

# Nutritional management of small intestinal malabsorption syndrome in nine horses

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**Introduction:** Small intestinal malabsorption syndrome includes several small intestinal tract disorders that result in impaired nutrient digestion and/or absorption<sup>1</sup>. Clinical signs associated with this syndrome in horses include chronic weight loss, intermittent colic, lethargy, diarrhea and peripheral edema<sup>2</sup>. Although this syndrome can affect the digestion and absorption of carbohydrates, protein, fat, vitamins and minerals<sup>3</sup>, diagnostic tests in the horse usually concentrate on reduced carbohydrate absorption as demonstrated by an abnormal (significantly reduced response to a standard dose) oral glucose tolerance test<sup>4</sup>.

**Case history:** In the period of September 2013 until September 2014, nine horses (3-22 years old) with complaints of chronic weight loss were referred to the Nutrition Department of Ghent University. In four of these horses, chronic diarrhea was also present and two horses suffered from intermittent colic. All horses had a Body Condition Score (BCS)<sup>5</sup> of  $\leq 3/9$  and an abnormal oral glucose tolerance test. In order to treat the diagnosed malabsorption syndrome, a combined therapy of corticosteroids and nutritional support was initiated.

**Discussion:** The main goal of nutritional management of horses with malabsorption syndrome is to improve BCS. Therefore, a weight gain program providing 120-125% of the maintenance energy requirement, based on estimated ideal body weight, was initiated. Fortunately, some level of absorptive capability is likely to remain in most horses with malabsorption syndrome<sup>2</sup>. The horses were fed *ad libitum* roughage (hay, haylage or grass), with a “worst case scenario” intake of 1% DM forage on ideal body weight being taken into account in the diet calculations. Furthermore, certain horses received additional roughage sources (such as beet pulp and alfalfa pellets) in order to increase protein- (alfalfa) and voluntary feed intake. With respect to the concentrate, all horses were fed a low sugar and starch - high fat/high fibre feed, which was chosen in order to provide <1gr sugar and starch /kg body weight /meal. In order to increase energy intake, vegetable oil was added to the diet, resulting in a total dietary crude fat % of 4.4-8.9 (DM basis). As horses with small intestinal carbohydrate malabsorption may also have compromised fat absorption<sup>2</sup>, the oil was introduced gradually. Furthermore, the horses needed to get used to the taste of the oil and the faeces needed to be monitored closely for any sheen on the fecal balls, which is a sign of some fat escaping digestion<sup>6</sup>. Additionally, a minimum of 100 IU of vitamin E per 100ml of vegetable oil was added to the diet, to help prevent peroxidation<sup>7</sup>. A *Saccharomyces cerevisiae* supplement (Yea-sacc<sup>1026</sup>, 0.02gr /kg BW) was added to the ration in order to help support digestion<sup>8</sup>. Finally, water and a salt lick were provided *ad libitum* and a general vitamin and mineral supplement was added if required to ensure NRC<sup>9</sup> nutrient requirements were met. The diet was divided into several small meals a day, as feeding more frequent small meals may also aid better digestion and absorption<sup>2</sup>.

**Follow-up:** Seven horses tolerated the high-fibre/high-fat diets well, gained weight and increased in BCS within the next few weeks. Three owners mentioned complete resolution of diarrhea and one owner reported resolution of intermittent colic. Unfortunately, two horses (BCS 1 and 2/9) had to be euthanized due to severe progression of the condition.

**References:** <sup>1</sup>Rogers and Madanick (2005) Textbook of Clinical Gastroenterology and Hepatology pp. 279-287 <sup>2</sup>Mair et al. (2006) Eq Vet Educ 18(6), 299-308 <sup>3</sup>Roberts (1998) Equine Internal Medicine pp. 796-801 <sup>4</sup>Roberts and Hill (1973) Eq Vet J 5, 171-173 <sup>5</sup>Henneke et al. (1983) Eq Vet J 15(4), 371-372 <sup>6</sup>Kronfeld et al. (2004) J Anim Sci 82, 1773-1780 <sup>7</sup>Harris (1999) Proceedings of the BEVA Specialist meeting on Nutrition and Behaviour 100-104 <sup>8</sup>Medina et al. (2002). J Anim Sci 80(10), 2600-2609 <sup>9</sup>NRC (2007) Nutrient Requirements of Horses 341 pp.