we examined the link between leptin and adrenocorticoid hormones by administering the mineralocorticoid receptor antagonist spironolactone to pony mares. We found no change in cortisol or leptin concentrations between treatments, but did see a trend for increased aldosterone concentrations in the blood of spironolactone treated ponies over time. Further work is necessary to elucidate the relationship between leptin and adrenocorticoids in equine.

In our third study, we investigated the effects lipoic acid supplementation on blood glucose and insulin responses, as well as leptin concentrations in pony mares. We found no differences between treatments for blood glucose or leptin concentrations during a glucose tolerance test; however there was a trend for decreased insulin concentrations. These results suggest that lipoic acid may improve insulin effectiveness and warrant further investigation into the potential benefits of lipoic acid supplementation in the management of insulin resistance in equine.