

## **Feeding and digestive problems in horses: physiologic responses to a concentrated meal.**

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### **ABSTRACT**

Association of feeding practices with development of digestive disorders in horses is reviewed. Physiological consequences of meal frequency may help to explain the relation and contribute to some conditions. Many horses kept for performance and leisure activities are fed on high-energy, low-forage diets twice daily, with limited access to hay or grazing. Rapid ingestion of such meals stimulates a copious outpouring of upper alimentary secretions and results in transient hypovolaemia (15% plasma volume loss). Subsequent activation of the renin-angiotensin-aldosterone system (RAAS) helps to maintain circulatory status. Large meals may accelerate digesta passage to the caecum and, thereby, increase soluble carbohydrate availability for large intestinal fermentation. Intense periods of fermentation develop that require significant shifts of fluid into the colonic lumen. This is followed by net fluid absorption, which, in part, is dependent on postprandial increases of aldosterone. Potential consequences of these events include imbalances in the RAAS response, which may promote conditions favourable to gastrointestinal disturbance, notably large intestinal impaction, and changes in the gastrointestinal microflora, which may affect the intraluminal endotoxin pool and the population of enterotoxin-producing bacteria. These changes are absent or greatly attenuated in simulated grazing conditions, such as small, frequent meals. Management practices which allow a more continuous feeding pattern may significantly reduce the incidence of digestive problems in stabled horses.