

Implications

Traditionally, pasture has been regarded as the major source of fiber for the horse. These studies suggest that fiber may be an important component of an ideal supplement for improved grass-legume pastures. In growing yearlings, the fat and fiber supplement may have buffered seasonal changes and the increased hydrolyzable carbohydrate content in rapidly growing pasture, as evidenced by smoother growth curves.

The differences in energy source of the SS and FF supplements influenced estimated bone mineral content in growing horses. Horses consuming diets containing fat, which tends to form calcium soaps, and fiber, which tends to capture cations, may have an increased requirement of calcium and other minerals. The SS supplement, compared to the FF supplement, may have initiated larger metabolic and hormonal changes associated with the feeding-fasting cycle, which may have influenced bone mineral deposition.

Milk composition of mares supplemented with fat and fiber was influenced in ways likely to improve foal health. Enhanced linoleic acid content of mares' milk may reduce the risk of gastric ulcers in foals. Increased immunoglobulin G content of colostrum from mares fed corn oil may enhance passive immunity.

The carbohydrate status of mares was influenced by adaptation to the SS and FF supplements. The increased response of plasma glucose and insulin to an oral

glucose load in the FF supplemented mares was indicative of fat adaptation. The adaptation of the SS mares to increased dietary hydrolyzable carbohydrate may have enabled them to utilize glucose at a faster rate.

Due to the nature of carbohydrate digestion in the horse, the opportunity for hydrolysis prior to fermentation, precise measurement of hydrolyzable carbohydrates in pasture and feeds would be beneficial. Traditional methods of non-structural carbohydrate determination “by difference” did not provide an adequate estimation of the hydrolyzable carbohydrate present, as evidenced by direct analysis.