

## The Future of Equine Nutrition: A Research Perspective

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The field of equine nutrition is wide-open and ripe for diverse study. From a feed manufacturer's point of view, we are always looking to learn more about ingredients, additives and how to combine these constituents in feed, in order to upgrade feedstuffs to support horse health. For example, learning how beta-glucans in oats may contribute to gut health or how aspects of alfalfa decrease the risk of ulcers can influence feed formulations and the health of horses eating the resulting feeds. To that effect, more research is needed to pinpoint nutrients and supportive ingredients that truly affect the health of horses versus just providing a marketable story. Research on nutritional aspects of chronic colic and laminitis, for instance, could help identify nutrients and management factors to help reduce the risk of these conditions. In addition, since equine research sometimes follows what is popular in other animal species and human nutrition, research needs to be conducted specifically in horses to make sure these nutrients in fact make a difference. For example, creatine is popular in human sports medicine as an ergogenic aid for exercising athletes, and is fed to horses with the same intent. Research studies have shown; however, that it is not well-absorbed in horses and therefore lacks a performance enhancing affect. Hence, equine nutrition research needs to continue to tease out dietary factors that may benefit horses, and which ones may only be contributing to expensive urine or manure.

In addition to general health and feed ingredients, research in equine digestive physiology will help to steer dietary regimens in different directions. The emerging data on the microbiome of the equine GI tract is exciting and although in its infancy, has the potential to greatly influence feeding and care of horses. We know that the microbiome of horses differs depending on health status, feeding regimen, management factors and more. And the status of that microbiome affects all systems in the body, from the immune system and nervous system to hormonal regulation. Influencing the microbiome in a positive way to affect changes in subsequent physiological systems is an important and exciting area of research.

Equine management as it relates to feeding is also an area that deserves attention and research. Horses are managed in a myriad of ways and the interaction between the feedstuffs chosen and how horses are subsequently cared for can impact the health of the animal. For example, feeding a horse too many calories while on stall rest can create obesity and negative behaviors in a horse, whereas feeding horses too little roughage during an extensive exercise training program can exacerbate ulcers. Alterations in feeding and management, however, have the ability to positively affect both conditions. Creating environments that mimic natural situations for horses, such as frequent feedings, that also appropriately balance calories and nutrients is critical. Ensuring horses have safe opportunities for interaction, play and movement is also necessary for optimal health. Considering and acting on all of these factors together creates a "sweet spot" to positively influence the health of horses. This is true whether they are on stall rest or living outside in group herds. The more we research how to best feed and manage horses in the many ways that we keep them, the better the horses will fare.

In conclusion, there is no doubt that the overall health and well-being of horses will continue to direct equine nutrition research in the future. Focusing on specialized ingredients, additives, and disease modifying diets has the ability to shape feed innovation. Learning more about the equine microbiome, and how to influence it, is an exciting field from which we have much to learn. And looking into management factors that optimize horse health will create a synergy of science and practical wisdom that is of benefit to the horse.

